



आचार्य नरेंद्र देव कृषि एवं प्रौद्योगिक विश्वविद्यालय,

कुमारगंज, अयोध्या-224229 (उ०प्र०), भारत

Acharya Narendra Deva University of Agriculture and Technology,
Kumarganj, Ayodhya-224229 (U.P.), India



Website: www.nduat.org, Phone: 05270-262035

Index

| S. No | Particulars | Page No |
|-------|---|--|
| 1 | Report of Rural Agricultural Work Experience and Agro-Industrial Attachment (RAWA & AIA) programme for Agriculture students | 1-3 |
| 2 | Photographs of activities under RAWA & AIA programme | 4-13 |
| 3 | List of students and allotted villages under RAWA | 14-36 |
| 4 | Provision of students' attachment to KVKs/Research stations | 37 |
| 5 | Brief Report on RAWA & AIA | 38-42 |
| 6 | Certificates of RAWA, AIA and Experiential Learning | 43-144, 575-633N |
| 7 | Request letters to various industries/ organizations for In-Plant training of Students | 145-148, 158-161, 167-168, 172-173 |
| 8 | Certificates of In-Plant training of Students | 149-150, 169-171, 174-176 |
| 9 | Proforma for fish production under Experiential Learning programme | 151-157, 162-166, |
| 10 | Photographs of activities under student READY programme | 177-178, 643-645 |
| 11 | List of students participated in Rural Horticulture Work Experience (RHWE) programme | 179-180, 182-183, 661-662, 664-665, 666-668, |
| 12 | List of students attached in different villages and industries | 184-188, 634-642, 715 |
| 13 | Manual of Experiential Learning programme for engineering students | 191-452 |
| 14 | Report of engineering students for Experiential Learning programme | 453-574 |
| 15 | List of students for Industrial Internship | 647-653 |
| 16 | Internship Schedule for veterinary student at Government veterinary hospital | 654-660 |
| 17 | Certificates of one month summer practical training at Central Farm machinery Training and Testing Institute (CFMTATI) | 670-709 |
| 18 | Activities of Girls students under In-Plant training/ RAWA | 710-714 |

Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya-224229 (U.P.)

Report of RAWE&AIA (Rural Agricultural Work Experience & Agro-Industrial Attachment)

To develop an understanding among students about rural life to acquaint them with different situations prevailing in the village, with special reference to agriculture, a course entitled, “Rural Agricultural Work Experience & Agro-industrial Attachment” is run in the College of Agriculture for B.Sc. (Ag., Hon’s) IV year students in the I semester.

Objectives of the RAWE&AIA Programme:

1. To provide an opportunity to the students to understand the rural setting in relation to agriculture and allied activities.
2. To make the students familiar with socio-economic conditions of the farmers and their problems.
3. To impart diagnostic and remedial knowledge to the students relevant to real field situations through practical training.
4. To develop communication skills in students using extension teaching methods in transfer of technology.
5. To develop confidence and competence to solve agricultural problems.
6. To acquaint students with on-going extension and rural development programmes.

Importance of RAWE&AIA:

This program helps students to get familiar with the socio-economic situation prevailing in the village and provides an opportunity for practical training in crop-production through work experience. It also develops communication skill in the transfer of technology and makes them understand the Agriculture Technology followed by local farmers. It develops confidence and competence in students for facing problems related to agriculture. It enables them to gain the knowledge and experience of the work and culture and provides an industrial exposure to the students for developing their career in the Agro-based industries. It helps them in acquiring first hand field experience. This program brings about positive changes in the students’ mindset, outlook, personality traits, managerial and entrepreneurial skills.

Thus, after acquiring sufficient fundamental knowledge on various aspects of farming, they are offered RAWE&AIA programme for full one semester so that they may learn almost all the practical aspects of the village and farming system by devoting their time in the village itself. As it provides enough exposure to the existing problems, advanced technologies learnt from the class rooms can be transferred promptly and communication can be improved. All these help in bridging the gap of both the sides. Inputs exchanged from either side prove beneficial for development of the country. Further, by selecting few villages under RAWE programme every year, socio-economic condition of selected villages could be improved. RAWE & AIA course is of 20 credits and its duration is of 20 weeks. It has 6 components, namely-

Details of all RAWE & AIA activities are given below-

| Rural Agricultural Work Experience and Agro-industrial Attachment (RAWE & AIA) -411 | | |
|---|--|---------------------------|
| S. No. | Activities | No. of weeks/Credit hours |
| 1. | General orientation & on campus training by different faculties | 1 |
| 2. | Village attachment | 8 |
| 3. | Unit attachment in Univ./College/KVK/Research Station Attachment | 5 |
| 4. | Plant Clinic | 2 |
| 5. | Agro-Industrial Attachment | 3 |
| 6. | Project Report Preparation, Presentation and Evaluation | 1 |
| Total weeks for RAWE & AIA | | 20 |

1. General orientation & on campus training by different faculties:

The course starts with an orientation program conducted by different faculty experts in the first week in which students are guided about various topics prescribed in the syllabus i.e., Agronomical Interventions, Plant Protection Interventions, Soil Improvement Interventions (Soil sampling & Testing), Fruit and Vegetable Production Interventions, Fruit Processing and Storage Interventions, Animal Production Interventions, Extension and Transfer of Technology Activities.

Students are also apprised of different components of RAWE&AIA program and advised about ways and methods of interacting with their allotted farmers, their family members & School children in the selected villages.

2. Village attachment:

Under this component, different villages are selected and allotted to groups comprising 5 to 6 students per village in different districts where students make survey of their allotted villages and make farmers aware about scientific cultivation, recent technologies, seed quality, advanced agricultural equipments, plant protection techniques, crop production, marketing of produce, importance of literacy and improvement in their living standard which prove highly beneficial in raising economic condition, literacy rate, social status, entrepreneurship and cultivation practices etc. of farmers. Details of 8 weeks are given below-

| | |
|---|--------|
| Orientation and Survey of Village | 1 week |
| Agronomical Interventions | 1 week |
| Plant Protection Interventions | 1 week |
| Soil Improvement Intervention (Soil sampling and testing) | 1 week |
| Fruit and Vegetable Production Interventions | 1 week |
| Food Processing and Storage Interventions | 1 week |
| Animal Production Interventions | 1 week |
| Extension and Transfer of Technology Activities | 1 week |

Students also fill the schedules "A" & "B" prepared by ICAR and information covered in both schedules are given below-

Schedule "A":

Schedule "A" is filled by the group members jointly in which they cover the villages information like, General information of selected village, Historical background of the village, The Demographic profile of the village, Assets in the village, Social map of the village, Hydrological assets in the village, Study of Hydrological and Topographical conditions of the village, Map of enterprises system in the village, Land use pattern of the village, Flora of the village, Livestock and Avian position of the village, Major cropping pattern of the village,

Working system of village Panchayat of the village, Problems and constraints of the village etc.

Schedule “B”:

Schedule “B” is filled by each group member individually for his or her five selected farmers in which they cover the village information such as Name of the Family Head and his personal information, Communication media possession of selected farmers, Source of Income, Family Composition, Land inventory, Implement & Machinery, Farm inventory, Source of Irrigation, Crop Information, Crop Records, Production and use of Farm Product, Plant disease situation & disease management in host farmers field, Monitoring of Insect Pest in different crops in host farmers field and Questionnaire for different aspects like- Agro-forestry Survey, Agricultural Engineering, Post harvest Technology etc.

3. Research Stations/KVKs:

KVK, is an integral part of the National Agricultural Research System (NARS), aims at assessment of location specific technology modules in agriculture and allied enterprises, through technology assessment, refinement and demonstrations. In the third step of RAWE&AIA program, students are placed in different KVKs/Research stations and learn about various activities conducted at KVKs such as supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district, linking the NARS with extension system and farmers.

4. Plant Clinic:

Under this component, students are attached to the Agriculture Technology Information Centre. Scientists at ATIC provide information regarding the plant protection and field diagnosis of insects pests and diseases. Scientists and SMS at the center of various disciplines provide information to students for protection and transfer of technologies to the field of farmers through Lab to Land process.

5. Agro-Industrial Attachment:

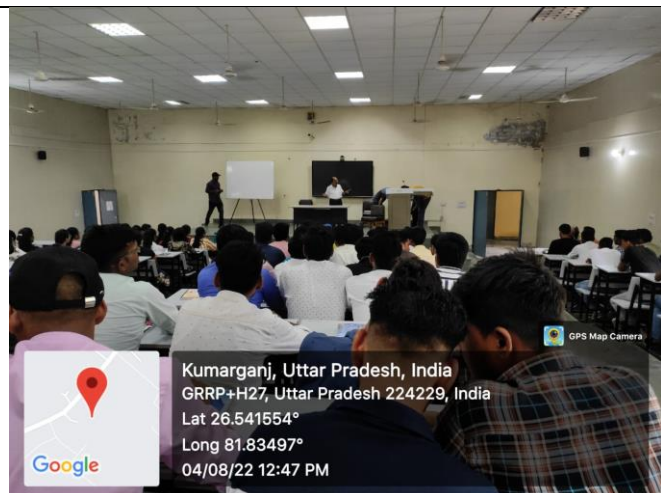
Students are placed in Agro-Industries for 03 weeks to get an experience of the industrial environment and working. Activities and Tasks during Agro-Industrial Attachment Programme are given below-

- Acquaintance with industry and staff.
- Study of structure, functioning, objectives and mandates of the industry.
- Study of various processing units and hands on training and supervision of industry staff.
- Ethics of industry.
- Employment generated by the industry.
- Contribution of the industry promoting environment.
- Learning business network including outlets of the industry.
- Skill development in all crucial tasks of the industry.
- Documentation of the activities and task performed by the students.
- Performance evaluation, appraisal and ranking of students.

6. Project Report Preparation, Presentation and Evaluation:

In the last week of the course, students prepare their reports of the work done by them during whole RAWE&AIA program; submit their charts based on activities, prevailing situations and conditions of their selected village. On the basis of their data documentation and presentation, final evaluation is made by Dean College of Agriculture, Course Co-coordinators and external examiner.

Photographs of Students Activities under RAWE&AIA Programme



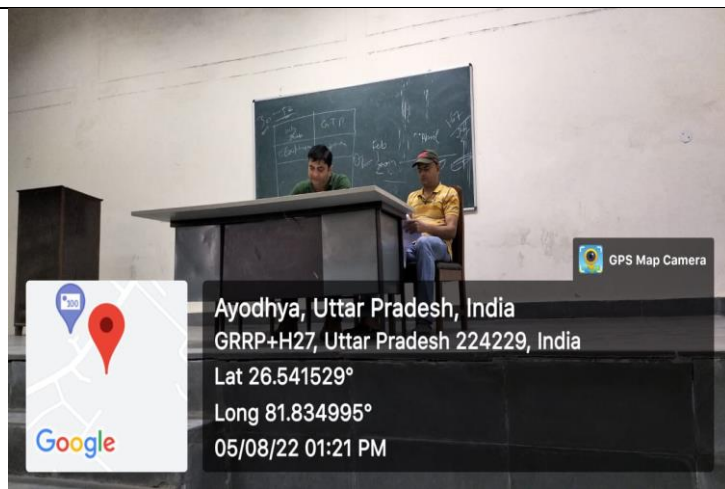
**Orientation lecture on Agronomy Interventions
by Dr. A K Singh**



Students during the orientation programme



**Orientation lecture on Vegetable Production by
Dr. G. C. Yadav**



**Important Guidelines and Instructions provided by
RAWE&AIA Coordinators**



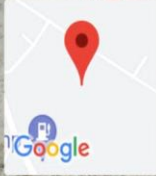
Guidelines and Instruction about Fruit Science provided by Dr. D. Ram



Orientation lecture on Insects, Pests and IPM by Dr. Umesh Chandra

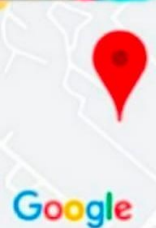


Lecture being delivered on role of Extension in RAWE & AIA Programme



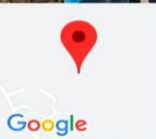
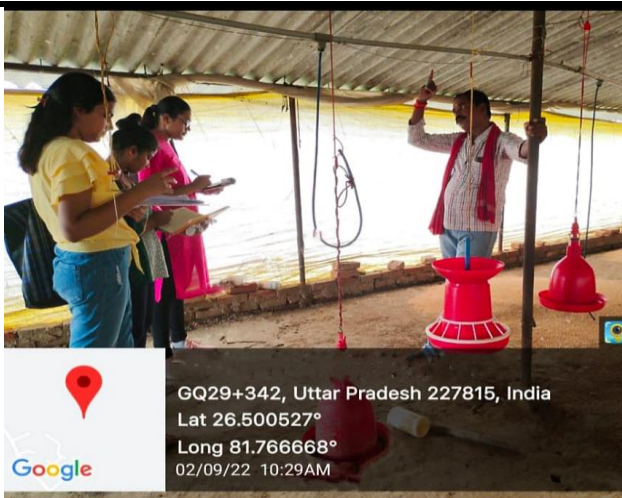
Ranmusepur, Uttar Pradesh, India
 GQ6R+GR, Ranmusepur, Uttar Pradesh 227815,
 Lat 26.51301°
 Long 81.793272°
 18/08/22 10:22 AM

Students discussing about the Insect and pest attack on rice crop with Mr. Roshan Saroj and Mr. Hanumant Tiwari at their farm.



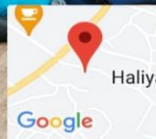
Haliyapur, Uttar Pradesh, India
 GQ6M+V8P, Haliyapur, Uttar Pradesh,
 227815, India
 Lat 26.545563°
 Long 81.835383°
 22/09/22 10:30 AM

Students discussing about the current scenario of the village in agriculture with Mr. Akhand Pratap Singh at his home.



GQ29+342, Uttar Pradesh 227815, India
 Lat 26.500527°
 Long 81.766668°
 02/09/22 10:29AM

Students discussing about the working of Poultry Farm with Mr. Ranvijay Singh at his poultry farm



Haliyapur, Uttar Pradesh, India
 GQ6H+XXX, Haliyapur - Jarai Kalan Rd, Haliyapur, Uttar Pradesh 227815,
 India
 Lat 26.512486°
 Long 81.779992°
 02/09/22 10:10AM

Students collecting the general information of the village from Panchayat Bhawan and met Panchayat Secretary Mr. Prince Kumar.



Discussing the adoption of Organic Farming with Mrs. Aasha Devi at her farm in Haliyapur.



Interaction with farmer at his home



Students discussing about farming practices at Haliyapur



Students discussing about the Rice cultivation at SIF farm with farm attendants



Students visiting the MES at University campus



Students discussing about the seed production with Farm attendant at NSP-1



Insecticide spray at UNIT NSP 5 during ATTACHMENET



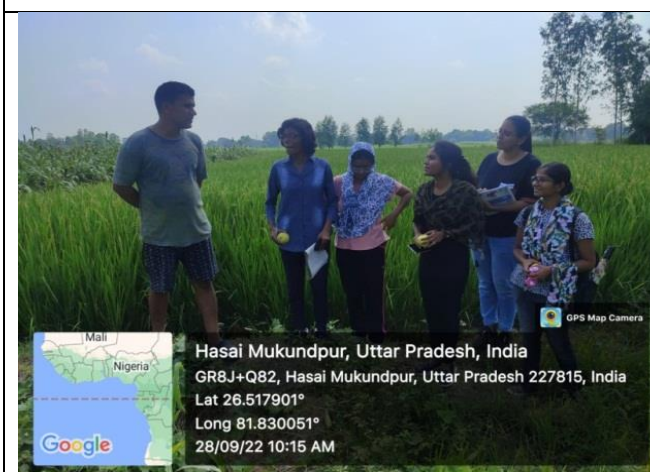
Interaction with farmers at UNIT ATTACHMENET Landscaping



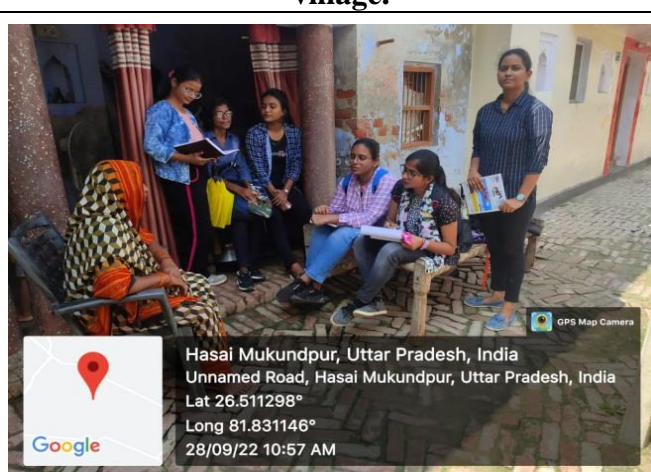
Students discussing about various cropping patterns with Mr.Ashok Singh at Mukundpur.



Students discussing about sugarcane plantation with Mr. Ashok kumar mishra at the allotted village.



Students discussing about cultural pest control techniques with Mr. Jayprakash in Mukundpur.



Students discussing about various cattle management techniques with Mrs.Kalavati devi in Mukundpur.



Dr. Amarnath instructing about the ATIC



Dr. Saurabh Kumar instructing about the ATIC



Students discussing with Farm Incharge at NSP – 2



Students discussing about the Orchard Raising with farm attendant at horticulture Farm (Akma)



Gathered Faculties of our course RAWE&AIA



Beginning of our Kisan Goshti organised at Dobiwara village



Presentation by Students in Dobhiyara village



Lecture given on topic about modern technologies and new farm implements by Dr. A P Rao, Director Extension



Visited the plant cafeteria and discussed about recent varieties of major crops.



**Agro Industrial Visit
KM Sugar Mill Ayodhya**



**Agro Industrial Visit
KM Sugar Mill Ayodhya**



**Students gathered information about how
sugar is processed**



**Students gathered information about packaging
and selling of sugar**



Students interacting with farmer about their family



Photos of students during the Goshthi



Students interacting with farmers at field



Students interacting with farmer about their Village History



Student presenting their work at the time of Goshthi



Student discussing about their work at the time of Goshthi



Student discussing about their work at the time of Goshthi



Photos of students during the Goshthi

List of Students and their Allotted Villages (Year: 2021-22)

| <p align="center">COLLEGE OF AGRICULTURE ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE & TECHNOLOGY, KUMARGANJ, AYODHYA (U.P.) B.Sc. (Ag.) 4th Year First Semester Session 2021-22</p> | | | | |
|--|--------------------------|----------------|---------------------|---------------------------------|
| <i>S. No.</i> | <i>Name of student</i> | <i>Id. No.</i> | <i>WhatsApp No.</i> | <i>Email Id.</i> |
| 1. Katghara | | | | |
| 1. | Abhimanyu Rajak | A-10115/18 | 7081711412 | abhi708171@gmail.com |
| 2. | Abhinav Bhatt | A-10116/18 | 7800815081 | abhinavbhatt55@gmail.com |
| 3. | Abhishek Tiwari | A-10117/18 | 9554691131 | abhitiwari1282000@gmail.com |
| 4. | AbhishekKumarMaurya | A-10118/18 | 8840502801 | abhishekthejack@gmail.com |
| 5. | Abhishek P Singh Chauhan | A-10119/18 | 6388479422 | apsc17799@gmail.com |
| 2. Tindauli | | | | |
| 6. | Abhishek Singh | A-10120/18 | 6388364309 | abhishek133503@gmail.com |
| 7. | Abhishek Shrivastva | A-10121/18 | 7610069213 | erdr4221@gmail.com |
| 8. | Aditya Chaudhary | A-10122/18 | 7081946855 | adityac957@gmail.com |
| 9. | Ajaj Ahmad | A-10123/18 | 7081849751 | ajajahmed176@gmail.com |
| 10. | Ajay Kumar | A-10124/18 | 8009921833 | 4797ajaykumar@gmail.com |
| 3. Umarhar | | | | |
| 11. | Akash Singh | A-10125/18 | 8052602181 | akashsingh73180@gmail.com |
| 12. | Amit Gupta | A-10127/18 | 7084712655 | amitguptashg028@gmail.com |
| 13. | Amit Kumar Yadav | A-10128/18 | 7080075211 | ak6412872@gmail.com |
| 14. | Anand Kumar | A-10130/18 | 9118563590 | anand745691@gmail.com |
| 15. | AneeshNishad | A-10131/18 | 8874636506 | 090100an@gmail.com |
| 4. Nagipur | | | | |
| 16. | Anil Kumar Maurya | A-10132/18 | 7518028583 | anilkm101200@gmail.com |
| 17. | Ankit Pandey | A-10133/18 | 7394934129 | ankitp422001@gmail.com |
| 18. | Ankool Kumar | A-10134/18 | 8756142937 | |
| 19. | Anuj Kumar | A-10135/18 | 9129936313 | anujkumarstp901@gmail.com |
| 20. | AnuragRawat | A-10136/18 | 9161826744 | anuragrawat5683@gmail.com |
| 5. Isauli Bhari | | | | |
| 21. | Arshad Aziz | A-10138/18 | 9670005302 | arshadaziz2000@gmail.com |
| 22. | Arun Kumar Maurya | A-10139/18 | 8545934128 | akmaurya1252000@gmail.com |
| 23. | Ashok Kumar | A-10140/18 | 7239069781 | rawatashokkumar561999@gmail.com |
| 24. | Ashutosh Kumar | A-10141/18 | 7839502660 | Ashutoshkumarrana92@gmail.com |
| 25. | AshutoshSoni | A-10142/18 | 9532057899 | Sonjashutosh200@gmail.com |
| 6. Sidhauna | | | | |
| 26. | Ayush Kumar | A-10144/18 | 9517035940 | ayushkumar6387479195@gmail.com |
| 27. | BhanuPratap Singh | A-10146/18 | 8429242956 | Bhanuprataprajput953@gmail.com |
| 28. | BhupendraGautam | A-10148/18 | 9918101182 | bhupendra.mwc@gmail.com |
| 29. | Bipin Kumar Maurya | A-10149/18 | 7068937495 | bipinkumarmaurya204@gmail.com |
| 30. | Deepak | A-10150/18 | 9044230950 | kdeepak52715@gmail.com |
| 7. Baraipara | | | | |
| 31. | Deepak Kumar | A-10151/18 | 6388520713 | dy4668@gmail.com |
| 32. | Deepak Singh | A-10152/18 | 7235062497 | deepakchamp00789@gmail.com |
| 33. | Dharmendra Kumar | A-10153/18 | 9198067665 | dkparakh65@gmail.com |
| 34. | Dhirendra Kumar Shukla | A-10154/18 | 7839002549 | hukladhirendrakumar9@gmail.com |
| 35. | Gaurav | A-10155/18 | 8112329464 | gaurav5070777@gmail.com |

8. Barauli

| | | | | |
|-----|-----------------------|------------|------------|-------------------------------|
| 36. | Gaurav Singh | A-10156/18 | 9044252321 | gs78758@ gmail.com |
| 37. | Ghanshyam Kumar Gupta | A-10157/18 | 8543053221 | kumarghansyamgupta@ gmail.com |
| 38. | Gopal Ji | A-10158/18 | 8423981742 | gopalji8423@ gmail.com |
| 39. | Gyan Prakash Pandey | A-10159/18 | 8009269215 | gyanpandey0026@gmail.com |
| 40. | Gyanendra Tiwari | A-10160/18 | 8429145114 | gyanendratiwari207@ gmail.com |

9. Dhamthua

| | | | | |
|-----|------------------|------------|-------------|-----------------------------|
| 41. | Hariom Singh | A-10161/18 | 8954889267 | ravalsingh8954@ gmail.com |
| 42. | Himanshu Rajpoot | A-10162/18 | /6307622856 | Himanshurajpoot68@gmail.com |
| 43. | Himanshu Tiwari | A-10163/18 | 7408208454 | Thimanshu761@gmail.com |
| 44. | Kshitij Mishra | A-10166/18 | 8127358013 | arshkimishra1807@ gmail.com |
| 45. | Lalchand Maurya | A-10167/18 | 9170839750 | lalchand10071998@gmail.com |

10. Itaunja

| | | | | |
|-----|----------------------|------------|------------|------------------------------|
| 46. | Lavkush Singh | A-10168/18 | 6306818734 | lavkushsingh7081@gmail.com |
| 47. | Mayank Singh | A-10169/18 | 7525090258 | mayanksingh14632@gmail.com |
| 48. | Mohd. Irshad Ali | A-10170/18 | 9675468998 | mohdirshadali57223@gmail.com |
| 49. | Monu Singh | A-10171/18 | 9129106238 | jimonu2002@ gmail.com |
| 50. | Neeraaj Kumar Pandey | A-10172/18 | 9984060975 | neerajpandey271401@gmail.com |

11. Dhagapur

| | | | | |
|-----|---------------|------------|------------|------------------------------|
| 51. | Nishant Patel | A-10174/18 | 8400081416 | patelnishant0079@ gmail.com |
| 52. | Nitin Gaur | A-10175/18 | 6395922950 | nitin_gaur763@ gmail.com |
| 53. | Om Prakash | A-10176/18 | 7607788274 | |
| 54. | Pankaj | A-10177/18 | 9839282244 | nishadpankaj87719@ gmail.com |
| 55. | Pankaj Yadav | A-10178/18 | 638803011 | |

12. Beesa Ka Purwa

| | | | | |
|-----|-----------------|------------|------------|-----------------------------|
| 56. | Pawan Patel | A-10179/18 | 8917073076 | pawanpatel8917@ gmail.com |
| 57. | Prabhash Mishra | A-10180/18 | 7084693702 | prabhash.azam111@gmail.com |
| 58. | Pradeep Kumar | A-10181/18 | 7235069709 | pk253609@ gmail.com |
| 59. | Pradeep Yadav | A-10182/18 | 9720857308 | pradeepyasavesa@ gmail.com |
| 60. | Prateek Singh | A-10183/18 | 8887718925 | aprateeksingh100@ gmail.com |

13. Churawan Ka Purwa

| | | | | |
|-----|------------------------|------------|------------|-------------------------------------|
| 61. | Praveen Kumar Kanaujia | A-10184/18 | 9115364690 | praveenkumarkanojia41801@ gmail.com |
| 62. | Priyanshu Dwivedi | A-10185/18 | 6388814995 | dwivedipriyanshu1801@ gmail.com |
| 63. | Rahul Pal | A-10186/18 | 8528428620 | rp854445@gmail.com |
| 64. | Raj Kapoor | A-10187/18 | 9792974787 | 160400rk@gmail.com |
| 65. | Rajnish Kumar | A-10188/18 | 9559330676 | rajnishkumar9559330676@gmail.com |

14. Gosai Ka Purwa

| | | | | |
|-----|----------------------|------------|------------|-------------------------------|
| 66. | Ravindra Kumar Yadav | A-10189/18 | 9554076241 | rudraravindryadav@gmail.com |
| 67. | Ritik Jaiswal | A-10191/18 | 8933043896 | ritikjaiswal18933@gmail.com |
| 68. | Rohit Kumar | A-10192/18 | 8052669305 | rtkkumar8052@gmail.com |
| 69. | Sachidanand Gupta | A-10193/18 | 9369064597 | sachindandagupta006@gmail.com |
| 70. | Sachin Gautam | A-10194/18 | 8545858460 | sachinbhimraj698@gmail.com |

15. Lal Ka Purwa

| | | | | |
|-----|---------------|------------|------------|----------------------------|
| 71. | Sachin Kumar | A-10195/18 | 9369064597 | kumarsachin35229@gmail.com |
| 72. | Sachin Pal | A-10196/18 | 7860279441 | spal228120@gmail.com |
| 73. | Sachin Yadav | A-10197/18 | 7080654079 | sachinyadavknj01@gmail.com |
| 74. | Sanjeet | A-10198/18 | 7232995282 | sanjeetbharti613@gmail.com |
| 75. | Santosh Kumar | A-10199/18 | 8081179170 | santoshkrnwj@gmail.com |

16. Chauhan Ka Purwa

| | | | | |
|-----|-------------------|------------|------------|-------------------------------|
| 76. | SaurabhTripathi | A-10200/18 | 9027474505 | mesaurabhtripathi12@gmail.com |
| 77. | Shiv Naresh | A-10203/18 | 7348015301 | shivnaresh201@gmail.com |
| 78. | Shiv ShankarVerma | A-10204/18 | 9517370122 | vermashivshankar135@gmail.com |
| 79. | Shivam | A-10205/18 | 7080326248 | shivam26062001@gmail.com |
| 80. | ShivamAwasthi | A-10206/18 | 7398107512 | awasthis728@gmail.com |

17. Jagannath Pur

| | | | | |
|-----|-----------------|------------|------------|--------------------------------|
| 81. | Shivam Kumar | A-10207/18 | 7599700836 | shivamkumar050601@gmail.com |
| 82. | ShivamKushwaha | A-10208/18 | 7753863362 | Shivamkushwaha9670@gmail.com |
| 83. | ShivamUpadhyay | A-10209/18 | 9506229581 | shivamupadhya2002s@gmail.com |
| 84. | Shivam Yadav | A-10211/18 | 7618908803 | shivam00789@gmail.com |
| 85. | Shivendra Singh | A-10212/18 | 7268093935 | shivendrasingh209724@gmail.com |

18. Bhat Purwa

| | | | | |
|-----|---------------------|------------|------------|--------------------------------|
| 86. | Shobit Kumar Kamle | A-10214/18 | 9956502628 | kambleshobhit@gmail.com |
| 87. | Shrawan Kumar Verma | A-10215/18 | 9628167327 | shrawankr9600@gmail.com |
| 88. | Shubham Kumar | A-10216/18 | 8429212656 | kumarshubham18072002@gmail.com |
| 89. | Shubham Patel | A-10217/18 | 9616476906 | shubham3239patel@gmail.com |
| 90. | Shubham Shukla | A-10218/18 | 8953557304 | shubham89535@gmail.com |

19. Purab Gaon

| | | | | |
|-----|----------------------|------------|------------|-------------------------------|
| 91. | Sonu Pal | A-10219/18 | | |
| 92. | Sudhir Kumar Pal | A-10220/18 | 7458878360 | 96sudhirpal@gmail.com |
| 93. | Sumit Sharma | A-10221/18 | 8738922772 | Sumitsharmaa99@gmail.com |
| 94. | Vinay Kumar | A-10225/18 | 8423474768 | vinaykumar01121@gmail.com |
| 95. | Virendra Singh Yadav | A-10227/18 | 7784828915 | virendra.siya778495@gmail.com |

20. VasaPur

| | | | | |
|------|--------------------|------------|------------|-----------------------------|
| 96. | Vishal Kumar | A-10228/18 | 840010682 | vishalkumar840010682 |
| 97. | Vishal Verma | A-10229/18 | 7310063554 | vermavishal010599@gmail.com |
| 98. | VishjeetVerma | A-10230/18 | 9598352253 | |
| 99. | Yashpal Singh | A-10231/18 | 8755580556 | yashpal15798@gmail.com |
| 100. | *Vineet Kr. Tiwari | A-10289/18 | 7054427033 | vineettiwari0527@gmail.com |

21. Akama

| | | | | |
|------|---------------------|------------|------------|------------------------------|
| 101. | Komal | A-10165/18 | 6387574947 | komalKvmati2018@gmail.com |
| 102. | Rashika Saini | A-10190/18 | 9918073013 | rishikasaini1998@gmail.com |
| 103. | ShobhaKashyap(F) | A-10213/18 | 8948140376 | shobhakashyap4387@gmail.com |
| 104. | VaishnaviBajpai (F) | A-10222/18 | 7897323430 | bajpai.vaishnavi23@gmail.com |
| 105. | Vibha Devi (F) | A-10223/18 | 9621167678 | vibharaj200@gmail.com |

22. Birauli Jham

| | | | | |
|------|---------------------|------------|------------|-----------------------------|
| 106. | Aashi Singh | A-10114/18 | 8924948399 | aashisingh5280@gmail.com |
| 107. | JyotsnaMaurya | A-10164/18 | 9670591419 | lyotriock1012982@gmail.com |
| 108. | NeetuSingh | A-10173/18 | 9027354356 | neetusingh211298@gmail.com |
| 109. | *RichaKumari (F) | A-10273/18 | 9643833035 | kumariricha27@gmail.com |
| 110. | *SamridhiMaurya (F) | A-10276/18 | 9984168528 | qsamridhimaurya11@gmail.com |

*Azamgarh Campus

List of Students and their Allotted Villages (Year: 2020-21)
College of Agriculture
Acharya Narendra Deva University of Agriculture and Technology,
Kumarganj, Ayodhya (U.P.)
B.Sc. (Ag.) IV Year, I Semester, 2020-21

Under the RAWE&AIA programme during 2020-21, following students were in the course.

| S.N. | Name of Student | Id.No. |
|-------------|--------------------------|---------------|
| 1 | Gopesh Yadav | A- 9669/17 |
| 2 | Kanchan Singh | A- 9694/17 |
| 3 | Namanpreet Kaur | A-9699/17 |
| 4 | Shalini Gaur | A-9714/17 |
| 5 | Adarsh Tiwari | A-9737/17 |
| 6 | Aditya Kumar Singh | A-9738/17 |
| 7 | Aditya Singh | A-9739/17 |
| 8 | Akash Kumar | A-9740/17 |
| 9 | Alok Katiyar | A-9741/17 |
| 10 | Alok Verma | A-9742/17 |
| 11 | Amit Kumar | A-9743/17 |
| 12 | Amit Kumar | A-9744/17 |
| 13 | Anirudha Priya | A - 9745/17 |
| 14 | Ankit Kumar | A-9746/17 |
| 15 | Ankit Tripathi | A-9747/17 |
| 16 | Ankit Verma | A- 9748/17 |
| 17 | Km Anshu | A- 9749/ 17 |
| 18 | Anshu Verma | A-9750/17 |
| 19 | Anshul Kumar Singh | A-9751/17 |
| 20 | Anubhav Saxena | A-9752/17 |
| 21 | Anuj Kumar Agnihori | A-9753/17 |
| 22 | Arjun Singh | A-9754/17 |
| 23 | Arun Kumar | A- 9755/17 |
| 24 | Ashish Kumar | A-9756/17 |
| 25 | Ashish Nishad | A-9757/17 |
| 26 | Ashutosh | A-9758/17 |
| 27 | Ashvani Kumar | A-9759/17 |
| 28 | Atul Vishwakarma | A-9760/17 |
| 29 | Avinash Pal | A-9761/17 |
| 30 | Brijesh Kumar Verma | A-9762/17 |
| 31 | Deeksha Shukla | A-9763/17 |
| 32 | Deepak | A- 9764/17 |
| 33 | Deepak Singh | A-9765/17 |
| 34 | Devendra Kumar | A- 9766/17 |
| 35 | Dharmendra Bahadur Singh | A-9767/17 |
| 36 | Durgesh Kumar | A-9768/17 |
| 37 | Indra Kumar | A-9770/17 |
| 38 | Jatin Katiyar | A- 9771/17 |
| 39 | Jeetan Raj | A-9772/17 |
| 40 | Jitendra Kumar | A- 9773/17 |
| 41 | Kamlesh Kumar | A -9774/17 |

| | | |
|----|----------------------|-------------|
| 42 | Kapil Kumar | A- 9775/17 |
| 43 | Kuldeep Kumar | A - 9776/17 |
| 44 | Kumari Vaishno | A-9777/17 |
| 45 | Lalbabu | A-9779/17 |
| 46 | Maan Singh | A-9780/17 |
| 47 | Mahesh Kumar | A-9781/17 |
| 48 | Manas Tripathi | A-9782/17 |
| 49 | Manish Kumar Bharti | A-9783/17 |
| 50 | Manish Kumar Kanozia | A-9784/17 |
| 51 | Manish Kumar Maurya | A-9785/17 |
| 52 | Mohammad Firoj | A-9786/17 |
| 53 | Mohd Ekhlaq | A-9787/17 |
| 54 | Mukesh Kumar | A-9788/17 |
| 55 | Nand Gopal Gupta | A-9789/17 |
| 56 | Nishant Kumar Singh | A-9790/17 |
| 57 | Pashvinder Singh | A-9791/17 |
| 58 | Prabhakar Kumar | A-9792/17 |
| 59 | Pradeep Kumar Verma | A-9793/17 |
| 60 | Pradeep Yadav | A-9794/17 |
| 61 | Pramod Kumar | A-9795/17 |
| 62 | Prashant Dixit | A-9796/17 |
| 63 | Praveen Kumar Yadav | A-9797/17 |
| 64 | Praveen Sharma | A- 9798/17 |
| 65 | Prem Kumar Verma | A-9799/17 |
| 66 | Pritam Kumar | A-9800/17 |
| 67 | Purushottam Singh | A 9801/17 |
| 68 | Rahul Katiyar | A-9802/17 |
| 69 | Raja Kaushl | A- 9803/17 |
| 70 | Rajesh Kumar Verma | A-9805/17 |
| 71 | Rakesh Kumar Verma | A-9806/17 |
| 72 | Ramlakhan | A-9807/17 |
| 73 | Ramnaresh | A-9808/17 |
| 74 | Ramesh Kumar | A-9809/17 |
| 75 | Ramu Bhaskar | A-9810/17 |
| 76 | Ravi Kumar Maurya | A-9811/17 |
| 77 | Ravi Kumar | A-9812/17 |
| 78 | Ravi Kumar | A-9813/17 |
| 79 | Ravi Kumar | A-9814\17 |
| 80 | Ravi Kumar Tiwari | A-9815/17 |
| 81 | Ravi Prakash Mishra | A-9816/17 |
| 82 | Ravindra Kumar | A-9817/17 |
| 83 | Ritendra | A-9818/17 |
| 84 | Rohit Kumar | A-9819/17 |
| 85 | Rohit Kumar Jaiswal | A-9820 /17 |
| 86 | Sabhajeet | A-9822/17 |
| 87 | Sachin Verma | A-9824/17 |
| 88 | Sahil Singh | A-9825/17 |
| 89 | Sanjeev Kumar | A-9826/17 |

| | | |
|-----|---------------------|-------------|
| 90 | Santosh Kumar Verma | A-9827/17 |
| 91 | Satyam Kumar | A - 9828/17 |
| 92 | Satayendra Patel | A-9829/17 |
| 93 | Saurabh Shukla | A-9830/17 |
| 94 | Shashank Gangwar | A-9831/17 |
| 95 | Shashank Kushwaha | A-9832/17 |
| 96 | Shivam Sahu | A-9833/17 |
| 97 | Shivlesh Yadav | A-9834/17 |
| 98 | Shubham Tripathi | A -9835/17 |
| 99 | Siddhartha Rajan | A -9836/17 |
| 100 | Sonu | A-9837/17 |
| 101 | Sudhanshu Singh | A-9838/17 |
| 102 | Sudheer Bhargav | A-9839/17 |
| 103 | Sugreev | A-9840/17 |
| 104 | Sumit Kumar | A- 9841/17 |
| 105 | Sumit Kumar | A-9842/17 |
| 106 | Sunaina Rajvanshi | A-9843/17 |
| 107 | Sunil Kumar Yadav | A-9844/17 |
| 108 | Surya Bhan Yadav | A-9845/17 |
| 109 | Uttam Singh | A- 9846/17 |
| 110 | Veer pratap Singh | A-9848/17 |
| 111 | Vijay Kumar | A-9849/17 |
| 112 | Vikash Pandey | A-9850/17 |
| 113 | Vikash Singh | A-9851/17 |
| 114 | Vinay Kumar | A-9852/17 |
| 115 | Vinod Kumar | A-9853/17 |
| 116 | Vipin verma | A-9854/17 |
| 117 | Virendra Kumar | A-9855/17 |
| 118 | Yadavendra | A 9856/17 |
| 119 | Amit kumar | A-9743/17 |
| 120 | Akash Kumar | A-9740/17 |
| 121 | Avinash pal | A-9761/17 |
| 122 | Aditya singh | A-9739/17 |
| 123 | VipinVerma | A-9854/17 |
| 124 | Raja kaushl | A- 9803/17 |
| 125 | Sumit Kumar | A-9842/17 |
| 126 | Ravi kumar | A-9813/17 |
| 127 | Sunaina Rajvanshi | A-9843/17 |
| 128 | Veerpratap Singh | A-9848/17 |
| 129 | Kapil kumar | A-9775/17 |
| 130 | Amit Kumar | A 9744/17 |
| 131 | Sahil Singh | A-9825/17 |
| 132 | Satyam kumar. | A- 9828/17 |
| 133 | Mohammad firoj | A-9786/17 |
| 134 | Ankit kumar | A-9746/17 |
| 135 | Shubham tripathi | A -9835/17 |
| 136 | Praveen Kumar Yadav | A-9816/17 |
| 137 | Alok Verma | A-9742/17 |

| | | |
|------------|--------------------------|-----------|
| 138 | Ravi kumar tiwari | A-9815/17 |
| 139 | Aditya Kumar Singh | A-9738/17 |
| 140 | Sumit Kumar | A-9841/17 |
| 141 | Siddhartha Rajan | A-9836/17 |
| 142 | Ravi Kumar Maurya | A-9811/17 |
| 143 | Vikash Pandey | A-9850/17 |
| 144 | Sudhanshu singh | A-9838/17 |
| 145 | Sunil kumar yadav | A-9844/17 |
| 146 | Nand Gopal Gupta | A-9789/17 |
| 147 | Dharmendra Bahadur Singh | A-9767/17 |
| 148 | Vijay Kumar | A-9849/17 |
| 149 | Kapil kumar | A-9775/17 |
| 150 | Anirudha priya | A-9745/17 |
| 151 | Ramlakhan | A-9807/17 |
| 152 | Rajesh Kumar Verma | A-9805/17 |
| 153 | Manish Kumar Kanozia | A-9784/17 |
| 154 | Shubham Tripathi | A-9835/17 |
| 155 | Durgesh kumar | A-9768/17 |
| 156 | prem kumar verma | A-9799/17 |
| 157 | Prabhakar Kumar | A-9792/17 |

Dr. Utkarsh Tripathi
Course Coordinator

List of Students and their Allotted Villages (Year: 2019-20)

College of Agriculture (Main Campus)

N. D. University of Agriculture & Technology, Kumarganj, Ayodhya-224

COURSE NO.: RAWE & AIA- 411: Rural Agricultural Work Experience & Agro-Industrial Attachment
Semester: 1st

Session: 2019-20

COORDINATORS: Dr. Utkarsh Tripathi, Dr. Raj Bahadur & Dr. Umesh Chandra

| S. No. | Name of Students | I. D. No. | ग्राम एवं प्रधान/किसान का नाम |
|--|--------------------------|-----------|-----------------------------------|
| GROUP-1 (Main Campus + Azamgargh) | | | |
| 1. | Miss Akanksha Singh | A-9106/16 | 29, लाला का पुरवा |
| 2. | Miss Arushi Chandel | A-9114/16 | श्री जितेन्द्र श्रीवास्तव - किसान |
| 3. | Miss Divya Singh | A-9131/16 | प्रधान |
| 4. | Miss Kalpana Yadav | A-9141/16 | |
| 5. | Miss Pratibha Tiwari | A-9167/16 | |
| 6. | Miss Ritika (Azmgr) | A-9267/16 | |
| 7. | Miss Shanu Singh (Azmgr) | A-9272/16 | |
| GROUP-2 | | | |
| 1. | Mr. Abhay Pratap Singh | A-9101/16 | 17, मालजनी का पुरवा |
| 2. | Mr. Abhishek Raj Ranjan | A-9102/16 | श्री शिवकरन मिश्र-प्रधान |
| 3. | Mr. Abhishek Shukla | A-9103/16 | |
| 4. | Mr. Adesh Kumar | A-9104/16 | |
| 5. | Mr. Akhilesh Rajak | A-9107/16 | |
| 6. | Mr. Alok Kumar | A-9108/16 | |
| GROUP-3 | | | |
| 7. | Mr. Ankit Gupta | A-9109/16 | 8, ककरहिया |
| 8. | Mr. Anshul Rajput | A-9110/16 | श्री अरविन्द - प्रधान |
| 9. | Mr. Antriksh | A-9111/16 | |
| 10. | Mr. Arjun Singh Aryan | A-9113/16 | |
| 11. | Mr. Arvind Kumar Maurya | A-9115/16 | |
| 12. | Mr. Birendra Kumar | A-9118/16 | |

GROUP-4

| | | | |
|-----|---------------------------|-----------|---|
| 13. | Mr. Brahspatimani Shukla | A-9119/16 | 31. गोविन्द पुर |
| 14. | Mr. Brajesh Kumar | A-9120/16 | श्री हजारी लाल यादव- प्रधान |
| 15. | Mr. Brajesh Kumar | A-9121/16 | श्री राजाराम यादव-यादव ट्रेडर्स (किसान) |
| 16. | Mr. Chandra Prakash | A-9122/16 | |
| 17. | Mr. Chandra Prakash Yadav | A-9123/16 | |
| 18. | Mr. Chandra Shekhar Naydu | A-9124/16 | |

GROUP-5

| | | | |
|-----|------------------------|-----------|--------------|
| 19. | Mr. Deepak Singh Patel | A-9125/16 | 30. डोभियारा |
| 20. | Mr. Dharmendra Kumar | A-9126/16 | प्रधान |
| 21. | Mr. Dharmendra Kumar | A-9127/16 | 7755090 085 |
| 22. | Mr. Dhruv Kumar | A-9129/16 | |
| 23. | Mr. Dileep Kumar | A-9130/16 | |
| 24. | Mr. Ganga Sagar | A-9132/16 | |

GROUP-6

| | | | |
|-----|----------------------------|-----------|--------------------------|
| 25. | Mr. Gyanendra Prasad | A-9133/16 | 18. सहन |
| 26. | Mr. Gyanendra Pratap Singh | A-9134/16 | श्री शिवकरन मिश्र-प्रधान |
| 27. | Mr. Happy Singh | A-9135/16 | |
| 28. | Mr. Harshit Gupta | A-9136/16 | |
| 29. | Mr. Jainendra Pratap | A-9137/16 | |
| 30. | Mr. Jitendra Kumar | A-9138/16 | |

GROUP-7

| | | | |
|-----|------------------------|-----------|---------------------------|
| 31. | Mr. Jitendra Rajak | A-9139/16 | 4. मिझूटी |
| 32. | Mr. Jitendra Singh | A-9140/16 | श्री ओमप्रकाश सरोज-प्रधान |
| 33. | Mr. Kamesh Chandra | A-9142/16 | श्री वृजनाथ मिश्र -किसान |
| 34. | Mr. Kapil Kumar | A-9143/16 | |
| 35. | Mr. Karan Singh Rana | A-9144/16 | |
| 36. | Mr. Kshitiz Srivastava | A-9145/16 | |

GROUP-8

| | | | |
|-----|--------------------------|-----------|-----------------------------------|
| 37. | Mr. Kuldeep Kumar | A-9146/16 | 7. रैंचा श्री अरविन्द - प्रधान |
| 38. | Mr. Lakshman | A-9147/16 | |
| 39. | Mr. Mahendra Kumar Patel | A-9148/16 | |
| 40. | Mr. Mahesh Jaiswal | A-9149/16 | |
| 41. | Mr. Mangal Prasad Verma | A-9151/16 | |
| 42. | Mr. Manmeet Singh | A-9152/16 | |

GROUP-9

| | | | |
|-----|-------------------|-----------|---|
| 43. | Mr. Neeraj Kumar | A-9155/16 | 19. डेहरियावाँ श्री राम मनोहर - प्रधान |
| 44. | Mr. Neeraj Kumar | A-9156/16 | |
| 45. | Mr. Nikhil Verma | A-9157/16 | |
| 46. | Mr. Nitees Kumar | A-9158/16 | |
| 47. | Mr. Nitesh Kumar | A-9159/16 | |
| 48. | Mr. Omendra Singh | A-9160/16 | |

GROUP-10

| | | | |
|-----|------------------------|-----------|------------------------------------|
| 49. | Mr. Pankaj Kumar | A-9161/16 | 25- उसकामऊ श्री जयसिंह - प्रधान |
| 50. | Mr. Pankaj Kumar Yadav | A-9162/16 | |
| 51. | Mr. Pradeep Kumar | A-9163/16 | |
| 52. | Mr. Pragesh Kumar | A-9164/16 | |
| 53. | Mr. Pramod Kumar | A-9165/16 | |
| 54. | Mr. Prashant | A-9166/16 | |

GROUP-11

| | | | |
|-----|--------------------------|-----------|---|
| 55. | Mr. Pritam Kumar Patel | A-9168/16 | 8. हरिवंश का पुरवा श्री अरविन्द - प्रधान |
| 56. | Mr. Rahulesh Kumar | A-9174/16 | |
| 57. | Mr. Rajnish | A-9175/16 | |
| 58. | Mr. Rakshit Katiyar | A-9176/16 | |
| 59. | Mr. Ram Janam Verma | A-9177/16 | |
| 60. | Mr. Ram Kalesh Chaurasia | A-9178/16 | |

GROUP-12

| | | | |
|-----|---------------------------|-----------|------------------------------------|
| 61. | Mr. Rameshwar Nath Tiwari | A-9179/16 | 20. तिरहुत श्री आसाराम - प्रधान |
| 62. | Mr. Ramu Gupta | A-9180/16 | |
| 63. | Mr. Ravi Kumar | A-9181/16 | |
| 64. | Mr. Ravi Shankar Shukla | A-9182/16 | |
| 65. | Mr. Rishabh Singh Gaur | A-9183/16 | |
| 66. | Mr. Rohit Yadav | A-9184/16 | |

GROUP-13

| | | | |
|-----|-------------------------|-----------|--|
| 67. | Mr. Sanat Kumar Dwivedi | A-9185/16 | 26. दला का पुरवा श्री सालिकराम यादव - किसान |
| 68. | Mr. Sandeep | A-9186/16 | |
| 69. | Mr. Sandeep Kumar | A-9187/16 | |
| 70. | Mr. Sandeep Kumar | A-9188/16 | |
| 71. | Mr. Sandeep Kumar | A-9189/16 | |
| 72. | Mr. Sanjay Verma | A-9190/16 | |
| | | | |

GROUP-14

| | | | |
|-----|----------------------|-----------|--|
| 73. | Mr. Saroj Kumar | A-9191/16 | 2. पूरे जूड़ा (सोरॉव) मो0 असलम - प्रधान |
| 74. | Mr. Sarvesh Kumar | A-9192/16 | |
| 75. | Mr. Satyam Yadav | A-9193/16 | |
| 76. | Mr. Satyendra Kumar | A-9194/16 | |
| 77. | Mr. Satyendra Pandey | A-9195/16 | |
| 78. | Mr. Saurabh Kumar | A-9196/16 | |
| | | | |

GROUP-15

| | | | |
|-----|-----------------------|-----------|--|
| 79. | Mr. Saurabh Tiwari | A-9197/16 | 9- तुलाराम का पुरवा श्री अरविन्द - प्रधान |
| 80. | Mr. Shailendra Rawat | A-9198/16 | |
| 81. | Mr. Shiv Kumar Rana | A-9199/16 | |
| 82. | Mr. Shiv Mohan Verma | A-9200/16 | |
| 83. | Mr. Shiv Nath Chouhan | A-9201/16 | |
| 84. | Mr. Shivam Dixit | A-9202/16 | |
| 85. | Mr. Shivam Yadav | A-9203/16 | |
| | | | |
| | | | |
| | | | |

Shivam Yadav

GROUP-16

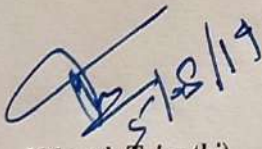
| | | | |
|-----|---------------------------|-----------|--|
| 86. | Mr. Shivendra Singh | A-9204/16 | 23. हलियापुर श्री गब्बर सिंह - प्रधान |
| 87. | Mr. Shrichand Yadav | A-9205/16 | |
| 88. | Mr. Shyam Singh | A-9206/16 | |
| 89. | Mr. Sikandar Verma | A-9207/16 | |
| 90. | Mr. Sukhvindar | A-9208/16 | |
| 91. | Mr. Sunil Kumar Chaudhary | A-9209/16 | |
| 92. | Mr. Suraj Mishra | A-9210/16 | |

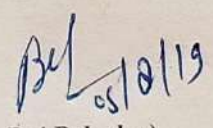
GROUP-17

| | | | |
|-----|-------------------------|-----------|--|
| 93. | Mr. Susheel Kumar Verma | A-9211/16 | 10. नरेश पचांग का पुरवा श्री अरविन्द - प्रधान |
| 94. | Mr. Sushmil Verma | A-9212/16 | |
| 95. | Mr. Uday Raj Singh | A-9214/16 | |
| 96. | Mr. Vikash Gupta | A-9215/16 | |
| 97. | Mr. Vikash Kumar Verma | A-9216/16 | |
| 98. | Mr. Vikash Pal | A-9217/16 | |
| 99. | Mr. Vipin Kumar | A-9218/16 | |

GROUP-18

| | | | |
|------|---------------------|-----------|--|
| 100. | Mr. Vipin Verma | A-9219/16 | 28. हरिद्वार का पुरवा श्री अमर बहादुर यादव- किसान |
| 101. | Mr. Vishal Yadav | A-9220/16 | |
| 102. | Mr. Vivek Chaudhary | A-9221/16 | |
| 103. | Mr. Vivek Kumar | A-9222/16 | |
| 104. | Mr. Vivek Kumar | A-9223/16 | |
| 105. | Mr. Vivek Singh | A-9224/16 | |
| 106. | Mr. Yogendra Singh | A-9225/16 | |


(Dr. Utkarsh Tripathi)
Assistant Professor/T.A.
Dean Office
Mobile No.-9415917886


(Dr. Raj Bahadur)
Associate Professor/T.A.
Dean Office
Mobile No.-7080090326

List of Students and their Allotted Villages (Year: 2018-19)

RAWE B.Sc.(Ag.) 4th year Main Campus

1st Semester, Session 2018-19

Date: 13-12-18

| Sl. No. | Name | I.D. No. | Mob. No. | Signature |
|---------------------------|--------------------------|-----------|----------|-------------------------------|
| 1. | S/Sri Abdul Salim | A-8391/15 | | <i>Salim</i> |
| 2. | Abhay Kumar Singh | A-8392/15 | | <i>Abhay Singh</i> |
| 3. | Abhishek Singh | A-8393/15 | | <i>Abhishek Singh</i> |
| 4. | Adesh | A-8394/15 | | <i>Adesh</i> |
| 5. | Aditya Kumar | A-8395/15 | | <i>Aditya Kumar</i> |
| 6. | Aditya Kumar Verma | A-8396/15 | | <i>Aditya Kumar</i> |
| 7. | Ajay Kumar | A-8397/15 | | <i>Ajay Kumar</i> |
| 8. | Ajay Pratap Singh Rajput | A-8398/15 | | <i>A.P. Singh</i> |
| 9. | Ajeet Kumar Gupta | A-8399/15 | | <i>Ajeet Gupta</i> |
| 10. | Akash Kumar Maurya | A-8401/15 | | <i>Akash</i> |
| 11. [Redacted] | | | | |
| 12. | Akhil Verma | A-8403/15 | | <i>Akhil Verma</i> |
| 13. | Akshay Verma | A-8404/15 | | <i>Akshay Verma</i> |
| 14. | Alok Kumar | A-8405/15 | | <i>Alok Kumar</i> |
| 15. | Amar Singh | A-8406/15 | | <i>Amar Singh</i> |
| 16. | Amit Babu Pal | A-8407/15 | | <i>Amit Pal</i> |
| 17. | Amit Kumar | A-8408/15 | | <i>Amit Kumar</i> |
| 18. | Amit Kumar | A-8409/15 | | <i>Amit Kumar</i> |
| 19. | Amol Kumar Gupta | A-8410/15 | | <i>Amol Gupta</i> |
| 20. | Anand Verma | A-8411/15 | | <i>Anand Verma</i> |
| 21. | Ankesh Kumar | A-8412/15 | | <i>Ankesh Kumar</i> |
| 22. | Ankit Gupta | A-8413/15 | | <i>Ankit Gupta</i> |
| 23. | Ankit Kamal | A-8414/15 | | <i>Ankit Kamal</i> |
| 24. | Anshul | A-8415/15 | | <i>Anshul</i> |
| 25. | Anuj Chaurasiya | A-8416/15 | | <i>Anuj Chaurasiya</i> |
| 26. | Anurag Verma | A-8417/15 | | <i>Anurag Verma</i> |
| 27. | Arvind Kumar | A-8419/15 | | <i>Arvind Kumar</i> |
| 28. | Ashish Kumar | A-8420/15 | | <i>Ashish Kumar</i> |
| 29. | Ayush Kumar | A-8421/15 | | <i>Ayush Kumar</i> |
| 30. | Bal Govind Chaudhary | A-8422/15 | | <i>Bal Govind Chaudhary</i> |
| 31. | Bhavanr Pal | A-8423/15 | | <i>Bhavanr Pal</i> |
| 32. | Bhupendra Gangwar | A-8424/15 | | <i>Bhupendra Gangwar</i> |
| 33. | Deepak Kumar | A-8425/15 | | <i>Deepak Kumar</i> |
| 34. | Dharmendra Singh Yadav | A-8426/15 | | <i>Dharmendra Singh Yadav</i> |
| 35. | Dilip Kumar Sahu | A-8427/15 | | <i>Dilip K. Sahu</i> |
| 36. [Redacted] | | | | |
| 37. | Gaurish Kumar | A-8429/15 | | <i>Gaurish</i> |
| 38. | Gokaran | A-8430/15 | | <i>Gokaran</i> |
| 39. | Harikesh Kumar | A-8431/15 | | <i>Harikesh Kumar</i> |
| 40. | Jitendra Kumar Sharma | A-8432/15 | | <i>Jitendra Sharma</i> |

| | | | | | |
|------------|-----|--------------------------|----------------------|--------|-------------------|
| दण्डपुर | 41. | Kaushal Kumar | A-8433/15 | | K. Kumar |
| | 42. | Krishan Kumar | A-8434/15 | | Krishan Kumar |
| | 43. | Kuldeep Kumar | A-8435/15 | | Kuldeep Kumar |
| | 44. | Lalit Kumar Purya | A-8436/15 | | Lalit Kumar |
| | 45. | Lavkush | A-8437/15 | | Lavkush |
| कफरहा | 46. | Madan Lal | A-8438/15 | | Madan Lal |
| | 47. | Mahendra Singh | A-8439/15 | | Mahendra Singh |
| | 48. | Mangal Singh | A-8440/15 | | Mangal Singh |
| | 49. | Mo. Danish | A-8441/15 | | Mohd Danish |
| | 50. | Mohammad Abdul Vadud | A-8442/15 | | Mohd Abdul |
| गगीपुर | 51. | Mohit Pal | A-8443/15 | | Mohit Pal |
| | 52. | Mukesh Kumar | A-8444/15 | | Mukesh Kumar |
| | 53. | Narendra Kumar | A-8446/15 | | Narendra Kumar |
| | 54. | Neeraj Choudhary | A-8448/15 | | Neeraj |
| | 55. | Neeraj Gautam | A-8449/15 | | Neeraj |
| ति-हौली | 56. | Neeraj Kumar | A-8450/15 | Absent | Absent - A |
| | 57. | Pawan Kumar | A-8451/15 | | |
| | 58. | Pawan Kumar | A-8454/15 | | Pawan Kumar |
| | 59. | Pawan Kumar | A-8455/15 | | Pawan Kumar |
| | 60. | Pawan Kumar | A-8456/15 | | Pawan Kumar |
| जोरिम | 61. | Pawan Kumar Prajapati | A-8457/15 | | Pawan Prajapati |
| | 62. | Pawan Kumar | A-8458/15 | | |
| | 63. | Prashant Singh | A-8459/15 | | Prashant Singh |
| | 64. | Prithabi Raj Yadav | A-8460/15 | | Prithabiraj Yadav |
| | 65. | Pushkar Shukla | A-8461/15 | | Pushkar Shukla |
| उसोली भारी | 66. | Pushp Raj Singh | A-8462/15 | | Pushpuraj Singh |
| | 67. | Pawan Kumar | A-8463/15 | | |
| | 68. | Rahul Singh | A-8465/15 | | Rahul Singh |
| | 69. | Rahul Verma | A-8466/15 | | Rahul |
| | 70. | Rakesh Kumar | A-8467/15 | | Rakesh Kumar |
| सरोडा भादे | 71. | Ram Pratap Singh | A-8468/15 | | R.P. Singh |
| | 72. | Ramvilash | A-8469/15 | | Ramvilash |
| | 73. | Ran Veer | A-8470/15 | | Ranveer |
| | 74. | Ranjit Kumar Singh | A-8471/15 | | Ranjit |
| | 75. | Sachin Yadav | A-8473/15 | | Sachin Yadav |
| वरड पारा | 76. | Sandeep Kumar | A-8474/15 | | Sandeep Kumar |
| | 77. | Sandeep Kumar | A-8475/15 | | Sandeep Kumar |
| | 78. | Sandeep Kumar Verma | A-8476/15 | | Sandeep Kumar |
| | 79. | Sanjay Pratap Raj | A-8477/15 | | Sanjay Pratap Raj |
| | 80. | Sanjay Yadav | A-8478/15 | | Sanjay Yadav |
| | 81. | Sanjeev Giri | A-8479/15 | | Sanjeev Giri |
| | 82. | Santosh Kumar | A-8480/15 | | Santosh |
| | 83. | Santosh Kumar Jaiswal | A-8481/15 | | Santosh Jaiswal |
| | 84. | Santosh Kumar | A-8482/15 | | |
| | 85. | Satya Prakash | A-8483/15 | | Satya Prakash |
| | 86. | Satya Priya | A-8484/15 | | Satya Priya |

कसइकरा

वेदा

दामयुजा

पौधरीपुर

बघौडा

इफरपुर

वीरवा

सिनायपुर

| | | | | |
|------|-------------------------|----------------------|-----------------|-------------------------|
| 87. | Satyendra Kumar | A-8485/15 | | Sati |
| 88. | Saurabh Kumar Kamal | A-8486/15 | | S. K Kamal |
| 89. | Saurabh Verma | A-8487/15 | | Saurabh V. |
| 90. | Shivan Kumar | A-8488/15 | | Shivan Kumar |
| | Shivan Kumar | A-8489/15 | | |
| 92. | Shivam Patel | A-8490/15 | | Shivam Patel |
| 93. | Shivam Verma | A-8491/15 | | Shivam Verma |
| 94. | Shubham Srivastav | A-8492/15 | | Shubham Sri. |
| 95. | Shubham Yadav | A-8493/15 | | Shubham Yadav |
| 96. | Shubham Yadav | A-8494/15 | | Shubham Yadav |
| 97. | Shwetank Singh | A-8495/15 | | Shwetank Singh |
| 98. | Sikandar | A-8496/15 | | Sikandar |
| 99. | Subhash Chandra Maurya | A-8498/15 | | Subhash |
| 100. | Sudhir Kumar Yadav | A-8499/15 | | Sudhir Yadav |
| 101. | Sujeet Kumar | A-8500/15 | | Sujeet Kumar |
| 102. | Sunel Kumar | A-8501/15 | No Registration | |
| 103. | Surendra Kumar | A-8502/15 | | Surendra |
| 104. | Vaibhav Shukla | A-8504/15 | | Vaibhav Shukla |
| 105. | Vashidra Yadav | A-8505/15 | | Vashidra Yadav |
| | Vinay Kumar | A-8506/15 | | |
| 107. | Vinay Kumar | A-8507/15 | | Vinay Kumar |
| 108. | Vineet Awasthi | A-8508/15 | | Vineet Awasthi |
| 109. | Vineet Kumar | A-8509/15 | | Vineet Kumar |
| 110. | Vinod Kumar | A-8510/15 | | Vinod Kumar |
| 111. | Vinod Kumar Yadav | A-8511/15 | | Vinod Kumar Yadav |
| 112. | Vipin Kumar | A-8512/15 | | Vipin Kumar |
| 113. | Viseshwar Dayal | A-8513/15 | | Viseshwar |
| 114. | Vishal Kumar | A-8514/15 | | Vishal Kumar |
| 115. | Vivek Kumar | A-8515/15 | | Vivek Kumar |
| 116. | Vivek Kumar | A-8516/15 | | Vivek Kumar |
| 117. | Vivekanand Kushwaha | A-8517/15 | | Vivekanand Kushwaha |
| 118. | Yash Verdhan Pandey | A-8518/15 | | Yash Verdhan Pandey |
| 119. | Yogesh Kumar | A-8519/15 | | Yogesh Kumar |
| 120. | Abhishek Verma | A-7706/14 | | Abhishek |
| 121. | Km. Ajita Singh | A-8400/15 | | Ajita |
| 122. | Anushi | A-8418/15 | | Anushi |
| 123. | Nahida Afreen | A-8445/15 | | Nahida |
| 124. | Neelam Chaurasiya | A-8447/15 | | Neelam |
| 125. | Neeti Yadav | A-8451/15 | | Neeti Yadav |
| 126. | Pallavi Singh | A-8452/15 | Absent | |
| 127. | Ragani Kumari | A-8463/15 | | Ragani Kumari |
| 128. | Ritika Raj | A-8472/15 | | Ritika Raj |
| 129. | Smriti Yadav | A-8497/15 | | Absent with application |
| 130. | Tanya Rathor | A-8503/15 | | Absent |
| 131. | Garima Yadav, Azamgarh | A-8533/15 | | Gyadav |

3
13/12/15
RPS
13/12/15

RAWE B.Sc.(Ag.) 4th year, Azamgarh Campus

Ist Semester, session 2018-19

Date: 13.12.18

| Sl. No. | Name of Student | I.D. No. | Mob. No. | Signature |
|---------|--------------------------------------|-----------|---------------------|----------------------|
| 1 | 2 | 3 | 4 | |
| 1. | Abhinay Kumar Mishra | A-8520/15 | | <u>Am</u> |
| 2. | Abhishek Maurya | A-8521/15 | | <u>Maurya</u> |
| 3. | Ajay Kumar Vishwakarma | A-8522/15 | | <u>Avish</u> |
| 4. | Akash Verma | A-8523/15 | | <u>Akash</u> |
| 5. | Amit Singh | A-8524/15 | | Amit Singh |
| 6. | Ankit Kumar Tiwari Tiwari | A-8525/15 | | <u>Tiwari</u> |
| 7. | Ashawnee Tiwari Kumar | A-8526/15 | | Ashawnee Kumar |
| 8. | Ashok Babu | A-8527/15 | | <u>Ashok Babu</u> |
| 9. | Ashok Kumar | A-8528/15 | | <u>Ashok</u> |
| 10. | Bheem Kumar Yadav | A-8529/15 | | <u>Bheem</u> |
| 11. | Brajesh Kumar | A-8530/15 | | <u>Brajesh</u> |
| 12. | Deependra Kumar | A-8531/15 | | Deependra Kumar |
| 13. | Dharmpal | A-8532/15 | | <u>Dharmpal</u> |
| 14. | Ghanshyam Pal | A-8534/15 | | <u>G.Pal</u> |
| 15. | Hariom Dwaivedi | A-8535/15 | | <u>HD</u> |
| 16. | Hariom Sharma | A-8536/15 | Report with parents | Absent |
| 17. | Indrasen | A-8537/15 | | INDRASEN |
| 18. | Jitendra Singh Yadav | A-8538/15 | | Jitendra Singh Yadav |
| 19. | Kamal Kishor | A-8539/15 | | Kamal Kishor |
| 20. | Karnveer Singh | A-8540/15 | | Karnveer Singh |
| 21. | Meraj Ahmad | A-8541/15 | | Meraj Ahmad |
| 22. | Moh. Vaheed | A-8542/15 | | <u>Moh. Vaheed</u> |
| 23. | Mritunjay | A-8543/15 | | <u>Mritunjay</u> |
| 24. | Nanhe Kumar | A-8544/15 | | <u>Nanhe Kumar</u> |
| 25. | Pawan Kumar Verma | A-8545/15 | | <u>Pawan</u> |
| 26. | Piyush Chandra Mishra | A-8546/15 | | Piyush Mishra |
| 27. | Prabhas Kumar Shukla | A-8547/15 | | <u>Prabhas</u> |
| 28. | Pradeep Kumar Gupta | A-8548/15 | | <u>Pradeep</u> |
| 29. | Prajwal Agniotri | A-8549/15 | | Prajwal Agniotri |

मितीर

खितीर

उधर

अमृतियाग

पुरेपगार
मितीर

भारत

भारत

भारत

भारत

| | | | |
|----------------|-----------------------|----------------------|-------------------------|
| 30. | Prashant | A-8550/15 | Prashant |
| 31. | Prashant Kumar | A-8551/15 | Prashant Kumar |
| 32. | Pushpendra Kumar | A-8552/15 | Pushpendra Kumar |
| 33. | Radheyshyam | A-8553/15 | Radheyshyam |
| 34. | Raghay Tiwari | A-8554/15 | Raghay |
| 35. | Rajan Kumar Gupta | A-8555/15 | Rajan |
| 36. | Rajdev Verma | A-8556/15 | Rajdev |
| 37. | Ram Sagar Verma | A-8557/15 | Ram Sagar Verma |
| 38. | Ramji Yadav | A-8558/15 | Ramji Yadav |
| 39. | Ramkumar | A-8559/15 | |
| 40. | Rashi Kumar Mishra | A-8560/15 | Rashikumar Mishra |
| 41. | Rishj Muni Rana | A-8561/15 | Rishimuni Rana |
| 42. | Ritesh Kumar | A-8562/15 | Ritesh Kumar |
| 43. | Sangam Kumar | A-8563/15 | Sangam Kumar |
| 44. | Sanjeet Kumar | A-8564/15 | Sanjeet Kumar |
| 45. | Satish Kumar | A-8565/15 | Satish Kumar |
| 46. | Saurabh Singh Chauhan | A-8566/15 | Saurabh Singh |
| 47. | Shailendra Kumar | A-8567/15 | Shailendra Kumar |
| 48. | Shivam Singh | A-8568/15 | Shivam Singh |
| 49. | Shubham Gupta | A-8569/15 | Shubham Gupta |
| 50. | Shubham Pandey | A-8570/15 | Shubham Pandey |
| 51. | Suryabhan Yadav | A-8571/15 | Suryabhan Yadav |
| 52. | Udit Pratap | A-8572/15 | Udit Pratap |
| 53. | Ved Prakash | A-8573/15 | Ved Prakash |
| 54. | Ved Prakash Yadav | A-8574/15 | Ved Prakash Yadav |
| 55. | Vikas Kumar Patel | A-8575/15 | Vikas Kumar Patel |
| 56. | Vikas Kori | A-8576/15 | Absent |
| 57. | Vikram Singh | A-8577/15 | Absent with application |
| 58. | Vinay Singh | A-8578/15 | Vinay Singh |

2/13.12.15
R.P. Singh

List of Students and their Allotted Villages (Year: 2017-18)

Allotment of village for B.Sc.(Ag.) 4th year student and attendance under RAWE course,
1st Semester Session, 2017-18

Date 14.12.17

श्रीशिव

श्रीशिव

श्रीशिव

| Sl. No. | Students Name | I.D. No. | Signature |
|---------|---|-----------|----------------------|
| 1 | S/Sri Abdul Qadir | A-7700/14 | Abdul Qadir |
| 2 | Abhinay Dixit | A-7701/14 | Dixit |
| 3 | Abhishek Kumar | A-7702/14 | Abhishek Kumar |
| 4 | Abhishek Kumar Singh S/o Sri Ram Adhar Singh | A-7703/14 | Abhishek K.S. Singh |
| 5 | Abhishek Kumar Singh S/o Sri Om Prakash Singh | A-7704/14 | Singh |
| 6 | Abhishek Singh Yadav | A-7705/14 | Abhishek Singh Yadav |
| 7 | Aditya Singh Visen | A-7708/14 | Aditya Singh Visen |
| 8 | Akash Kumar Verma | A-7709/14 | Akash Kumar Verma |
| 9 | Akhilesh Kumar S/o Sri Santram | A-7710/14 | Akhilesh Kumar |
| 10 | Akhilesh Kumar S/o Sri Dina Nath | A-7711/14 | Akhilesh Kumar |
| 11 | Alok Kumar Pandey | A-7712/14 | Alok Kumar Pandey |
| 12 | Amitendra Pratap Singh | A-7713/14 | Amitendra |
| 13 | Anand Kumar S/o Sri Hausila Prasad | A-7714/14 | Anand Kumar |
| 14 | Anand Kumar S/o Lal Mani Wishwakarma | A-7715/14 | Anand Kumar |
| 15 | Anand Singh Rawat | A-7716/14 | Anand |
| 16 | Ankit Dubey | A-7717/14 | Ankit dubey |
| 17 | Anurag Kumar | A-7719/14 | Anurag |
| 18 | Aranav Yadav | A-7720/14 | Aranav Yadav |

8-28

31-31

1-31
31-31

31-31

| | | | |
|----|-------------------------------|-----------|--------------------|
| 19 | Arvind Kumar | A-7721/14 | Arvind Kumar |
| 20 | Asheesh Kumar | A-7722/14 | Asheesh Kumar |
| 21 | Ashish Kumar Yadav | A-7723/14 | Ashish Kumar Yadav |
| 22 | Ashutosh Kumar | A-7724/14 | Ashutosh Kumar |
| 23 | Avnish Kumar | A-7725/14 | Avnish Kumar |
| 24 | Awadesh Pandey | A-7726/14 | Awadesh Pandey |
| 25 | Braj Bhan Singh | A-7727/14 | Braj Bhan Singh |
| 26 | Brijesh Kumar Nishad | A-7728/14 | Brijesh |
| 27 | Chandan | A-7729/14 | Chandan |
| 28 | Chandra Shekhar Pratap Singh | A-7730/14 | Singh |
| 29 | Chandra Sen Chaurasia | A-7731/14 | Chandras |
| 30 | Deen Mohammad | A-7732/14 | Deen |
| 31 | Deepak | A-7733/14 | Deepak |
| 32 | Deepak Kumar Singh | A-7734/14 | DK Singh |
| 33 | Deepak Verma | A-7735/14 | Deepak |
| 34 | Dhananjay Kumar | A-7736/14 | Dhananjay Kumar |
| 35 | Dharmendra Kumar | A-7737/14 | Dharmendra |
| 36 | Dheeraj Agrahari | A-7738/14 | Dheeraj Agrahari |
| 37 | Dileep Kumar S/o Sri Uma Kant | A-7739/14 | Dileep Kumar |
| 38 | Dileep Kumar Vishwakarma | A-7740/14 | Dileep |
| 39 | Dipendra Kumar | A-7741/14 | Dipendra |
| 40 | Durgesh Kumar Verma | A-7742/14 | Dsh Kumar |
| 41 | Diviyansh Bajpai | A-7743/14 | Diviyansh |

100

100

100

100

| | | | |
|-----|-------------------------------------|-----------|---------------------|
| 12. | Durgesh Kumar Singh | A-7744/14 | Durgesh Kumar Singh |
| 11. | Harsh Sachan | A-7747/14 | Harsh Sachan |
| 11. | Himanshu Singh | A-7749/14 | Himanshu Singh |
| 13. | Himanshu Tiwari | A-7750/14 | Himanshu Tiwari |
| 16. | Indrasen Yadav | A-7751/14 | Indrasen Yadav |
| 17. | Islammudin | A-7752/14 | Islammudin |
| 18. | Jitendra Singh | A-7753/14 | Jitendra Singh |
| 19. | Kuldeep Kumar Verma | A-7759/14 | Kuldeep Kr Verma |
| 20. | Kuldeep Verma | A-7760/14 | Kuldeep Verma |
| 21. | Lalit Babu Patel | A-7761/14 | Lalit babu Patel |
| 22. | Mahboob | A-7762/14 | Mahboob |
| 23. | Mohd. Nihal Kuraisi | A-7763/14 | Nihal |
| 24. | Nagendra Kumar | A-7764/14 | Nagendra Kumar |
| 25. | Navin, Tiwari | A-7765/14 | Naven Tiwari |
| 26. | Neeraj Kumar Gupta | A-7766/14 | Neeraj Kumar Gupta |
| 27. | Neeraj Kumar Pal | A-7767/14 | Neeraj Kumar Pal |
| 28. | Neeraj Kumar Verma | A-7768/14 | Neeraj Kumar Verma |
| 29. | Pankaj Kumar | A-7770/14 | Pankaj Kumar |
| 30. | Prabhat Ranjan Pandey | A-7771/14 | Prabhat |
| 31. | Pradeep Kumar S/o Sri Niranjan Lal | A-7772/14 | Pradeep |
| 32. | Pradeep Kumar S/o Sri Jamuna Prasad | A-7773/14 | Pradeep Kumar |
| 33. | Pratik Kumar | A-7774/14 | Pratik Kumar |
| 34. | Prashant Trivedi | A-7775/14 | Prashant Trivedi |

518

राहुत

काकरकोला

बेभ्यात

| | | | |
|-----|-------------------------------------|-----------|----------------------|
| 65. | Prem Ranjan | A-7776/14 | Prem Ranjan |
| 66. | Pushpendra Kumar Pal | A-7777/14 | Pushpendra |
| 67. | Raghvendra Kumar | A-7778/14 | Raghvendra Kumar |
| 68. | Rahul Kumar S/o Sri Ram Nath Singh | A-7779/14 | Rahul Kumar |
| 69. | Rahul Kumar S/o Sri Surendra Singh | A-7780/14 | Rahul Kumar |
| 70. | Rajpal | A-7781/14 | Rajpal |
| 71. | Raja Bhaiya | A-7782/14 | Raja Bhaiya |
| 72. | Rajeev Gupta | A-7783/14 | Rajeev Gupta |
| 73. | Raj Shekhar Dwivedi | A-7784/14 | Raj Shekhar |
| 74. | Rajeev Dwivedi | A-7785/14 | Dwivedi |
| 75. | Ram Kishor | A-7786/14 | Ram Kishor |
| 76. | Ram Sajiwan | A-7787/14 | Ram Sajiwan |
| 77. | Ramesh Kumar Verma | A-7788/14 | Ramesh Kumar |
| 78. | Ranveer | A-7789/14 | Ranveer |
| 79. | Ravi Pratap | A-7790/14 | Ravi Pratap |
| 80. | Rishabh Singh | A-7791/14 | Rishabh Singh |
| 81. | Sachin Kumar | A-7793/14 | Sachin Kumar |
| 82. | Sachin Pal | A-7794/14 | Sachin Pal |
| 83. | Sachin Tiwari | A-7795/14 | SACHIN TIWARI |
| 84. | Sandeep Kumar S/o Sri Gaya Prasad | A-7796/14 | Sandeep Kumar |
| 85. | Sandeep Kumar Mishra | A-7797/14 | Sandeep Kumar Mishra |
| 86. | Sandeep Kumar S/o Sri Kamlesh Kumar | A-7798/14 | Sandeep Kumar |
| 87. | Sanjay Singh | A-7799/14 | Sanjay Singh |

| | | | |
|------|--------------------------|-----------|--------------------------|
| 88. | Sarvesh Kumar Yadav | A-7800/14 | Sarvesh yadav |
| 89. | Satish Kumar | A-7801/14 | Satish Kumar |
| 90. | Saurabh Kumar Verma | A-7802/14 | Saurabh Kumar Verma |
| 91. | Shailendra Kumar Dwivedi | A-7803/14 | Shailendra Kumar Dwivedi |
| 92. | Shailendra Kumar Patel | A-7804/14 | Shailendra Kumar Patel |
| 93. | Shailesh Kumar Bhashkar | A-7805/14 | Shailesh Kumar |
| 94. | Shani Kumar | A-7806/14 | Shani Kumar |
| 95. | Shishupal | A-7807/14 | Shishupal |
| 96. | Shivendra Singh | A-7808/14 | Shivendra Singh |
| 97. | Shyam Lal Maurya | A-7809/14 | Shyam Lal Maurya |
| 98. | Shubham Verma | A-7810/14 | Shubham |
| 99. | Subhash Chandra | A-7811/14 | Subhash |
| 100. | Sudhanshu | A-7812/14 | Sudhanshu |
| 101. | Sudhir Kumar | A-7813/14 | Sudhir Kumar |
| 102. | Sujeet Kumar | A-7814/14 | Sujeet Kumar |
| 103. | Sumit Kumar | A-7815/14 | Sumit Kumar |
| 104. | Sumit Vishwakarma | A-7816/14 | Sumit Vishwakarma |
| 105. | Sunil Patel | A-7817/14 | Sunil Patel |
| 106. | Surya Pratap Singh | A-7818/14 | Surya Pratap Singh |
| 107. | Surya Bhan | A-7819/14 | Suryabhan |
| 108. | Tarun Kumar | A-7820/14 | Present |
| 109. | Tarun Rathore | A-7821/14 | Tarun Rathore |
| 110. | Updesh Kumar | A-7822/14 | Updesh Kumar |

3.5/14

4.1/14

5.1/14

6.1/14

| | | | | |
|---------|------|---------------------|-----------|---------------------|
| | 111 | Vijay Prakash Singh | A-7823/14 | Vijay Prakash Singh |
| | 112. | Vikas Rawat | A-7824/14 | Vikas Rawat |
| प्राचीन | 113. | Vipin Kumar | A-7825/14 | Vipin Kumar |
| | 114. | Virendra Kumar | A-7826/14 | Virendra Kumar |
| | 115. | Virendra Pratap | A-7827/14 | Virendra Pratap |
| | 116. | Yogesh Chand Yadav | A-7829/14 | Yogesh Chand |
| संशोधन | 117. | Km. Anchal Singh | A-7754/14 | Anchal Singh |
| | 118. | Km. Mahima Rawat | A-7755/14 | Mahima Rawat |
| | 119. | Km. Sanno Devi | A-7757/14 | Sanno Devi |

**Rural Agricultural Work Experience & Agro-Industrial Attachment (RAW&AIA)
I Semester Session 2020-21**

In session 2020-21 (during covid-19 epidemic), students selected nearby villages under village attachment component, went to KVKs/Research stations, Agricultural Technology Information Centers, Agro-based Industries in their home districts and completed the course successfully.



(Utkarsh Tripathi)
Coordinator (RAW&AIA)

A Brief Report
on
Rural Agricultural Work
Experience
and
Agro-Industrial Attachment
2021-22



**College of Agriculture Campus, Kotwa,
Azamgarh-276001**

(Acharya Narendra Deva University of Agriculture & Technology,
Kumarganj, Ayodhya, Uttar Pradesh)

REPORT

RAWE is an exposure to the principles of “learning by doing” and “seeing is believing”, which provides a direction to the students to think and act on their own. With a view to giving the real-life exposure to the students, College of Agriculture campus, Kotwa, Azamgarh has also introduced this programme for the students of VIIth Semester B.Sc (Hons.) Ag. Rural Agricultural Work Experience (RAWE) Programme is a key component in the B.Sc. (Ag.) degree programme. The students are given rigorous orientation and familiarization on various issues and problems they can expect in the farmers’ field.

An experiential learning approach was adopted towards problem solving and improving interaction with the farmers. It helps the students develop their competence, capability, capacity building, skills, expertise, in short and holistic development.

Course Structure of RAWE Programme

| | | | |
|---------------------------|--|-------------------------|--|
| RAWE & AIA-411 | Rural Agricultural Work Experience and Agro Industrial Attachment | Credits 20(0+20) | Dr. Renu Gangwar Dr. Prakash Yadav Dr. Vimlesh Kumar |
| S.No. | Activities | Credits | Instructor |
| 1 | General orientation | 01 | All concern course instructors |
| 2 | Village attachment | 08 | |
| i. | Village survey | 01 | Dr. Prakash Yadav Dr. Renu Gangwar Dr. Vimlesh Kumar Dr. Anil Kumar Singh |
| ii. | Agronomical intervention | 01 | Dr. T. Pandiaraj Dr. Akanksha Tiwari |
| iii. | Plant protection intervention | 01 | Dr. Vijay Laxmi Rai Dr. Vinit Pratap Singh |
| iv. | Soil improvement intervention | 01 | Dr. Vinod Kumar Dr. Sandeep Kumar Pandey |
| v. | Fruit and vegetable production intervention | 01 | Dr. Vinay Kumar Singh Dr. Vimlesh Kumar |
| vi. | Food processing and storage intervention | 01 | Dr. Vimlesh Kumar Dr. Akanksha Tiwari Dr. Sandeep Kumar Pandey |
| vii. | Animal production intervention | 01 | Dr. Narendra Raghuvanshi, Senior Scientist and Head, KVK, Amihit, Jaunpur-II |
| viii. | Extension and transfer of technology | 01 | Dr. Renu Gangwar |

| | | | |
|----------|--|-----------|---|
| | intervention | | Dr. Anil Kumar Singh Dr. Ashok Kumar Singh |
| 3 | Research station/KVK | 05 | In-charge of KVK |
| 4 | Plant Clinic | 02 | Dr. Vinay Kumar Singh Dr. Vinit Pratap Singh Dr. Vinod Kumar Dr. Vijay Laxmi Rai |
| 5 | Agro-Industrial Attachment | 03 | Dr. Ashok Kumar Singh Dr. Sandeep Kumar Pandey Dr. T. Pandiaraj |
| 6 | Project report preparation, presentation and evaluation | 01 | All concern course instructors |

The programme has been managed by the Dean, College of Agriculture, Kotwa, Azamgarh, RAWE Coordinator and Course instructors. Students have completed the above-mentioned courses under the guidance of different course instructors.

Various activities conducted by students

Orientation programme

The orientation programme of RAWE was organized on 12th August 2021 in a virtual mode (google meet) due to COVID-19 pandemic. The main aim of orientation was to aware the students about working of RAWE which is to be done in the village during village attachment programme. The programme was held with the presence of Dean, College of Agriculture, Kotwa, Azamgarh, Coordinators, instructors of RAWE with 51 students.

Village attachment

- Students conducted village survey and socio-economic survey including general information about village, natural resources, cropping pattern, land holding, irrigation facilities, various equipments, major insects-pests of various crops, livestock etc.
- Studied about village level institutions related with rural and agricultural development
- Conducted Strength, Weakness, opportunity and Threat (SWOT) analyses
- Identified major crops, fruits and vegetables cultivated in this village
- Conduced existing cropping system, constraints and possible recommendation, production practices of existing major field crops, weed infestation and their management etc.
- Identified various severe diseases appeared in different crops and evaluate their severity/intensity and probable management practices to control the diseases.
- Studied on soil profile and soil status, soil health cards, etc.

- Studied various grain storage techniques adopted by farmers.



KVK attachment

In this component, students were placed to KVK Kotwa, Azamgarh and examined various activities of Krishi Vigyan Kendra (KVK) such as mandate, details of district, organisational structure, technical achievements, target and achievement of mandatory activities, on farm tests and major thrust area like:

- Number of technologies assessed
- Achievement on technologies assessed and refined
- Front line demonstration
- Demonstration on crop hybrids
- Training and Extension activities
- Production of seeds
- Plants and livestock
- Success stories and Impact etc.



Students at KVK, Azamgarh

Plant Clinic

In this component, students with faculty members visited village Aarajibagmati and identified several diseases their symptoms and management practices. Field diagnostics of different insects-pests and non-insect pests through



Disease diagnosis at Farmer's Field

damage pattern and insect remnants etc. were also identified.

Agro-Industrial Attachment

In this component, students were divided into three groups and placed to the three different Agri-industries such as Vivek mushroom farm at Jhirua Kamalpur, Thekma Azamgarh, Jai Bharat nursery and Balaji dairy at Kertalpur, Azamgarh. In these industries, students identified profile of agro-processing unit, production of unit, marketing behaviour and channels, risk management of agro-processing unit and constraints of agro - processing.



Students Visit at Vivek Mushroom Farm and Jai Bharat nursery



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Abhishek Chandra** ID No.: **A-10232/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Abhishek Khaiwal** ID No.: **A-10233/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Adarsh Pratap Singh** ID No.: **A-10234/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Ajay Kumar** ID No.: **A-10235/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Akshay Kumar Ram** ID No.: **A-10236/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Amit Tiwari** ID No.: **A-10238/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Ankit Kumar Chaurasia** ID No.: **A-10239/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Ankur Varma** ID No.: **A-10240/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Anoop Kumar** ID No.: **A-10241/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Anoop Kumar** ID No.: **A-10242/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Anuj Kumar** ID No.: **A-10243/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Anurag** ID No.: **A-10244/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWA & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWA Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWA)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Arpit Dubey** ID No.: **A-10245/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Ashutosh Pandey** ID No.: **A-10246/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Avnish Patel** ID No.: **A-10247/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Bhashkar** ID No.: **A-10248/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Dharmendr** ID No.: **A-10250/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Dinesh Kumar** ID No.: **A-10251/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Divya Mohan** ID No.: **A-10252/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Diwakar Verma** ID No.: **A-10253/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Kailash Kumar** ID No.: **A-10254/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Kaushalendra Singh** ID No.: **A-10255/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWA & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWA Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWA)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Kisalay Singh** ID No.: **A-10257/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Kundan Kumar** ID No.: **A-10258/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Lavi Haidar** ID No.: **A-10259/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Mohd. Aisan** ID No.: **A-10260/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Pankaj Kumar** ID No.: **A-10263/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Pappu** ID No.: **A-10264/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAW & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAW Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Piyush Shrivastava** ID No.: **A-10265/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Prabhat Kumar Verma** ID No.: **A-10266/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Prajjwal Singh** ID No.: **A-10267/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Rahul Trivedi** ID No.: **A-10268/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Raj Kumar** ID No.: **A-10269/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Raj Naryan Prajapati** ID No.: **A-10270/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Rakesh** ID No.: **A-10271/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAW & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAW Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Ravi Kumar Verma** ID No.: **A-10272/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWA & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWA Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWA)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Rohit Gangwar** ID No.: **A-10274/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAW & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAW Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAW)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Sachin Soam** ID No.: **A-10275/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Sanjay Kumar Maurya** ID No.: **A-10277/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Sarvesh Kumar** ID No.: **A-10278/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Satendra Kumar** ID No.: **A-10279/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Saurabh Singh** ID No.: **A-10280/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Shailendra Kumar** ID No.: **A-10281/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Shivam** ID No.: **A-10282/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Shivam Chauhan** ID No.: **A-10283/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Sonu** ID No.: **A-10284/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Sujal** ID No.: **A-10285/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWE & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWE Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWE)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Veerendra Kumar** ID No.: **A-10287/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAW & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAW Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAW)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Vikas** ID No.: **A-10288/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWA & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWA Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWA)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Vipin Kumar Verma** ID No.: **A-10290/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWA & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWA Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWA)



College of Agriculture Campus, Kotwa, Azamgarh (U.P.)
*Acharya Narendra Deva University of Agriculture & Technology
Kumarganj, Ayodhya, U.P.*

RURAL AGRICULTURAL WORK EXPERIENCE & AGRO-INDUSTRIAL ATTACHMENT

CERTIFICATE

This is to certify that Mr. **Vishal Pal** ID No.: **A-10291/18**, a student of College of Agriculture Campus, Kotwa, Azamgarh (2018 Batch) has successfully completed RAWA & AIA-411 (Rural Agricultural Work Experience and Agro-industrial Attachment) in B.Sc. (Hons.) Agriculture Degree Programme.

During the final year of RAWA Programme, the student has been placed in a village with the farmers. He has been involved in programme planning and execution to bring about improvement in socio-economic and farming conditions through appropriate extension methods and technologies by the participation of farmers and farming community.

Dean

Coordinator (RAWA)



CERTIFICATE OF APPRECIATION

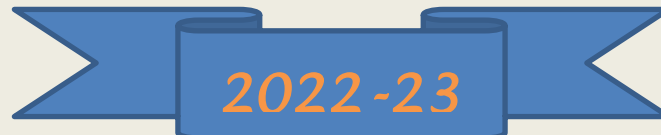
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Abhishek Chandra (A-10232/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

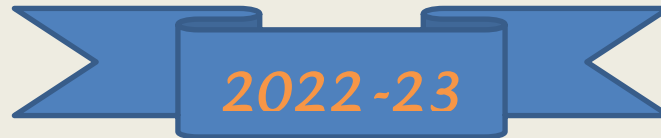
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Abhishek Khaiwal (A-10233/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Adarsh Pratap Singh (A-10234/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

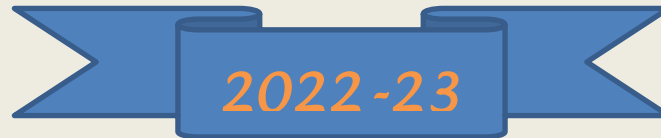
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Ajay Kumar (A-10235/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

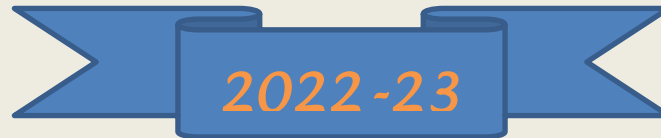
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Akshay Kumar Ram (A-10236/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Amit Tiwari (A-10238/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Ankit Kumar Chaurasia (A-10239/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Ankur Verma (A-10240/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Anoop Kumar (A-10241/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Anoop Kumar (A-10242/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Anuj Kumar (A-10243/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

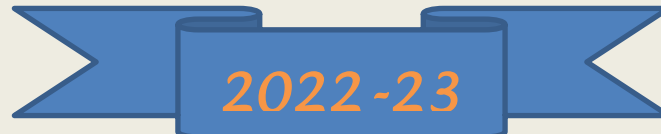
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Anurag (A-10244/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

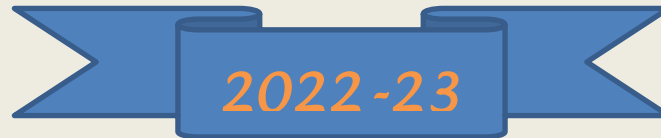
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Arpit Dubey (A-10245/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

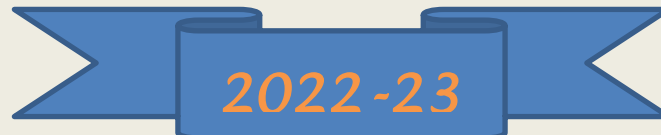
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Ashutosh Pandey (A-10246/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

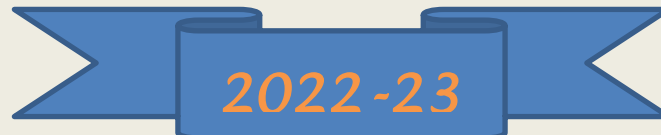
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Avnish Patel (A-10247/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Bhashkar (A-10248/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

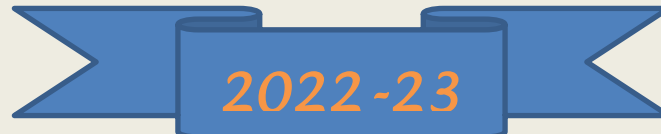
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Dharmendr (A-10250/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

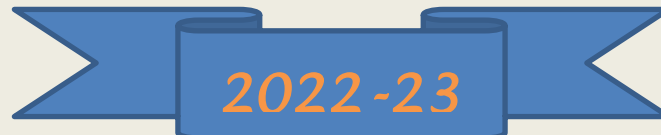
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Dinesh Kumar (A-10251/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Divya Mohan (A-10252/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

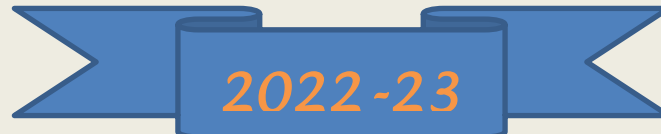
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Diwakar Verma (A-10253/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Kailash Kumar (A-10254/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Kaushlendra Singh (A-10255/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Kisalay Singh (A-10257/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

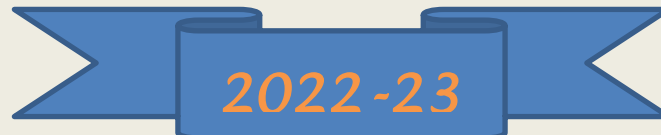
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Kundan Kumar (A-10258/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

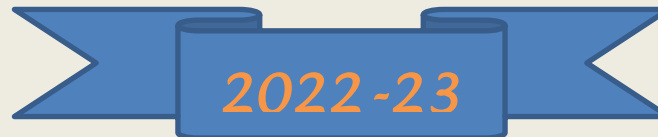
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Lavi Haidar (A-10259/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Mohd. Aisan (A-10260/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

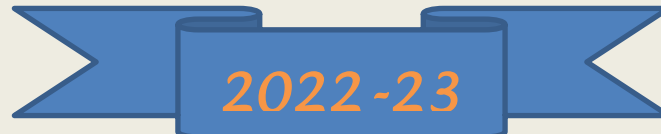
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Pankaj Kumar (A-10263/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

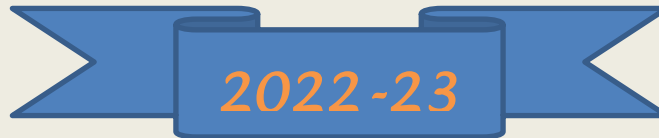
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Pappu (A-10264/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Piyush Srivastava (A-10265/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Prabhat Kumar Verma (A-10266/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

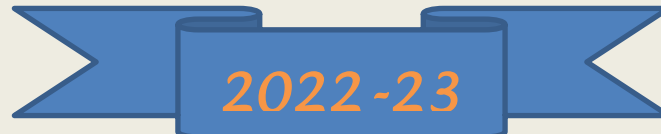
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Prajwal Singh (A-10267/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Rahul Trivedi (A-10268/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

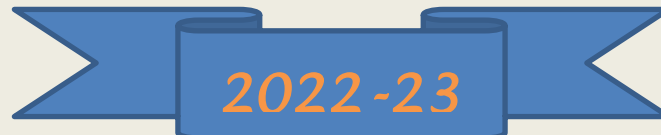
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Raj Kumar (A-10269/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Raj Naryan Prajapati (A-10270/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

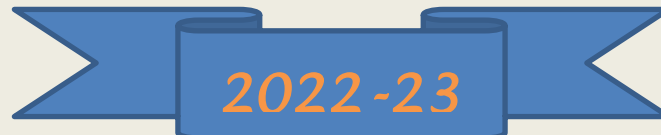
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Rakesh (A-10271/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

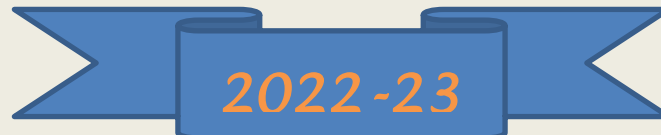
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Ravi Kumar Verma (A-10272/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Rohit Gangwar (A-10274/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

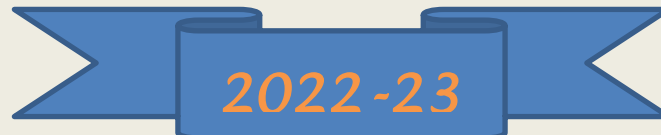
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Sachin Soam (A-10275/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Sanjay Kumar Maurya (A-10277/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

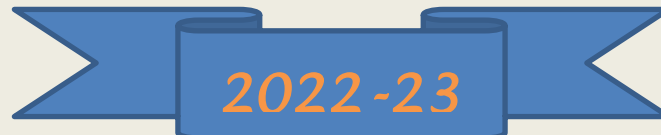
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Sarvesh Kumar (A-10278/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Satendra Kumar (A-10279/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

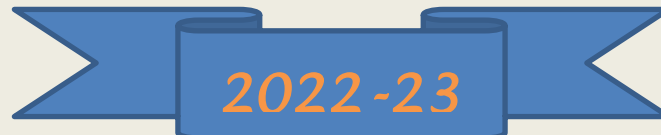
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Saurabh Singh (A-10280/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Shailendra Kumar (A-10281/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

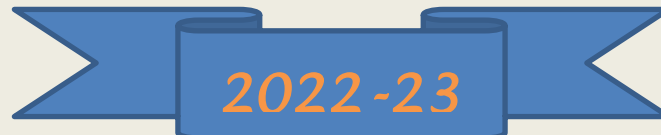
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Shivam (A-10282/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

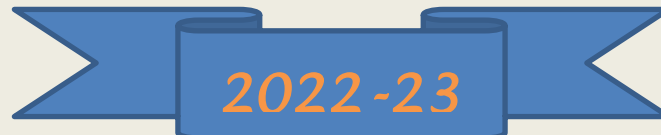
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Shivam Chauhan (A-10283/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

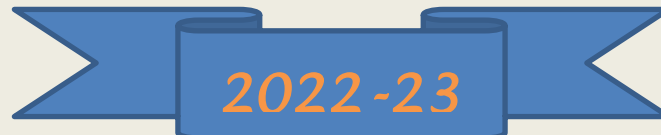
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Sonu (A-10284/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

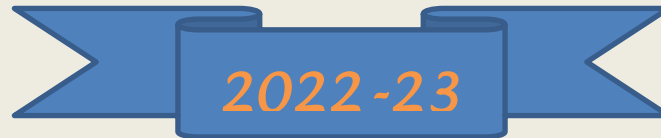
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Sujal (A-10285/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Virendra Kumar (A-10287/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

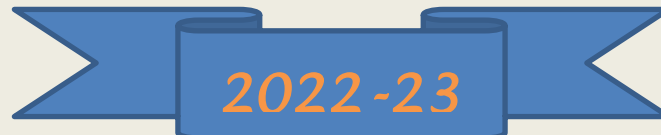
THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Vikas (A-10288/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Vipin Kumar Verma (A-10290/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN

2022-23

ELP CO-ORDINATOR



CERTIFICATE OF APPRECIATION

THIS CERTIFICATE OF ACHIEVEMENT IS PRESENTED TO

Mr. Vishal Pal (A-10291/18)

This is to certify that the student of College of Agriculture Campus, Kotwa, Azamgarh has successfully completed different modules of Experiential Learning Programme in B.Sc. (Hons.) Agriculture Degree Programme. This Program envisages proactive training imparted to students in agriculture and its allied enterprises. The program aims to stress upon the importance of entrepreneurship in student minds to develop their entrepreneurial skill.

His performance during the course was found satisfactory.

ASSOCIATE DEAN



ELP CO-ORDINATOR

Dean
College of Fisheries



College of Fisheries
N.D. University of Agriculture
& Technology Narendra Nagar
Kumarganj (Faizabad)
224229 (U.P) India

NS 666/68h/2018

dt 15/2/18

To

Mr.P.Priyadarshi

Director

Silver Aqua Research Center Chikasa Grej Road Chikasa , Porbandar ,
Gujarat

Subject- In Plant Training for B.F.Sc. student of N.D. University of Agriculture & Technology.

Dear Sir,

It is to bring to your kind notice that 4th year student of college of fisheries in second semester needs to be attached to aquaculture industries for practical exposure. I am glad to know that you agreed to accommodate student for in-plant training programme the year 2017-18. It is also to mention that the industry representative evaluate student and import marks out of 50 to the student as per their performance.

Therefore, I nominate following B.F.Sc. Student for your esteemed organization. Your corporation will be highly obliged.

We are permitted to all students in our organization.

Thanking you.

| | |
|---------------------|-------------|
| Arjun Kumar | (F-7896/14) |
| Vivek Kumar | (F-7925/14) |
| Rudresh Kumar Yadav | (F-7913/14) |
| Sanjeev Kumar | (F-7914/14) |

Rudresh Kumar Yadav
F-7913/14

Dean

College of Fisheries

Dean
College of Fisheries



136
College of Fisheries
N.D. University of Agriculture
& Technology Narendra Nagar
Kumarganj (Faizabad)
224229 (U.P) India

AND 667/hsh/2018
To

Date: 15/2/18

Shri Hiren Dhameliya

Director

Benchmark Aquaculture Pvt. Ltd.

Gujarat

Subject- In Plant Training for B.F.Sc. student of N.D. University of Agriculture & Technology.

Dear Sir,

It is to bring to your kind notice that 4th year student of college of fisheries in second semester needs to be attached to aquaculture industries for practical exposure. I am glad to know that you agreed to accommodate student for in-plant training programme the year 2017-18. It is also to mention that the industry representative evaluate student and import marks out of 50 to the student as per their performance.

Therefore, I nominate following B.F.Sc. Student for your esteemed organization. Your corporation will be highly obliged.

We are permitted to all students in our organization.

Thanking you.

Ravendra Kumar (F-7910/14)

ArpitShakya (F-7897/14)

Shiv Narayan Lal (F-7918/14)

Sungel Kumar (F-7922/14)

Kamlesh Kumar (F-7904/14)

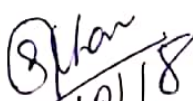
सुनील कुमार


Suneel Kumar

ID.No - F-7922/14


15-2-18
Dean

College of Fisheries


15/2/18


15/2/18


15/2/18

Dean
College of Fisheries



College of Fisheries
N.D. University of Agriculture &
Technology, Narendra Nager,
(Kumarganj), Faizabad

224229(U.P) India

08/02/2018

N0659/Rsh/2018

To

Sri Vasu Tandel

Proprietor

Tandel Shrimp Hatchery

Site Office: At.Kakwadi village,Taluka & District: Valsad,

Gujarat State,India

Phone No: +91 9727767806

Subject: In-Plant Training for B.F.Sc. student of N.D. University of Agriculture & Technology.

Sir,

It is to bring to your kind notice that 4th year, student of College of Fisheries in second semester needs to be attached to aquaculture industries for practical exposure. I am glad to know that you have agreed to accommodate student for In-plant training programme of the Year 2017-18. It is also to mention that the industry representative evaluate student and import marks out of four to the student as per their performance.

Therefore, I nominate following B.F.Sc. student for your esteemed organization. Your cooperation will be highly obliged.

Thanking you

Name I.D. No.

Ashish kumar F-7898/14

Amit kumar Mishra F-7894/14

Rajkamal Mishra F-7909/14


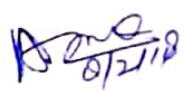
Nirdesh F-7907/14

Amit Kumar Mishra - F-7894/14

08/02/2018


Dean

College of Fisheries

 /c  08/02/18



Dean

College of Fisheries

College of Fisheries

N.D. University of Agriculture &
Technology, Narendra Nager,
(Kumarganj), Faizabad

224229(U.P) India

4-3/2/2018

NR 653/hsh/2018

To

Sri Sachin Vakil

Director

West coast frozen food pvt Ltd

Kumta Karnataka (581351)

Subject: In-Plant Training for B.F.Sc. student of N.D. University of Agriculture & Technology.

Sir,

It is to bring to your kind notice that 4th year, student of College of Fisheries in second semester needs to be attached to aquaculture industries for practical exposure. I am glad to know that you have agreed to accommodate student for In-plant training programme of the Year 2017-18. It is also to mention that the industry representative evaluate student and import marks out of fifty to the student as per their performance.

Therefore, I nominate following B.F.Sc. student for your esteemed organization. Your cooperation will be highly obliged.

Thanking you.


3-2-18
Dean


College of Fisheries

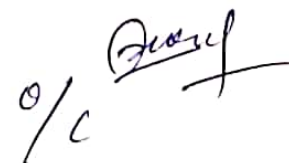
Brahmanand Gupta F-7900/14

Satyendra Mishra F-7915/14


F-7900/14


02/02/18


02/2/18


o/c

AMRUT COLD STORAGE PVT. LTD.

(EU APPROVED)



Factory :- Plot No. 1111/12, G.I.D.C., Veraval - 362 269. (Gujarat)
Tel +91 2876 232100 - 232200, Fax : +91 2876 232510
E-mail : amrutvrl@gmail.com

Regd. Off. :- JAVAR NAKA, PORBANDAR - 360 575. (GUJARAT) INDIA.
TEL : +91 286 - 2241819 / 2251027 FAX : 91 286 - 2242319 / 2253768
Email : info@silverseafoodindia.com
Web : www.silverseafoodindia.com

Date: 19.03.2014

To,
The Dean,
College of Fisheries,
N.D.U.A.T Kumarganj, Fizabad(U.P.)

This is to certify that the following listed students have completed training on Fish Processing from 01.03.2014 to 19.03.2014 in our organization.

| Sr. No. | Name of Students with their ID. No. |
|---------|-------------------------------------|
| 1. | Ashutosh Kumar Verma(F-5312/10) |
| 2. | Ravi Kumar Kaushal(F-5321/10) |
| 3. | Neelesh Kumar(F-5318/10) |
| 4. | Santosh Kumar (F-5322/10) |

For, Amrut Cold Storage Pvt. Ltd.,

Awadhesh Kumar
Authorized Signatory



No. WGFPL/SIS/02

In-Plant Training


Certificate

This is to certify that Mr. Ram Murti ID.No F-6558/12 a student of B.F.Sc 4th Year from College of Fisheries, N.D. University of Agriculture & Technology has done his full-semester In-Plant training at Sisodara Farm, West Coast Frozen Food Pvt. Ltd from 22-01-2016 to 15-04-2016

The Training work entitled "Tilapia Farming" embodies the original work done by Seed Stocking, Feeding, water Quality Management, Harvesting and packing during his above full semester training period.



Adnankhan Golandaj
Farm Manager
Sisodara Farm,
West Coast Frozen Food Pvt. Ltd
Sisodara, Tq. Ankaleshwar
Dist. Bharuch



Alakh Chaudhari
Operation Manager
Fish Division
West Coast Frozen Food Pvt. Ltd
Mumbai

Date: 15-04-2016
Place: Sisodara

West Coast Frozen Foods Pvt. Ltd.
Sisodara Farm, Sisodara, Dist-Branch,
Gujarat, Pin Code - 394810.

West Coast Frozen Foods Private Limited

Freezing Plant: Plot #321/322/323, Village Orna, Taluka Ojha,
SURAT - 394 540, Gujarat. Phone: +91 9913311400
Corporate Office: 1401-D, Lotus Corporate Park, Gram Path,
Goregaon East, Mumbai 400063, Maharashtra, INDIA

Phone: +91 22 22822028 • Facsimile: +91 22 22831435
Email: info@west-coast.in • www.west-coast.in

**Cambay
Tiger™**

Name Alok Kumar
 I.O.No F-937/16
 District - Hanoi

Mobile - 7510471461

PROFORMA FOR FISH PRODUCTION

1. Data must be collected for a year in an average of all the input.

| INPUT | UNIT | Applied per year |
|-------------------------------------|-------------------|--------------------|
| 1. Labour | | 2 |
| a. Men | No. | 2 |
| b. Women | No. | |
| 2. Electricity | kWh or unit | |
| 3. Diesel | lit | NO |
| 4. kerosene | | " |
| 4. Feed | | " |
| Oilcakes (Mustard/groundnut/ other) | kg | 700kg |
| Rice polish | kg | 700kg |
| Rice bran | kg | NO |
| Flour (wheat/maize) | kg | " |
| Minerals | kg | " |
| salt | kg | " |
| Grasses (name) | kg | Banjeem 2.5 tonnes |
| if Commercial feed (please specify) | kg | NO |
| other | | |
| 5. Fertilizers | kg | NO |
| 1. Urea | kg | " |
| 2. DAP | kg | " |
| 3. MOP | kg | " |
| 4. Potash | kg | " |
| 5. Zinc sulphate | kg | " |
| 6. Cow dung/FYM | kg | 4 Tonne |
| 7. Vermicompost | kg | |
| 8. Other | kg | |
| 6. Chemicals | | NO |
| KMnO ₄ | kg | 0.5kg |
| Insecticides | kg/lit | NO |
| Herbicides | kg/lit | NO |
| Lime | kg | 30kg |
| Other | | NO |
| | | " |
| 7. Net (Name and Dimension) | kg | Drage net 50 |

2/12/2018

| | | |
|--|---------|----------------------------|
| 8. Fish Seed (Total) | Kg & No | 3000 (mixture) Fingerlings |
| Catla | Kg & No | NO |
| Rohu | Kg & No | 1 |
| Mrigal | Kg & No | 1 |
| Silver carp | Kg & No | 1 |
| Grass carp | Kg & No | 1 |
| Common carp | Kg & No | 1 |
| Pangas | Kg & No | 1 |
| Magur | Kg & No | 1 |
| Singhi | Kg & No | 1 |
| Other (Name) | Kg & No | 1 |
| | Kg & No | 1 |
| | Kg & No | 1 |
| 7. Machinery (if any) specify Model description also | | |
| Motor/Diesel Engine | hr | 1 |
| Aerator | hr | 1 |
| For Transportation of feed/seed/fertilizer /chemicals vehicle used | | |
| a. Car | hr | 25 hr |
| b. Bicycle | hr | |
| c. Motor Bike | hr | 15 hr |
| d. Tractor | hr | NO |
| 8. Water | lit | 1 |
| Output | | 1 |
| Fish (Total) | kg | 1.5 Tonnes |
| * Please add other inputs if any | | 1.70000 |
| Total Cost of fish production (Rs) | | 140-160/Kg |
| Current fish price/kg | | 0.5 per |
| Area of the pond/farm | | NO |
| Geographical location of the farm/pond | | |
| Farmer's Name | | Ramkishor Rawat |
| Village | | Balamau |
| Block | | Kachhohra |
| District | | Hardoi |
| state | | |
| Phone No. | | GP 7881162382 |

If, any disease outbreak was observed, please specify

Preventive measures taken

| | | |
|--|---------|----------------------------|
| 8. Fish Seed (Total) | Kg & No | 3000 (mixture) Fingerlings |
| Catla | Kg & No | NO |
| Rohu | Kg & No | 1 |
| Mrigal | Kg & No | 1 |
| Silver carp | Kg & No | 1 |
| Grass carp | Kg & No | 1 |
| Common carp | Kg & No | 1 |
| Pangas | Kg & No | 1 |
| Magur | Kg & No | 1 |
| Singhi | Kg & No | 1 |
| Other (Name) | Kg & No | 1 |
| | Kg & No | 1 |
| | Kg & No | 1 |
| 7. Machinery (if any) specify Model description also | | |
| Motor/Diesel Engine | hr | 1 |
| Aerator | hr | 1 |
| For Transportation of feed/seed/fertilizer /chemicals vehicle used | | |
| a. Car | hr | 25 hr |
| b. Bicycle | hr | |
| c. Motor Bike | hr | 15 hr |
| d. Tractor | hr | NO |
| 8. Water | lit | 1 |
| Output | | 1 |
| Fish (Total) | kg | 1.5 Tonnes |
| * Please add other inputs if any | | 1.70000 |
| Total Cost of fish production (Rs) | | 140-160/Kg |
| Current fish price/kg | | 0.5 hr |
| Area of the pond/farm | | NO |
| Geographical location of the farm/pond | | |
| Farmer's Name | | Ramkishor Rawat |
| Village | | Balamau |
| Block | | Kachhohra |
| District | | Hardoi |
| state | | |
| Phone No. | | GP 7881162382 |

If, any disease outbreak was observed, please specify

Preventive measures taken

Name - Alok Kumar mobile - 7518471461
 ID No - F-9327116
 District - Hoshiarpur

PROFORMA FOR FISH PRODUCTION

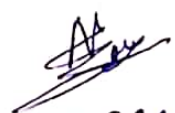
1. Data must be collected for a year in an average of all the input.

| INPUT | UNIT | 3 | Applied per year |
|-------------------------------------|-------------------|-------|------------------|
| 1. Labour | | | 3 (4 permanent) |
| a. Men | No. | 3 | |
| b. Women | No. | | |
| 2. Electricity | kWh or unit | | |
| 3. Diesel | lit | NO | |
| 4. kerosene | | " | |
| 4. Feed | | " | |
| Oilcakes (Mustard/groundnut/ other) | kg | 100kg | |
| Rice polish | kg | 150kg | |
| Rice bran | kg | NO | |
| Flour (wheat/maize) | kg | " | |
| Minerals | kg | NO | |
| salt | kg | 50kg | |
| Grasses (name) | kg | | Banyan 1 tonney |
| if Commercial feed (please specify) | kg | NO. | |
| other | | | |
| 5. Fertilizers | kg | NO | |
| 1. Urea | kg | " | |
| 2. DAP | kg | " | |
| 3. MOP | kg | " | |
| 4. Potash | kg | " | |
| 5. Zinc sulphate | kg | " | |
| 6. Cow dung/FYM | kg | " | |
| 7. Vermicompost | kg | | 2 Tonnar |
| 8. Other | kg | | NO |
| 6. Chemicals | | | |
| KMnO ₄ | kg | | 1 kg |
| Insecticides | kg/lit | | NO |
| Herbicides | kg/lit | | " |
| Lime | kg | | " |
| Other | | | 10kg |
| 7. Net (Name and Dimension) | kg | | Drug net 50kg |

| | | |
|--|---------|----------------------------|
| 8. Fish Seed (Total) | Kg & No | |
| Catla | Kg & No | 5000 (mixture) Fingerlings |
| Rohu | Kg & No | 1. No |
| Mrigal | Kg & No | |
| Silver carp | Kg & No | |
| Grass carp | Kg & No | |
| Common carp | Kg & No | |
| Pangas | Kg & No | No |
| Magur | Kg & No | |
| Singhi | Kg & No | |
| Other (Name) | Kg & No | |
| | Kg & No | |
| | Kg & No | No |
| 7. Machinery (if any) specify Model description also | | |
| Motor/Diesel Engine | hr | |
| Aerator | hr | |
| For Transportation of feed/seed/fertilizer /chemicals vehicle used | | |
| a. Car | hr | 12 hr |
| b. Bicycle | hr | 10 hr |
| c. Motor Bike | hr | ✓ |
| d. Tractor | hr | No |
| 8. Water | lit | " |
| Output | | " |
| Fish (Total) | kg | 600 kg |
| * Please add other inputs if any | | |
| Total Cost of fish production (Rs) | | 35000 rupees |
| Current fish price/kg | | 160/kg |
| Area of the pond/farm | | 0.25 hr |
| Geographical location of the farm/pond | | |
| Farmer's Name | | Narendra Kumar |
| Village | | Mannakhera. Post Bhitauli |
| Block | | Behender |
| District | | (Hardoi) |
| state | | (U.P) |

If, any disease outbreak was observed, please specify

Preventive measures taken


8853713908

Name - Alok Kumar
 ID No. F-9327116
 District - Hanoi

Mobile No. - 7518474461

PROFORMA FOR FISH PRODUCTION

1. Data must be collected for a year in an average of all the input.

| INPUT | UNIT | Applied per year |
|-------------------------------------|-------------------|------------------|
| 1. Labour | | 4 (1 permanent) |
| a. Men | No. | 4 |
| b. Women | No. | |
| 2. Electricity | kWh or unit | |
| 3. Diesel | lit | No |
| 4. kerosene | | " |
| 4. Feed | | " |
| Oilcakes (Mustard/groundnut/ other) | kg | 50 kg |
| Rice polish | kg | 50 kg |
| Rice bran | kg | No |
| Flour (wheat/maize) | kg | " |
| Minerals | kg | " |
| salt | kg | 10 kg |
| Grasses (name) | kg | 250-300 kg |
| if Commercial feed (please specify) | kg | 2 tonnes (CP) |
| other | | |
| 5. Fertilizers | kg | No |
| 1. Urea | kg | " |
| 2. DAP | kg | " |
| 3. MOP | kg | " |
| 4. Potash | kg | " |
| 5. Zinc sulphate | kg | " |
| 6. Cow dung/FYM | kg | 400 kg |
| 7. Vermicompost | kg | |
| 8. Other | kg | |
| 6. Chemicals | | No |
| KMnO ₄ | kg | 1 kg |
| Insecticides | kg/lit | No |
| Herbicides | kg/lit | No |
| Lime | kg | 50 kg |
| Other | | No |
| 7. Net (Name and Dimension) | kg | Orange net |

सर्वज्ञ कुमार

| | | |
|--|---------|----------------------------|
| 8. Fish Seed (Total) | Kg & No | 5500 (Line) |
| Catla | Kg & No | No |
| Rohu | Kg & No | " |
| Mrigal | Kg & No | " |
| Silver carp | Kg & No | " |
| Grass carp | Kg & No | " |
| Common carp | Kg & No | " |
| Pangas | Kg & No | Pangas |
| Magur | Kg & No | No |
| Singhi | Kg & No | No |
| Other (Name) | Kg & No | No |
| | Kg & No | No |
| | Kg & No | No |
| 7. Machinery (if any) specify Model description also | | |
| Motor/Diesel Engine | hr | 150hr |
| Aerator | hr | No |
| For Transportation of feed/seed/fertilizer /chemicals vehicle used | | |
| a. Car | hr | 50hr |
| b. Bicycle | hr | No |
| c. Motor Bike | hr | 10hr |
| d. Tractor | hr | No |
| 8. Water | lit | No |
| Output | | No |
| Fish (Total) | kg | 4 tonnes |
| * Please add other inputs if any | | |
| Total Cost of fish production (Rs) | | 250000 |
| Current fish price/kg | | 120/kg |
| Area of the pond/farm | | 0.4 ha. (Green Perch Pond) |
| Geographical location of the farm/pond | | |
| Farmer's Name | | Sarvesh Kumar |
| Village | | Balamau |
| Block | | Balamau |
| District | | Haredoi |
| state | | Uttar Pradesh |
| | | 010 536 37001 |

If, any disease outbreak was observed, please specify

Preventive measures taken

College of Fisheries
Narendra Deva University of Agriculture and Technology
Narendranagar, Kumarganj, Ayodhya 224229,

Mr 461/Gsk/2019

dt 22/2/19

To,

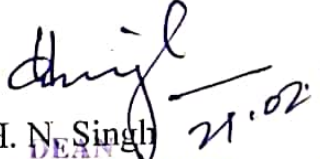
The Technical Head,
Indepesca Aquaculture Pvt . Ltd.
Mumbai, Maharashtra.
Email Id.No. sunil.tomar@indepesca.com

Subject: Regarding training in your esteemed organization.

Dear Sir,

I am glad to inform you that Narendra Deva University of Agriculture and Technology, Narendranagar, Kumarganj, Ayodhya is providing B.F.Sc Degree to the students since 2010-2011. The last semester of the degree is totally devoted for training through industry attachment for their better exposure to the fisheries allied activities. They need exposure in processing and packaging of aquatic freshwater and sea food products or subjects related to culture aspects. It is stated that in the current session 2018-19, 2nd semester has already started from 20th January 2019 and it will ends on 20th may 2019. We are interested to send 02 trainees students in your well established company. I will be highly thankful if you can accommodate our students for training in your esteemed organization. I hope these students will perform in better way and co-operate you to learn and serve the fishery industry. Expenses towards their training will be borne by the students. The name and ID of students are mentioned below.

We are looking forward for your positive response.
Thanking you.


Prof. H. N. Singh
Dean
COLLEGE OF FISHERIES
NARENDRA DEVA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
KUMARGANJ, AYODHYA, U.P.

| S.NO. | Name | ID No. | E-mail ID. |
|-------|---------------|-----------|--|
| 1 | Shivam Singh | F-8608/15 | rajpootshivam984@gmail.com |
| 2 | Pravesh Kumar | F-8596/15 | praveshkumar0769@gmail.com |

(127)

To
Director,
College of Fisheries,
Narendra Deva University of Agriculture & Technology,
Narendra Nagar, Kumarganj,
Ayodhya -224229

Dear Sir,

I inform you that in Haryana & Punjab region the culture of Shrimp/Vannammie and IMC at progressing stage. In Haryana no fisheries college but the aquaculture is increased day by day. If your fisheries college trainee student want to do industrial Trainee in Punjab and Haryana , we provide the facility of industrial training under our company in Haryana & Punjab region . Our company Haryana Aqua Food deals in Vannammie and IMC feed, feed supplements, medicine and machinery and we also do the research culture and farm culture in Haryana & Punjab. We have three aquaculture technical person in our team. So we request you that if you have some trainee student in your college which are interested to take training in Haryana & Punjab region to give our Company reference. We shall provide free boarding and lodging to trainee students. For any other detail contact to Mr. Ravinder Singh (9354308899).

Thanking You

Yours Faithfully,

From Haryana Aquafood & Farms


Mr. Aditya Jhajhra 26/02/2019

Director

Register Office:-

HARYANA AQUA FOOD & FARM KHARATI KHERA ROAD CHOWK NEAR CRESENT PUBLIC
SCHOOL MINI - BYEPASS FATEHABAD 125050 PH NO- 9354308899

(126)

Dean
College of Fisheries



Narendra Deva University of Agriculture &
Technology, Narendra Nagar,
(Kumarganj), Ayodhya
224229 (U.P.) India
E Mail I.D. cofcfnuat@gmail.com
Mob-No-9450796577

To, ND-470/NDUAT-56/19

Dated:- 26-2-2019

The Technical Head,
Indepesca Aquaculture Pvt . Ltd.
Mumbai, Maharashtra
Email Id.No. sunil.tomar@indepesca.com

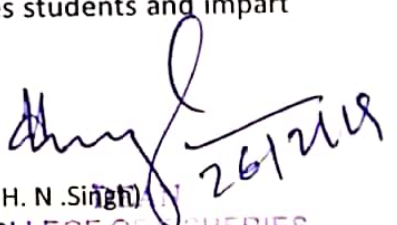
Subject: In- Plant Training for B.F.Sc 4th year students of N.D. University of Agriculture & Technology.

Dear Sir,

It is to bring to your kind notice that B.F.Sc 4th year, students of College of Fisheries in 2nd semester needs to be attached to aqua culture industries for practical exposure. I am glad to know that you have agreed to accommodate student for In-Plant Training Programme of the year 2018-19. It is also mention that the industry representative evaluates students and impart marks out of fifty as per their performance.

Your cooperation will be highly obliged.

Thanking you


(Prof. H. N. Singh)
Dean
College of Fisheries
N.D. UNIVERSITY OF AGRICULTURE & TECHNOLOGY
KUMARGANJ
FAIZABAD U.P.

| S.No. | Name | I.D No. | Mobile No. | E -mail Id. |
|-------|---------------|-----------|------------|--|
| 1 | Shivam Singh | F-8608/15 | 8874613402 | rajpootshivam984@gmail.com |
| 2 | Pravesh Kumar | F-8596/15 | 8853940342 | praveshkumar0769@gmail.com |

स्टो मित्रा सुभाष

22/4
both switch off

125



NO-472/INDUAT-56/19

To,

Dated:- 26.2.2019

Director,

Haryana Aquafood & Farms,
KharatiKhera Road ChowkNearCrescent Public School,
Mini-Bypass Fatehabad -125050, Haryana.

Subject: In- Plant Training for B.F.Sc 4th year students of N.D. University of Agriculture & Technology.

Dear Sir,

It is to bring to your kind notice that B.F.Sc 4th year, students of College of Fisheries in 2nd semester needs to be attached to aquaculture industries for practical exposure. I am glad to know that you have agreed to accommodate student for In-Plant Training Programme of the year 2018-19. It is also mention that the industry representative evaluates students and impart marks out of fifty as per their performance.

Your cooperation will be highly obliged.

Thanking you

(Handwritten signature)
(Prof. H.N. Singh)
Dean
COLLEGE OF FISHERIES
N.D.U.A.T. KUMARGANJ
FATEHABAD, P.

| S.N. | Name | I.D. No. | E-mail | Mob. No. |
|------|-------------------------|-----------|--|------------|
| 1. | Satyaveer | F-8605/15 | satyaveers779@gmail.com | 9761027015 |
| 2. | Saurabh Singh Parmar | F-8606/15 | saurabhparmar266@gmail.com | 8948137301 |
| 3. | Shyamlal | F-8609/15 | shyamlal8609@gmail.com | 9838798251 |
| 4. | Rituraj Singh | F-8601/15 | riturajsingh1228@gmail.com | 9125413450 |
| 5. | Satendra Kumar | F-8604/15 | sg074005@gmail.com | 8006078279 |
| 6. | MayankBhushan Singh | F-8591/15 | mayankbhushan4142.singh@gmail.com | 7317289379 |

डा. विनोद कुमार

(Handwritten signature)
(Laxmi Prasad)

112

NAME - Amaresh kumar

I.D No - F - 9328/16

Mob No - 9005263069

PROFORMA FOR FISH PRODUCTION

1. Data must be collected for a year in an average of all the input.

| INPUT | UNIT | Applied per year |
|-------------------------------------|-------------------|------------------|
| 1. Labour | | 5 |
| a. Men | No. | 1 |
| b. Women | No. | 1 |
| 2. Electricity | kWh or unit | - 1 KWH 360 |
| 3. Diesel | lit | |
| 4. kerosene | | - 5 |
| 4. Feed | | |
| Oilcakes (Mustard/groundnut/ other) | kg | 100 kg |
| Rice polish | kg | |
| Rice bran | kg | 15 kuntal |
| Flour (wheat/maize) | kg | |
| Minerals | kg | |
| salt | kg | 50 kg |
| Grasses (name) | kg | Jal kumbhi |
| if Commercial feed (please specify) | kg | |
| other | | |
| 5. Fertilizers | kg | |
| 1. Urea | kg | 50 kg |
| 2. DAP | kg | |
| 3. MOP | kg | |
| 4. Potash | kg | |
| 5. Zinc sulphate | kg | 10 kuntal |
| 6. Cow dung/FYM | kg | |
| 7. Vermicompost | kg | |
| 8. Other | kg | |
| 6. Chemicals | | |
| KMnO ₄ | kg | 500 gm |
| Insecticides | kg/lit | |
| Herbicides | kg/lit | |
| Lime | kg | 400 kg |
| Other | | |
| 7. Net (Name and Dimension) | kg | Phasla, dheda. |

| | | |
|--|---------|-----------------|
| 6. Fish Seed (Total) | Kg & No | |
| Catla | Kg & No | 10000 - / |
| Rohu | Kg & No | 10000 - / |
| Mrigal | Kg & No | 10000 - / |
| Silver carp | Kg & No | 20000 - / |
| Grass carp | Kg & No | 60 kg. |
| Common carp | Kg & No | |
| Pangas | Kg & No | |
| Magur | Kg & No | |
| Singhi | Kg & No | |
| Other (Name) | Kg & No | |
| | Kg & No | |
| | Kg & No | |
| 7. Machinery (if any) specify Model description also | | |
| Motor/Diesel Engine | hr | |
| Aerator | hr | |
| For Transportation of feed/seed/fertilizer /chemicals vehicle used | | |
| a. Car | hr | |
| b. Bicycle | hr | 1 |
| c. Motor Bike | hr | Bike |
| d. Tractor | hr | 1 |
| 8. Water | lit | 30 day |
| Output | | |
| Fish (Total) | kg | 8 kundan. |
| * Please add other inputs if any | | |
| Total Cost of fish production (Rs) | | |
| Current fish price/kg | | 100 Ru/kg |
| Area of the pond/farm | | 2 ha. area. |
| Geographical location of the farm/pond | | |
| Farmer's Name | | Rammilan Bind |
| Village | | Ramnagar, meja, |
| Block | | Urwa. |
| District | | Prayagraj, U.P. |
| state | | |
| Phone No. | | 895671785. |

If, any disease outbreak was observed, please specify

Preventive measures taken

PROFORMA FOR FISH PRODUCTION

1 Data must be collected for a year in an average of all the input.

| INPUT | UNIT | Applied per year |
|--|-------------------|----------------------|
| 1. Labour | | 5 |
| a. Men | No. | 3 |
| b. Women | No. | 2 |
| 2. Electricity | kWh or unit | 200 Kwh |
| 3. Diesel | lit | |
| 4. kerosene | | 50-70 |
| 4. Feed | | |
| Otlcakes (Mustard/groundnut/ other) | kg | 300 Kg |
| Rice polish | kg | 250 Kg |
| Rice bran | kg | |
| Flour (wheat maize) | kg | |
| Minerals | kg | |
| salt | kg | |
| Grasses (name) <i>Bansen</i> | kg | 250-300 Kg |
| if Commercial feed (please specify) other | kg | <i>knowel 200 Kg</i> |
| 5. Fertilizers | kg | |
| 1. Urea | kg | 100 Kg |
| 2. DAP | kg | |
| 3. MOP | kg | |
| 4. Potash | kg | |
| 5. Zinc sulphate | kg | |
| 6. Cow dung/FYM | kg | 5000 Kg |
| 7. Vermicompost | kg | |
| 8. Other <i>SSP</i> | kg | 20 Kg |
| 6. Chemicals | | |
| KMnO ₄ | kg | |
| Insecticides | kg/lit | |
| Herbicides | kg/lit | |
| Lime | kg | 500 Kg |
| Other | | |
| 7. Net (Name and Dimension) | kg | <i>Dragg net</i> |

PROFORMA FOR FISH PRODUCTION

1. Data must be collected for a year in an average of all the input.

| INPUT | UNIT | Applied per year |
|-------------------------------------|-------------------|------------------|
| 1. Labour | | |
| a. Men | No. | 13 |
| b. Women | No. | 1 |
| 2. Electricity | kWh or unit | |
| 3. Diesel | lit | 30-40 L |
| 4. kerosene | | |
| 4. Feed | | |
| Oilcakes (Mustard/groundnut/ other) | kg | 1000 kg |
| Rice polish | kg | 1000 kg |
| Rice bran | kg | |
| Flour (wheat/maize) | kg | 500 kg |
| Minerals | kg | |
| salt | kg | 200-300 kg. |
| Grasses (name) | kg | |
| if Commercial feed (please specify) | kg | |
| other | | |
| 5. Fertilizers | kg | |
| 1. Urea | kg | 50 kg |
| 2. DAP | kg | 40 kg |
| 3. MOP | kg | |
| 4. Potash | kg | 20 kg |
| 5. Zinc sulphate | kg | |
| 6. Cow dung/FYM | kg | 1-2 tonnes |
| 7. Vermicompost | kg | |
| 8. Other hen dung | kg | 1 tonne |
| 6. Chemicals | | |
| KMnO ₄ | kg | |
| Insecticides | kg/lit | |
| Herbicides | kg/lit | |
| Lime | kg | 200 kg |
| Other | | |
| 7. Net (Name and Dimension) | kg | Fasla → 4 kg. |

Name → Devdeshi Ranjan

Id. No. → F-9332/11

Mo. No. → 7460944625

| | | |
|---|---------|--|
| 8. Fish Seed (Total) | Kg & No | 30,000 - 35,000 No. |
| Catla | Kg & No | 5000 |
| Rohu | Kg & No | 2000 |
| Mrigal | Kg & No | 1500 |
| Silver carp | Kg & No | 2000 |
| Grass carp | Kg & No | 5000 |
| Common carp | Kg & No | 3000 |
| Pangas | Kg & No | |
| Magur | Kg & No | |
| Singhi | Kg & No | |
| Other (Name) | Kg & No | |
| Beghead carp | Kg & No | 7,000 |
| China rohu | Kg & No | 45.00 |
| 7. Machinery (if any) specify Model description also | | |
| Motor/Diesel Engine | hr | |
| Aerator | hr | |
| For Transportation of feed/seed/fertilizer /chemicals vehicle used | | |
| a. Car | hr | |
| b. Bicycle | hr | 700 nos. |
| c. Motor Bike | hr | 900 nos. |
| d. Tractor | hr | |
| 8. Water | lit | 2,000,000 l. |
| Output | | |
| Fish (Total) | kg | 2000 - 2500 kg. |
| * Please add other inputs if any | | |
| Total Cost of fish production (Rs) | | 70,000 - 80,000 Rs. |
| Current fish price/kg | | 100 - 120 Rs/kg. |
| Area of the pond/farm | | 2 - 2.5 ha. |
| Geographical location of the farm/pond | | |
| Farmer's Name Village Block District state Phone No. | | Sabhajeet Kahar Basupur Jaisingpur Sultanpur J.P. 8423009929 सभजीत कहर |

If, any disease outbreak was observed, please specify

Preventive measures taken

College of Fisheries

Narendra Deva University of Agriculture and technology

Narendranagar, Kumarganj, Ayodhya U.P. 224229,

NO-157 / NDUAT-56 / 19

Date 07-08-2019

To,

The Technical Head

Hariom Aquaculture Pvt. Ltd.

J.P. Ice Factory, 28/D, Udhoynagar,

Jalalpore, Navsari, (Gujarat)- 396450

Subject: Regarding training in your esteemed organization.

Dear Sir,

I am glad to inform you that Narendra Deva University of Agriculture and Technology, Narendranagar, Kumarganj, Ayodhya is providing B.F.Sc degree to the students. The seventh semester of the degree is totally devoted for training through industry attachment for their better exposure towards fisheries allied activities. They need exposure in culture processing and packaging of aquatic fresh water and sea food products or subjects related to culture aspects. It is stated that in the current session 2019-20 and training period of students in the current semester in eight weeks. We are interested to send 02 numbers of students trainees in your well established company. I will be highly thankful if your company accommodate our students for training in your respected organization. I hope these students will perform in better way and co-operate you to learn and serve the fishery industry. Expenses towards their training will be borne by the students. The name and ID of students are mentioned below.

We are looking forward for your positive response.

Thanking you.

Dean
COLLEGE OF Fisheries
N.D.U.A. & T. KUMARGANJ
FAIZABAD U.P.

| S.N. | Name | I.D. | Email ID |
|------|-----------------|-----------|--|
| 1. | Sandeep Mishra | F-9338/16 | sandeepnduat2016@gmail.com |
| 2. | Devarshi Ranjan | F-9332/16 | devarshiranjan508@gmail.com |

College of Fisheries
Narendra Deva University of Agriculture and Technology
Narendranagar, Kumarganj, Ayodhya U.P.224229.

No = 147 / NDUAT-56/19

dated: 31-7-2019

To,

The Owner, Kash Fish Hatchery (Sh. Yateendra Kashyap)
Bariariya, Sangrampur
Motihari (E. Champaran) Bihar- 845434

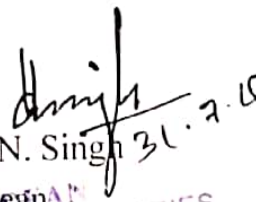
Subject: Regarding training at your fish hatchery and aqua farm.

Dear Sir,

I am glad to inform you that Narendra Deva University of Agriculture and Technology, Narendranagar, Kumarganj, Ayodhya (Uttar Pradesh) is providing B.F.Sc. Degree to the students. The seventh semester of the degree is totally devoted for training through industry attachment for their better exposure towards fisheries allied activities. They need exposure in culture, breeding, processing and packaging of aquatic fresh water and sea food products or subjects related to culture aspects. It is stated that during current session (2019-20) training period of students in the 7th semester is of eight weeks. I would like to send one of the student trainees at your well established Hatchery/Fish Farm. I will be highly thankful if you accommodate our student for training at your Hatchery/Fish Farm. I hope the student will perform in better way and co-operate with you to learn and serve the fishery industry. Expenses towards their training will be borne by the students. The name and ID of students are mentioned below.

We are looking forward for your positive response.

Thanking you.


Prof. H.N. Singh 31.7.19
Dean
COLLEGE OF FISHERIES
N.D.U.A. & T. KUMARGANJ
FAIZABAD U.P.

| Name | I.D. | Email ID |
|----------|-----------|---------------------------|
| Deepansu | F-9331/16 | deepansugautam1@gmail.com |

डा. एम. धनी प्रसाद | डा. दिवेश कुमार

सब प्रति प्राप्त की

Deepansu



Date : 28.9.19

TO WHOM SO EVER IT MAY CONCERN

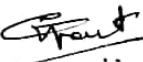
This is to certify that Mr. Susheel Kumar S/o Kanhaiyalal I. D. No. F – 9343/16 , a final year Student doing B.F.Sc. 4th year at Collage of Fisheries Narendra Deva University of Agriculture & Technology Kumarganj Ayodya,(UP) - 224229 has successfully completed the fisheries IN-Plant attachment "SRP(N)411 Course of the year 19-20 in Aquaculture under the guidance of Dr. Ajitsinha B. Patil, Chief Technology Officer at our farms at Jalsar & Vedhi Dhamangaon, Tal. Palghar, Dist. Palghar. His training perios was 8 weeks.

He has worked on L. Vannamei Culture from pond preparation to harvesting. He is now proficient in water parameter testing, monitoring & manipulation, population estimation, feed requirement calculations, feed consumption monitoring & health check.

He bears a good moral character, is sincere & hard working, takes initiative & is good at man management.

We wish him all the best for his future endeavours.

FOR PANCHAM AQUACUTURE FARMS LTD.


(SMT. C. V. RAUT)
DIRECTOR/





Tranning Inbox



Ak technical tech 25 Jul

College of fishriesh N D U A T kumarganj
Ayodhya Pin 224229 Uttar Pradesh



Pancham aqua 2:39 PM

to me



Pof H.N.Singh

Dean

College of Fisheries

Narendra Deva University of Agriculture and
Technology

Narendranagar, kumarganj, Ayodhya. U.P.
224229

Dear Sir,,

We hereby confirm training of the following
student on our farm as per your letter dated
25.7.2019

12



Tranning Inbox



Ak technical tech 25 Jul

College of fishriesh N D U A T kumarganj
Ayodhya Pin 224229 Uttar Pradesh



Pancham aqua 2:39 PM

to me



Pof H.N.Singh

Dean

College of Fisheries

Narendra Deva University of Agriculture and
Technology

Narendranagar, kumarganj, Ayodhya. U.P.
224229

Dear Sir,,

We hereby confirm training of the following
student on our farm as per your letter dated
25.7.2019

6

lined Kumarganj



Prof. A.K. Gangwar
Dean
College of Fisheries
Mob No.- 7054232311



College of Fisheries
Acharya Narendra Deva University of
Agriculture & Technology, Kumarganj,
Ayodhya- 224229 (U.P.) India

6

No 346/hsh/22

dt 17.8.22

To,

Manish Patel
General Manager
Ram Rai Trading Company
Bada Gudda (Sirsa)
Haryana -125078

Subject: In-plant training for B.F.Sc. students of A.N.D.U.A.T., Kumarganj, Ayodhya.


Sir,

It is to bring to your kind notice that 4th year students of college of fisheries in first semester needs to be attached to aqua cultural industries for practical exposure. Am glad know that you have granted consent to accommodate students for in-plant training programme (for 8 weeks) of the year 2022-23. It is also to mention that the industry representative evaluate will have to students and impact marks out of fifty o the students as per their performance.

Therefore, I nominate following B.F.Sc. students for your esteemed organization.

| S. No. | Name | Id. No. |
|--------|--------------------|------------|
| 1. | Shailesh Prajapati | F-11023/19 |
| 2. | Satyadev | F-11021/19 |

We will highly obliged for your amazing cooperation.


17.08.2022
Dean
College of Fisheries
DEAN
College of Fisheries
A.N.D.U.A.T. Kumarganj-Ayodhya (U.P.)

mob - 9458359038 (Ram Rai)
G.Mail - ramraitrading@gmail.com

Prof. A.K. Gangwar
Dean
College of Fisheries
Mob. No. 7054232311



College of Fisheries
Acharya Narendra Deva University of
Agriculture & Technology, Kumarganj,
Ayodhya- 224229 (U.P.) India

Letter No. 340

To,

Date- 16/8/22

Ranjit Patil (M.D) Sir
103-B Mittal Tower Nariman
Point, Mumbai-400021(India)

Subject: In-plant training for B.F.Sc. students of A.N.D.U.A.T., Kumarganj, Ayodhya.

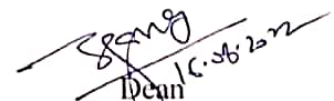
Sir,

It is to bring to your kind notice that 4th year students of college of fisheries in first semester 2022-23 needs to be attached to aqua cultural industries for practical exposure. Am glad know that you have granted consent to accommodate students for in-plant training programe (for 8 weeks) of the year 2022-23. It is also to mention that the industry representative evaluate will have to students and impact marks out of fifty o the students as per their performance.

Therefore, I nominate following B.F.Sc. students for your esteemed organization.

| S. No. | Name | Id. No. |
|--------|-------------------|------------|
| 1. | Rahul Kumar | F-11020/19 |
| 2. | Satyendra Kumar | F-11022/19 |
| 3. | Ankit Kumar Verma | F-11004/19 |

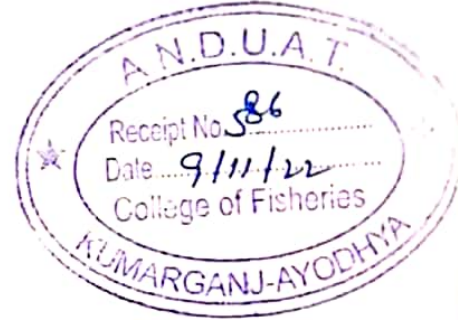
We will highly obliged for your amazing cooperation.


Dean
16.08.22
DEAN
College of Fisheries
College of Fisheries
A.N.D.U.A.T. Kumarganj-Ayodhya (U.P.)



HARYANA AQUA FOOD & FARMS

Khairati Khera Road Chowk, Near Crescent Public School
Fatehabad, Haryana-125050
Mob. : 9354308899, 7990241630
E-mail : haryanaaquafood@gmail.com



TO WHOM SO EVER IT MAY CONCERN

CERTIFICATE

This is to certify that MR. ANKIT SINGH, ID No : - F-11006/19 student of B.F.Sc. (Bachelor of Fisheries Science) studying in 7th semester (Final Year) from the College of Fisheries Acharya Narendra Deva University of Agriculture & Technology, Kumarganj, Ayodhya (U.P.) A has successfully completed On-Site Training Programme in Aqua-Farming module at Haryana Aqua Foods & Farms during 17 August to 11 October 2022.



We found him sincere, hardworking and result oriented. He worked well as part of a team during his tenure. He take this opportunity to thank and wish all the best for his future.

Date of Issue :- 15-10-2022


Technical Manager
(Mr. Deepak Sharma)
Cargill India Pvt. Ltd.


Director
(Mr. Aditya Jhajhra)



Seal with Signature

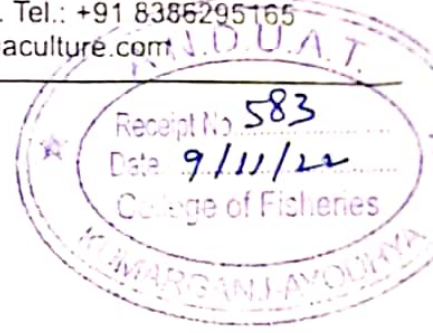


CANARES AQUACULTURE LLP

India's First Seabass Fish Hatchery



592/1, Holanagadde, Kumta, Uttarakannada Dist.-581351. Karnataka, India. Tel.: +91 8386295165
Email: accounts@canaresaquaculture.com Web: www.canaresaquaculture.com



Training Certificate

This is to certify that Ankit Kumar Yadav ID No. F-11005/19 a student doing B.F.Sc 1Vth year at college of Fisheries Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya (U.P.). He has successfully completed the Fisheries In-Plant attachment (8-weeks) SRP-411 course programme for first semester of session 2022-23 from 21-Aug to 16 Oct in aquaculture under of Canares Aquaculture LLP, Kumta, Uttara Kannada district , Karnataka.

He has worked on Hatchery of Lates Calcarifer from breeding to fingerling stage and also worked on the culture of Algae, Rotifer and Artemia.

He is now proficient in egg collection, water parameter testing , monitoring , density estimation , feed requirement calculation , feed consumption monitoring , health management , preparation of Algal media and its culture , Rotifer feeding and its culture , preparation of Artemia decapsulation and harvesting procedure.

He is sincere hard working and having moral character.

His aggregating the score of 50 out 50 (50/50).

We wish all the the best for your future.

Date : 16/10/2022

Place : Kumta, Karnataka

For Canares Aquaculture LLP
Director

Authorised Signatory
Mr. Karthik Gowda

Pancham
Aquaculture
Farms Ltd.



Date : 31.10.22

Receipt No: 585
Date 9/11/22
College of Fisheries
KUMARGANJ AYODHA

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. Ankit Kumar Varma I. D. No. F -11004/19 , a final year Student doing B.F.Sc. 4th year at Collage of Fisheries Narendra Deva University of Agriculture & Technology Kumarganj Ayodya,(UP) - 224229 has successfully completed the fisheries IN-Plant Training Programme(for 8 weeks) of the year 2022-23 in Aquaculture under the guidance of Dr. Ajitsinha B. Patil, Chief Technology Officer at our farms at Jalsar & Vedhi Dhamangaon, Tal. Palghar, Dist. Palghar. His training period from 24.8.22 to 19.10.22.

He has worked on L. Vannamei Culture from pond preparation to harvesting. He is now proficient in water parameter testing, monitoring & manipulation, population estimation, feed requirement calculations, feed consumption monitoring & health check.

He bears a good moral character, is sincere & hard working, takes initiative & is good at man management.

We wish him all the best for his future endeavours.

FOR PANCHAM AQUACUTURE FARMS LTD.

(SMT. C. V. RAUT)
Authorised Signatory



Regd. Office : 103-B, Mittal Tower, Nariman Point, Mumbai - 400 021. (India)
Phone (022) 2283 1176 • E-mail : panchamaquafarms@gmail.com

Geotag Photos of B. F. Sc. Final year students working at different companies for the fulfillment of degree under the Student READY program



Fish Transportation at Canares Aquaculture LLP, Karnataka



Applying moss and algae remover B.S. Trading Pvt. Ltd.



Decapsulation of Artemia cyst at Canares Aquaculture LLP



Checking hardness at B.S. Trading Pvt. Ltd



Checking DO of pond



Application of jaggery and rice polish juice at B.S. Trading Pvt. Ltd.



Adding liquid minerals B.S. Trading Pvt. Ltd.



Mixing feed at Aqua food company



Agar plating at Canares Aquaculture LLP



Measuring feed B.S. Trading Pvt. Ltd.



Checking Ammonia at Puran aqua food



Mixing feed at B.S. Trading Pvt. Ltd.



Grading of Fingerlings at Canares Aquaculture LLP



Mixing OTC before application in tank at Canares aquaculture LLP



Viewing Rotifer Density at Canares Aquaculture LLP



Grading of Fry at Canares Aquaculture LLP

College of Horticulture & Forestry

Acharya Narendra Deva University of Agriculture & Technology, Kumarganj, Ayodhya (UP)
Details of Students passed out since last five years (2017-18, 2018-19, 2019-20, 2020-21 and 2021-22)

Rural Horticulture Work Experience (RHWE):

Under Rural Horticulture Work Experience programme students are placed for twelve weeks experiences on rural areas and four weeks in industries. In this programme one farmer is identified in the selected village for two students to perform intensive study under the guidance of coordinator and teachers. Students thoroughly study about present status along with social, cultural and farming related activities of farmer as well as village. In these placements, students fill up the proforma as provided by the coordinator. A students work in their villages/town accordingly. In the end of programme students organized a kisan gosthi in which they present the status of village along with causes of poor yield/income and their solutions and also discuss their social and cultural activities in the presence of course coordinator, teachers, farmers and gram pradhan. In the end of semester students submitted work report and their performance were evaluated by a committee constituted by the Dean, college of Horticulture and Forestry. Thirty six students were passed out in both the programme organized by CHF Horticulture.

List of participated students in RHWE

Year-2017-18

| Sl. No. | Name of Students | I.D. No. | Activity | |
|---------|-----------------------|------------|---|---|
| | | | Placement in Village (Period-12 Weeks) Purabali, Amaniganj | Worked in Post Harvest Technology Laboratory, College of Horticulture & Forestry (Period-4 Weeks) |
| 1 | Abhisek Shukla | HF-7830/14 | | |
| 2 | Adarsh Tiwari | HF-7831/14 | | |
| 3 | Amit Kumar Singh | HF-7833/14 | | |
| 4 | Anil Kumar Verma | HF-7835/14 | | |
| 5 | Ankit Singh | HF-7836/14 | | |
| 6 | Arvind Kumar | HF-7837/14 | | |
| 7 | Atul Kumar | HF-7838/14 | | |
| 8 | Azad Ahmad | HF-7839/14 | | |
| 9 | Bhupendra Mishra | HF-7840/14 | | |
| 10 | Braj Kiashor | HF-7841/14 | | |
| 11 | Dharam Veer | HF-7842/14 | | |
| 12 | Dharmendra Kumar | HF-7843/14 | | |
| 13 | Gautam Pratap Singh | HF-7844/14 | | |
| 14 | Gyanendra Kumar Verma | HF-7845/14 | | |
| 15 | Indra Jeet | HF-7846/14 | | |
| 16 | Jitendra Kumar Shukla | HF-7847/14 | | |
| 17 | Jitendra Singh | HF-7848/14 | | |

| | | | | |
|----|----------------------------|------------|--|--|
| 18 | Kehar Raj | HF-7849/14 | | |
| 19 | Usha Shukla | HF-7851/14 | | |
| 20 | Kripa Shankar Yadav | HF-7852/14 | | |
| 21 | Krashna Pratap Singh Yadav | HF-7853/14 | | |
| 22 | Kuldeep Kumar Shukla | HF-7854/14 | | |
| 23 | Lav Kush Kumar | HF-7855/14 | | |
| 24 | Lavkush Pandey | HF-7856/14 | | |
| 25 | Manvendra Verma | HF-7857/14 | | |
| 26 | Mohammad Salman | HF-7858/14 | | |
| 27 | Mo. Jahid | HF-7859/14 | | |
| 28 | Mritunjay Rai | HF-7860/14 | | |
| 29 | Mukesh Kumar | HF-7861/14 | | |
| 30 | Mukesh Kumar | HF-7862/14 | | |
| 31 | Nitin Singh | HF-7863/14 | | |
| 32 | Nivesh Kumar | HF-7864/14 | | |
| 33 | Pawan Kumar | HF-7865/14 | | |
| 34 | Pradeep Kumar | HF-7866/14 | | |
| 35 | Praveen Kumar | HF-7868/14 | | |
| 36 | Pravin Kumar | HF-7869/14 | | |
| 37 | Pushpendra Singh Rana | HF-7870/14 | | |
| 38 | Rahul Singh | HF-7871/14 | | |
| 39 | Rajesh Kumar Pal | HF-7872/14 | | |
| 40 | Rakesh Kumar Yadav | HF-7873/14 | | |
| 41 | Ram Babu | HF-7874/14 | | |
| 42 | Rajneet Singh | HF-7875/14 | | |
| 43 | Ravindra Kumar | HF-7876/14 | | |
| 44 | Rishabh Kumar | HF-7877/14 | | |
| 45 | Rohit Kumar Bharti | HF-7878/14 | | |
| 46 | Sachchida Nand | HF-7879/14 | | |
| 47 | Sampurna Nand Singh | HF-7880/14 | | |
| 48 | Saurabh Singh | HF-7881/14 | | |
| 49 | Saurav Kumar | HF-7882/14 | | |
| 50 | Shivam Dixit | HF-7883/14 | | |
| 51 | Subham Gangawar | HF-7884/14 | | |
| 52 | Shubham Gupta | HF-7885/14 | | |
| 53 | Shubham Mishra | HF-7886/14 | | |
| 54 | Subheer Kumar Yadav | HF-7887/14 | | |
| 55 | Tej Prakash | HF-7888/14 | | |
| 56 | Vinay Kumar | HF-7890/14 | | |



Fig: Kisan Gosthi Organized by Students under RHWE Programme



Fig: Voting Awareness Programme during RHWE Period

Year-2018-19

| Sl. No. | Name of Students | I.D. No. | Activity | |
|---------|---------------------|------------|---|--|
| | | | Placement in Village (Period-12 Weeks) Sidhauna | Worked in Post Harvest Technology Laboratory, College of Horticulture & Forestry (Period-4 Weeks) |
| 1 | Abhishek Kumar | HF-8613/15 | | |
| 2 | Abhishek Pandey | HF-8614/15 | | |
| 3 | Ajeet Gupta | HF-8615/15 | | |
| 4 | Amarish Kumar | HF-8616/15 | | |
| 5 | Ankit Kumar | HF-8617/15 | | |
| 6 | Ankur Tyagi | HF-8618/15 | | |
| 7 | Arjun Singh | HF-8619/15 | | |
| 8 | Arvind Kumar | HF-8620/15 | | |
| 9 | Ashish Dubey | HF-8622/15 | | |
| 10 | Bharat Mishra | HF-8623/15 | | |
| 11 | Bipin Kumar | HF-8624/15 | | |
| 12 | Brijmohan | HF-8625/15 | | |
| 13 | Brijesh Kumar Yadav | HF-8626/15 | | |
| 14 | Devesh Kumar | HF-8627/15 | | |
| 15 | Dhananjay | HF-8628/15 | | |
| 16 | Dheeraj Kumar | HF-8629/15 | | |
| 17 | Dhirendre Kumar | HF-8631/15 | | |
| 18 | Harishankar Verma | HF-8632/15 | | |
| 19 | Rajneesh Verma | HF-8649/15 | | |
| 20 | Jitendra Singh | HF-8633/15 | | |
| 21 | Kaushal Kishor | HF-8635/15 | | |
| 22 | Kuldeep | HF-8636/15 | | |
| 23 | Lakhvindra Singh | HF-8637/15 | | |
| 24 | Neelu Kumari | HF-8638/15 | | |
| 25 | Neeraj Kumar | HF-8639/15 | | |
| 26 | Nirankar | HF-8640/15 | | |
| 27 | Pawan Kumar Verma | HF-8641/15 | | |
| 28 | Pradeep Kumar | HF-8642/15 | | |
| 29 | Pradeep Kumar verma | HF-8643/15 | | |
| 30 | Prakhar Agnihottri | HF-8644/15 | | |
| 31 | Puneet Mishra | HF-8645/15 | | |
| 32 | Putan Yadav | HF-8646/15 | | |
| 33 | Rahul Sachan | HF-8647/15 | | |
| 34 | Rahj banshi Yadav | HF-8648/15 | | |
| 35 | Ram kishor | HF-8650/15 | | |
| 36 | Ram Kumar | HF-8651/15 | | |

| | | | | |
|----|--------------------|------------|--|--|
| 37 | Ritika Mehta | HF-8655/15 | | |
| 38 | Ramnivas | HF-8652/15 | | |
| 39 | Rameshwar Dayal | HF-8653/15 | | |
| 40 | Rang Nath Pandey | HF-8654/15 | | |
| 41 | Roopendra Kumar | HF-8656/15 | | |
| 42 | Roshan Verma | HF-8657/15 | | |
| 43 | Sandeep Kumar | HF-8658/15 | | |
| 44 | Sandeep Kumar | HF-8659/15 | | |
| 45 | Shivam | HF-8661/15 | | |
| 46 | Shivam Mishra | HF-8662/15 | | |
| 47 | Shivam | HF-8663/15 | | |
| 48 | Shubham Singh | HF-8664/15 | | |
| 49 | Shyam Kumar | HF-8665/15 | | |
| 50 | Sujeet Kumar Patel | HF-8666/15 | | |
| 51 | Sunil Kumar | HF-8667/15 | | |
| 52 | Vimal Singh | HF-8668/15 | | |
| 53 | Vinay Kumar | HF-8669/15 | | |
| 54 | vinod Kumar Maurya | HF-8670/15 | | |
| 55 | Vipin Kumar | HF-8671/15 | | |



Students Interaction with Farmers Under RHWE Programme

Year- 2019-20

| Sl. No. | Name of Students | I.D. No. | Activity | |
|---------|---------------------|------------|--|--|
| | | | Placement in Village (Period-12 Weeks) | Placement in Industry (Period-4 Weeks) |
| 1 | Adarsh Dubey | HF-9286/16 | Tendha | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 2 | Ajeet Verma | HF-9288/16 | Khemipur Nidhiyawan | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 3 | Alok Singh | HF-9289/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 4 | Anil Kumar Singh | HF-9290/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 5 | Ankit Singh | HF-9291/16 | Tendha | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 6 | Anurag Singh | HF-9292/16 | Katranindemau | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 7 | Arbaz Ali | HF-9293/16 | Bendiyamau | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 8 | Atul Kumar Verma | HF-9294/16 | Bendiyamau | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 9 | Atul Pal | HF-9295/16 | Bendiyamau | Satkar Fruit Product, Aonla Nagar Gonde, Pratapgarh (U.P.) |
| 10 | Bipin Kumar | HF-9296/16 | Bendiyamau | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 11 | Deepak Kumar | HF-9298/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 12 | Diksha Sangh Mitra | HF-9299/16 | Bendiyamau | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 13 | Divakar Singh | HF-9300/16 | Raurapur | Satkar Food Products Pvt. Ltd., Pratapgarh (U.P.) |
| 14 | Gabbu Kumar | HF-9301/16 | Shishav | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 15 | Ganga Ram Yadav | HF-9302/16 | Dattanagar, Gonda | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 16 | Gaurav Mishra | HF-9303/16 | Fatehpur Chaurasi | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 17 | Gaurav Tiwari | HF-9304/16 | Dattanagar, Gonda | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 18 | Hemant Kumar | HF-9305/16 | Gangagarh | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 19 | Indra Bahadur Verma | HF-9306/16 | Bhojwa | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 20 | Jeetendra Kumar | HF-9307/16 | Dattanagar, Gonda | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |

| | | | | |
|----|--------------------------------|------------|-------------------|---|
| 21 | Krishna Singh | HF-9308/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 22 | Kumar Ambuj Sahu | HF-9309/16 | Dattanagar, Gonda | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 23 | Lokesh Yadav | HF-9310/16 | Arai | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 24 | Maneesh Kumar Bharti | HF-9311/16 | Dattanagar, Gonda | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 25 | Mukesh Pal | HF-9312/16 | Saray Chhivalaha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 26 | Neetu Saroj | HF-9313/16 | Tendha | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 27 | Raghvendra Prasad Niranjana | HF-9314/16 | Tendha | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |
| 28 | Raksha Ram | HF-9315/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 29 | Rohit Kumar Veram | HF-9316/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 30 | Shivam Bharati | HF-9317/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 31 | Shivam Patel | HF-9318/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 32 | Sooraj | HF-9319/16 | Afseriyahusenpur | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 33 | Sunil Kumar | HF-9320/16 | Bhola ka Purva | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 34 | Umesh Kumar | HF-9322/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 35 | Vipin Kumar | HF-9323/16 | Mukundpur | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 36 | Vipin Kumar | HF-9324/16 | Tendha | Sri Ram Food Product Pvt.Lmtd., Pratapgarh (U.P.) |
| 37 | Virendra Kumar | HF-9325/16 | Kolabhar | Sri Ram Gramodyog Food Products, Sonawa, Pratapgarh (U.P.) |

Year-2020-21

| Sl. No. | Name of Students | I.D. No. | Activity | |
|---------|--------------------|------------|--|---|
| | | | Placement in Village (Period-12 Weeks) | Placement in Industry (Period-4 Weeks) |
| 1 | Abhishek Mishra | HF-9857/17 | Wazirganj | Shree Ram Gramodyog Food Products, Wazirganj, Gonda (U.P.) |
| 2 | Aditya Kumar | HF-9858/17 | Wazirganj | Shree Ram Gramodyog Food Products, Wazirganj, Gonda (U.P.) |
| 3 | Ajay Kumar | HF-9859/17 | Maharaj Nagar | Mahima Enterprises (Ashirwaad mixed pickles), Lucknow, (U.P.) |
| 4 | Ajeet Kumar Yadav | HF-9860/17 | Newaada | Srin Ganga Udyog Food Product Pvt., Ltd., Barabanki (U.P.) |
| 5 | Amrit Pal Singh | HF-9861/17 | Wazirganj | Shree Ram Gramodyog Food Products, Wazirganj, Gonda (U.P.) |
| 6 | Anil Kumar | HF-9862/17 | Barbata | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Paliakalan (U.P.) |
| 7 | Ankit Kumar Dubey | HF-9863/17 | Sidhauna, Kumarganj | Shiv Shankar Foods Pvt. Ltd, Ayodhya (U.P.) |
| 8 | Arbind Kumar | HF-9864/17 | Dalelpur, Kanpur | Sri Ram Food Products Pvt. Ltd., Pratapgarh (U.P.) |
| 9 | Arpit Verma | HF-9865/17 | Bandhuwapur | Sri Laddu Gopal Khadya & Fal Sanrakshan Kendra, Sultanpur |
| 10 | Ashish Kr. Upadhya | HF-9866/17 | Sultanpur | Sri Laddu Gopal Khadya & Fal Sanrakshan Kendra, Sultanpur |
| 11 | Avnish Kumar | HF-9867/17 | Harwal | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 12 | Divyansh Patel | HF-9868/17 | Bannapur, Hardoi | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 13 | Govind Verma | HF-9869/17 | Baghauna | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 14 | Himanshu Yadav | HF-9870/17 | Nijampur, Kannauj | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 15 | Kamlesh Sharma | HF-9871/17 | Jagannathpur | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 16 | Kirti Singh | HF-9872/17 | Bulkipur, Etawah | Rama Fruit Products, Kanpur (U.P.) |
| 17 | Meraj | HF-9873/17 | Tekari Khurd | Rama Fruit Products, Kanpur (U.P.) |
| 18 | Mohit Yadav | HF-9874/17 | Lakhraiya, Jaunpur | Shree Ram Gramodyog Food Products, Ayodhya (U.P.) |
| 19 | Naveen Kumar | HF-9875/17 | Bannapur, Hardoi | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 20 | Pankaj Kumar | HF-9878/17 | Udari, Sultanpur | Sri Laddu Gopal Khadya & Fal Sanrakshan Kendra, Sultanpur |
| 21 | Pankaj Kumar | HF-9879/17 | Bannapur, Hardoi | Angel Food Manufacturer and Marketing |

| | | | | |
|----|----------------------|------------|-------------------------|---|
| | | | | Industry Pvt. Ltd., Hardoi (U.P.) |
| 22 | Pranshu Gupta | HF-9880/17 | Hyderabad, Kumbhigola | Mahima Enterprises (Ashirwaad mixed pickles), Lucknow, (U.P.) |
| 23 | Raghvendra Pandey | HF-9881/17 | Sambhu Ka Purva | Sri Ganga Udyog Food Product Pvt. Ltd., Prayagraj (U.P.) |
| 24 | Rahul Kumar | HF-9882/17 | Sidhauna, Kumarganj | Sri Ram Food Products Pvt. Ltd., Pratapgarh (U.P.) |
| 25 | Ranjit Singh | HF-9884/17 | Bannapur, Hardoi | Mahima Enterprises (Ashirwaad mixed pickles), Lucknow, (U.P.) |
| 26 | Sachin Gupta | HF-9885/17 | Bannapur, Hardoi | Mahima Enterprises (Ashirwaad mixed pickles), Lucknow, (U.P.) |
| 27 | Sandeep Chaudhary | HF-9886/17 | Bannapur, Hardoi | Mahima Enterprises (Ashirwaad mixed pickles), Lucknow, (U.P.) |
| 28 | Sanjay Kumar | HF-9887/17 | Khamariya, Dalelganj | Sri Ram Food Products Pvt. Ltd., Pratapgarh (U.P.) |
| 29 | Satyendra Kumar | HF-9888/17 | Itkhoriya | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 30 | Shailesh Kr. Yadav | HF-9889/17 | Bannapur, Hardoi | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 31 | Siddharth Kr. Maurya | HF-9890/17 | Wazirganj | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 32 | Sudeep Singh | HF-9891/17 | Bannapur, Hardoi | Angel Food Manufacturer and Marketing Industry Pvt. Ltd., Hardoi (U.P.) |
| 33 | Tajauddin | HF-9892/17 | Bulkipur, Etawah | Alltime Food Pvt. Ltd., Kanpur (U.P.) |
| 34 | Veer Bhan Keshari | HF-9894/17 | Jalalpur Mafi, Mirzapur | Kashi Food Product, Pvt. Ltd., Mirzapur (U.P.) |
| 35 | Vivek Kr. Gaurav | HF-9895/17 | Imali Gaon | Sri Laddu Gopal Khadya & Fal Sanrakshan Kendra, Sultanpur |
| 36 | Vipin Kumar | HF-9896/17 | Dalelpur, Kanpur | Sri Ram Food Products Pvt. Ltd., Kanpur (U.P.) |

Year 2021-22

| Sl. No. | Name of Students | I.D. No. | Activity | |
|---------|------------------|------------|--|---|
| | | | Placement in Village (Period-12 Weeks) | Placement in Industry (Period-4 Weeks) |
| 1 | Akhilesh Kumar | H-10292/18 | Pragas ka Purva | 1. Sri Ram Fruit Processing Industry 2. Indica Fruit Processing Industry |
| 2 | Alok | H-10293/18 | | |
| 3 | Alok Kumar Rawat | H-10294/18 | | |
| 4 | Ankesh Kumar | H-10296/18 | | |

| | | | |
|----|-----------------------|------------|---------------------------------------|
| 5 | Ankit Kumar Verma | H-10297/18 | 3. U.P. Kaushal Prashikshan Kendra |
| 6 | Anshika | H-10298/18 | |
| 7 | Anuj Kumar | H-10300/18 | |
| 8 | Anurag Sharma | H-10301/18 | |
| 9 | Ashish Kumar Singh | H-10302/18 | |
| 10 | Ashutosh Pandey | H-10303/18 | |
| 11 | Balram Rawat | H-10304/18 | |
| 12 | Dev Prakash | H-10305/18 | |
| 13 | Devendra Mishra | H-10306/18 | |
| 14 | Dhananjay Nidhi Yadav | H-10307/18 | |
| 15 | Manish Kumar | H-10308/18 | |
| 16 | Mohammad Saheem | H-10309/18 | |
| 17 | Mohit Kumar | H-10310/18 | |
| 18 | MukeshKumar | H-10311/18 | |
| 19 | Nirdesh Chandra Singh | H-10312/18 | |
| 20 | Nitin Singh | H-10313/18 | |
| 21 | Prabhujeeet Shukla | H-10314/18 | |
| 22 | Pradeep Kumar | H-10315/18 | |
| 23 | Rajesh Kumar Bhartiya | H-10316/18 | |
| 24 | Rajneesh Kumar | H-10317/18 | |
| 25 | Ratish Kumar | H-10318/18 | |
| 26 | Rohit Singh | H-10319/19 | |
| 27 | SandeepMaurya | H-10320/20 | |
| 28 | ShashankMishra | H-10322/18 | |
| 29 | Shivam Kumar Rajpoot | H-10323/18 | |
| 30 | Shivam Mishra | H-10324/18 | |
| 31 | Shubham Patel | H-10325/18 | |
| 32 | Sumit Chaudhary | H-10326/18 | |
| 33 | Suraj Dwivedi | H-10327/18 | |
| 34 | Suraj Yadav | H-10328/18 | |
| 35 | Tanishq Kalyani | H-10329/18 | |
| 36 | Tilak Singh | H-10330/18 | |
| 37 | Vivek Kumar | H-10331/18 | |



Fig: Kisan Gosthi Organized by Students under RHWE Programme

Plant Distribution and interaction of Teacher-Students With Farmers Under RHWE Programme



ग्रामीण उद्यान कार्य अनुभव के तहत हुआ किसान गोष्ठी का आयोजन

मा
श
इ
सी
म
के
म
ने
।
व
इ
स
में
नों
।

कुटुंब जागरण ब्यूरो अयोध्या। आचार्य नरेंद्र देव पि विवि के उद्यान एवं बानिको महाविद्यालय के बी. एस. सी. उद्यान चतुर्थ वर्ष के छात्रों द्वारा किया गया गोष्ठी का आयोजन। छात्रों द्वारा ग्राम प्रकाश का पुरवा में ग्रामीण उद्यान कार्य अनुभव के तहत गोष्ठी का आयोजन किया जिसमें महाविद्यालय के वैज्ञानिक प्रो.डा. डी. राम, डा. संजय पाठक एवं डाक्टर भानु प्रताप के साथ छात्र धनंजय निधि यादव, अनुराग शर्मा, नितिन सिंह, अंकेश यादव, आलोक रावत, अखिलेश, समेत अन्य छात्र मौजूद रहे गांव के वर्तमान

प्रधान एवं पूर्व प्रधान सहित कई किसान भी मौजूद रहे इस कार्यक्रम के तहत विन्वविद्यालय के वैज्ञानिक ने छात्रों द्वारा किसानों को प्रोत्साहित किया गया उनको खेती से जुड़ी हुई समस्याओं का निवारण भी बताया गया साथ ही साथ उन्नत खेती करने के लिए प्रोत्साहित भी किया गया इस मौके पर डा भानु प्रताप ने बताया कि छोटी जेत के किसान किस प्रकार से मूलों को खेती कर कर अपना रोजगार स्थापित कर सकते हैं इस कार्यक्रम के दौरान डब्लू संजय पाठक ने बागवानी से जुड़ी समस्याओं को लेकर

कर उनके निवारण भी बताएं और किसानों को बागवानी करने के लिए प्रोत्साहित भी किया तथा प्रोफेसर डाक्टर डी राम ने पि शिक्षा को लेकर किसानों

को विन्वविद्यालय में प्रशिक्षण लेने के लिए भी बताया इस मौके पर डाक्टर डी राम ने किसानों को पीछे भेंट कर उनका स्वागत किया।



A

READY (Rural and Entrepreneurship Awareness Development Yojana)

Programme-4

10-Weeks Experiential Learning On-Campus Manual



In the partial fulfillment of the award of the Degree

Of

BACHELOR OF TECHNOLOGY

In

AGRICULTURAL ENGINEERING

ORGANIZED BY

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY,

AKBARPUR, AMBEDKAR NAGAR (U.P.) 224122

(A CONSTITUENT COLLEGE OF)

NARENDRA DEVA UNIVERSITY OF AGRICULTURE & TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

PREFACE

A practical training is a method of implementing and converting your theoretical knowledge into a practical use. The more one can go under practical training, the more he will be able to accuracy and experience in his field. Therefore, a practical training is must to complete a degree of engineering in any field. To gain a professional knowledge, students were also made to undergo ten weeks Experiential learning on campus program at MCAET Campus. To do this, students must understand how engineering students acquire, evaluate and field knowledge and the implication or limitation of this knowledge. The trainees or the organization hence identification of training needs, if done properly, provide the basics on which all other training activities can be considered and we lead to multi skilling, fitting peoples to take extra responsibility all around competence and preparing people to take higher level responsibility in future. This report emphasis on the knowledge and practical training as well, gained during this ten-weeks experiential learning on campus training program. It includes the activities carried out on different days, tasks, problems and their solutions, area covered during the whole program as well. During the tenure of ten-weeks different challenge came across us, but with the cooperation of faculty and students these challenges were easily tackled. In this report a brief history of on-campus training program has been provided and also various tasks and training activities has been mentioned. The process and method carried out during the program of the training has also been mentioned.

TABLE OF CONTENT

| MODULE | TOPICS |
|---------------|---|
| MODULE-1 | SOIL SAMPLING AND DETERMINATION OF SOIL MOISTURE CONTENT, HYDRAULIC CONDUCTIVITY, BULK DENSITY, INFILTRATION RATE OF SOIL USING DOUBLE RING INFILTROMETER |
| MODULE-2 | DESIGN AND INSTALLATION OF MICRO IRRIGATION SYSTEM |
| MODULE-3 | ASSEMBLING AND DISASSEMBLING OF 5 H.P SINGLE CYLINDER ENGINE |
| MODULE-4 | TRACTOR DRIVING, REPAIR AND MAINTENANCE |
| MODULE-5 | FIELD OPERATION OF AGRICULTRAL MACHINERY |
| MODULE-6 | PULSE PROCESSING |
| MODULE-7 | QUALITY CONTROL OF RICE (RICE PROCESSING) |
| MODULE-8 | PHOTOVALATIC SOLAR CELL AND SOLAR TREE |
| MODULE-9 | SURVEYING AND LEVELING |
| MODULE-10 | REWINDING OF THREE PHASE MOTOR |
| MODULE-11 | WATER TESTING |
| MODULE-12 | AUTO-CAD, 3D AND CFD |
| MODULE-13 | WORKSHOP TECHNOLOGY |
| MODULE-14 | WEB DESIGN AND MAT LAB |

| Weeks | Module | Topics | Resource person |
|--|-----------|---|--|
| 1 st | MODULE-1 | Soil sampling and determination of soil moisture content, hydraulic conductivity, bulk density, infiltration rate of soil using double ring infiltrometer | Dr. H.C. Singh |
| 2 nd | MODULE-2 | Design and installation of micro irrigation system | Dr. R.K. Mehta |
| 3 rd | MODULE-3 | Assembling and disassembling of 5 hp single cylinder engine | Dr. P.K. Mishra |
| | MODULE-4 | Tractor driving, repair & maintenance and Field operation of agricultural machinery | Dr. P.K. Mishra |
| 4 th | MODULE-5 | Pulse processing | Dr. S. K. Pandey |
| | MODULE-6 | Quality control of rice (rice processing) | Dr. S. K. Pandey |
| 5 th | MODULE-9 | Photovalatic solar cell and solar tree | Dr. P.K. Mishra, Er. Madhukar Shukla |
| | MODULE-10 | Surveying and levelling | Er. Seema |
| | MODULE-11 | Water testing | Dr. Babita Belal |
| 6 th | MODULE-10 | Rewinding of three phase motor | Er. B.N. Verma |
| 7 th and 8 th | MODULE-12 | Auto-CAD, 3D and CFD | Dr. Akashdeep Gupta |
| 9 th | MODULE-13 | Workshop technology | Dr. S.K. Chaudhary |
| 10 th | MODULE-14 | Web design and MAT LAB | Er. Ritika Yadav |

MODULE-1: Soil sampling and determination of soil moisture content, hydraulic conductivity, bulk density, infiltration rate of soil using double ring infiltrometer

SOIL SAMPLING FOR LAB ANALYSIS

Each sample collected must represent the area being sampled. Utility of the result obtained from the laboratory analysis depend very much on the sample precision. Here, collection of large number of samples is advisable so that sample of desired size can be obtained by sub sampling.

Material required

1. Auger
2. Polythene or cloth bags
3. A pan or bucket
4. Khurpi

MOISTURE CONTENT

PRINCIPLE

Soil moisture is determined by drying a known quantity of soil sample in an electric oven at 105°C to 110°C and finding out the dry weight.

MATERIAL REQUIRED

1. Moisture bottle
2. Chemical balance
3. Hot oven

PROCEDURE: -

- Place a clean and empty moisture bottle or Al tin with separately in an electric oven and keep it at 105°C for 15 minutes. Replace the stopper or lid, remove the moisture bottle or al tin cool in a desiccator, weigh accurately and record the weight.
- Fill the moisture bottle or al tin to about two third of its capacity with soil sample close with stopper and weigh quickly.
- Remove the stopper/tin and keep it in the oven at 105°C for about 8 hours. After that, remove the moisture bottle, cool it in a desiccator and weigh quick calculate the loss in weight and express the moisture content on oven dry basis.



Fig. A view of while taking soil sample for determination of moisture content

| Sr.no. | Box Name | Weight of empty bottle(a) | Weight of Fresh sample weight(b) | Oven dry weight(c) |
|--------|----------|---------------------------|----------------------------------|--------------------|
| 1 | D-55 | 41.25gm | 99.77gm | 95.93gm |
| 2 | D-75 | 39.25gm | 102.87gm | 98gm |
| 3 | D-78 | 41.98gm | 121.34gm | 112.13gm |

CALCULATION

Weight of empty moisture bottle =a g

Weight of the moisture bottle + moist soil sample= b g

Weight of moist soil alone= (b-a) g

Weight of the moisture bottle + soil sample after drying in the oven =c g

Weight of moisture in the soil= (b-c) g

Percentage of moisture in the soil= (b-c)/ (ca)×100

- (0-15)cm, D-55(box name)

Fresh weight of sample (b) =99.77 gm

Oven dry weight of sample(c) =95.93 gm

Weight of empty moisture bottle (a) =41.25 gm

Moisture content= $(99.77/95.33) \times 100/95.33/41.25$
=7.02%

- (15-30)cm D-75(box name)

Fresh weight of sample (b) =102.87 gm

Oven dry weight of sample(c) =98 gm

Weight of empty moisture bottle (a) =39.25 gm

Moisture content= $(102.87/98) \times 100/98/39.25$
=8.28%

- (30-45)cm D-78(box name)

Fresh weight of sample (b) =121.34 gm

Oven dry weight of sample(c) =112.13 gm

Weight of empty moisture bottle (a) =41.98 gm

Moisture content= $(121.34/112.13) \times 100/112.13/41.98$ =**13.1%**

HYDRAULIC CONDUCTIVITY

Hydraulic conductivity is the physical property which measures the ability of the material to transmit fluid through pore spaces and fractures in the presence of an applied hydraulic gradient.

OBJECTIVE

To determine saturated hydraulic conductivity by constant head method.

Principle

The rate of flow of liquid through a porous medium depends on the size, distribution & continuity of pores & temperature of the fluid which is indexed as hydraulic conductivity. In case of soil saturated with water it is directly related to permeability of the porous medium. Using a constant head water, water is passed through the soil column & the conductivity of water per unit time is calculated using Darcy's equation.

Material Required

1. Constant head water supply unit
2. Hydraulic ring
3. Measuring cylinder
4. Stop watch

Procedure

- First of all we collected undisturbed soil samples from the field by using core sampler. Then we shaved the excess soil from that retaining the soil core column.
- After that we covered the bottom portion of the sectional cylinder with a muslin cloth. Then we kept the samples in a tray containing water for overnight saturation.
- We placed a filter paper on the surface of the soil to avoid the removal of soil particles. Then connect the hydraulic rings over the saturated soil samples by means of wax coating.
- Then we placed the sample on a metal screen supported by out flow unit. We filled up the constant head water supply unit & connected the discharge tube of constant head to hydraulic rings.
- Then we allowed water to flow over the surface of soil for 15 to 30 minutes. Then we collected the out flow water that is passing through a stipulated time.
- For sandy soil 5 minute interval is sufficient whereas for clay or heavy textured soils 15-30 minutes interval is necessary. Then we repeated this to get constant values. The hydraulic conductivity was calculated using the formula;

$$K = (QL/hAt)$$

Where;

Q= quantity of water that flows out at a time interval of t in ml.

L= length of soil column (7 cm) in cm

h= length of hydraulic head in cm

A= cross-sectional area of the soil column in cm^2

T= time in hours.



Fig. A view of collecting soil sample for determination of hydraulic conductivity

CALCULATION

$$K = (QL/hAt)$$

$$K = Q \frac{8}{10.5} \pi \times (3.5)^2 \times \frac{30}{60}$$

$$K = 0.0396 Q$$

| Sr. No. | Time | Volume of Water(ml) | Hydraulic Conductivity (K) |
|---------|-------|---------------------|----------------------------|
| 1 | 11:20 | 0 | 0 |
| 2 | 11:50 | 108 | 4.2768 |
| 3 | 12:20 | 126 | 4.9896 |
| 4 | 12:50 | 112 | 4.4352 |
| 5 | 1:20 | 108 | 4.2768 |
| 6 | 1:50 | 110 | 4.356 |
| 7 | 2:20 | 106 | 4.1976 |
| 8 | 2:50 | 104 | 4.1184 |
| 9 | 3:20 | 103 | 4.0788 |

| | | | |
|-----------|------|-----|--------|
| 10 | 3:50 | 102 | 4.0392 |
| 11 | 4:20 | 102 | 4.0392 |
| 12 | 4:50 | 102 | 4.0392 |

BULK DENSITY

PRINCIPLE: Volume of undisturbed soil core from the field is determined and the mass per unit volume calculated.

MATERIAL REQUIRED

1. Core sampler
2. Spade
3. Crow bar
4. Balance
5. Aluminum tin
6. Hot air oven
7. Knife

PROCEDURE

- Drive a core sampler into the soil gently with the help of a hammer so that entire ring goes into the soil. Remove the soil surrounding the ring with the spade. Remove the core sampler with the soil intact by using a crow bar.
- Remove the excess soil on both sides of the ring gently using a sharp knife. Transfer the soil in the ring to an aluminum can and dry it in an oven at 105° C for at least 24 hours.
- Then cool the sample in desiccators and record the weight. Calculate the volume of the ring from the height and diameter and calculate the bulk density of the soil.

CALCULATION

Volume of the ring $V = \pi r^2 h$

Where 'r' is the radius and 'h' is length of the ring

Weight of soil = W g

Bulk density of the soil = $W / V (\pi r^2 h)$

| <u>Sl.no.</u> | <u>Depth</u> | <u>Weight(box+soil)</u> | <u>Weight(empty box+core)</u> | <u>Length(h)</u> | <u>Diameter of ring</u> | <u>Volume of soil</u> | <u>Weight of soil</u> | <u>Bulk density</u> |
|----------------------|---------------------|--------------------------------|---------------------------------------|-------------------------|--------------------------------|------------------------------|------------------------------|----------------------------|
| 1 | 0-15 | 816.28 | 420.88 | 7.98 | 7.00 | 306.95 | 395.40 | 1.29 |
| 2 | 15-30 | 862.85 | 411.42 | 8.03 | 7.00 | 308.87 | 451.43 | 1.46 |
| 3 | 0-15 | 841.57 | 408.69 | 8.02 | 7.00 | 308.49 | 432.88 | 1.40 |
| 4 | 15-30 | 881.79 | 415.14 | 7.98 | 7.00 | 306.95 | 466.65 | 1.52 |
| 5 | 0-15 | 839.24 | 396.48 | 7.83 | 7.05 | 305.50 | 442.76 | 1.45 |
| 6 | 15-30 | 840.61 | 392.60 | 8.00 | 7.01 | 308.60 | 448.01 | 1.45 |
| 7 | 0-15 | 796.24 | 412.18 | 8.03 | 7.00 | 308.87 | 384.06 | 1.24 |
| 8 | 15-30 | 872.85 | 402.86 | 8.02 | 6.96 | 304.97 | 469.99 | 1.54 |
| 9 | 0-15 | 782.15 | 402.02 | 8.00 | 7.00 | 307.72 | 380.13 | 1.24 |
| 10 | 15-30 | 813.95 | 408.01 | 8.00 | 7.01 | 308.60 | 405.94 | 1.32 |
| 11 | 0-15 | 799.26 | 433.15 | 7.96 | 6.96 | 302.69 | 366.11 | 1.21 |
| 12 | 15-30 | 854.26 | 404.47 | 8.00 | 7.00 | 307.72 | 449.79 | 1.46 |
| 13 | 0-15 | 810.80 | 418.80 | 8.00 | 7.00 | 307.72 | 392.00 | 1.27 |
| 14 | 15-30 | 814.10 | 394.74 | 7.98 | 7.01 | 307.83 | 419.36 | 1.36 |
| 15 | 0-15 | 825.40 | 418.29 | 8.03 | 7.01 | 309.76 | 407.11 | 1.31 |
| 16 | 15-30 | 912.71 | 429.25 | 8.02 | 7.00 | 308.49 | 483.46 | 1.57 |
| 17 | 0-15 | 797.71 | 416.02 | 8.03 | 7.02 | 310.64 | 381.69 | 1.23 |
| 18 | 15-30 | 812.84 | 401.22 | 7.96 | 7.06 | 311.45 | 411.62 | 1.32 |

INFILTRATION RATE

Double ring infiltrometer

- The double ring infiltrometer is a simple instrument which is used to determine the infiltration rate of water into the soil.
- The infiltration rate is determined as the amount of water per surface area and time unit, which penetrates the soils.
- This rate can be calculated on the basis of the measurements and the Darcy's law.
- Several measurements can be executed simultaneously, yielding a very reliable and accurate mean result.
- As vertically infiltrated water runs away to the side. The outer ring of the infiltrometer serves as a separation.
- The measurement exclusively takes place in the inner ring through which the water runs virtually vertically.
- A double ring infiltrometer requires two rings an inner and outer ring. The purpose is to create a one-dimensional flow of water from the inner ring, as the analysis of data is simplified. If water is flowing in one-dimension at steady state condition, and a unit gradient is present in the underlying soil, the infiltration rate is approximately equal to the saturated hydraulic conductivity.
- An inner ring is driven into the ground and a second bigger ring around that to help control the flow of water through the first ring. Water is supplied either with a constant or falling head condition, and the operator records how much water infiltrates from the inner ring into the soil over a given time period. The ASTM standard method specifies inner and outer rings of 30 and 60 cm diameters, respectively
- **Rate of Infiltration is always greater or equal to hydraulic conductivity.**
- **Ratio of diameter of outer to inner rings is 1.6.**

FACTORS AFFECTING INFILTRATION RATE

- 1) Soil cover & vegetation
- 2) Physiographical factors
- 3) Soil characteristics
- 4) Climatologically factors
- 5) Water characteristics
- 6) Soil water stay on the soil surface

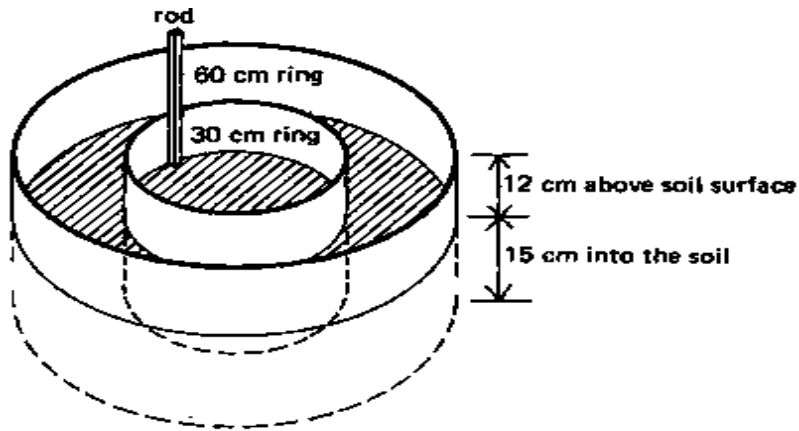


Fig. A view of taking a reading of infiltration rate

OBSERVATION

| <u>Sl. No.</u> | <u>Time(minute)</u> | <u>Volume of water added(ml)</u> | <u>Height of water(cm)</u> | <u>Cumulative height(cm)</u> | <u>Infiltration rate</u> |
|----------------|---------------------|----------------------------------|----------------------------|------------------------------|--------------------------|
| 1 | 0 | 0 | 0 | 1.45 | 17.44 |
| 2 | 5 | 578 | 1.45 | 2.1 | 7.85 |
| 3 | 10 | 260 | 0.65 | 3.86 | 10.56 |
| 4 | 20 | 700 | 1.76 | 5.37 | 9.05 |
| 5 | 30 | 600 | 1.51 | 7.86 | 7.5 |
| 6 | 50 | 994 | 2.5 | 10.3 | 7.3 |
| 7 | 70 | 968 | 2.43 | 12.37 | 6.9 |
| 8 | 90 | 968 | 2.43 | 15.03 | 7.17 |
| 9 | 110 | 915 | 2.3 | 17.42 | 6.6 |
| 10 | 130 | 950 | 2.39 | 19.62 | 6.5 |
| 11 | 150 | 875 | 2.2 | 21.79 | 5.73 |
| 12 | 170 | 862 | 2.17 | 23.7 | 7.09 |
| 13 | 190 | 760 | 1.91 | 26.06 | 7.55 |

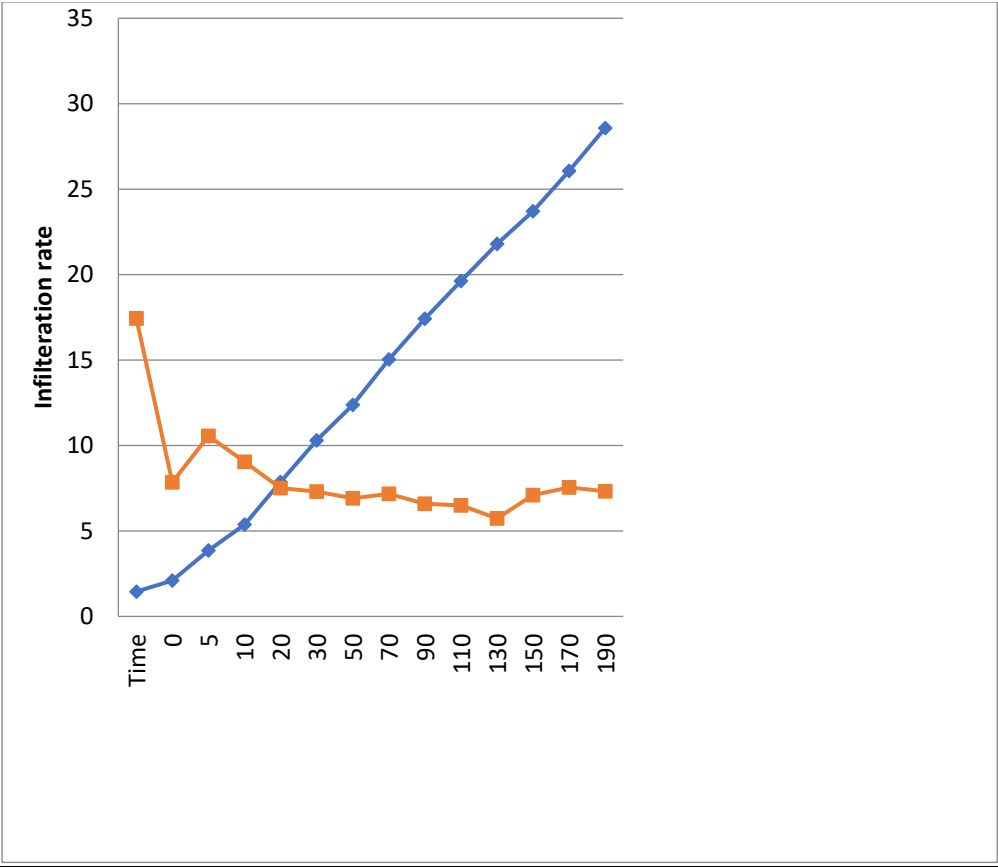


Fig. A view of Infiltration rate v/s time graph

MODULE-2: Design and installation of micro irrigation system

Drip irrigation system - It is the latest technology of irrigation, is also known as trickle irrigation. The daily required amount of water is dropped in the root zone of the plants, as a result the loss of water due to evaporation, seepage, deep percolation etc. gets minimized to a large extent.

Benefits of drip irrigation-

1. Increase water use efficiency.
2. Water saving up to 30-70%.
3. Increased plant figure and crop yield.
4. Labour saving.
5. Reduced weed growth due to partial wetting of soil.
6. Saving in fertilizer.
7. Less disease and best production.

Components of drip irrigation system- Component of drip irrigation system are basically divided into three units:

1. Head unit
2. Water conveyance unit
3. Water distribution unit

Head unit- Head unit are given below:

- 1) Water source
- 2) Pump
- 3) NRV(non- returning valve)
- 4) Throttle valve
- 5) Pressure gauge
- 6) ARV(air release valve)
- 7) Bypass valve

Filter unit-

- 1) **Primary filter** – It is of two types:
 - Sand filter
 - Hydro cyclone filter
- 2) **Secondary filter** – It is of two types:
 - Screen filter
 - Disc filter

Fertigation unit-

- 1) Venturi injector
- 2) Fertilizer pump/ injection pump
- 3) Fertilizer tank

Water conveyance system-

- a. PVC pipe
- b. Sub main line
- c. Control valve
- d. Flush valve
- e. Main valve
- f. ARV(air release valve)

Water distribution system-

- a. Plane lateral
- b. Emitter
- c. Emitting pipe
- d. Grommet rubber
- e. Take off
- f. Connector
- g. End cap

Design of drip irrigation system

Land survey-

Data given-

Area = 1 hectare

Crop = Mango

Spacing = 20×20 feet = 6.09×6.06 m (P-P×R-R)

Soil type = Clay soil

Land formation = flat

Water source = Open well

Water level = 15 m below soil surface

Electricity = 10 hour

❖ No of plant-

No of plant = Area/ P-P×R-R spacing = $10,000/6.09 \times 6.09 = 269.62$ plants

❖ Crop water requirement-

Peak water requirement = $A \times B \times C \times D / E$, litre/day/plant.

Where,

- A- Evapotranspiration, mm/day
- B- Crop factor
- C- Canopy factor
- D- Spacing, m
- E- Efficiency of system

Then, C.W.R. = $6 \times 0.65 \times 0.75 \times 6.09 \times 6.09 / 0.9 = 120.53$ litre/day/plant.

❖ **Design and selection of dripper-**

- a) Land formation– Flat (then we select the N.P.C dripper)
- b) Spacing- Large
- c) Crop type- Horticultural crop (select the on-line dripper)

❖ **Water application rate-**

We choose no of dripper = 4 (blue color)

Discharge of per dripper = 8 lph

W.A.R. = $4 \times 8 = 32$ lph

❖ **Irrigation time-**

Time of irrigation = $PWR/WAR = 120/32 = 3.76$ hour

❖ **No of irrigation section possible-**

No of section = $\text{Electricity available} / \text{irrigation time} = 10 / 3.76 = 2.65$

So, we divide the area in two sections.

❖ **design and selection of lateral lines/drip line-**

Maximum length of lateral should be 50 m.

Length=?

Diameter=?

Specific Discharge Rate-

S.D.R. = $\text{No of dripper per plant} \times \text{dripper spacing} / \text{Plant to plant spacing}$
 $= 4 \times 8 / 6.09 = 5.25$ litre/hour/m

Maximum head loss in lateral should not be more than 2 m. From S.D.R table or curve, for 12 mm dia lateral to be run up to maximum length 40 m of head loss is equal to 2 m.

For up to 2 m head loss the lateral can be run only 42 m of 12 mm dia but the required length is 50 m. So we will go for higher dia size of lateral.

From S.D.R table, 16 mm dia lateral, the length of lateral to be run up to maximum 70 m of head loss 2 m.

So, we select the 16 mm dia of lateral of 50 m length and the head loss will be 0.9 m.

❖ **Design and selection of sub main and main line-**

Length of sub main should be 70-80 m. We can take below 60 m but the length should not be more than 80 m. Sectional flow should not be more than 5 lps and flow velocity inside the sub main line should not be more than 1.5 m/s.

S.D.R. = no of plant covered by sub main \times no of dripper per plant \times dripper discharge / length of sub main

$$= 135 \times 4 \times 8 / 50 = 86.4 \text{ litre/hour/m}$$

From S.D.R table or curve, for 50 mm dia of sub main, the length of sub main maximum up to 120 m and head is equal to 2 m. So, we select 50 mm dia of sub main, length is 50 m and head is equal to 0.1 m which is given in Table.

Flow in sub main = No of plant \times no of dripper \times dripper discharge = $135 \times 4 \times 8 = 4320$ lph = 1.2 lps.

Table: Selection of sub main line-

| Section | Sub main no | Area covered by sub main (m ²) | No of plant covered by sub main | S.D.R. (litre/hour/m) | Dia of sub main (mm) | Head loss (m) | Sectional flow (litre/second) |
|---------|-------------|--|---------------------------------|-----------------------|----------------------|---------------|-------------------------------|
| I | 1 | 5000 | 135 | 86.4 | 50 | 0.1 | 1.2 |
| II | 2 | 5000 | 134 | 85.7 | 50 | 0.1 | 1.19 |

As be irrigating one section in one time flow in sub main equal to flow in main line, therefore the flow in main line is 1.20 lps. Dia of main line should be more than sub main then we selected 63 mm dia main line, the head loss for 100 m of main line is 4.2 m.

❖ Design and selection of filter-

We select the filter on the basis of water source.

Filter capacity = Sectional flow in main line

$$= 1.2 \text{ lps} = 1.2 \times 3.6 = 4.32 \text{ m}^3/\text{hour}$$

❖ Design and selection of venturi injector-

$$M.F = Q/2 = 1.2/2 = 0.6 \text{ lps}$$

So, 2160 lph flow in main line and this flow divert in venturi injector as per volume 75%. Then suction rate is = $2160 - 2160 \times 75/100 = 540$ lph. From the Table, we select the 1.25 inch venturi because the suction rate of this venturi are vary from 440-550. So, 1.25 inch venturi is required for this area.

Table: Selection of venturi injector

| Size(inch) | Suction rate(lph) |
|------------|-------------------|
| 2 | 1400-1900 |
| 1.5 | 800-1200 |
| 1.25 | 440-550 |
| 1 | 150-300 |
| 0.75 | 40-60 |

❖ **Design and selection of pump-**

Total head required = Suction head + Delivery head + Head loss in filter + Head loss in venture + Head loss in fitting + Head loss in main line + Head loss in sub main line + Operating pressure

$$= 15+5+5+2+0.4+0.1+0.19+10=37.69 \text{ m}$$

Pump Capacity = Discharge \times total head /76

$$= 1.2 \times 37.69 / 76 \times 0.85 \times 0.9 = 0.778 \text{ H.P.}$$

So, we select the 1 H.P centrifugal pump.

SPRINKLER IRRIGATION SYSTEM

Important factors affecting sprinkler system layout are topography, field shape and the location of the water source. Several alternate layouts are considered to select the best layout after careful analysis and pipe size. Depending on the water source location, the layout of laterals, main and sub mains are decided. The source of water and pumping plant should be located in such a way so as to minimize the pipe length that ultimately affects the pumping cost. In case of drilling a well it should be located in the center of the farm. The layout of the mains will depend on location of well. the layout of stationary pump and water source at center of field and laterals are moved to successive position up one side of the main and then down on the other side. movable pumping set and portable sprinkler unit

drawing water from a field channel running along one edge of the farm. In this system a portable pumping set and sprinkler unit with the lateral extending to the field are used to draw water directly from a stream/ channel and distribute in farm. Another alternative is to have a permanent pumping plant at the source and distribute the water in buried pressure pipelines. These pipelines will usually run down the center of the field so that the outlets offer little hindrance to tillage and other farm operations.

Lateral should be laid across prominent land slopes to minimize the variation of pressure along the lateral. The American Society of Agricultural Engineers (ASAE) recommends that along the lateral pressure variation in set move and solid set systems should not exceed ± 10 per cent of the design lateral pressure. Thus if the design lateral pressure was 300 kPa, the pressure at any sprinkler should not be less than 270 kPa or greater than 330 kPa. When it is necessary to run laterals up and down prominent slopes it is preferable for water to flow down slope rather than up slope. This will compensate the head loss due to friction and also shorten the lateral length for the given pipe size. Laying laterals on uphill should be avoided wherever possible. In case water is required to flow on uphill the length of lateral can be reduced or flow regulators should be used.

Mains or sub mains are normally run up and down the slopes when laterals run across prominent land slopes. layouts for set move sprinkler system. When it is necessary to run laterals up and downhill, main lines or sub mains should be located on ridges to avoid laterals that run uphill. Split lateral layouts use set move laterals that may operate on either side of them. The labour requirement is reduced by eliminating the need for moving lateral pipes back to the starting point.

To obtain a reasonable degree of uniformity in the discharge of each sprinkler, the mains should be located in the general direction of the steepest slope, with the laterals at right angles thereto and as close as in practical to the contour. The usual design is based on the lateral being level. If the lateral slopes upgrade appreciably, it is difficult to design laterals for a reasonable length. If its slopes downgrade, the length can be longer than usual, but rarely does the slope remain uniform for each setting.

The general guide lines for set-move sprinkler system are stated below:

- i) Mains should be laid up and downhill.
- ii) Laterals should be laid across slope or nearly on the contour.

- iii) For multiple lateral operations, lateral pipe sizes should be limited to not more than two diameters.
- iv) If possible, water supply should be chosen nearest the center of area.
- v) Layouts should facilitate minimal lateral movement during the season.
- vi) Differences in number of sprinklers operating for various setups should be held to minimum.
- vii) Booster pumps should be considered where small portions of field would require high pressure at the pump.
- viii) Layout should be modified to apply different rates and amounts of water where soils are greatly different in the design area.
- ix) Mainline and sub main layout is keyed to lateral layout.
- x) When laterals run across prominent slopes, mainline or sub mains will normally run up and down the slopes.
- xi) When it is necessary to run laterals up and down hill, mainlines or sub mains should be located on ridges to avoid laterals that run uphill.



Fig. A view of installation of sprinkler irrigation system

The basic objective of sprinkler irrigation system is to apply uniform depth of water at predetermined application rate. The sprinkler irrigation system should be designed properly to achieve high irrigation efficiency. The inventory of resources and climatic conditions of the field area are primarily required for the design of sprinkler irrigation system.

Inventory of resources and other parameters

- **Land:** Land is often a major factor in irrigation system design as it influences the selection of sprinkler device, irrigation efficiency, costs of land development, labour requirements, range of possible crops, etc. The major factors of land which have a special bearing on sprinkler irrigation design are: slope, infiltration rate, effective soil depth, texture & structure of soil and size & shape of field.
- **Water:** The source of water supply for sprinkler irrigation can be surface water (river, canal, pond etc.) or ground water (a tube well or open well). Adequate water availability & quality parameters play an important role in the design of sprinkler irrigation system.
- **Climate:** Important climatic data required are solar radiation, temperature, relative humidity, evapotranspiration rate, precipitation or rainfall and wind speed. These climatic parameters are required to estimate peak consumptive use rate as well as total seasonal evapotranspiration of crop(s).
- **Source of power:** Electricity, diesel, solar, wind and biofuels are used to pump water from the source. The selection of pump depends on type of power used to operate pump.

Soil water parameters

Net depth of water application

The depth of water application is the quantity of water, which should be applied during irrigation in order to replenish the water used by the crop during evapotranspiration. The difference between field capacity and permanent wilting point will give the available soil moisture (water holding capacity), which is the total amount of water that the crop can use. Depending on the crop sensitivity to stress, the soil moisture should be allowed to be depleted only partially. For most field crops, a depletion of 60 to 65% of the available moisture is acceptable. This is the moisture that will be easily available to the crop without causing undue stress. The maximum net depth to be applied per irrigation can be calculated, using Equation.

$$d_{\text{net}} = (\theta_{\text{FC}} - \theta_{\text{WP}}) \times D_{\text{rz}} \times P$$

where,

d_{net} = readily available moisture or net depth of water application per irrigation for the selected crop, mm

θ_{FC} = soil moisture at field capacity, mm/m

θ_{WP} = soil moisture at the permanent wilting point, mm/m

D_{rz} = the depth of soil that the roots exploit effectively (m)

P = the allowable portion of available moisture permitted for depletion by the crop before the next irrigation

In order to express the depth of water in terms of the volume, the area proposed for irrigation is multiplied by depth.

Volume of water to be applied (m^3) = $10 \times A \times d$

where,

A = area proposed for irrigation, ha

d = depth of water application, mm

Classification of sprinkler system:

On the basis of head-

1. Rotating head sprinkler system (Discharge- 1200-1400 litre/hour, Pressure- 2.5-5 kg/cm², coverage area- 19 m).

NOTE- 1 H.P. pump operate only 3 rotating head sprinklers.

2. Perforated pipe (Pressure- 0.5-2.5 kg/cm²)
3. Single nozzle sprinkler
4. Twin nozzle sprinkler
5. Half round nozzle sprinkler
6. Full round nozzle sprinkler
7. Big giant sprinkler system

On the basis of portability-

1. Portable system (Pump, main and sub main are portable)
2. Semi-permanent (Pump are fix)
3. Permanent (all are fixed)

Mini sprinkler-

Discharge- 500-1000 litre/hour

Operating pressure- 2.5 kg/cm²

Coverage area- 16 m

Very low pressure (V.L.P.) - It is three types

- Spray Irrigation (Fogger or Mister)
- Bubbler (discharge less than 225 litre/hour)
- Micro Sprinkler (discharge-20-100 litre/hour, Coverage area - 5-6 m and operating pressure is 1.5 kg/cm²)

Component of sprinkler system- All components of sprinkler irrigation system are given below:

- A. Pump unit
- B. Main and sub main
- C. Couplers
- D. Valve , End plug, Riser pipe
- E. Sprinkler head- All parts of sprinkler head are given below:
 - Stem
 - Washer
 - Bearing
 - Bearing spring
 - Oscillating arm
 - Oscillating spring
 - Cotter pin
 - Rectifier



Fig. A view of component of sprinkler head



Fig. A view of coverage area measurement of rotating head type sprinkler head

MODULE-3: ASSEMBLING AND DISASSEMBLING OF 5-HP SINGLE CYLINDER ENGINE

Introduction About Engine

Engine is a device which converts **Chemical Energy** into **Heat Energy** and then in **Mechanical Energy** with the help of Stationary and Moving parts of it. Use of 2nd Law of Thermodynamics.

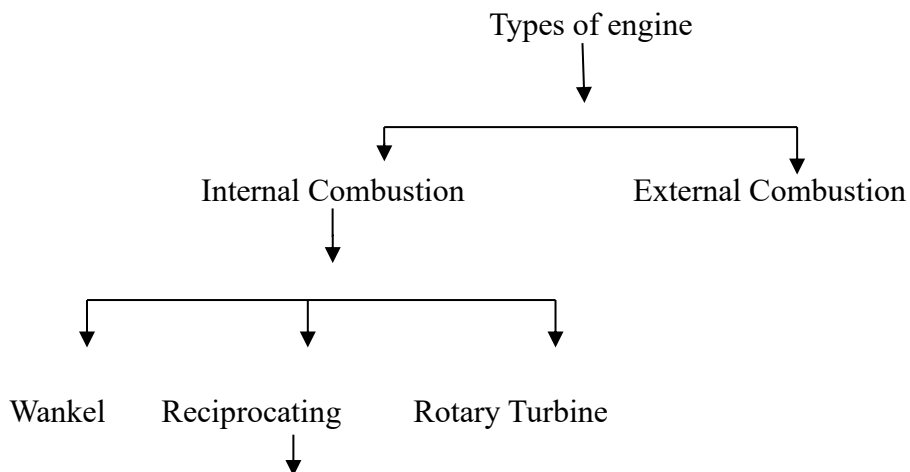
First Steam Engine – THOMAS SAVERY in 1698.

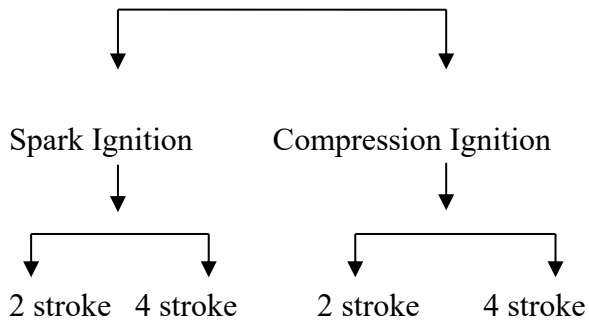
First Petrol Engine – NIKOLAUS AUGUST OTTO in 1876.

First Diesel Engine – RUDOLF DIESEL in 1893.

Types of Engine: - As shown in Flow chart:

Flow chart - Type of engines





Systems of Engine

- Air Intake/ Exhaust System
- Cooling System
- Lubrication System
- Fuel Supply System
- Governing System

Study of KIRLOSKER-AV-1 Engine and Various purpose tools used in assembling and disassembling.

Kirloskar AV1 is a 5 hp, single cylinder, water cooled, 4 stroke stationary CI engine used for the purpose of stationary work like operating of pumps, generator etc.

Specification

| | | |
|--|---|-----------------------------------|
| 1. HP | : | 5HP |
| 2. RPM | : | 1500 |
| 3. Bore | : | 80 mm |
| 4. Fuel Used | : | High Speed Diesel |
| 5. Compression Ratio | : | 16.5:1 |
| 6. Length of Stroke | : | 116 mm |
| 7. Swept Volume | : | 553 cc |
| 8. Capacity of oil sump | : | 2.85 liters |
| 9. Capacity of fuel tank | : | 4.87 liters |
| 10. Capacity of Cooling System by radiator | : | 5.1 liters |
| 11. Fuel Pump | : | Bosh Type |
| 12. Fuel Injection Timing | : | 27 ⁰ before TDC |
| 13. Fuel Injection Pressure | : | 211kg/cm ² or 3000 psi |

| | | |
|---|---|-----------------------------------|
| 14. Tappet Clearance | | |
| a) Inlet valve | : | 0.20 mm |
| b) Exhaust valve | : | 0.25 mm |
| 15. Bumping clearance | : | 0.90 to 1.05 mm |
| 16. Crankshaft end play | : | 0.12 – 0.30 mm |
| 17. Connecting rod side clearance | : | 0.10 – 0.25 mm |
| 18. Crankpin and main bearing oil clearance | : | 0.06 – 0.10 mm |
| 19. Maximum end clearance of piston ring | : | 0.88 mm |
| 20. Side clearance of piston ring | | |
| a. Top ring | : | 0.01 – 0.05 mm |
| b. Compression Ring | : | 0.04 – 0.065 mm |
| 21. Oil clearance of small end bearing | : | 0.02 – 0.05 mm |
| 22. Maximum ovality of crankshaft | : | 0.075 mm |
| 23. Oil clearance of crankshaft | : | 0.10 – 0.25 mm |
| 24. Maximum friction of liner | : | 0.125 mm |
| 25. Liner ovality | : | 0.05 mm |
| 26. Dia. of crank main gene | : | 57 mm |
| 27. General dia. of crankpin | : | 54 mm |
| 28. Dist. b/w cylinder head and valve face | : | 0.80 – 2.5 mm |
| 29. Valve sheet angle | : | 45 ⁰ (inlet & exhaust) |
| 30. Lubricating oil consumption | : | 2.75 gm/hp/hr. |
| 31. Specific Fuel Consumption | : | 199 gm/hp/hr. |
| 32. Valve face margin | : | 0.75 mm |
| 33. Measurement of nuts & bolt | : | |
| i. Connecting rod bolt | : | 40 (ft. lbs.) |
| ii. Balance Weight | : | 62(ft. lbs.) |
| iii. Cylinder block nut in crankcase | : | 62(ft. lbs.) |
| iv. Injector nut | : | 14(ft. lbs.) |
| v. Fuel pump nut | : | 14(ft. lbs.) |
| vi. Nut of head in block | : | 94(ft. lbs.) |

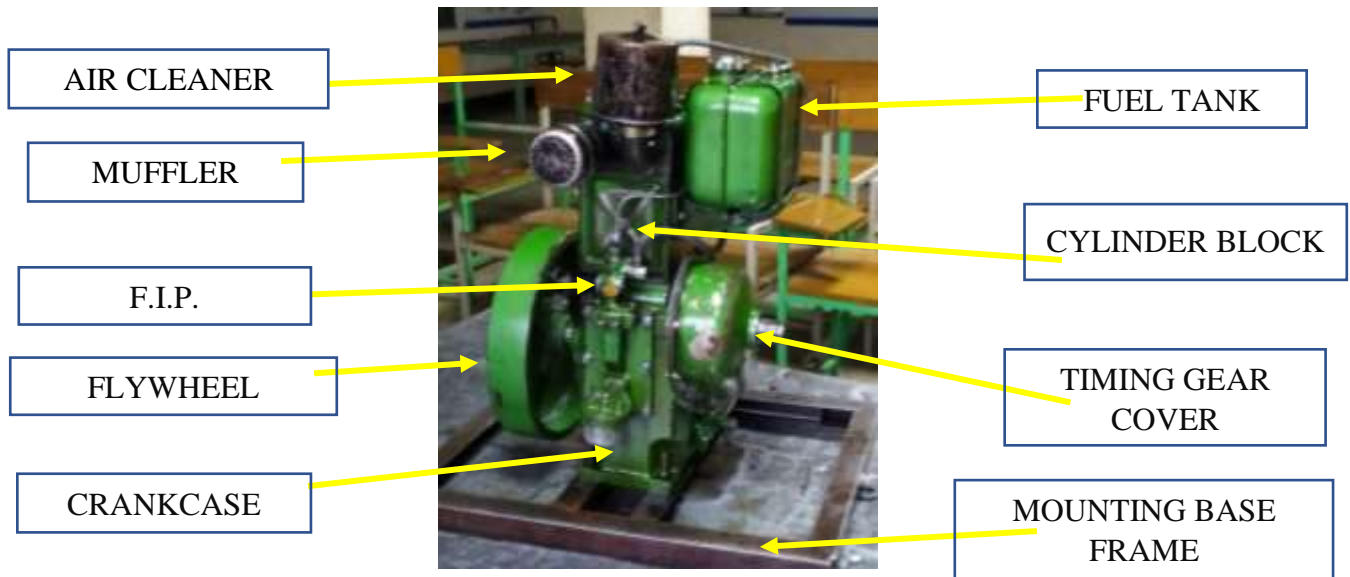


Fig. – A View of Kirloskar 5HP Engine

Parts of fuel supply system of kirlosker-AV-1: -

- a. Fuel tank
- b. Valve
- c. Fuel pipe
- d. Fuel filter
- e. Fuel feed pump
- f. Fuel injection pump

Different Tools Used: -

- a. Ring spanner
- b. Socket
- c. Wrenches (Allen Key Wrenches, pipe wrenches)
- d. Open end spanner
- e. Pliers

Some special tools used: -

- a. Bore gauge
- b. Micro meters
- c. Valve spring compressor
- d. Vernier calipers
- e. Filler gauge
- f. Injector tester

Tools - A device or implement, especially one held in the hand, use to carry out a particular function.

Types of tools:

- 1) General purpose tools.
- 2) Special purpose tools.
- 3) Measuring tools.

1. GENERAL PURPOSE TOOLS: The tools which are used in general purpose are called General tools.

Ex: Open Spanner, Ring Spanner, Socket, Hammer, Plastic Hammer, File, Plier, Chisel, Adjustable Pipe Wrenches, Screw Driver, Vice Grip Plier, Hexa Blade, Oil Cane, Emery Paper, Allen Key, Extension, T or L handle, Universal.

2. SPECIAL PURPOSE TOOLS: The tools which are used for special parts are called Special tools.

Ex: Ring Compressor, Ring Expander, Wire Type Carbon Scraper, Ring Groove Cleaner, Circlip lock Plier (inner, outer), Valve Lifter, Valve Grinding stick, Oil Filter Remover (belt type, chain type), Three Leg Puller, Torque Wrench.



Fig.- A view of different tools

3. MEASURING TOOLS: The tools which are used for measuring purpose are called Measuring tools.

Example: Micro meter, Vernier Calipers, Scale, Measuring Tape, Dial Bore Gauge, Air Pressure Gauge, Feeler Gauge.

TOPIC: - Dismantling of Kirloskar AV- 1

1. Rocker Box Cover: - It is also known as the tappet cover. It prevents the entrance of dust, dirt and other foreign materials from entering in the rocker box. It is fitted to rocker box by a screw or nut. It was opened with the help of ring or open-end spanner.

2. Rocker Box: - The rocker assembly is located inside the rocker box.

The various parts of rocker box assembly are as follows: -

- i. Decompression lever
- ii. Rocker Arm
- iii. Rocker Arm Assembly
- iv. Valve adjusting screw
- v. Push rod
- vi. Mounting hole

3. Cylinder Head: - The various parts mounted on cylinder head are: -

- Breather
- Fuel Injection Pump
- Inlet manifold
- Exhaust manifold
- Silencer or muffler

Parts of a cylinder head are:

- Cylinder head
- Inlet valve
- Exhaust valve
- Exhaust manifold & Silencer
- Inlet manifold & air cleaner
- Injector
- Water outlet
- Nozzle tip
- Breather tube
- Valve seat
- Margin
- Neck
- Stamp
- Locking groove

- Tip
- Valve returning spring
- Valve returning seat
- Catcher

Removing of Cylinder Head: -

- I.** The nuts of all valve's arrangement were gradually removed by giving half turn at a time in sequence until all of them were quite loose.
- II.** The cooling system was drained, the radiator hose & other components were disconnected
- III.** The inlet & exhaust manifold were removed.
- IV.** The injector & spark plug were removed.
- V.** The cylinder head was separated from the cylinder block. The gasket was removed. It is advised that the gasket must be changed every time the engine is assembled.

After the removal of cylinder head, the next step was to scrap the traces of carbon which was formed on the walls of combustion chamber & top of the piston, after dismantling of piston from the crankcase. The scraper should be made by soft mild steel.

4. Cylinder Block: The various parts of a cylinder block are:

- (1) Head gasket
- (2) Liner or Cylinder (wet type)
- (3) Bracket of fuel tank
- (4) Inlet pipe for fresh water
- (5) Piston.
- (6) Combustion chamber
- (7) Piston ring
 - i. Top ring
 - ii. Compression ring
 - iii. Oil ring
- (8) Gudgeon pin/ piston pin
- (9) Circlip lock
- (10) Connecting rod

5. Valve Assembly

It consists following parts:

- Valve
- Valve Spring
- Spring Retainer
- Catcher
- Valve sheet insert

A single cylinder engine has two valves or two ports depending upon their types i.e. whether engine is 4-stroke or 2-stroke.

In the Kirloskar AV1 single cylinder engine, one inlet and one exhaust valve are provided.

The parts of a valve are:

- Valve tip
- Lock groove
- Stem
- Neck
- Face
- Margin
- Valve Head

6. Tappet Clearance: The clearance between the valve tip and rocker arm is called the tappet clearance. It is about 0.20 mm for inlet valve and about 0.25 mm for the exhaust valve.

7. Crank case: The crankcase consists of various parts as illustrated below:

- ❖ Crank shaft
- ❖ Crank pin
- ❖ Cam shaft
- ❖ Tappet
- ❖ Cam lobe
 - For inlet valve
 - For exhaust valve
 - For Fuel injection pump
- ❖ Cam locking hole
- ❖ Cam gear

- ❖ Governor
- ❖ Governor weight
- ❖ Weight returning spring
- ❖ Governor pin
- ❖ Engine Starting handle
- ❖ Shim
- ❖ Crank gear
- ❖ Wood ruff key
- ❖ Main general
- ❖ Fly wheel
- ❖ Plunger type oil pump
- ❖ Strainer
- ❖ Fulcrum pin
- ❖ Bush bearing
- ❖ Crank balancing weight
- ❖ Oil filter
- ❖ Timing gear cover
- ❖ Oil seal
- ❖ Timing gear
- ❖ Flange (mounting bracket)
- ❖ Crank wave
- ❖ Dip stick

High pressure pipe which one end connected to the fuel injection pump and other end connected to the injector.

8. Removing the piston & crankcase assembly: -

- 1) Then, the crankshaft and the First of all the gear cover was taken out. Then the crank gear and the cam gear were taken out by removing their locking keys.
- 2) After this, the piston was removed from the crankshaft. The nuts and bolts were removed from the big end of the connecting rod. The piston was taken out of the crankcase.
- 3) The thrust of the piston is balanced by the balancing weight of ballasting weight. They were also removed from their positions.
- 4) The tappets were removed from their position.
- 5) Camshafts were removed from their position.

- 6) The oil in the sump was drained and was collected in a container. The crankcase was cleaned and was inspected for the traces of impurities present in the oil. All the fine particles were cleaned from the crankcase and oil sump.

All the parts of the engine were thoroughly observed and their functioning were studied.



Fig. A view of dismantling of piston

Sequence of assembling of 5H.P. Single Cylinder Kirloskar AV-1 Diesel Engine: -

- 1) Crankshaft
- 2) Camshaft
- 3) Crank gear
- 4) Cam gear
- 5) Ballasting weight
- 6) Piston
- 7) Cylinder block Fuel Injection Pump
- 8) Cylinder head
- 9) Fuel Injector
- 10) Tappets
- 11) Push Rods
- 12) Rocker box
- 13) Rocker arms
- 14) Rocker box cover
- 15) Fuel pipelines
- 16) Flywheel
- 17) Gear cover
- 18) Fuel tank
- 19) Inspection cover

20) Muffler

21) Air Cleaner

Assembling:

- I. Fill the engine oil in sump.
- II. To fit the cam shaft and place the tappet.
- III. Connect the big end of connecting rod to crank pin (40 lbs. ft. by torque wrench).
- IV. To fit the F.I.P mounting plate and crankcase inspection plate.
- V. Add the Cylinder block and fill the sim between cylinder block and crankcase for proper bumping clearance (62 lbs. ft. torque by torque wrench)
- VI. Add the cylinder head and fill the gasket (94lbs ft.).
- VII. Fix the push rod on the tappet.
- VIII. Fit the Fuel tank.
- IX. Set the High-pressure line.
- X. Add the Rocker arm assembly and set the tappet clearance.

DIFFERENT ADJUSTMENTS IN THE ENGINE: -

- 1. End –play of crank shaft:** -it can be done by adjusting thrust washer & can be measured by filler gauge.
- 2. Oil clearance:** -it is adjusted between crankpin and big end & also between main journal & main bearing.
- 3. Bumping clearance**
- 4. Side clearance of connecting rod**
- 5. Timing gear setting**
- 6. Tappet clearance adjustment**
- 7. Side clearance of piston ring**
- 8. End clearance of piston ring**
- 9. Fuel timing: -**
 - i. Initially, the valve seat and the valve of the FIP are removed for the observation of the fuel injection.
 - ii. The flywheel is rotated until the inlet and outlet valves are in overlapping position (dancing positioning of rocker arms).
 - iii. The cam gear and the crank gear are set on their punch mark marked on them.

- iv. At this time the piston is at TDC position which is the position of end of exhaust stroke of previous cycle and start of suction stroke of next cycle.
 - v. The flywheel is again rotated to one cycle to bring the piston at TDC of compression stroke. At this stroke the fuel must be injected in the combustion chamber 27^0 before the end of the compression stroke.
 - vi. If the fuel injection timing gets disturbed at this position also, the adjustment is done through shim. If the fuel before 27^0 (advanced), the shims are added and if the fuel is injected after 27^0 (retard), the shims are removed.
- 10.** Thus, by adjusting the stroke length through the application of shims the fuel timing is corrected.

MODULE-4: TRACTOR DRIVING, REPAIR & MAINTAINENCE AND FIELD OPERATION OF AGRICULTURAL MACHINERY

TRACTOR DRIVING:

Following care should be taken at the time of driving of tractor: -

Pre-starting check

- a) Check fuel level in tank
- b) Check oil level in oil sump
- c) Check water level in radiator
- d) Check free play of clutch & break peddle
- e) Check the PTO lever & break peddle are always in disengaged condition before starting of tractor
- f) Check both position control & draft control lever.
- g) Check high/low gear level are always in neutral before starting of tractor
- h) Check air pressure in both front and rear wheels.

| | | |
|-------|---|-----------|
| Front | : | 26-28 psi |
| Rear | : | 14-18 psi |

Post starting check

Tractor should on plane surface: -

- a. Check the brake pedal and hand brake
- b. Check the clutch pedal
- c. The accelerator
- d. Check the PTO lever
- e. Check the PC and DC

- f. Check the gear shifting lever
- g. Check the dashboard
- h. Check the engine RPM gauge meter.
- i. Check the lubricating meter gauge
- j. Check the horn and all lights

Safety in operation of tractor

- a) When some unusual sound heard in tractor. It should be stop immediately.
- b) If the battery charging indicator doesn't show charging current tractor should be stopped and find the cause.
- c) If oil pressure indicator doesn't show normal pressure, the tractor should be stopped and find the cause.
- d) Gear should never be change when tractor is not in neutral condition.

Driving of Tractor:

(A) In forward direction

- I. After insuring all the safety and inspection of tractor we seat on the operator seat.
- II. Ensuring that the tractor gears is in neutral position or not, if not than first of all bring the gears in neutral position.
- III. Then start the tractor while pressing the clutch pedal to ensure the safety.
- IV. Accelerate the tractor at idle condition for a while.
- V. Now shift the high-low speed lever to low position while pressing the clutch pedal.
- VI. And then shift the forward-reverse gear lever to 1st gear position while ensuring that the clutch pedal is still pressed.
- VII. Now, slowly remove the foot from the clutch pedal ensuring the moving of tractor smoothly without of sudden jerks.
- VIII. And while driving/operating of tractor, the operator should focus on road to avoid accidents.

(B) In reverse direction

- I. Now, while reversing the tractor ensure the tractor comes in rest before shifting of gear.
- II. After the tractor comes in rest, shift forward-reverse gear lever to reverse position and while shifting of gears clutch pedal should be kept pressed.
- III. Now, the operator should look behind while reversing the tractor.

(C) Making of 8 in forward and reverse direction

- I. While making the 8, when we take the tractor in forward direction then we should look at the outside wheel.
- II. While making the 8, when we take the tractor in reverse direction then we should look at the inside wheel.

TRACTOR REPAIR & MAINTENANCE

Maintenance of tractor is done for the proper functioning its systems and increase its working life. The following are the main servicing & maintenance which must be done:

- Washing
- Engine warm up
- Oil draining
- Oil filter change
- Air cleaner oil change
- Fan belt adjustment
- Clutch free play adjustment
- Break free play adjustment
- Greasing

A Periodic maintenance of tractor: -Periodic maintenance of tractor is carried out daily, weekly, monthly and yearly. These must be strictly followed to prevent the damages to tractor. The various periodic maintenance is discussed below.

1. After 8 to 10 hours working of tractor: -

- i. Clean the tractor and the implements.
- ii. Check oil level in a horizontal surface. Top up if necessary, when the engine is cold.
- iii. Remove the sediments from the air precleaned bowl
- iv. Clean the oil bath of the air cleaner, if the tractor is operated in dusty and tropical surroundings.
- v. Top up the fuel tank if necessary, preferably in the evening, after day's work, to avoid condensation.
- vi. Clean the radiator, remove the dust and dirt accumulated in the port and top up the cooling system using clean water.
- vii. Adjust the tension of V belts, driving and the dynamo and the fan is in accordance with the manufacturer's recommendations.

- viii. Check the tightness of the fuel, oil and water pipes and hoses, cleaners, filters and drain plugs to avoid leakage.
- ix. Check the electrical units, make sure that the ends of the cables are connected to the terminals.
- x. Check the level and specific gravity of the electrolyte in the storage battery.
- xi. Lubricate the tractor in accordance with the manufacturer's recommendations. Lubricate the front wheel, hub bearing after puddling operation.
- xii. Check all joints of the steering linkage, make sure that the bolts and screws of front axle, wheel hub, wheel weights are tight.
- xiii. Check all the fastening bolts and screws and make sure that they are tight.
- xiv. Start the engine and ensure that
 - ❖ The engine runs smoothly without knocking and abnormal noise.
 - ❖ The oil pressure gauge is representing the sufficient pressure.
 - ❖ Warning lights if provided are functioning properly.
 - ❖ The dynamo is generating proper current.
 - ❖ The voltage regulator is functioning properly.
- xv. Engage the hydraulic lift and check the movement of lifting arms and three-point linkages.

2. After 50 to 60 hours of engine working: -

- i. Carry out the operations given in (1).
- ii. Check the movement of clutch paddle free travel and adjust it if necessary.
- iii. Make sure that the brakes are in good working condition.

3. After 100 to 120 hours of engine working: -

- i. Carry out the operations as given in (2).
- ii. Disconnect the cables of the electrical equipment from the terminals, apply grease or petroleum jelly on the terminals and reconnect.
- iii. Inspect the water pump, make sure that there are no leakage points.
- iv. Lubricate the dynamo putting 8-10 drops of slight engine oil in each bearing if provide.

4. After 200 to 250 hours of engine working

- i. Carry out the operations as given in (3).
- ii. Drain oil from oil sump and flush with the flushing oil.
- iii. Refill with oil of grade and up to the level recommended by the manufacturer.
- iv. Lubricate the joints of the throttle control linkage and other bass joints.
- v. Check the clearance of the front wheel hub bearing.

vi. Check the toe in.

5. After 480 to 500 hours of engine working

- i. As in (4).
- ii. Add rust removing compound to the radiator. Start the engine and flush the cooling system.
- iii. Interchange the tires of the front to secure the uniform wearing.
- iv. Flush the fuel tank.
- v. Test and clean the self-starter, dynamo and switching control of the starter relay.
- vi. Clean the magnetic drain plug.
- vii. Check the injector pressure and adjust if necessary.

6. After 960 to 1000r of hour engine working

- i. As in (5).
- ii. Change the oil in the gear box, steering housing, PTO case and hydraulic system. The grade and level of oil should be as recommended by the manufacturer.
- iii. Inspect the brake lining vehicle and adjust the brakes.
- iv. Get the compression pressure of the engine checked and get the engine overhauled if necessary.

FIELD OPERATION OF AGRICULTURAL MACHINERY (STRAW CHOPPER)

Operated by tractor PTO has cutter bar reel, feeding auger and bruising cylinder like a traditional thresher. Straw thrown and stubble left by the grain combine is collected by straw combine and delivered to the cylinder concave section, where it is cut into pieces and passed through the concave. A reciprocating cutter bar is used for reaping the standing stubbles and the portion of the straw left uncut by the combine harvester. Straw, which passes through the concave, is aspirated by a blower and fed into a trolley on rear side covered by a wire net. For recovering the left grains from the straw, a sieve system is provided below the concave.

The tyres fixed on the reel pipes push the straw of wheat crop left after combine operation towards the oscillating cutter bar after which the harvest straw reaches the threshing drum after passing Auger and guide drum. The wheat Straw gets crushed in very small pieces in the threshing unit. The product fine straw is sucked by the blowers and is then pushed towards the outlet pipe by blower and which is collected in the Trailer fitted with wire mesh.

Special Features:

- Heavy Duty Gear Box. Chopper is running without load.
- Special Hand lever provided for Concave Adjustment & Operating.
- Specially Designed Tampered Blades made of High Quality Steel.
- Gear helps it to Work Smoothly & Efficiently.
- Frame made of Heavy Duty Pipes.
- Export Quality Heavy Duty Gear Box.
- Nuts & Bolts made of High Tensile Steel.
- Every part made with Computerized CNC machine.
- Free Tool Kit.
- Spares are available easily.



Fig. A view of field operation of straw chopper

Technical specification of straw chopper-

Size Of Concave : 4 mm X 50 mm X 254 mm

Blade Size Of Rotor : 8 mm X 50 mm X 180 mm

Chasis : 56''(1423 mm)

| | |
|-------------------------------------|---------|
| Cutter Bar Width : | 7 Feet |
| EXTRA ROW OF Blade : | 18 pcs |
| Height : | 1600 mm |
| Length: | 1370 mm |
| No of Blades: | 54 |
| No of Flanges : | 27 |
| Rear Concave Blade : | 27 |
| Rear Rotor Diameter : | 235 mm |
| Thresher Blade (M Type) : | 216 pcs |
| THRESHER CONCAVE BLADE : | 36 pcs |
| Threshing Drum Diameter : | 508 mm |
| Tractor Power : | 55 H.P |
| Tyre size : | 6.50.20 |
| Width : | 2450 mm |

MODULE-5: PULSE PROCESSING

Introduction

Pulses are the edible seeds of pod bearing plants are widely grown throughout the world. Pulses have a high protein content ranging from 20-30% and this makes them important in human food from the point of view of nutrition. Because of this high protein content, they are also known as “poor man’s meat”. An alternative name for pulses is “legumes”, which is common in many parts of the world. In India, the term “gram” is commonly used for dry legume seeds with husk, while split decorticated grains are called “dhal”. Like many leguminous crops, pulses play a key role in crop rotation due to their ability to fix nitrogen. Green gram, red gram, bengal gram, horse gram, cluster bean, field bean, cow pea are some of the common types of pulses. In general, their protein content is high and is commonly more than twice that of cereal grains, usually constituting about 20 per cent of the dry weight of seeds. Pulse seeds are also sources of other nutritionally important materials, such as vitamins and minerals. Milling of pulses is removal of outer husk/hulls and splitting the grain into two equal halves. The husk/hull is more tightly held by the kernel of some pulses poses problems. The alternate wetting and drying method is used to facilitate de-husking and splitting of pulses. The traditional method of milling yields only 65-70 % as compared to 82-85 % potential yield. Also, traditional methods results in high losses in the form of powder and broken. Therefore, it is necessary to improve the traditional methods of pulse milling to increase the total yield of de-husked and split pulses and reduce losses.

Definition of terms used in pulse processing

Gram: Dry legume seeds with husk

Decortications/dehusking: Removal of outer husk from gram

Splitting of pulses: Breaking a seeds in to two halves

Milling of pulses: Removing the husk and splitting the grains into two halves

Dhal: Split decorticated grains

Gota: Unhusked pulse grains coming out of the roller mill

Dust/chuni: Powder obtained as byproduct from the milling operation of pulses

Broken: Broken grains coming out of the roller along with dhal

Cleaning: Removing the various inorganic impurities present in the raw grains

Grading: Separating the cleaned grains based on size

Conditioning: loosening of the husk to facilitate its separation from the kernel, thus reducing the milling losses(e.g. Hydrothermal treatment, water treatment, heating, use of salt or chemicals)

Polishing: Mixing edible oil and water with dhal by publishing through a screw conveyer to impart desirable color and shine to milled pulses

Grading of dhal: separation of dhal as per the size and soundness

Pulse milling process

Basic processes in dhal milling are cleaning, de-husking, splitting, separation and bagging. Major variation is involved with de-husking process only. Dhals like Aarahar, urad, moong and lentil are difficult to de-husk as a result repeated operation by de-husking rollers are required. Rewetting and drying is done to loosen portions of husk sticking after repeated rolling. Linseed oil is used to impart shine or better appeal to the milled dhal.

The removal of the outer husk and splitting the grain into two equal halves is known as milling of pulses. To facilitate de-husking and splitting of pulses alternate wetting and drying method is used. In India trading milling methods produce de-husked split pulses. Loosening of husk by conditioning is insufficient in traditional methods. To obtain complete de-husking of the grains a large number of abrasive forces is applied in this case as a result high loss occur in the form of broken and powder.

In India, there are two conventional pulses milling methods; wet milling method and dry milling method. The latter is more popular and used in commercial mills. The dry milling quality is found to be good and on an average 70-72 % dhal recovery is reported. Wet milled dhal is of better taste than dry milled dhal, but takes longer cooking time.

There is no common processing method for all types of pulses. However, some general operations of dry milling method such as cleaning and grading, rolling or pitting, oiling, moistening, drying and milling have been described here.

Cleaning and grading: Pulses are cleaned from dust, chaff, grits, etc., and graded according to size by a reel type or rotating sieve type cleaner.

Pitting: The clean pulses are passed through an emery roller machine. Husk is cracked and scratched in this operation. This is to facilitate the subsequent oil penetration process for the loosening of husk. The clearance between the emery roller and cage (housing) gradually narrows from inlet to outlet. As the material is passed through the narrowing clearance mainly cracking and scratching of husk takes place by friction between pulses and emery. Some of the pulses are dehusked and split during this operations which are then separated by sieving.

Pretreatments with oil: The scratched or pitted pulses are passed through a screw conveyor and mixed with some edible oil like linseed oil (1.5 to 2.5 kg/tonne of pulses). Then they are kept for about 12 hours for diffusion of the oil.

Conditioning of pulses: Conditioning of pulses is done by alternate wetting and drying. After sun drying for a certain period, 3-5 % moisture is added to the pulse and tempered for about eight hours and again dried in the sun. Addition of moisture to the pulses can be accomplished by allowing water to drop from an overhead tank on the pulses being passed through a screw conveyor. The whole process of alternate wetting and drying is continued for two to four days until all pulses are sufficiently conditioned. Pulses are finally dried to about 10 to 12 % moisture content.

De-husking and Splitting: Emery rollers, known as Gota machine are used for the de-husking of conditioned pulses. About 50 % pulses are de-husked in a single operation (in one pass). De-husked pulses are split into two parts also, the husk is aspirated off and de-husked split pulses are separated by sieving. The tail pulses and unsplit de-husked pulses are again conditioned and milled. The whole process is repeated two to three times until the remaining- pulses are de-husked and split.

Polishing: Polish is given to the de-husked and split pulses by treating them with a small quantity of oil and/or water.

5.3 Equipments required for pulse processing

Vibratory sieve separator: For cleaning of raw grains

Cleaner with aspirator: For removing lighter impurities such as dust, husk, broken of insects etc.

Destoner: To separate mud and stones from raw grains

Auger Mixer/Screw conveyor: For mixing water/oil/red earth during conditioning and polishing of grains/dhal

Pulse scourer: An emery scourer (emery roller) machine is used to obtain cracking and scratching of clean pulses passing through it. For loosing the husk to facilitate the subsequent oil penetration this required. Gradually the clearance between the emery roller and cage (housing) is narrowed from inlet to outlet. Cracking and scratching of husk takes mainly by friction between pulses and emery as the material passed through the narrowing clearance. During the operation some of the are de husked and split which are separated by sieving.

Pulse splitter: For splitting and dehusked grains into two halves

LSU Drier: For conditioning of the grains before milling

Emery coated rollers: For dehusking and milling of pulses.

Rotating reel grader: For separating the dhal based on size and soundness, in which separate compartments with different size screens are present. Various sizes of dhal though the openings of these screens and graded dhal are bagged separately.

MODULE-6: QUALITY CONTROL OF RICE (RICE PROCESSING)

Rice Quality is determined by the consumer and all consumers want the best quality they **can afford.**

Purpose

This course examines the different factors that affect rice seed and grain quality, explains how to measure quality and outlines ways of improving grain quality.

Rationale

As countries reach self-sufficiency in rice production, the demand by the consumer for better quality rice and rice seed has increased. Traditionally, plant breeders concentrated on breeding for high yields and pest resistance. Now the demand is to incorporate preferred quality characteristics that increase the total economic value of rice. Grain quality is not solely a varietal characteristic but also depends on the crop production environment, harvesting, processing and handling systems. Therefore, maintaining good

grain quality is the concern of all disciplines such as breeding, agronomy, entomology, chemistry and engineering.

Objectives

On completion of this course, participants will be able to:

- Measure grain quality,
- Measure seed quality
- Understand the different factors that effect grain and seed quality and
- Evaluate a rice mill and a storage facility.

Rice Quality Training Manual

Grain Quality

Table of Contents

1. Introduction
2. Grain quality characteristics
3. Quality characteristics of paddy or rough rice
4. Quality characteristics of milled rice
5. Improving or maintaining rice quality
6. Measuring physical properties of paddy
- 7. Measuring physical properties of milled rice**
8. Measurements of chemical characteristics milled rice
9. Practical exercises
10. Appendices

Introduction:

Quality is not always easy to define as it depends on the consumer and the intended end use for the grain. All end users want the best quality that they can afford. As countries reach self-sufficiency in rice production, the demand by the consumer for better quality rice has increased. Traditionally, plant breeders concentrated on breeding for high yields and pest resistance. Now the demand is to incorporate preferred quality characteristics that increase the total economic value of rice.

Grain quality is not solely a varietal characteristic but also depends on the crop production environment, harvesting, processing and handling systems. Therefore, maintaining good grain quality is the concern of all disciplines such as breeding, agronomy, entomology,

chemistry and engineering. The quality of grain is best when it reaches physiological maturity. Management from that point forward will determine the rate of decline in quality but is unable to stop some decline in quality from occurring.

2.0 Grain quality characteristics

Rice grain quality represents a summary of the physical and chemical characteristics that may be genetic or acquired properties.

The genetic properties include:

- chemical characteristics (gelatinization temperature, apparent amylase content, gel consistency, alkali spreading value and aroma),
- shape,
- size,
- color of grain,
- chalkiness,
- bulk density,
- thermal conductivity,
- equilibrium moisture content and
- flowability.

The acquired properties or environmental factors are either additional to the normal complement of genetic qualities or are the consequence of certain genetic qualities being lost or modified. The important acquired properties are:

- moisture content,
- grain purity,
- physical and pest damage, cracked grains,
- presence of immature grains and
- milling-related characteristics (milling and head rice recoveries, grain dimensions, whiteness, milling degree and chalkiness) will likewise be included.

Milling-related characteristics are relevant measures of value because these are the major concern of consumers. The quality characteristics of paddy and milled rice can be considered separately.

Quality characteristics of paddy or rough rice:

A number of interrelated features determine the quality of paddy. These are:

- Moisture content of paddy,
- Purity degree,

- Varietal purity,
- Cracked grains,
- Immature grains,
- Discolored/fermented grains and damaged grains.

These quality characteristics are determined by the environmental weather conditions during production, crop production practices, soil conditions, harvesting, and post harvest practices

Moisture content Moisture content has a marked influence on all aspects of paddy and rice quality and it is essential that paddy be milled at the proper moisture content to obtain the highest head rice yield. Paddy is at its optimum milling potential at moisture content of 14%. Grains with high moisture content are too soft to withstand hulling pressure without undue breakage and may be pulverized. Grain that is too dry becomes brittle and has greater breakage.

Moisture content and temperature during the drying process is also critical as it determines whether fissures and/or full cracks are introduced into the grain structure.

Degree of purity. Purity is related to the presence of dockage in the grain. Dockage refers to material other than paddy and includes chaff, stones, weed seeds, soil, rice straw, stalks, etc. These impurities generally come from the field or from the drying floor.

Unclean paddy increases the time taken to clean and process the grain. Foreign matter in the grain reduces milling recoveries and the quality of rice and increases the wear and tear on milling machinery.

Variety Purity. A mixture of varieties causes difficulties at milling and usually result in reduced capacity, excessive breakage, lower milled rice recovery and reduced rice. Different sizes and shaped grains makes it more difficult to adjust the hullers and polishers to produce whole grains. This results in low initial de-hulling efficiencies, a higher percentage of re-circulated paddy, non-uniform whitening, and lower grade of milled rice.

Grain dimensions. Grain size and shape (length-width ratio) is a very stable varietal property. Long slender grains normally have greater breakage than short, bold grains and consequently have a lower mill rice recovery. The grain dimensions will also dictate to some degree the type of milling equipment needed. As an example, the Japanese designed milling equipment may be better suited to short-bold grains.

Cracked grains. Overexposure of mature paddy to fluctuating temperature and moisture conditions leads to development of fissures and cracks in individual kernel. Cracks in the kernel are the most important factor contributing to rice breakage during milling. This

results in reduces milled rice recovery and head rice yields.

Immature grains. The amount of immature paddy grains in a sample has a major affect on head rice yield and quality. The immature rice kernels are very slender and chalky and this results in excessive production of bran, broken grains and brewer's rice. The optimal stage to harvest grain is at about 20-24% grain moisture or about 30 days after flowering. If the harvest is too late, many grains are lost through shattering or dry out and are cracked during threshing, which causes grain breakage during milling.

Damaged grains. Paddy deteriorates through biochemical change in the grain, the development of off-odors and changes in physical appearance. These types of damage are caused from water, insects, and heat exposure.

Yellowing is caused by over-exposure of paddy to wet environmental conditions before it is dried. This results in a combination of microbiological and chemical activity that overheats the grain similar to a milled form of parboiling. These fermented grains .frequently possess partly gelatinized starch cells and generally resist the pressures applied during grain milling. While the presence of fermented grain does not affect milling yields it does downgrade the quality of the milled rice because of the unattractive appearance.

The presence of black spots around the germ end of the brown rice kernel is caused by the microorganisms (fungi) and is increased by unfavorable weather conditions. In the process of milling, these black spots are only partly removed which consequently increases the presence of damaged grains.

4.0 Quality characteristics of milled rice

The quality characteristics of milled rice are classified both physically and chemically.

Physical characteristics

Milling degree. The degree of milling or percent brown rice removed as bran affects the level of recovery and influences consumer acceptance. Apart from the amount of white rice recovered, milling degree influences the color and also the cooking behavior of rice. Unmilled brown rice absorbs water poorly and does not cook well. The water absorption rate improves progressively up to about 25% milling degree after which, there is very little effect.

The flow (frictional property) and packing (bulk density) behaviors of rice are also depend on milling Likewise, the nutrient content of rice is also strongly influenced since most micro-nutrient located largely in the peripheral layers of brown rice are removed with high milling degree.

Head rice percentage. The head rice percentage is the volume or weight of head grain or whole kernel in the rice lot. Head rice normally includes broken kernels that are 75-80%

of the whole kernel. High head rice yield is one of the most important criteria for measuring milled rice quality. Broken grain has normally only half of the value of head rice. To a large extent, the characteristics of the paddy determine the potential head rice yield although the milling process is responsible for some losses and damage to the grain.

Whiteness.

This characteristic is a combination of varietal physical characteristics and the degree of milling. In milling, the whitening and polishing greatly affect the whiteness of the grain. During whitening, the silver skin and the bran layer of the brown rice is removed. Polishing is undertaken after whitening to improve the appearance of the white rice. During polishing some of the bran particles stick to the surface of the rice which polishes and gives a shinier appearance.

Chalkiness. Grain appearance is largely determined by the endosperm opacity and this is commonly classified as the amount of chalkiness. Opaqueness has an overall chalky texture caused by interruption of final filling of the grain. Though chalkiness disappears upon cooking and has no direct effect on cooking and eating qualities, excessive chalkiness downgrades the quality and reduces milling recovery.

Table 1. Quality standards for milled rice in Philippines (National Food Authority)

| Grade Specifications | GRADE | | | |
|-------------------------------------|---------|---------|---------|---------|
| | Premium | Grade 1 | Grade 2 | Grade 3 |
| Head rice (min %) | 95.00 | 80.00 | 65.00 | 50.00 |
| Brokens (max %) | 4.90 | 19.75 | 34.50 | 49.00 |
| Brewers (max %) | 0.10 | 0.25 | 0.50 | 1.00 |
| Defectives: | | | | |
| • Damaged grains, max % | 0 | 0.25 | 0.50 | 2.00 |
| • Discolored grains, max % | 0.50 | 2.00 | 4.00 | 8.00 |
| • Chalky and immature grains, max % | 2.00 | 5.00 | 10.00 | 15.00 |
| • Red grains, max % | | | | |
| • Red streaked grains, max % | 0 | 0.25 | 0.50 | 2.00 |
| Foreign matter (max 5) | 1.00 | 3.00 | 5.00 | 10.00 |
| Paddy (max no./kg) | 0 | 0.10 | 0.20 | 0.50 |
| Moisture content (max %) | 1 | 8 | 10 | 15 |
| | 14.00 | 14.00 | 14.00 | 14.00 |

Chemical characteristics

Gelatinization temperature. The time required for cooking is determined by gelatinization temperature. Environmental conditions, such as temperature during ripening, influence gelatinization temperature. A high ambient temperature during development results in starch with a higher temperature.

Gelatinization temperature is estimated by the extent of alkali spreading and clearing of milled rice soaked in 1.7% KOH at room temperature or at 39°C for 23 hours (Little et al, 1958).

The degree of spreading is measured using a seven-point scale as follows:

1. grain not affected
2. grain swollen,
3. grain swollen, collar incomplete and narrow,
4. grain swollen, collar complete and wide,
5. grain split or segmented, collar complete and wide,
6. grain dispersed, merging with collar; and
7. grain completely dispersed and intermingled.

Alkali spreading value corresponds to gelatinization temperature as follows:

- 1-2 high (74.5-80°C),
- 3, high intermediate,
- 4-5, intermediate (70-74°C), and
- 6-7, low (<70°C).

There is normally a distinct preference for rice with intermediate gelatinization temperature.

Amylose content. Starch makes up about 90% of the dry matter content of milled rice. Starch is a polymer of glucose and amylose is a linear polymer of glucose. The amylose content of starches usually ranges from 15 to 35%. High amylose content rice shows high volume expansion (not necessarily elongation) and high degree of flakiness. The grains cooked dry, are less tender, and become hard upon cooling. In contrast, low-amylose rice cooks moist and sticky. Intermediate amylose rice is preferred in most rice-growing areas of the world, except where low-amylose japonicas are grown.

Based on amylose content, milled rice is classified as

- waxy (1-2% amylose),
- non-waxy (>2% amylose),
- very low (2-9% amylose),
- intermediate (20-25% amylose) and

- high (25-33% amylose).

The colorimetric iodine assay indexes the amylose content of milled rice.

Gel consistency Gel consistency measures the tendency of the cooked rice to harden on cooling. Gel consistency is determined by heating a small quantity of rice in a dilute alkali. This test differentiates the consistency of cold 5.0% milled rice paste. Within the same amylose group, varieties with a softer gel consistency are preferred, and the cooked rice has a higher degree of tenderness.

Harder gel consistency is associated with harder cooked rice and this feature is particularly evident in high-amylose rice. Hard cooked rice also tends to be less sticky.

Maintaining Quality

The quality and yield of rice is determined by the variety, the crop management, harvesting, processing and handling

Variety

Different varieties have different physical and chemical characteristics that affect grain quality and yields. The dimension, shape, weight, volume and density of grains determine the physical characteristics of rice and in turn influence head rice yield.



Varieties that:

- Have short and medium type grains, which are more rounded, thicker and harder than long grains produce higher head yield.
- Mature earlier tend to produce less head rice than late maturing varieties.
- Fill uniformly have higher grain density and less chalkiness
- Flower unevenly also ripen unevenly. Non synchronous varieties can have a variation of up to 10% in moisture content and take 5 days longer for the grain to mature at the bottom of the panicle, when compared to the grain in the top of the panicle.
-

Crop management

The management of the crop will influence the time and uniformity of crop maturity. Basic requirements of good crop management include good water, nutrient, pest and harvest management.

Water management

To be able to manage water, the fields must be level and the bunds or levees well maintained. Uniform water depth across the field will contribute to more uniform crop, higher grain yields and consistent moisture content in the grain sample. Reducing the variation in moisture content at harvest reduces grain fissuring (cracking) and also reduces the chance of spoilage through yellowing and of odors.

Good water management helps reduce weed competition, which not only increases yields but also improves grain quality by reducing dockage levels and reducing moisture

Differentials between weed seeds and grain. Wet spots in the grain due to uneven drying or weed seeds can lead to off odors and discoloration of the grain.

Nutrient Management

The application of the correct level and type of fertilizer for the variety and growing conditions is essential. The prudent application of nitrogen is essential to get an even maturing crop with full grain size and high protein levels. Excessive and uneven application of N can stimulate late tiller production, which results in heads on the main culm ripening a number of days faster than the tillers. This will result in more immature and green heads in the sample as well as higher moisture content that increasing the chance of fissuring and spoilage. Conversely insufficient nitrogen can lead to reduced grain size and protein content.

Plant Population



Establishing the correct number of plants is essential to maximize water and nutrient use. A target population that results in 400-500 panicles per m^{-2} is desirable. This means establishing at least 70-100 seedling m^{-2} when transplanting, or broadcasting 80-120 kg seed ha^{-1} when direct seeding.

Low populations may result in:

- increased tillering, which creates more variation in panicle maturity,
- increased weed populations and
- reduces the yield potential of the variety.

High plant populations may reduce yield and quality by:

- competing for water and nutrients,

- mutual shading,
- lodging and
- reduced grain size.

Harvesting

Timeliness

The optimal stage to harvest grain is between 20-25% grain moisture or when 80-85% of the grains are straw colored and the grains in the lower part of the panicle are in the hard doe stage. This is about 30 days after flowering. If the crop is harvested too late, many grains are lost through shattering or drying out and are cracked during threshing. Cracked grains break during milling. If harvested too early, there will be many immature paddy grains and this will reduce head rice yield and quality. The immature rice kernels are very slender and chalky and this results in excessive amount of bran and broken grains. Threshing should occur immediately after cutting as the longer the cut panicles remain in a stack the higher the chance of discoloration or yellowing.

Thresher Machine settings

The correct drum speed settings are needed if grain quality is to be maintained and threshing losses minimized. Drum tip speeds for a peg tooth thresher should be between 12-16 m/sec or approximately 600rpm. Higher speeds result in higher levels of grain damage while lower speeds increase the amount grain retained in the panicle. The fan speed and oscillation speed should be between 800-850 rpm. The clearance between the peg teeth and concave should be about 25 mm.

Processing

Drying

Paddy or rough rice should be dried to 14% moisture as soon as possible after threshing.

Quality can be maintained by drying and tempering the grain a number of times or in stages during the drying process. This means drying the grain on a drying pad for a number of hours or in the grain dryer and then tempering the grain by allowing it to cool down for a number of hours in a bin or in the bag. This process should be repeated at least a couple of times until the grain is at 14% moisture.

When sun drying the grain should be spread in thin layers (50-100mm) on the pad or floor and be turned and stirred 7-8 times per day. This will even up moisture distribution and increase the rate of drying. Temperatures on drying pads can exceed 50°C during the day and this can cause fissuring. To reduce fissuring the paddy may need to be covered during the very hot times of the day or dried over a couple of days.

Grain is also dried in mechanical batch dryers. The most common smaller dryers have a capacity of 1-3 tons per day with drying times of 6-12 hours. For drying of paddy in tropical areas an air temperature of 40-45°C is normally used with a heater capable of raising the air temperature 10-15°C. An air velocity 0.15-0.25m/s is required and typical power requirements are 1.5-2.5 kW /ton of paddy. The efficiency of these dryers is also improved by stirring the grain.

Cleaning

Threshed grain contains all kinds of trash. This trash can be vegetable, such as chaff, straw, empty grains and foreign seed as well as mineral materials such as earth and stones. Grain should be cleaned as soon as possible after harvesting and certainly before storage. The simple traditional cleaning method is winnowing, which uses wind or a fan to remove the light elements from the grain. Mechanical winnowers that incorporate a fan and several superimposed reciprocating sieves or screens are now used in many countries. These can be manually powered or motorized and have capacities from 100 kg to 2-3 tons per hour. Where combine harvesters are used, there is a trend towards using large capacity centralized seed cleaners. These are normally equipped with a series of vibrating sieves and are capable of 10-30 tons per hour.

Storage

If grain is to be stored safely for extended periods it must

- have less than 13- 14% moisture,
- be protected from insects and rodents and
- be protected from absorbing moisture either through rain or the surrounding air.

Grain is traditionally stored in 40-50kg sacks, which are made from jute or woven plastic. These bags are stacked under a roof or in a shed and must be periodically fumigated to control insects. Some farmers use granaries, which are made from timber or mud/cement or large woven baskets and these also suffer from insect and rodent damage.

Sealed storage is an option that has a lot of potential in the tropics. If grain is dried to 14% and stored in a sealed storage it reduces the risk of insect and rodent damage and the grain should not absorb moisture from the atmosphere or be damaged by rain. Sealed storages come in all shapes and sizes. They may range from a sealed 200-liter drum to the more complex and costly sealed plastic commercial storages. Most large commercial steel and concrete silos being used in western countries can be sealed for fumigation.

Equilibrium moisture content

In storage, the final moisture content of seed depends on the temperature and relative humidity of the air that surrounds the grain. The final grain moisture content resulting from storage is called the 'equilibrium moisture content' or EMC. The following table shows the EMC of paddy under different storage conditions. The underlined & colored areas represent the desirable environmental conditions for storage of paddy for food purposes in the tropics. If grain is not protected against humidity in the air, in particular in the rainy season when the relative humidity may reach 95%-100%, grain moisture content will rise leading to quality deterioration.

| Relative Humidity | Storage Temperature (°Celsius) | | | | | | |
|-------------------|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 22°C | 24°C | 28°C | 32°C | 36°C | 40°C | 44°C |
| 50% | 11.2 | 10.9 | 10.7 | 10.5 | 10.2 | 10.0 | 9.9 |
| 55% | 11.7 | 11.5 | 11.2 | 11.0 | 10.8 | 10.6 | 10.4 |
| 60% | 12.3 | 12.0 | 11.8 | 11.6 | 11.4 | 11.2 | 11.0 |
| 65% | 12.7 | 12.6 | 12.4 | 12.2 | 12.0 | 11.8 | 11.6 |
| 70% | <u>13.5</u> | 13.3 | 13.1 | 12.8 | 12.6 | 12.5 | 12.3 |
| 75% | 14.3 | <u>14.0</u> | <u>13.8</u> | 13.6 | 13.4 | 13.2 | 13.0 |
| 77% | 14.6 | 14.3 | <u>14.1</u> | 13.9 | 13.7 | 13.5 | 13.4 |
| 79% | 14.9 | 14.7 | 14.5 | 14.3 | <u>14.1</u> | <u>13.9</u> | 13.7 |
| 81% | 15.3 | 15.1 | 14.9 | 14.6 | 14.5 | 14.3 | <u>14.1</u> |
| 83% | 15.7 | 15.7 | 15.3 | 15.1 | 14.9 | 14.7 | 14.5 |
| 85% | 16.1 | 15.9 | 15.7 | 15.5 | 15.3 | 15.1 | 15.0 |
| 87% | 16.6 | 16.4 | 16.2 | 16.0 | 15.8 | 15.6 | 15.5 |
| 89% | 17.2 | 17.0 | 16.8 | 16.6 | 16.4 | 16.2 | 16.1 |
| 91% | 17.9 | 17.7 | 17.5 | 17.3 | 17.1 | 16.9 | 16.7 |

Milling

It is often said that milling is more an art than a science. Using good quality paddy, in a well-maintained mill, operated by a skilled miller produces high quality head rice. Poor quality paddy will always result in poor quality milled rice irrespective of the type of rice mill and the skill of the miller. Similarly, the use of good milling equipment and good quality paddy will not ensure a

high-quality product. The best quality milled rice will be attained from a mill that has

- a system of pre cleaning the paddy,
- uses a rubber roller to remove the husk,
- has two separate whiteners and one polisher and
- grades the polished white rice.

Having at least two stages in the whiting process and a separate polisher will reduce over heating the rice during milling and should allow the miller to set the individual machines to give the highest head rice and milling yield. Continual maintenance, monitoring, adjustment and replacement of components such as rubber rollers and sieves is essential to maintain high quality rice.

Measuring physical properties of paddy

Moisture content

Two methods can be used to measure moisture content:

- The primary or direct method (Air oven method)
- The secondary method (Electronic moisture tester)

Air oven method

- Set the oven at 130°C.
- Weigh three 100 g paddy samples and place the samples inside the oven.
- Measure the final weight of the samples after the 16 hours.
- Compute for the moisture content wet basis (MCWB) using the equation:

$$MCWB = \frac{Initial\ Weight - Final\ Weight}{Initial\ Weight} \times 100$$

- Compute the average MC.

Moisture Tester

- Read the operators instruction
- Turn on the moisture meter and ensure that the machine is set for paddy or rough rice.
- Fill the tray/bowl of the moisture tester with paddy samples.
- Turn/press the knob until the moisture reading is displayed.

- Test at least three samples.

Crack Detector

Using the Paddy Crack Detector, count the number of cracked grains in a 100 grain sample then compute the % cracked grains using the equation:

$$\% \text{ Cracked grains} = \frac{\text{No. of cracked grains}}{100 \text{ grains}} \times 100$$

Grain Dimensions

Using the Vernier caliper or photographic enlarger, collect 20 paddy samples at random from each replicate and measure the dimensions to obtain the average length and width of the paddy grains. To obtain the paddy shape, the following equation will be used.

Paddy will be classified based on International Organization for Standardization (ISO) for paddy.

$$\text{Length to width ratio (L/W)} = \frac{\text{Average paddy length, mm}}{\text{Average paddy width, mm}}$$

Immature Grains

- Select a 25 gm grain sample
- Select, segregate and weigh the immature grains in sample. Calculate the percentage immature grains in the sample using the formula:

Dockage

$$\% \text{ Immature grains} = \frac{\text{Wt of immature grains}}{\text{Total weight of samples}} \times 100$$

Remove light foreign matter, stones, weed and seeds from a 100gm sample. Obtain the total weight then compute the dockage percentage as follows:

$$\% \text{ Dockage} = \frac{\text{Wt of dockage}}{\text{Total wt of sample}} \times 100$$

1000 seed weight

Count and weigh 1,000 grains (paddy).

Measuring physical properties of milled rice

Milling degree

Milling degree is computed based on the amount of bran removed from the brown rice. To obtain the weight of brown rice, dehull the paddy samples using the Laboratory Huller.

Estimate the percent milling degree using the following equation:

Milling recovery

$$\% \text{ Milling degree} = \frac{\text{Wt of milled rice}}{\text{Wt of brown rice}} \times 100$$

Using the Abrasive Whitener, mill the dehulled samples. Compute milling recovery by dividing the weight of milled rice recovered by the weight of the paddy sample.

Dockage

$$\% \text{ Milling recovery} = \frac{\text{Wt milled rice}}{\text{Wt of sample used}} \times 100$$

Select, segregate and weigh the foreign matter. Record the number of unhulled grains collected from the sample. Determine the percentage of dockage of milled rice using the equation:

$$\% \text{ Dockage (mr)} = \frac{\text{Wt. of dockage}}{\text{Total wt of milled rice}} \times 100$$

Broken grain

$$\% \text{ Head rice} = \frac{\text{Wt of whole grains}}{\text{Wt of paddy samples}} \times 100$$

Using the Grain Grader, separate the broken grain from the whole grains. Compute the percentage of the milling recovery components using the following equations:

Chalkiness

A visual rating of the chalky proportion of the grain is used to measure chalkiness based on the

$$\% \text{ Broken} = \frac{\text{Wt of broken grains}}{\text{Wt of paddy samples}} \times 100$$

standard Evaluation System SES scale presented below:

| Scale | % area of chalkiness |
|--------------|-----------------------------|
| 1 | less than 10 |
| 5 | 10-20 |
| 9 | more than 20 |

- Select, segregate and weigh the chalky grains (SES Scale 9). Determine the % chalky grain using the equation:

$$\% \text{ Chalky grain} = \frac{\text{Wt of chalky grains}}{\text{Wt of milled rice}} \times 100$$

Whiteness

- Measure the grain whiteness using the Whiteness Meter.

- Separate and weigh yellow-fermented grains. Calculate the percentage of yellow/fermented grains using the formula:

Grain Shape

$$\% \text{ Yellow grains} = \frac{\text{Wt yellow grains}}{\text{Wt total milled rice}} \times 100$$

- Follow the procedure of determining grain shape of paddy. Based on the length to width ratio,

$$L/W \text{ ratio} = \frac{\text{Avg. length of rice}}{\text{Avg. width of rice}} \times 100$$

the shape of the milled rice will be determined. The ISO Classification is as follows:

| <u>Scale</u> | <u>Shape</u> | <u>L/W ratio</u> |
|--------------|--------------|------------------|
| 1 | Slender | Over 3.0 |
| 3 | Medium | 2.1 – 3.0 |
| 5 | Bold | 1.1 – 2.0 |
| 9 | Round | 1.0 or less |

1000 grain weight

Count and weigh 1,000 whole grains.

Measurements of chemical characteristics milled rice

Amylose content.

Twenty grains are selected and ground in the UDY Cyclone Mill. Amylose content is analyzed using the simplified iodine colorimetric procedure. Samples are categorized into low, intermediate and high based on the following grouping:

| <u>Category</u> | <u>%Amylose Content</u> |
|-----------------|-------------------------|
| Low | 10-20 |
| Intermediate | 20-25 |
| High | 25-30 |

Gelatinization temperature is measured using alkali-spreading value. The alkali digestibility test is employed. Grains are soaked in 1.7% KOH and incubated in a 30°C oven for 23 hours. Measurement ranges based on the following:

| Category | Temp ranges (°C) | Alkali Spread |
|--------------|------------------|---------------|
| Low | 55-69 | 6-7 |
| Intermediate | 70-74 | 4-5 |
| High | 75-79 | 2-3 |

Gel consistency.

Two to 10 grains are selected and ground separately in the Wig-L Bug. Gel consistency is measured by the cold gel in a test tube, being held horizontally, for one hour. Measurement ranges and category are as follows:

| Category | Consistency, mm |
|----------|-----------------|
| Soft | 61-100 |
| Medium | 41-60 |
| Hard | 26-40 |

International Standards (ISO 7301)

Rice – Specification

1. Scope

This International Standard lays down the minimum specifications for rice (*Oryza sativa* L.) of the following types: husked rice, husked parboiled rice, milled rice and milled parboiled rice, suitable for human consumption, directly or after reconditioning, and which is the subject of international trade.

2. Normative references

The following standards contain provisions, which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 712: 1985, Cereals and cereal products – Determination of moisture content (Routine reference method).

ISO 950: 1979, Cereals – Sampling (as grain).

3. Definitions

For the purposes of this International Standard, the following definitions apply.

3.1. paddy: paddy rice: rough rice: Rice retaining its husk after threshing.

3.2. husked rice: cargo rice¹: Paddy from which the husk only has been removed.

The processes of husking and handling, particularly of parboiled rice, may result in some loss of bran.

3.3. milled rice: Rice obtained after milling which involves removing all or part of the bran and germ from the husked rice.

It could further be classified into the following degrees of milling.

a) undermilled rice: Rice obtained by milling husked rice but not to the degree necessary to meet the requirements of well-milled rice.

b) well-milled rice: Rice obtained by milling husked rice in such a way that some of the germ, and all the external layers and most of the internal layers of the bran have been removed.

c) extra-well-milled rice: Rice obtained by milling husked rice in such a way that almost all the germ, and all the external layers and the largest part of the internal layers of the bran, and some of the endosperm, have been removed.

3.4. parboiled rice: Rice, the starch of which has been fully gelatinized by soaking paddy or husked rice in water followed by a heat treatment and a drying process.

3.5. glutinous rice: waxy rice: Special varieties of rice (*Oryza sativa* L. *glutinosa*) the kernels of which have a white and opaque appearance. The starch of glutinous rice consists almost entirely of amylopectin. It has a tendency to stick together after cooking.

3.6. size of kernels, broken kernels and chips

3.6.1. whole kernel: Kernel without any broken part.

3.6.2. head rice: Kernel, the length of which is greater than or equal to three quarters of the average length of the corresponding whole kernel.

¹ Cargo rice is a term used in some countries to describe rice that has been husked but not milled.

- 3.6.3. large broken kernel: Fragment of kernel, the length of which is less than three-quarters but greater than one-half of the average length of the corresponding whole kernel.
- 3.6.4. medium broken kernel: Fragment of kernel, the length of which is less than or equal to one-half but greater than one-quarter of the average length of the corresponding whole kernel.
- 3.6.5. small broken kernel: Fragment of kernel, the length of which is less than or equal to one-quarter of the average length of the corresponding whole kernel but which does not pass through a metal sieve with round perforations 1.4 mm in diameter.
- 3.6.6. chip: Fragment of kernel which passes through a metal sieve with round perforations 1.4 mm in diameter.
- 3.7. extraneous matter: Organic and inorganic components other than kernels of rice, whole or broken

Rice Quality Training Manual

- 3.8. heat-damaged kernels: Kernels, whole or broken , that have changed their normal color as a result of heating. This category includes whole or broken kernels that are yellow due to alteration. Parboiled rice in a batch of non-parboiled rice is also included in this category.
- 3.9. damaged kernels: Kernels, whole or broken, showing obvious deterioration due to moisture, pests, disease or other causes, but excluding heat-damaged kernels (3.8).
- 3.10. immature kernels: Kernels, whole or broken, which are unripe and/or underdeveloped.
- 3.11. chalky kernels: Kernels, whole or broken, except for glutinous rice, of which at least three-quarters of the surface has an opaque and floury appearance.
- 3.12. red kernels: Kernels, whole or broken, having a re coloration covering more than one-quarter of their surface, but excluding heat-damaged kernels (3.8).
- 3.13. red-streaked kernels: Kernels, whole or broken, with red streaks, the lengths of which are greater than or equal to one-half of that of the whole kernel, but where the surface covered by these red streaks is less than one-quarter of the total surface.
- 3.14. pecks: Kernels, whole or broken, of parboiled rice of which more than one-quarter of the surface is dark brown or black in color.

3.15. other kinds of rice

3.15.1 Paddy in husked rice, in husked parboiled rice, in milled rice and in milled parboiled rice.

3.15.2 Husked rice in husked parboiled rice, in milled rice and in milled parboiled rice.

3.15.3 Milled rice in husked parboiled rice and in milled parboiled rice.

3.15.4 Glutinous in non-glutinous rice.

4. Specification

4.1 General, organoleptic and health characteristics
Kernels of rice, whether or not parboiled, husked or milled, and whether or not whole or broken, shall be sound, clean and free from foreign odors or odor which indicates deterioration.

The levels of additives and pesticide residues and other contaminants shall not exceed the maximum limits permitted by the national regulations of the country of destination or, in their absence, by the joint FAO/WHO Commission of Codes Alimentarius.

The presence of living insects, which are visible to the naked eye, is not permitted.

4.2 Physical and chemical characteristics

4.2.1 The moisture content, determined in accordance with ISO 712, shall be not greater than 15% (m/m)

Note: Lower moisture contents may be required for certain destinations depending on the climate, duration of transport and storage. For further details, see ISO 6322, parts 1, 2 and 3.

4.2.2 The maximum contents of extraneous matter, defective kernels and other kinds of rice in husked and milled rice, whether or not parboiled, and determined in accordance with the method described in annex A, shall be not greater than the values specified in table 1.

4.2.3 All commercial contracts should be clearly the total percentage of broken kernels permitted, classified according to the agreed categories, and the relative proportions of each category, and the total percentage of extraneous matter and of defective kernels, determined in accordance with the method described in Annex A.

The proportion of chips shall not exceed 0.1%.

Table 1.

| Defect | Reference to the definition | Husked rice | Milled rice (non-glutinous) | Husked parboiled rice | Milled parboiled rice |
|----------------------|-----------------------------|-------------|-----------------------------|-----------------------|-----------------------|
| Extraneous matter | 3.7 | | | | |
| a) organic | | 1.5 | 0.5 | 1.5 | 0.5 |
| b) inorganic | | 0.5 | 0.5 | 0.5 | 0.5 |
| Paddy | 3.1 | 2.5 | 0.3 | 2.5 | 0.3 |
| Husked rice | 3.2 | - | 1.0 | - | 1.0 |
| Milled rice | 3.3 | - | - | 2.0 | 2.0 |
| Heat-damaged kernels | 3.8 | 4.0 | 3.0 | 8.0 | 6.0 |
| Damaged kernels | 3.9 | 4.0 | 3.0 | 4.0 | 3.0 |
| Immature kernels | 3.10 | 12.0 | 2.0 | 12.0 | 2.0 |
| Chalky kernels | 3.11 | 11.0 | 11.0 | - | - |
| Red kernels | 3.12 | 12.0 | 4.0 | 12.0 | 4.0 |
| Red-streaked kernels | 3.13 | - | 8.0 | 0 | 8.0 |
| Glutinous rice | 3.5 | 1.0 | 1.0 | 1.0 | 1.0 |
| Pecks | 3.14 | - | - | 4.0 | 2.0 |
| After milling | | | | | |

10.0 Practical exercises

1. Determine the quality of Milled rice

The following tests will be undertaken in the laboratory to determine the quality of milled rice.

- Moisture content
- Head rice
- Broken
- Color
- Transparency
- Chalkiness
- Cooking test

2. Determine the quality of Paddy or Rough rice

The following tests will be undertaken in the laboratory to determine the quality of paddy rice

- Moisture content
- Purity- Other varieties
- Grain dimensions
- Damaged or broken grains
- Unfilled or immature grains
- Insects
- Weed seeds
- Inert material

3. Testing a Rice mill for performance and quality

We will visit a rice mill and sample the paddy before milling, brown rice after husking and the milled grain after processing. At the same time we will monitor the performance of the rice mill by collecting the outputs from all of the outlets from the mill over a given time period.

That means we will collect and weigh the:

- Head rice
- Course broken
- Fine broken
- Brewers
- Meal and
- Husk

Time

Samples will be collected for 10 minutes from each outlet. An open woven bag will be necessary to collect the husk.

Weighing

Use the miller's scales

Sub-sampling

Sub samples will be taken from each of the outlets so that they can be analyzed in the laboratory

4. Visit a Rice Field

- Evaluate crop management practices and determine the likely affect on grain quality.

MODULE-7: PHOTOVOLTAIC SOLAR CELL AND SOLAR TREE



Fig. A view of monocrystalline silicone solar cell

Fabrication of a Solar Cell

In the Czochralski process a silicon ingot is “grown” or drawn from a pool of molten silicon. This entire ingot forms one single crystal, yielding mono-crystalline silicon solar cells. The ingot is cut into wafer thin slices. The slices are then “doped”. One side is doped to be positive – the P side. Small amounts of an impurity, such as Boron, are added which creates an excess of “holes”. The other side is doped to be negative – the N side. A different impurity, such as Phosphorus, is added which creates an excess of electrons. The band gap voltage (energy potential difference) created by the silicon P-N junction is around 0.5 V per cell as a result.

In polycrystalline silicon cells, silicon is melted and poured into blocks, which are then cut into wafers. This process introduces many crystals within a single cell. The boundaries between the

different crystals reduce the efficiency of the cell. However, this process has a lower cost of manufacturing.

On the other hand, thin film, or amorphous solar cells are made by depositing a thin-film of the solar cell material onto a substrate (typically glass) and then doping the film. Because this method uses much smaller amounts of raw materials and often employs common semiconductor vapour deposition processes, it is the cheapest and simplest method. However, the efficiency of the cells is usually less.

Cells can also be layered on top of each other, creating a heterojunction cell. The different layers are often responsive to different frequencies of light. Thus, the overall efficiency of the cell can be increased.

Numerous cell chemistries exist, such as Doped Silicon, Cadmium-Telluride and Gallium-Arsenide. Each provides a slightly different type of P-N junction, which may have different band-gaps and respond to different frequencies of light.

Theory of Operation of a Solar Cell

Sunlight hits the solar cell – if the energy of the photon is high enough (\geq band gap energy), it is absorbed on the P-side. This sends the “holes” towards the N-side. A potential difference (voltage) is thereby created across the p-n junction that drives the current and propels the excess free electrons to the conductor on the top of the cell.

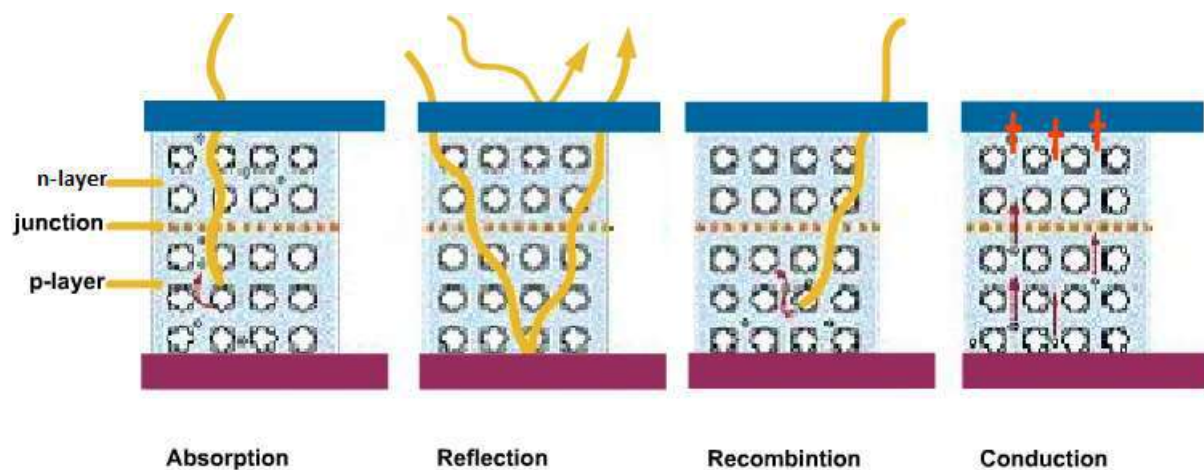


Fig. A view of Operation of a solar cell (courtesy U.S. Department of Energy)

A solar cell is essentially a diode with a large area. It can therefore be described simplistically by the following equivalent circuit.

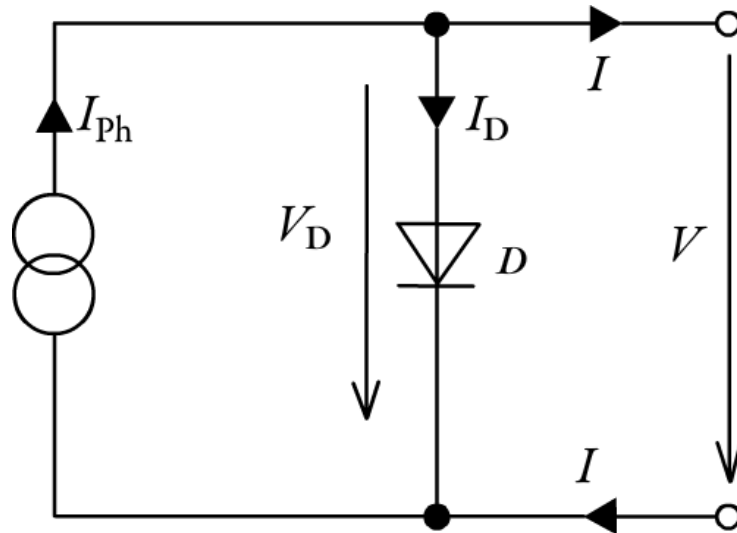


Fig. A view of Simple Equivalent Circuit of a Solar Cell

Where I_D is the current across the diode D , and I_{Ph} is the photocurrent generated by the current source.

$$I = I_{ph} - I_d$$

The photocurrent is directly proportional to the Irradiance E , which is the amount of sunlight falling on the cell. The two are related by the following equation,

$$I_{ph} = C_0 \cdot E$$

Where, C_0 is a coefficient determined by the cell's efficiency and other characteristics. The current across the diode can be Modelled by the formula,

$$I_D = I_s \cdot \left(\exp \left(\frac{V_D}{m \cdot V_t} \right) - 1 \right)$$

Where I_s is the saturation current, V_D is the cell voltage, V_T is the thermal voltage, and m is the diode factor. This then yields the following formula, which describes the circuit shown in Figure 4 above.

$$I = I_{ph} - I_s \cdot \left(\exp \left(\frac{V_D}{m \cdot V_t} \right) - 1 \right)$$

A common values for V_T at a temperature of 25°C is $V_T = 25.7 \text{ mV}$. The saturation current I_s typically in the order of 10^{-10} to 10^{-5} Amps. For an ideal diode, the diode factor m is equal to 1. Using a diode factor between the values 1 and 5 may give a more accurate description of the solar cell characteristics.

The following set of curves describing the relationship between the current I , and the voltage V_D , is obtained by using the above common values and Equation 1. These curves are actually a subset of an infinite number of curves which satisfy the previous equation. Each curve represents a different level of Irradiance, which is measured in Wattsm^{-2} .

An example of the influence of solar irradiation on a solar cell is given below.

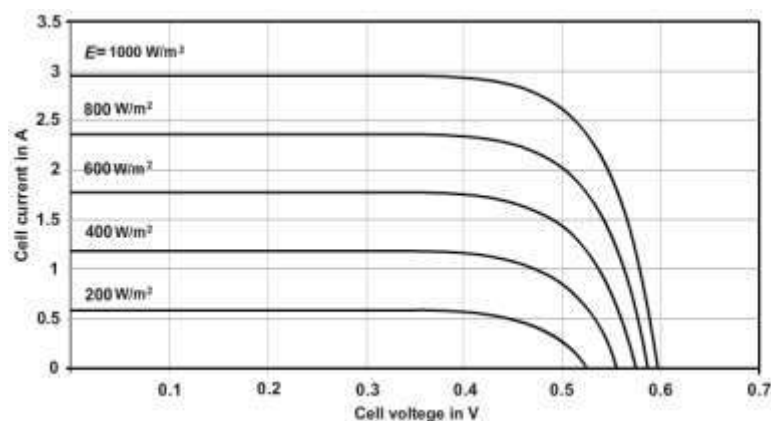


Fig. A view of Current-Voltage (I-V) curves at various illumination levels

In essence, a photovoltaic solar cell will produce current depending on the load attached to it. For example, the short-circuit photocurrent can be found by substituting $V_D = 0$ into the comprehensive Equation 1 developed above. On the plot above and from the equations, we can see that the photocurrent is greatest under short circuit conditions.

The open-circuit voltage V_{OC} , is the voltage when the positive and negative leads of the cell are not connected to any kind of circuit. At this point, naturally, the current will be zero. This condition is satisfied by the points lying on the x-axis (Voltage) of the plot. The following diagram shows these points.

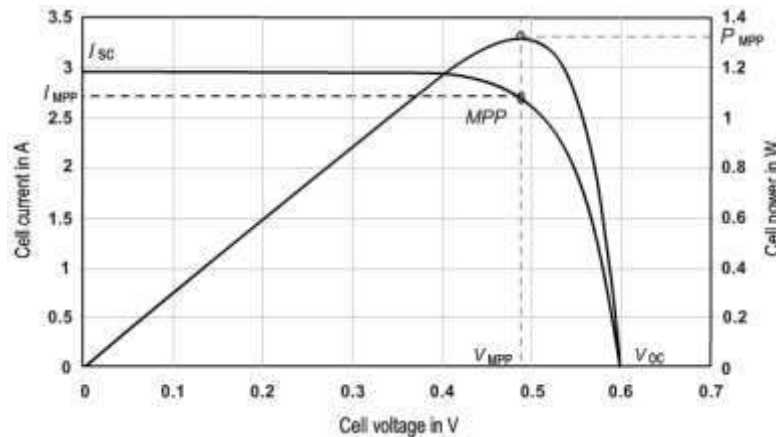


Fig. A view of Finding the Maximum Power Point for a particular I-V curve

The power of the cell can be obtained by multiplying the cell's voltage and current, for any particular operating point on the Current-Voltage (I-V) curve. A unique fact of photovoltaic solar cells is that the power output of the cell can be adjusted by changing the load voltage. By adjusting the load voltage, the cell's current output can also be adjusted. Since power is the multiplication of voltage and current, the power output of the cell can also be modified by adjusting the load voltage. The point at which the power is optimized is called the Maximum Power Point (MPP). Note that the maximum power is usually not at the same point as either the maximum voltage or current. A Maximum Power Point Tracker (MPPT) is an electronic DC-DC converter which adjusts the load voltage on a cell to optimize the power output. Typically, power gains of 10-15% can be realized, for the same input solar irradiation. This implies that the efficiency of the cell is improved by operating the cell at the MPP.

The equivalent circuit and resulting equations can be modified with increasing complexity to more accurately describe the output of the solar cells under various changing conditions. In particular, models have been developed to account for variations in temperature, series resistance and parallel resistance, as well as operation in negative voltage and extreme positive voltage regions. These models are not covered here, but you are encouraged to refer to the Reference [1] for more information. Solar panels are put on top of its “branches”. Utilizing the sunlight energy, solar panels produce electric energy which is then used for charging batteries of mobile phones, tablets, laptops etc. and, additionally, as an element of street lighting. Its attractive and modern design will complement the public areas of our campus and it'll be integrated completely into the architectural design of the Faculty of Electrical Engineering (ETF) at the University of Sarajevo, thus allowing all students and visitors on campus to freely use its resources. Alongside the promotion of renewable sources of energy, Solar tree also promotes the use of energy efficient technologies, ie. LED street lighting.

PLANNED ACTIVITIES

It is equipped with a system of solar panels which, as long as they're illuminated by the sunlight, produce voltage at their respective endings. That voltage can then be used for charging batteries. Accumulated energy from those batteries is then used for various purposes. Neglecting the necessary replacement of the batteries every few years, electric energy produced by this system is completely cost-free. Additional automatic control of charging and discharging process of the batteries can guarantee maximum lifetime of the batteries. Realization of the project comprises of many additional activities, all of which will be carried out by the members of our SB IEEE IAS (Student Branch IEEE Industrial Applications Society). This means that complete project will be done by the students and supervised by the assistants and professors at the Faculty of Electrical Engineering in Sarajevo. These activities range from writing documentation for the project and securing the necessary funding, to doing various calculations and making design choices.

IV. CHARACTERISTICS AND DESIGN

It is a known fact that everyone today can utilize solar energy. Sunlight reaches Earth's surface regardless of weather conditions, but its intensity is reduced by passing through the clouds (we call it diffused light or indirect radiation). Direct radiation is a lot stronger, as sunlight

reaches Earth's surface without being blocked by the clouds. Enough sunlight reaches Earth's surface to be used for electric energy production even at locations with a lot of foggy days. One photovoltaic cell is comprised of two or more thin layers of semiconducting material, usually made of silicon (Si). Under the silicon layer, there is a thin conducting layer made of metal. When silicon is exposed to sunlight, electrons are knocked loose from their atoms, causing electric potential difference. As a result, direct current (DC) starts to flow through the material in order to cancel out the potential difference. Due to the special composition of solar cells, the electrons are only allowed to move in a single direction. Photovoltaic modules will also function during cloudy days, but with reduced output power. Each branch ending will serve as a mechanical support for a number of monocrystalline solar panels, summing up to 10 overall. Single panel has an output of 80 W, and the diameter of each panel is 1.02 m. This type of panel is able to convert 1000 W/m^2 of the sun's irradiation into 140W on every square meter of its surface. Panels are pointed to the south and their declination is 34° because these are the optimal settings for maximum efficiency at the current location. shows global irradiation levels and electricity potential. Yearly production of the solar three is approximately 1200 kWh/m^2 . This is based on the available research on the subject of solar irradiance and solar electricity potential more precisely in Sarajevo, where the solar tree will be located. The design of this solar tree is solely developed. show 3D rendering of the design in daylight and at night, respectively.

MODULE-8: SURVEYING AND LEVELLING

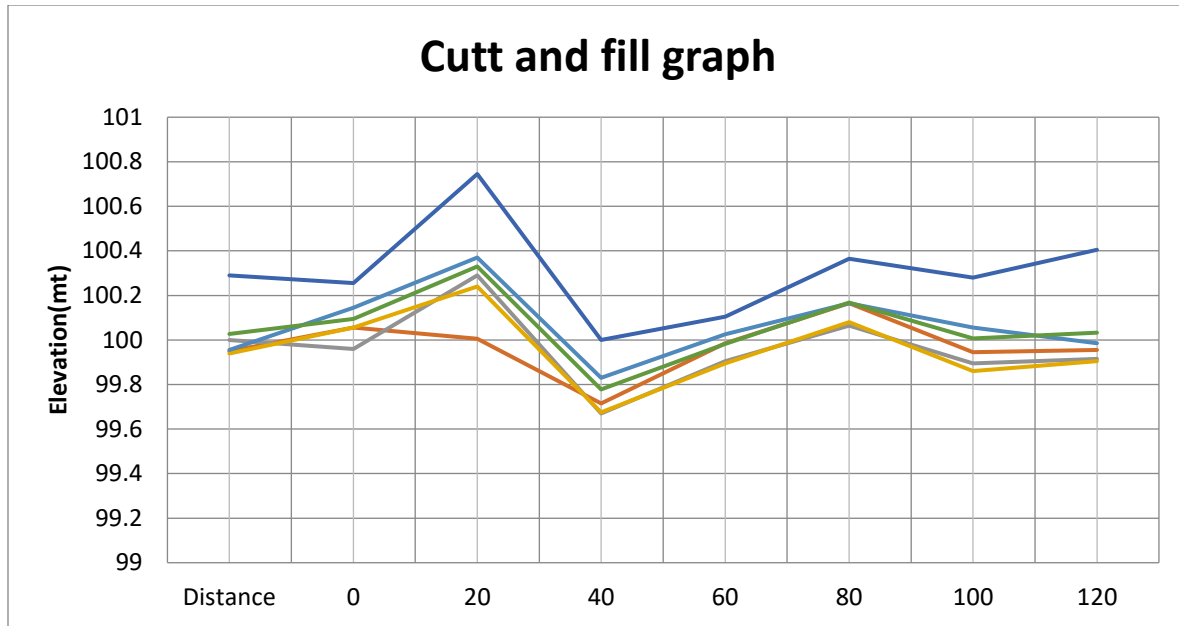
A grid survey is done on any field for knowing the elevation of any point from the bench mark. we generally makes grids of about same dimension so that we may calculate its total elevation of point and even of grid.

We have performed a grid survey on a land of having 140 meter of total lateral distance and 80 meter of width. we created a $20 \text{ mt} \times 20 \text{ mt}$ grid and taken data of whole field from a point and plotted a graph as shown in sheet .we have calculated its local reduced level via help of which we will calculate the elevation.

Procedure

- Grid survey, In this method, the area to be surveyed is divided into a grid or series of squares .
- The grid size may vary from 5 m x 5 m to 25 m x 25 m depending upon the nature of the terrain, the contour interval required and the scale of the map desired. Also, the grids may not be of the same size throughout but may vary depending upon the requirement and field conditions.
- The grid corners are marked on the ground and spot levels of these comers are determined by leveling. The grid is plotted to the scale of the map and the spot levels of the grid corners are entered.
- The contours of desired values are then located by interpolation. Special care should be taken to give the spot levels to the salient features of the ground such as hilltops, deepest points of the depressions, and their measurements from respective corners of the grids, for correct depiction of the features.
- The method is used for large scale mapping and at average precision

| Distance | 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 |
|----------|--------|---------|---------|--------|---------|---------|---------|---------|
| 0 | 100.29 | 100.255 | 100.745 | 100 | 100.105 | 100.365 | 100.28 | 100.405 |
| 20 | 99.95 | 100.055 | 100.005 | 99.715 | 99.985 | 100.165 | 99.945 | 99.955 |
| 40 | 100 | 99.96 | 100.29 | 99.67 | 99.905 | 100.065 | 99.895 | 99.915 |
| 60 | 99.94 | 100.055 | 100.24 | 99.675 | 99.895 | 100.08 | 99.86 | 99.905 |
| 80 | 99.955 | 100.145 | 100.37 | 99.83 | 100.025 | 100.165 | 100.055 | 99.985 |



Cutt and fill method

Cut and Fill method is generally used for the leveling of the field actual field elevation or the reduced level are taken and we just make sure of how much elevation did we need in the field. And via excel we just put our desired value and it will just gives us the required cut or fill in the field.

Volume of cut

$$V_c = \frac{l^2}{4} \times \frac{Hc^2}{Hf + Hc}$$

Volume of fill

$$V_f = \frac{l^2}{4} \times \frac{Hf^2}{Hf + Hc}$$

Where,

V_c = volume of a cut (m^3)

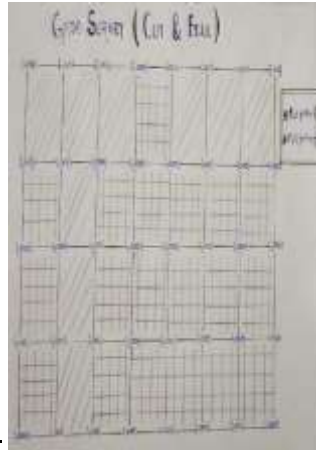
V_f = volume of a fill (m^3)

l = grid spacing

H_c = sum of the cut on the four corner of the square grid (m)

H_f = sum of the fills on the four corner of the square grid (m)

In general form we just take the areas of the required grid. Either it is of any shape just takes the area divided by four or the same procedure is computed. i.e.



$$V_c = \frac{\text{Area}}{4} \times \frac{H_f^2}{H_f + H_c}$$

Fig. A view of manually obtained cut and fill

Plane table survey- Plane table surveying is that method of surveying in which the fieldwork and plotting work is done simultaneously, and no office work is necessarily required.

The plane tabling is generally adapted for surveys in which high precision is not required. It is mainly employed for small scale or medium size mapping.

Drawing Board

It is made of well-seasoned wood. It varies in size; the common sizes are from 40 cm x 30 cm to 75 cm x 60 cm or 45 cm square, 60 cm square, etc.

The board may be mounted on a tripod with a levelling head or a ball and socket arrangement in such a fashion that it can be levelled and revolved about a vertical axis and may be clamped in any position.

Alidade

The alidade is a ruler with a sight line attached and is used on the plane table for bisecting the object, drawing rays, direction lines, etc.

It consists of a metal (brass or gunmetal) or boxwood straightedge or ruler of about 45 cm long. The beveled edge is called the “ruling edge” or the “working edge” or the “fiducially edge.”

Spirit level

If the spirit level which may be very sensitive is not fitted to the alidade, the table can be leveled by placing the spirit level in two positions at right angles to each other and setting the plane table such that the bubble is central in both positions.

Trough Compass

Trough Compass with two bubble tubes at right angles to each other mounted on a square brass plate is used for indicating the direction of the magnetic meridian on the paper.

U-Frame or Plumbing Fork

A plumbing fork with a plumb bob attached to one end is used for centering the table at a particular station.

Paper or Drawing Sheet

The paper used for plotting the survey on the plane table should be of excellent quality because it is very sensitive and liable to changes due to the variation of humidity of the atmosphere.

Tripod

Tripod is also required for plain table survey. It is one of the important plane table survey instruments without it is impossible to do plain table survey.

Tripod is used to fix the drawing board. It consists of a screw at the bottom which is used to set and level the drawing board on it comfortably.

A plane table survey is conducted in institution ground by Arya sir. The common objectives and principle of the plane table surveys are

A plane table survey is of three types

1. Radiation method

2. Intersection method

3. Traverse method

Procedure

1. Firstly we just take the plane table equipment place the board on tripod stand level it via using trough compass
2. Then we just calibrate our sheet to the north via using compass.
3. Find the center of board via using the plumb bob.
4. After placing the sheet we just take the shaft to the various end of the field an takes its measurement via fixing a suitable scale with the help of Alidade.
5. After taking all the required point we just moves our whole system and instrument to the second position just off to the same distance calibrate it again and just we can get the required scaling we just again takes all the point in a row and intersect them with the retaken one we just have to notice that it must intersect to the pre values if it not then our projection are wrong and there is some mistake in our survey. This second type of the survey is termed as the intersection method of plane table survey.

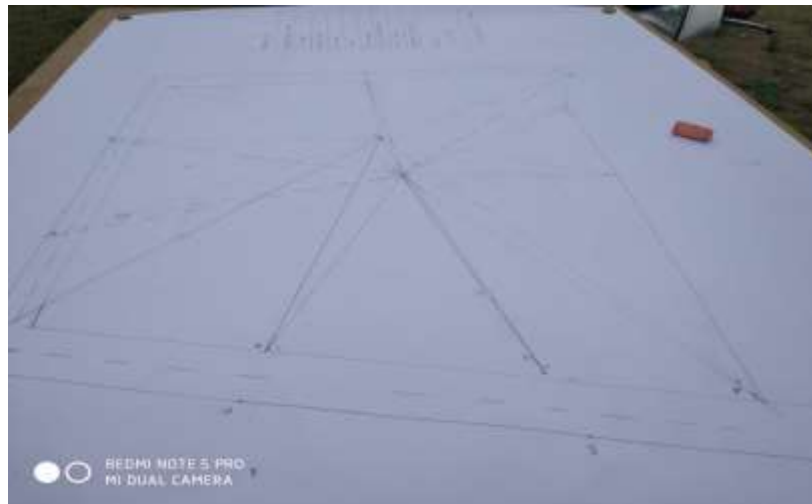


Fig. A view of Plane table survey of field

LEVELLING:

HEIGHT OF BASE IN-ACCESSIBLE OBJECT - SINGLE PLANE METHOD

AIM:

To determine the elevation of the base of an in accessible object by single plane method.

EQUIPMENT REQUIRED:

Theodolite with stand, ranging rod, arrow, tape or chain, leveling staff etc

PROCEDURE:

1. Let P and R be the two chosen instrument stations. Q be the elevated object whose elevation is required, R and Q lie in the same vertical plane.
2. Set up the theodolite over the station 'P' and level it accurately with respect to the altitude bubble.
3. Take a staff reading on BM with the line of sight horizontal to determine the elevation of instrument axis. Take both face staff readings to get to average. Let it be S1.
4. Direct the telescope with left towards the top of the object Q set 'Q' accurately and clamp both plates. Read vernier c and D and determine the vertical angle α 1.
5. Plunge the telescope mark the second station R in the line so that Q1P and R in the same vertical plane.
6. Change the face to right and measure the vertical angle α 1. Obtain the average value of the vertical angle.
7. Shift the instrument to setup and level it with reference to altitude bubble. Repeat step (2) and take the staff readings S2 on B.M.
8. Measure the vertical angle α 2 to Q with both face observations by repeating steps (3),(5).
9. Instruments axes at P and R are at the same level.

Calculation for Single plane method:

Tabulation

| Inst@ | Sight to | Height (m) | Face left | | Face Right | | Average Value | | |
|-------|----------|------------|-----------|------|------------|--------|---------------|--------|-----------|
| A | B | Mean | A | B | B | Mean | | | |
| A | BM | 1.20 | 0°0'0" | 0'0" | 0°0'0" | 0°0'0" | 0'0" | 0°0'0" | 14°19'30" |

| | | | | | | | | |
|---|----|------|-----------|--------|-----------|-----------|--------|-----------|
| Q | - | | 14°20'20" | 14'20" | 14°17'20" | 14°19'40" | 21'40" | 14°20'20" |
| B | BM | 1.37 | 0°0'0" | 0'0" | 0°0'0" | 0°0'0" | 0'0" | 0°0'0" |
| | | | | | | | | 14°26'55" |

| | | | | | | | | |
|---|---|--|-----------|--------|-----------|-----------|--------|-----------|
| Q | - | | 14°40'20" | 14'20" | 14°26'20" | 14°40'40" | 14'20" | 14°27'30" |
|---|---|--|-----------|--------|-----------|-----------|--------|-----------|

Calculation:

a) $b = 10\text{m}$, $s = 0.170$

To find D;

1) $D =$

$= 1^\circ 20' = 1136.68\text{m}$

2) $H = D \tan \alpha + B.M$

$= 1136.6 \tan 14^\circ 20' 40'' + 1.37 = 291.87\text{m}$

3) $RL \text{ of object} = RL \text{ of BM} + S + H1$

$= 100 + 0.170 + 291.87$

$= 392.04\text{m}$

$RL \text{ of object} = 392.04\text{m}$

□ **RESULT:**

$R.L \text{ of the top of the object} = 392.04\text{m}$

HEIGHT OF BASE ACCESSIBLE OBJECT- DOUBLE PLANE

□ AIM:

To determine the height of object, when the base is accessible.

□ Heights and distance or Trigonometrically leveling –Introduction:

Trigonometrically leveling is an indirect method of leveling. The relative elevations of various parts are determined from observed vertical angles and horizontal distances by use of certain trigonometrically relations. This method also known as ‘height and distances’

Case1:

Base of the object is accessible

Case2:

Base of the object is inaccessible

(i) Single plane method

(ii) Double plane method

(a) For single object

(b) For double object

□ EQUIPMENT REQUIRED:

Transit theodolite, tape or chain, leveling staff, arrows etc

□ PROCEDURE:

Let Q be the top of the object whose elevation is required. The horizontal distance ‘D’ between the object Q and the instrument station ‘P’ can be measured directly using a tape. The following field procedure is used.

1. Set up the theodolite over P and level it accurately with reference to altitude bubble.
2. Take a staff reading over P and level line of sight horizontal to determine the elevation of line of sight.
3. Direct the telescope towards the top of the object Q and observe the vertical angle of elevation α .

4. Let ‘h’—height of the instrument at P

h_1 - QQ’= height of object Q above horizontal line of sight

h_2 – QQ1- height of object below the horizontal line of sight

In the Triangle P’Q’Q

$$h_1 = D \tan \alpha$$

Therefore R.L of the top of object Q= R.L of instrument axis +h1

And R.L of bottom of object Q1=R.L of instrument axis-h2

R.L of instrument axis= R.L of BM +S

= R.L of p h'

Hence,

Height of object, H= h1+h2

= R.L of tip of the object – R.L of bottom of the object

This method is usually employed when the distance 'D' is small.

However if 'D' is large, combined correction for curvature and refraction should be applied for curvature and refraction should be applied to the calculated height.

i.e., the combined correction for curvature and refraction ,

C= 0.06735 D² where D is the horizontal distance is km. Its sign is positive for angle of elevation and negative for angle of depression. Thus in the figure

R.L of Q= R.L of instrument axis +h1+c

R.L of Q1= R.L of instrument axis –h2—C

□ **Calculation for Double plane method:**

□ **Tabulation**

| Instrument @ | Sight to | Height (m) | | Horizontal angle | | Vertical angle | | Bench Mark | |
|--------------|----------|------------|-----------|------------------|-----------|----------------|--------|------------|-------|
| | | A | B | A | B | A | B | A | B |
| A | BM | 1.370 | 0°0'0" | 0'0" | 0°0'0" | 0°0'0" | 0'0" | 0°0'0" | 1.370 |
| Q | - | | 64°20'40" | 20'40" | 64°20'40" | 14°40'20" | 14'20" | 14°26'20" | |
| B | BM | 1.420 | 0°0'0" | 0'0" | 0°0'0" | 0°0'0" | 0'0" | 0°0'0" | 1.420 |
| Q | - | | 18°40'20" | 40'20" | 18°40'20" | 14°40'20" | 14'20" | 14°26'20" | |

MODULE-9: TO DETERMINE pH OF WATER

Theory: The ionisation of water results in the formation of hydrogen ion (H^+) and hydroxyl ion (OH^-). Change in the concentration of one brings about the simultaneous changing in the concentration of the other there by altering the condition of the water. So, a number scale, termed as pH scale, is used to determine the pH of a medium, i.e., the acidity or the alkalinity of the same.

Materials Required:

- i. Beaker – 100ml
- ii. pH meter
- iii. Buffer capsule (4 and 7 pH)
- iv. Tissue paper
- v. Distilled water
- vi. Sample of which the pH is to be measured.

Procedure:

- i. The pH meter is set on a flat surface.
- ii. The electrode of the pH meter is dipped in a buffer solution with a known pH (4 and 7) to calibrate it.
- iii. After calibrating, the pH meter, the electrode is washed by dipping into distilled water to get rid of any adhered buffer.
- iv. The electrode is gently wiped with a tissue paper.
- v. The electrode is then dipped in the sample solution and its reading is noted.
- vi. The electrode is washed again by dipping in distilled water and the pH of the sample is measured two more times.

Observation:

| Sample | pH | | | Average pH |
|----------|-------|-------|------|------------|
| | 1 dip | 2 dip | 3dip | |
| Solution | 7.12 | 7.10 | 7.11 | 7.11 |

Result:

The pH of the given water sample was found to be 7.11, which indicates that the sample is acidic/alkaline/neutral in nature.

Precautions:

- i. The electrode bulb of the pH meter should always be clean, to avoid misleading of the result.
- ii. pH estimation is carried on spot immediately after collection of sample or the value changes.

TOTAL DISSOLVED SOLIDS (TDS) IN THE GIVEN WATER.

Principle: A well-mixed sample is filtered through a standard glass fibre filter, and retained on the filter is dried to a constant weight at 103-105°C. The increase in weight of the filter represents the total suspended solids. If the suspended material clogs the filter and prolongs filtration, the difference between the total solids and total dissolved solids may provide an estimate of the total suspended solids, the filtrate is evaporated to dryness in a weighed dish and dried to constant weight at 179-181°C. The increase in dish weight represents the total dissolved solids. A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue

Materials Required:

1. Evaporating Dish
2. Oven
3. Desiccator
4. Analytical Balance
5. Graduated Cylinders
6. Tongs
7. Filter

Procedure:

1. Testing of sample for total dissolved solids.

To measure total dissolved solids, take a clean dish which has been washed and dried in a hot air oven at 180°C for one hour.

- Now weigh the empty evaporating dish in analytical balance. Let's denote the weight measured as $W_1 = 35.43$ g.
- Mix sample well and pour into a funnel with filter paper. Filter approximately 80 -100 mL of sample.
- Transfer 75mL of unfiltered sample in the dish.
- Switch on the oven and allowed to reach 105°C. Check and regulate oven temperatures frequently to maintain the desired temperature range.
- Place it in the hot air oven and care should be taken to prevent splattering of sample during evaporation or boiling.
- Dry the sample to get constant mass. Drying for long duration usually 1 to2 hours is done to eliminate necessity of checking for constant mass.
- Cool the container in a desiccator. Desiccators are designed to provide an environment of standard dryness. This is maintained by the desiccant found inside. Don't leave the lid off for prolonged periods or the desiccant will soon be exhausted. Keep desiccator cover greased with the appropriate type of lubricant in order to seal the desiccator and prevent moisture from entering the desiccator as the test glassware cools.
- We should weigh the dish as soon as it has cooled to avoid absorption of moisture due to its hygroscopic nature. Samples need to be measured accurately, weighed carefully, and dried and cooled completely.
- Note the weight with residue as $W_2 = 35.44$ g.

Formula Used:

Total Dissolved Solids (TDS)= (A-B)X 1000

Volume of Sample (ml)

Where,

A= WEIGHT OF DRIED RESIDUE + DISC (mg)

B= WEIGHT OF DISC (mg)

Calculation:

Table

| Description | | Weight(g) |
|--|------------|------------------|
| Weight of the clean dish (g) | W1 | 35.43 |
| Weight of the dish and the residue (g) | W2 | 35.44 |
| Weight of residue (g) | W | 0.01 |
| Volume of sample (mL) | V | 50.0 |
| Total dissolved solids (mg/L) | TDS | 0.2 mg/L |

Precautions:

The following precautions should be observed while performing the experiment:

- Water or Wastewater samples which contain high concentrations of calcium, chloride, magnesium or sulfate can rapidly absorb moisture from the air.
- Such samples may need to be dried for a longer period of time, cooled under proper desiccation and weighed rapidly in order to achieve areas on a constant weight.
- We should be aware prolonged drying may result in loss of constituents, particularly nitrates and chlorides.
- Volume of sample should be adjusted to have residue left after drying as 100 to 200mg. It is mainly to prevent large amount of residue in entrapping water during evaporation.
- Samples with high concentrations of bicarbonate require additional drying at 180°C to ensure that all of the bicarbonate is converted to carbonate.

MODULE-10: REWINDING 3 PHASE MOTOR

Introduction: Rewinding 3 Phase Motor- Remove bearings, calculate new winding, rewind motor, reassemble it with new bearings and test motor. Rewinding is very long process. It took about two days to rewind it, replace all old parts and reassemble it.

Step 1: Analyse Motor

Three phase asynchronous motor is most common used motor in the world. It has very good efficiency and low manufacture and maintain costs. Two main parts of motor are rotor and stator. Rotor is usually made as squirrel-cage, and it is inserted in stators hole. Stator is made out of iron core and winding.

Stator is used to generate magnetic field. 3 phases generates rotation magnetic field so we don't need capacitor on three phase motor. Rotation magnetic field "cut" squirrel-cage, where it induces voltage. Because cage is short-circuited, voltage generates flow of electric current. Current in magnetic field generates force.

Because magnetic field must rotate faster than rotor to induce voltage in rotor. That's why motor speed is a little bit less then magnetic field speed ((3000 rpm [Magnetic field] -- 2810 rpm [Electric motor])). That's why we call them Three phase **ASYNCHRONOUS** electric motor.

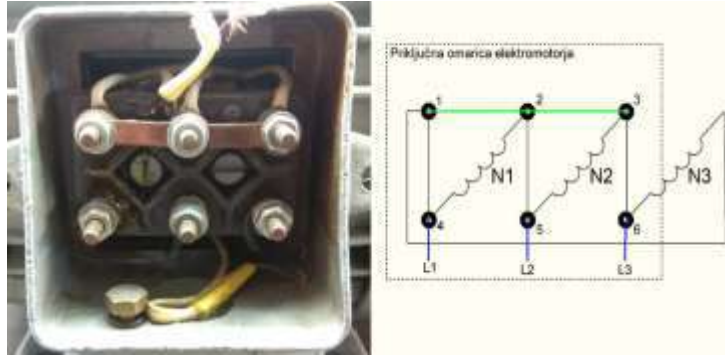
Step 2: Analyse Motor

Motors Inscription board

On the motors inscription board we can find most useful information about motor:

- Motors nominal voltage (for star (**Y**) and triangle (**D**) motor connection) [V]
- Motors nominal current (for star (**Y**) and triangle (**D**) motor connection) [A]
- Power of the electric motor [W]
- Power factor $\cos\phi$
- Rotation speed [rpm]
- Nominal frequency [Hz]

Step 3: Analyse Winding



Open the cover of conduit box.

Before measuring remove all connections in conduction box. Measure resistance for each winding, resistance between two different winding and resistance between winding and motors frame.

Resistances of three winding should be same (+/- 5%). Resistance between two winding and winding - frame should be more than 1,5 Mohm.

You can detect burned motors winding by unique smell (smells like burned lacque

Step 4: Disassembling Motor

Take few picture of motor. Mark spots between first cover and stator and second cower and stator (we will need this marked points at motors assemble).

Remove covers from motor. Usually they are attached on stator by long screws. If you cant separate cover and stator you can use rubber hammer. Gently hit cover and try to rotate it. If that wont works, heat it.

Step 5: Disassembling Motor

Remove rotor from stator. You can gently hit rotors axis with rubber hammer.

Step 6: Removal of Bearings

Use puller to remove bearings on both sides. You must be careful because you can easily damage the axis of rotor.

Step 7: Removal of Old Winding

First you need to cut old winding from stator. For this job use hammer and chisels. Try not to damage stators lamellas.

Do same on both sides of stator.

Step 8: Removal of Old Winding

Remove connections and conduit box from stator. In next step you will need to heat up old coils, and conduit box must be empty.

Step 9: Removal of Old Winding

Heat up winding with flame torch to burn out the rest of lacquer.

If you burned old lacquer you should be able to push remain winding out of stators gaps.

Step 10: Sandblasting

Sandblasting is process where sand hits surface of workpiece with very high speed and slightly damage it.

You can easily remove old colour form motor with sandblasting. While sandblasting you need to be careful, that you don't damage surface too much, especially edges of covers.

Step 11: Paint Motor

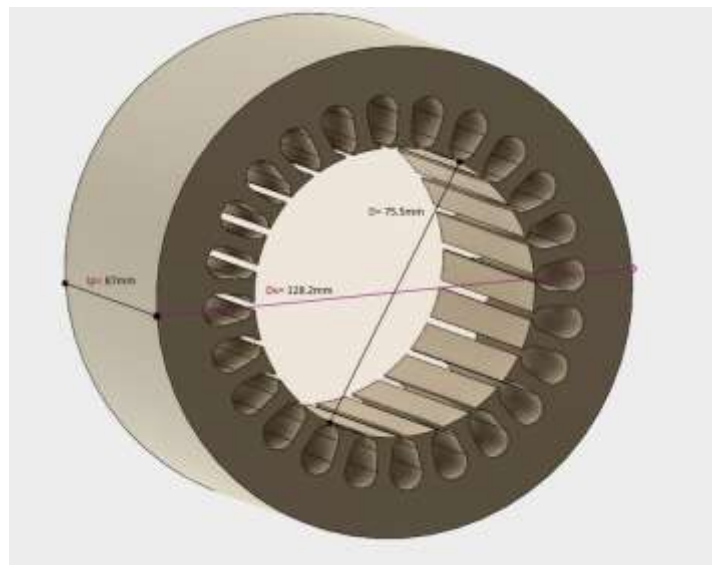
The colour must withstand at least 100 degrees Celsius. Make sure you don't paint inscription board.

Step 12: Identification of Old Winding

You can find all information about type of old winding in "winding head". Winding head is part of winding where all connections are made.

By the winding head (Type of winding), number of wires in each gap and thickness of the wire you can rewind new motors winding without doing calculations in next step.

Step 13: Calculation of Parameters for New Winding

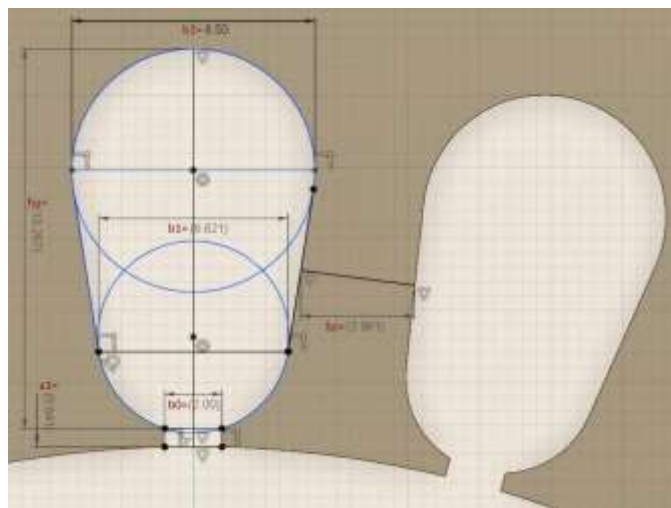


New winding of motor depends of stators package (dimensions of iron core). For better presentation i made 3D model of my statros package.

You need to measure following things:

- Length of stators package: $l_p = 87\text{mm}$;
- External diameter of statros package: $D_v = 128\text{mm}$;
- Inner diameter of stators package: $D = 75.5\text{mm}$;
- Number of stators gaps: $Z = 24$;

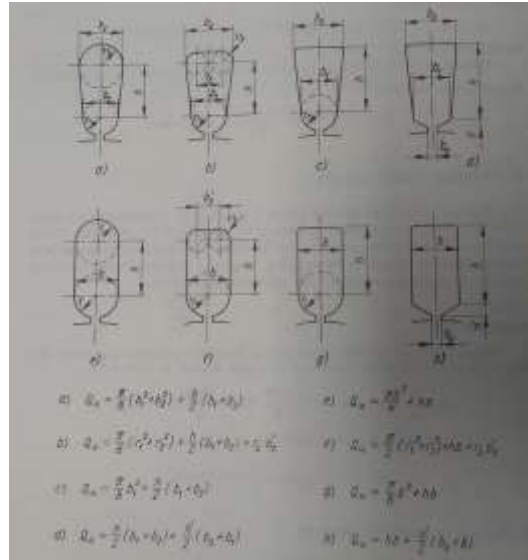
Step 14: Calculation of Parameters for New Winding



Now measure dimensions of stators slot.

- Width of stators slot: $b_1 = 6.621\text{mm}$; $b_2 = 8.5\text{mm}$;
- Height of stators slot: $h_u = 13.267\text{mm}$;
- Opening of stators slot: $b_0 = 2\text{mm}$;
- Height of slots "neck": $a_1 = 0.641\text{mm}$;
- Tooth width: $b_z = 3.981\text{mm}$;

Step 15: Calculation of Parameters for New Winding



If you have other shape of slot you look at upper picture.

Step 16: Calculate Number of Pole Pairs

Number of pole pairs depends on nominal frequencies and rotation speed of magnetic field. You can get rotation speed of magnetic field by rounding motors speed (2810) to closest value (3000, 1500, 1000, 750...).

Step 17: Calculate Number of Pole Pairs



I calculated that my motor has 2 pole pairs and it generates magnetic field as you can see on upper picture.

Step 18: Calculate Pole Step

$$\tau = \frac{\pi \cdot D}{2 \cdot p} = \frac{3.14 \cdot 75.5}{2 \cdot 1} = 118.53 \text{ mm}$$

Where is:

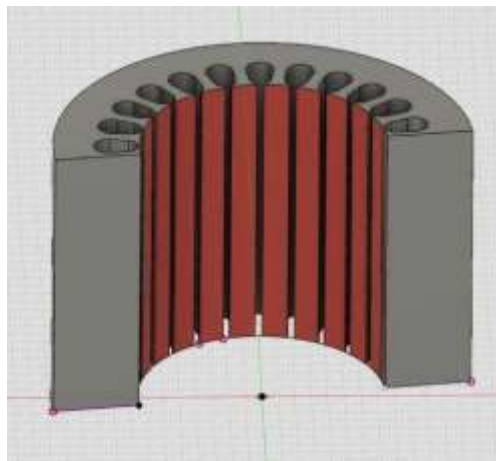
τ – Pole step

D – Inner diameter of stators package (mm)

p – Number of pole pairs

Pole step is distance on inner circle of stator, and it marks size of each pole.

Step 19: Calculate Pole Surface



Pole surface is marked red on picture two. One pole surface is exactly half surface of stator, that is because i have 2 pole motor.

Step 20: Calculation of the Tooth Length

Step 21: Calculation of the Height of the Yoke of the Stator

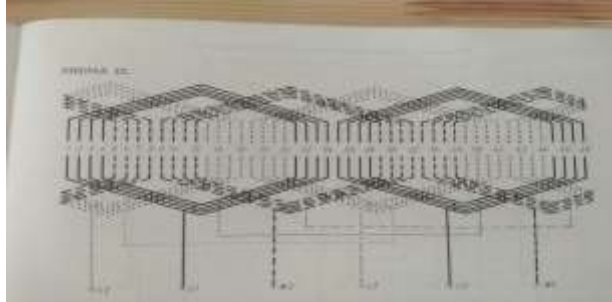
Stators yoke is part of stators package which extends from stators tooth to end of package.

Step 22: Calculation of the Yoke Cross Section

Step 23: Calculation of the Cross Section of Teeth of One Pole

Step 24: Calculation of the Slot Surface

Step 25: Choosing the Type of Winding



I chose type of winding based on my motors specifications. In winding books there is a lot of different types of winding diagrams. Each one is drawn for different amount of pole pairs.

I took winding on the picture from winding book. My new winding was three phase single layer concentric winding.

Step 26: Calculation Number of Slots Per Pole and Phase

Step 27: Calculation of Pole Step (in Slots)

Step 28: Winding Factor-There is a table in upper picture. You cant pick up winding factor from table if you have one layer winding.

Step 29: Induction in the Air Gap

Select appropriate value of induction in air gap from table. It depends on number of pole pairs. If motor is older chose column **I**, else chose value from column **II**.

Step 30: Calculation of the Induction in the Teeth of the Stator

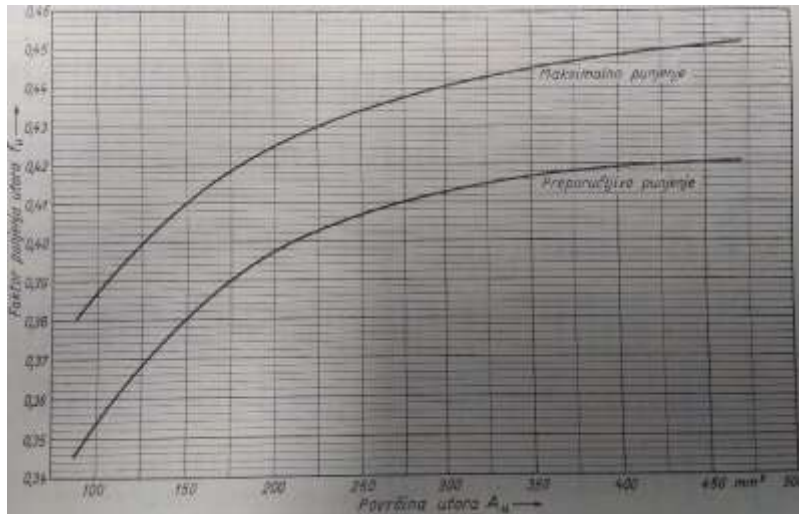
Step 31: Calculation of the Induction in the Stator Yoke

Step 32: Calculation of the Magnetic Flux of One Pair of Poles

Step 33: Calculation of the Calculation Number of Turns in the Phase

Step 34: Calculation of Calculation Number of Turns in Slot

Step 35: Determine the Filling Factor



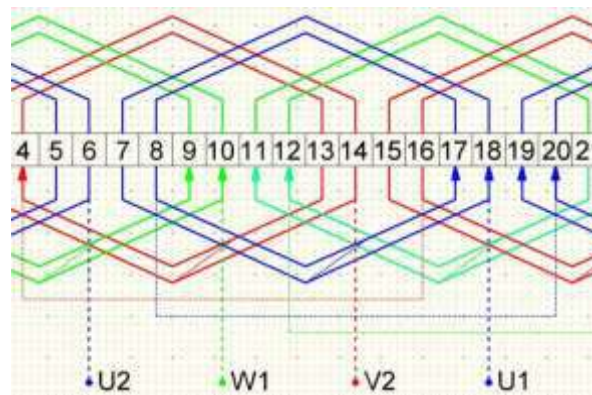
To get right filling factor you need to have surface of your slot. Then you easily write down filling factor from upper graph. Filling factor must be between upper and bottom recommended line.

Step 36: Calculation of Cross Section of the Wire

Step 37: Calculation of Thickness of Wire

According to the result you pick a wire which is in +/-2% range of result. I picked 0,8mm wire.

Step 38: Winding Diagram



I remade winding diagram from book, so it fits into my stator. I draw new winding diagram which i had used at winding motor.

Second picture is showing the magnetic field generated by stators winding. O and X are showing direction of electric current. Current which is flows inside picture has clockwise direction of magnetic field. If would had 4 pole motor we would have 4 areas instead of 2 areas of magnetic field.

Step 39: Isolating Stators Slots



Measure length of slot, and add about 16mm (depends of how you will twist paper). Cut it and twist it as I have done on gifs. Put isolate paper on table, and place ruler on it, so you get about 4mm gap in witch you will insert isolate paper and then twist it. Use screwdriver to bend it and insert it in gap. It should fit perfectly so you cant pull it out.

Step 40: Measure Length of Coils



Make model of coil. Place model in right slots, leaving some free space. You must not leave too much space, because winding would be too bit, and you must not make it too small, because you will not be able access to all slots.

Step 41: Winding Coils

Place model in special tool. Free 3d model of winding tools are available on "Rewinding one phase motor" instructables. Make sure you wind correct number of turns. After you wind coil you need to tie it up with piece of wire. Then you can take it of winding tool.

Step 42: Inserting Coils in Stators Slots



Careful place coils in stators slots. This can take a long time to do. Be gently so you don't damage wires lacquer. Rotate coils so their end wires will come out on the side, where is the hole from stator to electrical clips. You can use wooden stick to put winding in slots.

Mark ends of coils!

Step 43: Connecting Coils

Wire coils together according to winding diagram. Solder and isolate them. End of each coil wire to conduit box and extra isolate them.

Step 44: Bind the Coils

Bind the coils with the stator lacing thread. Sew stator lancing thread around coils, as you can see on pictures. Tight winding well.

Step 45: Varnishing the Motor

1. Heat up cooking oven to 100 °C. Put motor in it.
2. When motor heats up, spills lacquer on motors coils as you see on pictures
3. Turn motor around and do the same
4. You can reuse old lacquer.
5. Put motor in hot oven, and cook it for about 4 hours
6. Take motor out and clean edge (so cover will fit perfectly).

DON'T DO IT INSIDE BUILDING OR KITCHEN!

Step 46: Reassemble Motor

Attach new bearings. Lubricate axis of rotor. You find type of bearing on side of bearing. If you cant find it, you can measure it and find number in catalogue on internet.

Step 47: Reassemble Motor

Attach cover on stator. Watch marks to put it into right place.

Step 48: Reassemble Motor

Put rotor in stator, and close it with second cover. Screw motor together.

Step 49: Reassemble Motor



Connect end of coils to clips, according to picture from analyse motor.

Step 50: Reassemble Motor

Put ventilator and last cover on motor. If you have iron ventilator heat it.

Step 51: Measurement

Measurement of resistance

| Winding | resistance [Ω] |
|-----------------|-------------------------|
| R ₁ | 4,5 |
| R ₂ | 4,66 |
| R ₃ | 4,18 |
| R ₁₃ | 8,68 |
| R ₁₂ | 9,16 |
| R ₂₃ | 8,84 |

3 More Images

Step 52: Conclusion



MODULE-11: AUTOCAD, 3D AND CFD

Basic Introduction to Engineering Drawing & AutoCAD

Engineering Drawing is a type of Technical drawing used to fully and clearly define requirements for engineered items. Engineering Drawing is the Engineer's Language across the world. As the drawing prepared by engineer in any country can easily understood by engineers all over the world. In India, Bureau of Indian Standards (BIS) adapted the International Standards on codes of practice for drawing to serve as a means of communication.

Types of Engineering Drawing

- Machine Drawing
- Production Drawing
- Part Drawing
- Assembly Drawing

Computer Aided Design & Drafting (CADD)

The term Computer Aided Design & Drafting (CADD) applies to a wide range of programs that allows user to create Drawings, plans, and designs electronically i.e. computers, etc.

AutoCAD

AutoCAD is one the such programs that allows user to create drawings, plans, and designs in 2D/3D. It is relatively easy to use and is very comprehensive to create 2D and 3D drawings.

Advantages of AutoCAD

- i. Drawing may be created more quickly and accurately.

- ii. Making changes is more efficient and easier.
- iii. It allows views of same objects and also in 3D view.
- iv. AutoCAD drawing can also be transferred anywhere via. disk or pen drives, mails, etc.

TOPIC: - Starting with Basics of AutoCAD

AutoCAD User Interface – It is the main screen which appears when start the AutoCAD. It Consists of following:

- Menu Bar
- Quick Access Toolbar
- Drawing Title
- Tabs
- Panels
- Graphics Window/ Workspace
- Command Window
- View Cube
- Navigation Bar
- Workspace switching
- Status Bar, etc.

Co-ordinate System – Also referred as World Coordinate System (WCS). To locate any point in AutoCAD one must use following Co-ordinate System:

- i. Absolute Co-ordinate System (X, Y) – SYNTAX: [X, Y]
- ii. Relative Co-ordinate System (@X, T) – SYNTAX: [@X, Y]
- iii. Polar Co-ordinate System (@D < A) – SYNTAX: [@DISTANCE < ANGLE]

Units – UNITS command is used to control the precision and display formats for co-ordinates, distances, and angles. The available drawing units' types are:

- Architectural – 1", 2^{1/2}", etc.
- Decimal – 1.0, 4.2, etc.
- Engineering – 1.4", 2.5", etc.
- Fractional – 1, 1^{1/2}, etc.

- Scientific – 1.000E+00, 2.500E+1

COMMAND – (UN)UNITS + ENTER

TO EXIT FROM ANY COMMAND – PRESS ENTER / ESC

Limits – Using LIMITS command creates an invisible rectangular boundary by giving the values of LOWER LEFT CORNER and UPPER RIGHT CORNER.

COMMAND – (LIMI)LIMITS + ENTER

COMMANDS – Commands in AutoCAD are given in Table:

Table: A table of Basic commands in AutoCAD

| Sr. NO. | COMMANDS | USE |
|---------|---------------------|--|
| 1. | LINE(L) | To Draw individual lines or number of attached lines |
| 2. | CIRCLE(C) | Draw circle of desired dimension |
| 3. | ARC(ARC) | Create the arc entity in counter clockwise rotation |
| 4. | ZOOM(Z) | Use to increase or decrease the magnification of the object |
| 5. | ERASE(ERASE) | Used to remove/delete the no. of objects. |
| 6. | COPY(CO/CP) | Used to duplicate the object. |
| 7. | MOVE(M) | Used to displace the object/part from its base point |
| 8. | OFFSET(O) | Used to create concentric circles, parallel lines, etc. |
| 9. | ORTHO(F8) | Used to create straight lines in AutoCAD |
| 10. | OSNAP | Used to track the alignments paths when specifying points in a command |
| 11. | POLYGON(POL) | Used to create an equilateral closed polyline. Any value b/w 3 and 1024 for no. of sides for a polygon |
| 12. | TRIM(TR) | Used to delete the unwanted parts of an object |
| 13. | JOIN(J) | Used to join the endpoints of linear and curved objects to create a single object |

| | | |
|-----|-----------------------------------|--|
| 14. | EXTEND(EX) | Used to extend the object to meet the edge of other objects |
| 15. | RECTANGLE(REC) | Used to create rectangle by specifying the rectangle parameters |
| 16. | MIRROR(MI) | Used to create symmetric objects easier and quicker |
| 17. | ROTATE(RO) | Used to rotate the objects around the base point at specified angle |
| 18. | ELLIPSE(EL) | Used to create ellipse or elliptical arc entity |
| 19. | REVISION CLOUD | Used to highlight the parts of drawing that are being reviewed |
| 20. | POLYLINE(PL) | Used to create a single object that is composed of line and arc segments. |
| 21. | SPLINE(SPL) | Used to create a smooth curve that passes through a set of fit points or control vertices (CVs) |
| 22. | FILLET(F). | Used to make curves by removing the sharp corners |
| 23. | CHAMFER(CHA) | Used to create bevels at the corners of the objects |
| 24. | BLEND CURVE(BLEND) | Used to create spline b/w two selected lines or curves |
| 25. | MULTILEADER(MLD) | Used to create multileader objects consists of an arrowhead a horizontal landing, a leader line or curve or text |
| 26. | MULTILEADER STYLE(MLS) | Used to create and modify multileader styles |
| 27. | POINT(PO) | Used to create a point object at desired location |
| 28. | SCALE(SC) | Used to enlarge or reduce the sizes of the selected objects, keeping the proportions of the object same |
| 29. | HATCH(H) | Used to fill an enclosed area or selected objects with a selected hatch pattern, solid fill or a gradient fill |
| 30. | BLOCK(B) | Used to create a block definition from selected objects |
| 31. | DIVIDE(DIV) | Used to create evenly spaced point objects or blocks along the length or perimeter of an objects |

| | | |
|-----|------------------------------------|---|
| 32. | ARRAY(AR) | Used to create child entities for the selected parents' objects in a particular order |
| 33. | LAYER(LA) | Used to reduce the visual complexity of a drawing by managing the layers and their properties |
| 34. | MATCH PROPERTY | Used to match the property of layers when different featured layer is applied to same objects |
| 35. | TEXT | Used to create a single-line or multi-line text object |
| 36. | TEXT STYLE(ST) | Used to create, modify or specify text styles |
| 37. | TABLE | Used to create an empty table object, which is used to fill the data in a row against column |
| 38. | DIMENSION(DI) | Used to annotate the different parameters such as linear length, angular, angles, etc. |
| 39. | DIMENSION STYLE(D) | Used to create and modify the dimension setting that control the appearance of dimensions |
| 40. | MULTILINE(ML) | Used to create a set of parallel lines with different properties in single go |
| 41. | MULTILINE STYLE(MLSTYLE) | Used to create, modify, save and load multiline styles |
| 42. | MULTILINE EDIT(MLEDIT) | Used to edit the multiline creation methods at the intersections |
| 43. | MEASURE(ME) | Used to create point objects at measured intervals along the length or perimeter of an object |
| 44. | EXTERNAL REFERENCES(ER) | Used to organise, display and manage referenced files, such as DWG files, DWF, DWFx, PDF, etc. |
| 45. | ATTRIBUTE(ATT) | Used to create a label or tag for storing data in a block |
| 46. | LAYOUT(PAGESETUP) | Used to control the page layout, plotting device, paper size, and other setting for each new layout |
| 47. | VIEWPORT(VPORTS) | Used to create multiple viewports in model space or paper space |
| 48. | USER COORDINATE SYSTEM(UCS) | Used to set origin and orientation of the current user coordinate system |
| 49. | EXTRUDE | Used to create a 3D solid from an enclosed sketch |

| | | |
|-----|----------------------|--|
| 50. | REVOLVE | Used to create a 3D solid or surface by sweeping a longitudinal section objects around an axis |
| 51. | SWEEP | Used to create 3D solid or 3d surface by sweeping a 2D objects along an open or closed path |
| 52. | LOFT | Used to create a 3D solid or surface feature by blending two different sections |
| 53. | PRESSPULL | Used to dynamically modify the objects by extrusion and offset |
| 54. | UNION | Used to combine 2 or more 3D solids, surfaces, or 2D regions into a single, composite 3D solid, surface, or region |
| 55. | SUBTRACT | Used to remove the portion of existing object using another intersecting object |
| 56. | INTERSECT | Used to create a 3D solid, surface from overlapping solids, surface or regions |
| 57. | RENDER | Used to create a photorealistic image from 2D or 3D model |
| 58. | MATERIAL(MAT) | Used to provide the specific material to the 3D solid or surface |

TASKS IN AUTOCAD

TASK – 1: To draw the Fig. in AutoCAD.

Procedure – To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open AutoCAD and click on New Drawing.
2. Set limit using **LIMIT** command from (0,0) to (500,500).
3. Now draw a line of length 50mm in positive x-axis using line command.
4. Again, draw a line of 37mm at an angle of 25° from x-axis.
5. Create a line of 72mm, joining the end of above line.
6. Now, create a line 40mm in y-axis.
7. Create a line of 40mm in x-axis joining the end of above line.
8. Now, create a line of 50mm an angle of 45° with x-axis.
9. Now, offset the above line using an **OFFSET** command through a distance of 40mm.

10. Now, join the both ends of above both lines through lines.
11. Now, create a line from the midpoint of the joining line of 42mm in negative x-axis.
12. Create a line of 30mm in y-axis while joining the second end of above line.

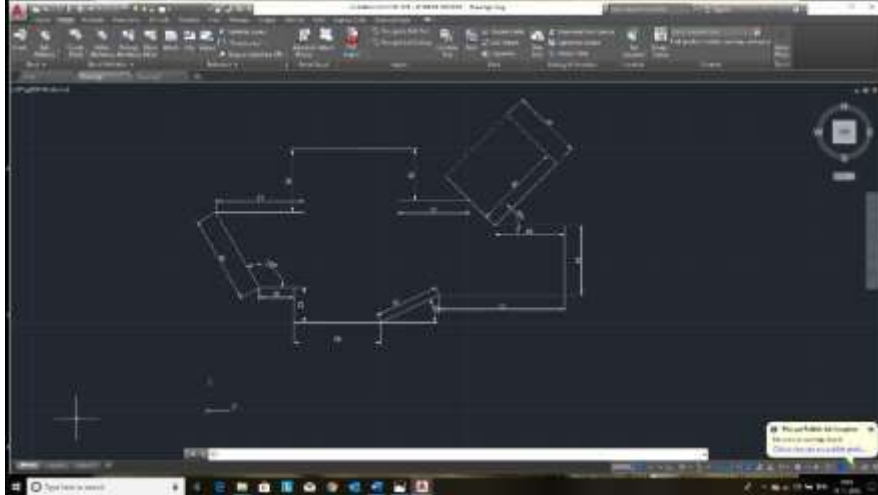


Fig. A view of AutoCAD Drawing

13. Now, create a line of 20mm in y-axis from the starting point of line in STEP 3.
14. Now, create the line of 20mm in negative x-axis joining the above line.
15. Create the line of 50mm at 120° with x-axis at an end of above line.
16. Now, create the line of 51mm in x-axis joining the end of the above line.
17. Create the line of 36mm in y-axis joining the above line.
18. Now, join the end points of above line and line in drawn in STEP 12.
19. And at last save the file.

TASK – 2: To draw the Fig. in AutoCAD.

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open AutoCAD and click on New Drawing.
2. Set limit using **LIMIT** command from (0,0) to (500,500).
3. Create a line of 12mm using **LINE** command in positive x-axis direction.
4. Now, offset the above line through 1mm in positive y-axis using **OFFSET** command.
5. Create the lines of 5mm joining the end points of line in STEP 3 on both sides.
6. Create the line of 9.9mm at a distance of 2mm in negative x-axis.

- Mirror the above line using **MIRROR** command and taking the mirror line from mid of the line in STEP 6.

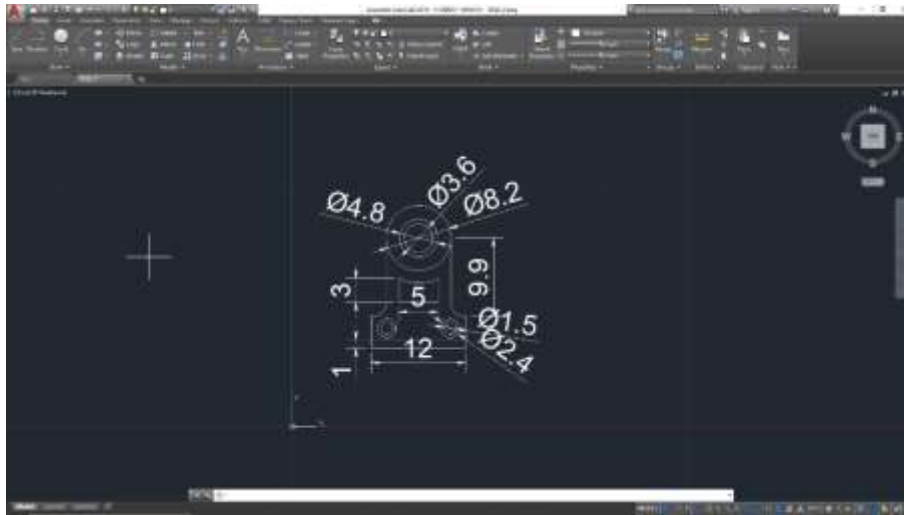


Fig. A View of AutoCAD drawing of task 2

- Now, fillet the lines in STEP 5 and STEP 6 of radius 2mm using **FILLET** command.
- Now, draw the circle of diameter 8.2mm, joining the end points of lines in STEP 6 and 7 using **CIRCLE** command.
- Again, create a circle of dia. 4.8mm using center point of above circle as the center point of this circle.
- Now, Offset the above circle by 0.4mm in inward direction using **OFFSET** command.
- Now, create the circle of dia. 2.4mm at a distance of 2mm and 2.5mm from lines of STEP 3 and 5 on sides above the lines using **CIRCLE** command.
- Again, offset the above circles through 0.9mm in inward direction using **OFFSET** command.
- Now, provide the dimensions to the drawing using **DIMENSION** command.
- At last, save the file.

TASK - 3: To draw the Fig. in AutoCAD.

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

- Open AutoCAD and click on New Drawing.
- Set limit using **LIMIT** command from (0,0) to (500,500).

3. Create the equilateral triangle of side length 112mm using the **POLYGON** command and giving the number of sides 3.
4. Now, rotate the above triangle taking the center of the triangle as the base point for rotation and rotate it 180° using **ROTATE** command with **COPY** in rotate command.

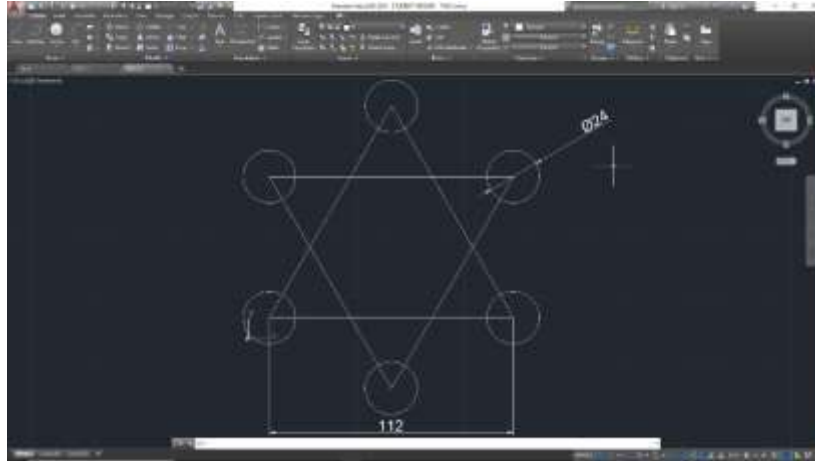


Fig. A View of AutoCAD drawing of task 3

5. Now, create a circle of diameter 24mm at any edge of triangles using **CIRCLE** command.
6. Now, array the above circle to every edge of both triangles using **ARRAY** command.
7. Provide the dimension to the drawing.
8. At last, save the file.

TASK - 4: To draw the Fig. in AutoCAD.

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open AutoCAD and click on New Drawing.
2. Set limit using **LIMIT** command from (0,0) to (500,500).
3. Now, create the concentric circles of diameters 234mm, 214mm, 140mm and 46mm using **CIRCLE** command.
4. Again, create the circles of diameters 74mm, 54mm and 34mm taking the base to one of the co-ordinates of the circle with dia. 140mm using **CIRCLE** command.
5. Now, array the above created circles in 4 at 90° each, taking the center of circles of STEP 3 as center of array using **ARRAY** command without association.

6. Now, create a circle tangent to circles having diameters 34mm, 46mm and 34mm respectively using **CIRCLE (TAN TAN TAN)** command.
7. Offset the above circle through 10mm touching the corresponding circles of same dia. Of 54mm using **OFFSET** command.
8. Again, repeat the above STEP with the circles having dia. of 74mm both.
9. Now, remove the unwanted objects using **TRIM** command.

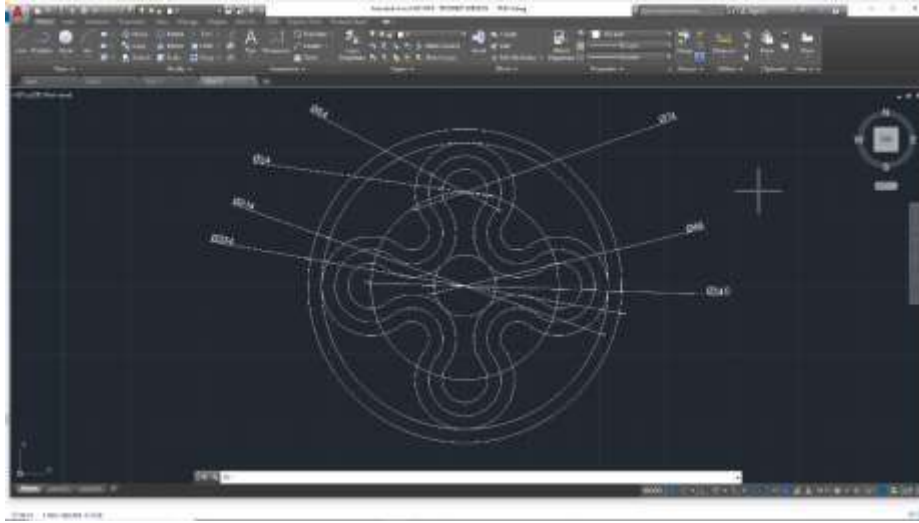


Fig. A view of AutoCAD drawing of task 4

10. After removing the unwanted objects array the remaining parts of STEP 6, 7 and 8 at an angle of 90° and no. of item should be kept 4 without association using **ARRAY** command.
11. At last, save the drawing.

TASK - 5: To create the given drawing in AutoCAD.

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open AutoCAD and click on New Drawing.
1. Set limit using **LIMIT** command from (0,0) to (500,500).
2. Create two circles of same diameter of 26mm in a same line at a center to center distance of 38mm using **CIRCLE** command.
3. Create two circles inscribed in above circles of diameter of 10mm with same center points.
4. Again, create a circle of radius 32mm tangential through the above circles.

5. Mirror the above circles of STEP 3, 4 and 5 at distance of 100mm from the centers of the circles in y-axis using **MIRROR** command.
6. Trim the unwanted objects from the drawing using **TRIM** command.
7. Now, create concentric circles of diameter 64mm and 38mm respectively in of the above circles using **CIRCLE** command.
8. Create a circle of diameter 30mm at a distance of 46mm from the center of above circles in x-axis direction.

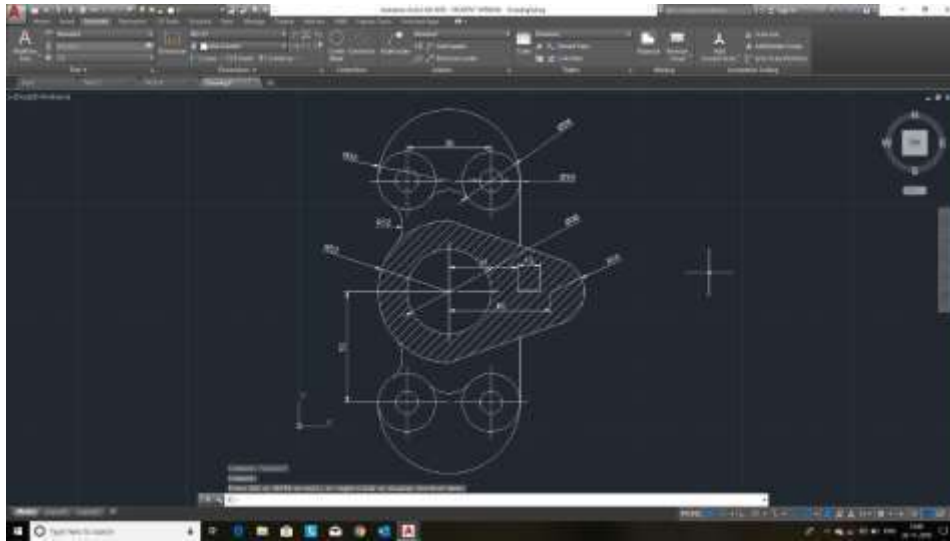


Fig. A View of AutoCAD drawing of task 5

9. Joint the y quadrants of circle having dia. 64mm tangentially to the circle of above STEP using **LINE** command.
10. Trim the unwanted objects from the using **TRIM** command.
11. Provide the dimension to the drawing.
12. At last, save the drawing.

TASK - 6: To create the drawing with different views in AutoCAD.

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open AutoCAD and click on New Drawing.
2. Set limit using **LIMIT** command from (0,0) to (500,500).

I. FRONT VIEW –

1. Create a line of 10mm in x-axis using **LINE** command.

2. Create line of 12mm perpendicular to above line from its starting point.
3. Again, create a line perpendicular to the above line of 45mm in positive x-axis.
4. Offset the line of STEP 2 through 45mm in positive x-axis.
5. Now, create a line of 2mm from the other end of the line of STEP 1 in Y-axis.
6. Now create a line of 25mm in x-axis from the above line.
7. Offset the line of STEP 4 though 25mm in positive x-axis direction using **OFFSET** command.
8. Now join the lines of STEP 4 and 7 with line using **LINE** command.
9. Create a line of 43mm through the point of join of lines in step 3 and 4 in y-axis.

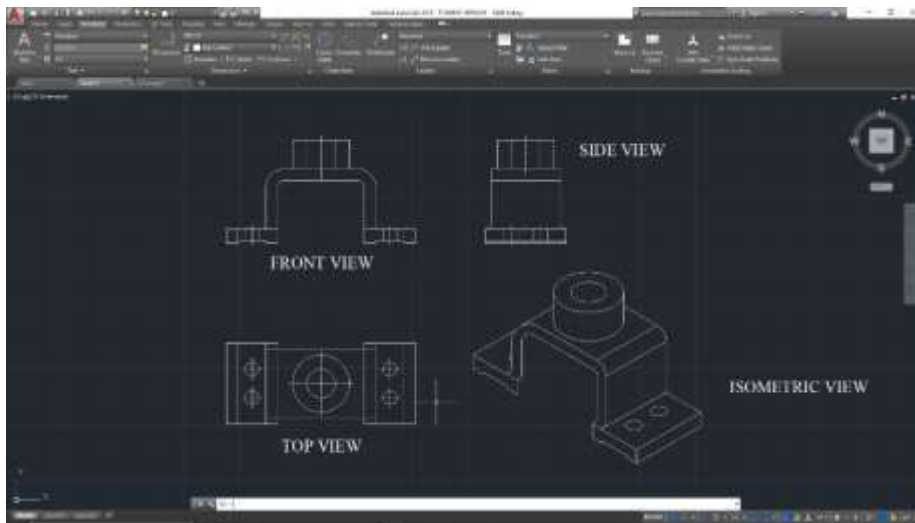


Fig. A View of drawing with different views in AutoCAD

10. Create parallel line of 53mm at distance of 10mm from the above line on the line of STEP 3.
11. Create perpendicular line of 48mm from above the line.
12. Again, create a perpendicular line of 38mm from the line of STEP 9.
13. Now, create a perpendicular line of 25mm from the line of STEP 11 in positive y-axis.
14. Create a line perpendicular to the above line of 25mm in negative x-axis.
15. Create a line perpendicular to the above line of 25mm in negative y-axis.
16. Apply the fillet to the lines of STEP 10 and 11 through radius of 16mm using **FILLET** command.

17. Apply the fillet to the lines of STEP 9 and 12 through radius of 6mm using **FILLET** command.

18. Now, mirror the drawing created using **MIRROR** command.

II. TOP VIEW –

1. Using the command **XLINE** take the reference infinity lines in **vertical** direction from the above **FRONT VIEW**.
2. Create perpendiculars lines to the reference lines as shown in drawing using **LINE** command.
3. Create the concentric circles of diameter 50mm and 25mm respectively at midpoint of the above drawing using **CIRCLE** command.
4. Now, create circles of diameter 12mm to the mid plane of the line of STEP 3 in above view keeping center to center distance of 25mm.
5. Denote the dotted lines of the drawing using **DLINE** command.

III. SIDE VIEW –

1. Using the command **XLINE** take the reference infinity lines in horizontal direction from the above **FRONT VIEW**.
2. Create perpendiculars lines of 12mm to the reference lines as shown in drawing using **LINE** command.
3. Create perpendiculars lines of 53mm at a distance of 5mm to the reference lines as shown in drawing using **LINE** command.
4. Mirror the above line though 61mm using **OFFSET** commands.
5. Join the end points of the lines in STEP 3 and 4 through line using **LINE** command.
6. Now, create a line of 25mm at a distance of 5.5 from the one end of above line.
7. Offset the above line through 50mm using **OFFSET** command in positive x-axis.

TASK - 7: To create the layout of socket of cotter joint assembly in AutoCAD.

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open AutoCAD and click on New Drawing and configure the **layout 1** from status bar.
2. Open page setup manager, select layout 1 and click modify.
3. In **Page Setup-Layout 1** under printer/plotter, select the name as **DWG to PDF** and select properties.

4. It opens the **Plotter Configuration Editor**, select custom paper sizes and click **Add** button.
5. It displays **Custom Paper Size-Begin** dialog box, select use existing and selected **ISO A4 (297.00 × 211.00 mm)** and click **next** button.
6. Click **Finish**. Now the custom paper size is added. Select the **A3 sheet** and click **ok**.
7. Now, select the above custom paper created.
8. Click **ok** to close the dialog box. Now the layout screen will appear.
9. Add text using **MTEXT** command and attributes.
10. **Save** as the layout as template.
11. Close the drawing.
12. Open the drawing **projection_view.dwg** and import the layout template file.
13. Select **layout 1** and click **ok**. The new layout is added to the drawing.
14. Press CTRL+P. Set the required details.

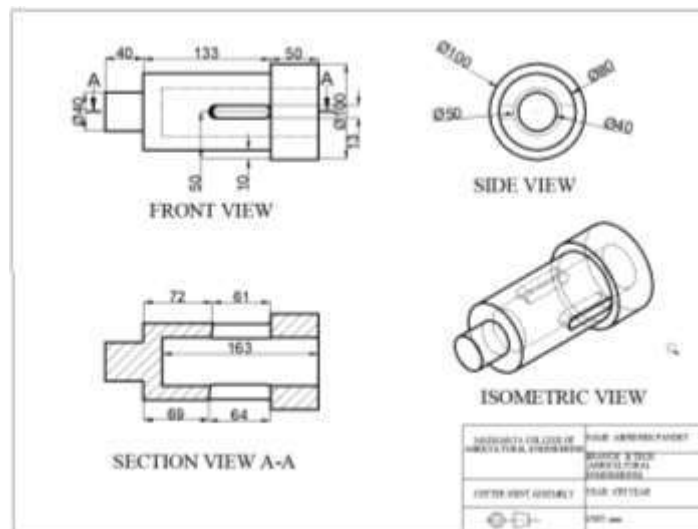


Fig. A view of Layout drawing in AutoCAD

15. Select the plot method area by **window** method and click **preview**.
16. Set the plot style to **acad.ctb** and click **preview**.

AUTOCAD 3D:

To draw 3D drawing shown in Fig. in AutoCAD.

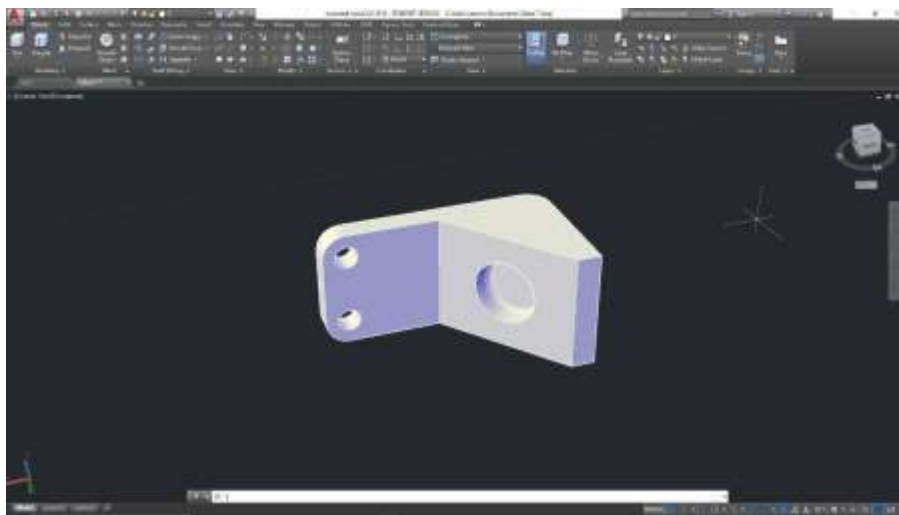
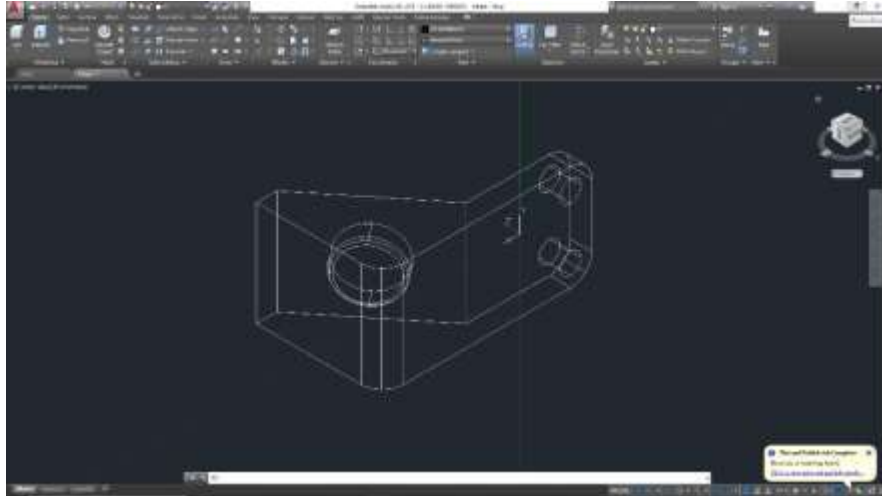


Fig. A View of 3D drawing in AutoCAD

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open New AutoCAD drawing and switch to 3D workspace.
2. Draw a 2D profile of the above Fig.
3. **Visual Style Controls** should be kept in **2D wireframe**.
4. Create a line of 10mm in positive x-axis using **LINE** command.
5. Create a perpendicular line to above line of 6mm from one end of above line.

6. Create another line of 1mm perpendicular to the above line.
7. Create a line of 1mm from other end of line of STEP 3 in positive y-axis.
8. Create a perpendicular line of 5mm from above line in negative x-axis direction.
9. Join the ends of lines of STEP 5 and 7 using **LINE** command.
10. Join the above profile as one object using **JOIN** command.
11. Now, extrude the above profile by 5mm using **EXTRUDE** command.
12. Now, select the **UCS+F** to place the co-ordinate system on the inclined face.
13. Create a circle of diameter 2.8mm on inclined face at a distance of 1.8mm of quadrant from line of STEP 6 and from center 3.2mm using **CIRCLE** command.
14. Press the above circular sketch through 1mm in the 3D profile using **PRESSPULL** command.
15. Similarly, placing **UCS** at 3D profile created by line of STEP 8 using **UCS+F**
16. command.
17. Create two same diameter circles at a distance of 3mm from center to center and 4mm away from contact line of plane and inclined surface using **CIRCLE** command.
18. Press the above circles profile through 1mm in the 3D profile using **PRESSPULL** command.
19. Now apply fillet to the corners of 3D profile as shown in Fig. radius of 1mm using **FILLET** command.
20. Now, to view the 3D view of the above profile change the **Visual Style Controls** from **2D WIREFRAME** to **CONCENPTUAL**.
21. At last, save the drawing.

TASK - 1: To create the parts of Cotter Joint Assembly as in Fig. in AutoCAD.

Procedure - To draw the drawing shown in Fig. in AutoCAD following steps should be followed:

1. Open New AutoCAD drawing and switch to 3D workspace.

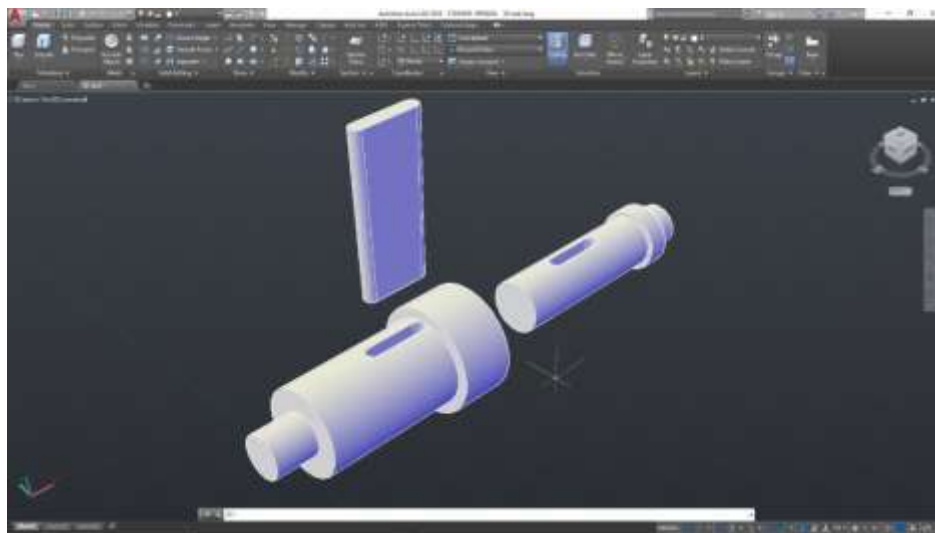
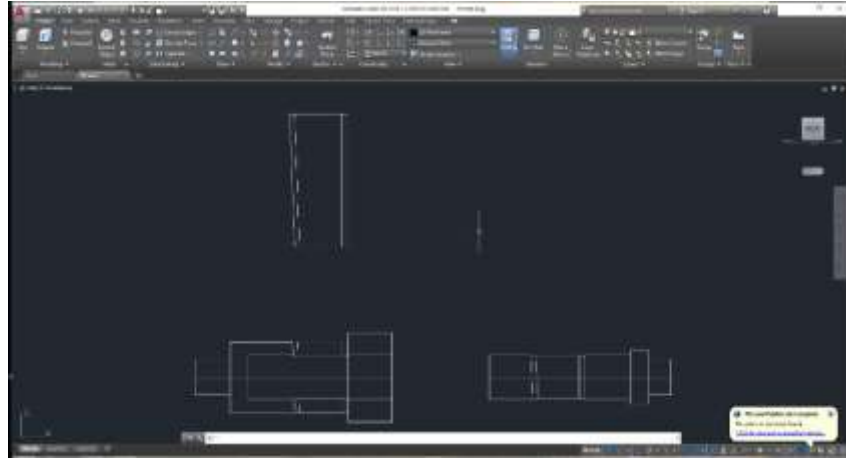


Fig. – A View of 2D & 3D Drawing of Parts of Cotter Joint Assembly

For SOCKET – Open a drawing workspace in 2D wireframe and draw the profile as described below:

1. Create line of 25mm in the y-axis using **LINE** command.
2. Again, create a line perpendicular to the above line of 50mm.
3. Create a line of 10mm perpendicular to the above line.
4. Create line of 133mm in the x-axis direction from the end point of above line.
5. Again, create the line of 20mm perpendicular to the above line.
6. Create line of 40mm in x-axis direction.
7. Create a perpendicular line of 20mm to the above line through its end point.
8. Create line of 55mm parallel to line of STEP 6 and joining end point of above line.
9. Create a line of 45mm perpendicular to above line through its end point.

10. Close the profile by joining end points of lines of STEP 1 and 9 using **LINE+CLOSE** command.
11. Join the profiles as single profile using **JOIN** command.
12. Revolve the above profile through the center line using **REVOLVE** command.

For SPIGOT –

1. Create line of 20mm in the y-axis using **LINE** command.
2. Again, create a line perpendicular to the above line of 25mm.
3. Create a line of 10mm perpendicular to the above line.
4. Create line of 20mm in the x-axis direction from the end point of above line.
5. Again, create the line of 5mm perpendicular to the above line.
6. Create line of 160mm in x-axis direction.
7. Create a perpendicular line of 25mm to the above line through its end point.
8. Create line joining end points of above line and line of STEP 1.
9. Join the profiles as single profile using **JOIN** command.
10. Revolve the above profile through the center line using **REVOLVE** command.

For COTTOR –

1. Create a line of unknown length and at an angle of 92° from the x-axis using **LINE** command.
2. Create another line from above line of length 66mm and perpendicular to it.
3. Create line of 150mm, perpendicular to the above line and through its end point.
4. Create a perpendicular line of unknown length from the end point of above line and joining the line of STEP 1.
5. Remove the excess extensions of lines using **TRIM** command.
6. Join the above profile as single profile using **JOIN** command.
7. Extrude the above profile through 13mm using **EXTRUDE** command.
8. Fillet the corners of the lines of STEP 1 and 3 using **FILLET** command through radius of 6.5mm.

TASK - 2: To create Assembly of Cotter Joint in AutoCAD as in Fig.

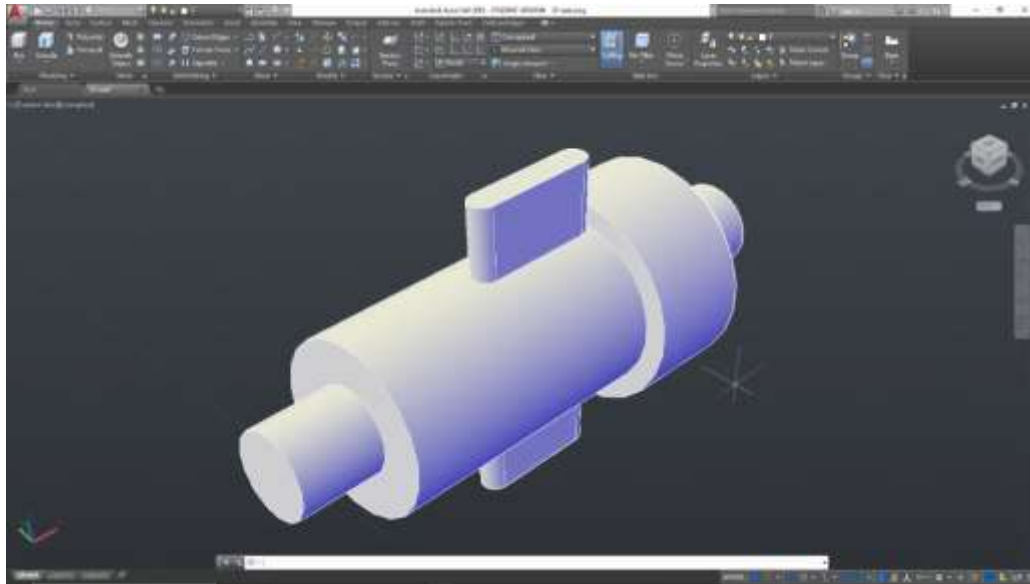


Fig. A View of Assembly of Cotter Joint

Procedure - To draw the drawing of Fig. in AutoCAD following steps should be followed:

1. Open New AutoCAD drawing and switch to 3D workspace.
2. Recall the base parts of the following assembly from **BASE** in **View Section**.
3. Make the parts align according to the assembly of the parts using **3D ROTATE** and **3D MOVE** commands.
4. To assemble the parts, use **ALIGN** command.
5. Firstly, activate the **ALIGN** command and then select the spigot part and click **ENTER**.
6. Define first point on spigot and second point on the socket, then click **ENTER**.
7. Again, activate the **ALIGN** command and select the cotter and click **ENTER**.
8. Define first point on cotter and second point on the socket, then click **ENTER**.
9. At last, save the assembly.

CFD:

BUILD GEOMETRY

This is the beginning of Preprocessing.

Step 1: Define rectangles.

There are several ways to create the model geometry within ANSYS, some more convenient than others. The first step is to recognize that you can construct the bracket easily with combinations of rectangles and circle Primitives.

Decide where the origin will be located and then define the rectangle and circle primitives relative to that origin. The location of the origin is arbitrary. Here, use the center of the upper left-hand hole. ANSYS does not need to know where the origin is. Simply begin by defining a rectangle relative to that location.

In ANSYS, this origin is called the global origin.

1. Main Menu> Preprocessor> Modeling>Create> Areas> Rectangle> By Dimensions

2. Enter the following:

X1 = 0 (Note: Press
the Tab key between
entries)

X2 = 6

Y1 = -1

Y2 = 1

3. Apply to create the first rectangle.

4. Enter the following:

X1 = 4

X2 = 6

Y1 = -1

Y2 = -3

5. OK to create the second rectangle and
close the dialog box.

Structural Tutorial

Step 2: Change plot controls and replot.

The area plot shows both rectangles, which are areas, in the same color. To more clearly distinguish between areas, turn on area numbers and colors. The "Plot Numbering Controls" dialog box on the Utility Menu controls how items are displayed in the Graphics Window. By default, a "replot" is automatically performed upon execution of the dialog box. The replot operation will repeat the last plotting operation that occurred (in this case, an area plot).

1. Utility Menu> Plot Ctrls> Numbering
2. Turn on area numbers.
3. OK to change controls, close the dialog box, and replot.

Before going to the next step, save the work you have done so far. ANSYS stores any input data in memory to the ANSYS database. To save that data base to a file, use the SAVE operation, available as a tool on the Toolbar. ANSYS names the database file using the format job name. db. If you started ANSYS using the product launcher, you can specify a job- name at that point (the default jobname is file). You can check the current jobname at any time by choosing Utility Menu> List> Status> Global Status. You can also save the database at specific milestone points in the analysis (such as after the model is complete, or after the model is meshed) by choosing

Utility Menu> File> Save As and specifying different jobnames (model.db, or mesh.db, etc.).

It is important to do an occasional save so that if you make a mistake, you can restore the model from the last saved state. You restore the model using the RESUME operation, also available on the Toolbar.

(You can also find SAVE and RESUME on the Utility Menu, under File.)

4. Toolbar: SAVE_DB.

Step 3: Change working plane to polar and create first circle.

The next step in the model construction is to create the half circle at each end of the bracket. You will actually create a full circle on each end and then combine the circles and rectangles with a Boolean

"add" operation (discussed in step 5.). To create the circles, you will use and display the working plane.

You could have shown the working plane as you created the rectangles but it was not necessary.

15

Static Analysis of a Corner Bracket

Before you begin however, first "zoom out" within the Graphics Window so you can see more of the

circles as you create them. You do this using the "Pan-Zoom-Rotate" dialog box, a convenient graphics

control box you'll use often in any ANSYS session.

1. Utility Menu> PlotCtrls> Pan, Zoom, Rotate

2. Click on small dot once to zoom out.

3. Close dialog box.

4. Utility Menu> WorkPlane> Display Working Plane (toggle on)

Notice the working plane origin is

immediately plotted in the Graphics

Window. It is indicated by the WX

and WY symbols; right now coincident with the global origin X and Y symbols. Next you will change the WP type to polar, change the snap increment, and display the grid.

5. Utility Menu> WorkPlane> WP Settings

6. Click on Polar.

7. Click on Grid and Triad.

8. Enter .1 for snap increment.

9. OK to define settings and close the dialog box.

10. Main Menu> Preprocessor> Modeling> Create> Areas> Circle> Solid Circle

Be sure to read prompt before picking.

11. Pick center point at:

WP X = 0 (in Graphics Window shown below)

WP Y = 0

12. Move mouse to radius of 1 and click left button to create circle.

13. OK to close picking menu.

14. Toolbar: SAVE_DB.

Note- While you are positioning the cursor for picking, the "dynamic" WP X and Y values are displayed in the Solid Circular Area dialog box. Also, as an alternative to picking, you can type these values along with the radius into the dialog box.

17

Static Analysis of a Corner Bracket

Step 4: Move working plane and create second circle.

To create the circle at the other end of the bracket in the same manner, you need to first move the working plane to the origin of the circle. The simplest way to do this without entering number offsets is to move the WP to an average keypoint location by picking the keypoints at the bottom corners of the lower, right rectangle.

1. Utility Menu > WorkPlane > Offset WP to > Keypoints

2. Pick keypoint at lower left corner of rectangle.

3. Pick keypoint at lower right of rectangle.

4. OK to close picking menu.

5. Main Menu > Preprocessor > Modeling > Create > Areas > Circle > Solid Circle

6. Pick center point at:

WP X = 0

WP Y = 0

7. Move mouse to radius of 1 and click left button to create circle.
8. OK to close picking menu.
9. Toolbar: SAVE_DB.

Step 5: Add areas.

Now that the appropriate pieces of the model are defined (rectangles and circles), you need to add them together so the model becomes one continuous piece. You do this with the Boolean add operation

for areas.

1. Main Menu> Preprocessor> Modeling> Operate> Booleans> Add> Areas
2. Pick All for all areas to be added.
3. Toolbar: SAVE_DB.

Step 6: Create line fillet.

1. Utility Menu> PlotCtrls> Numbering
2. Turn on line numbering.
3. OK to change controls, close the dialog box, and automatically replot.
4. Utility Menu> WorkPlane> Display Working Plane (toggle off)
5. Main Menu> Preprocessor> Modeling> Create> Lines> Line Fillet
6. Pick lines 17 and 8.
7. OK to finish picking lines (in picking menu).

19

Static Analysis of a Corner Bracket

8. Enter .4 as the radius.
9. OK to create line fillet and close the dialog box.
10. Utility Menu> Plot> Lines

Step 7: Create fillet area.

1. Utility Menu> PlotCtrls> Pan, Zoom,

Rotate

2. Click on Zoom button.
3. Move mouse to fillet region, click left button, move mouse out and click again.
4. Main Menu> Preprocessor> Modeling> Create> Areas> Arbitrary> By Lines
5. Pick lines 4, 5, and 1.
6. OK to create area and close the picking menu.
7. Click on Fit button.
8. Close the Pan, Zoom, Rotate dialog box.
9. Utility Menu> Plot> Areas

Structural Tutorial

10. Toolbar: SAVE_DB.

Step 8: Add areas together.

1. Main Menu> Preprocessor> Modeling>

Operate> Booleans> Add> Areas

2. Pick All for all areas to be added.

3. Toolbar: SAVE_DB.

Step 9: Create first pin hole.

1. Utility Menu> WorkPlane> Display Working Plane (toggle on)

2. Main Menu> Preprocessor> Modeling> Create> Areas> Circle> Solid Circle

3. Pick center point at:

WP X = 0 (in Graphics Window)

WP Y = 0

4. Move mouse to radius of .4 (shown in the picking menu) and click left button to create circle.

5. OK to close picking menu.

Step 10: Move working plane and create second pin hole.

1. Utility Menu> WorkPlane> Offset WP to> Global Origin

2. Main Menu> Preprocessor> Modeling> Create> Areas> Circle> Solid Circle

3. Pick center point at:

Static Analysis of a Corner Bracket

WP X = 0 (in Graphics Window)

WP Y = 0

4. Move mouse to radius of .4 (shown in the picking menu) and click left mouse button to create circle.
5. OK to close picking menu.
6. Utility Menu> WorkPlane> Display Working Plane (toggle off)
7. Utility Menu> Plot> Replot

From this area plot, it appears that one of the pin hole areas is not there. However, it is there (as indicated by the presence of its lines), you just can't see it in the final display of the screen. That is because the bracket area is drawn on top of it. An easy way to see all areas is to plot the lines instead.

8. Utility Menu> Plot> Lines

9. Toolbar: SAVE_DB.

Step 11: Subtract pin holes from bracket.

1. Main Menu> Preprocessor> Modeling> Operate> Booleans> Subtract> Areas
2. Pick bracket as base area from which to subtract.
3. Apply (in picking menu).
4. Pick both pin holes as areas to be subtracted.
5. OK to subtract holes and close picking menu.

Step 12: Save the database as model.db.

At this point, you will save the database to a named file -- a name that represents the model before

meshing. If you decide to go back and remesh, you'll need to resume this database file. You will save it as model.db.

1. Utility Menu> File> Save As
2. Enter model.db for the database file name.
3. OK to save and close dialog box.

Define Materials

Step 13: Set preferences.

In preparation for defining materials, you will set preferences so that only materials that pertain to a structural analysis are available for you to choose.

To set preferences:

1. Main Menu> Preferences
2. Turn on structural filtering. The options may differ from what is shown here since they depend on the ANSYS product you are using.
3. OK to apply filtering and close the dialog box.

Step 14: Define material properties.

To define material properties for this analysis, there is only one material for the bracket, A36 Steel, with given values for Young's modulus of elasticity and Poisson's ratio.

1. Main Menu> Preprocessor> Material Props> Material Models
2. Double-click on Structural, Linear, Elastic, Isotropic.
3. Enter 30e6 for EX.
4. Enter .27 for PRXY.
5. OK to define material property set and close the dialog box.

23

Static Analysis of a Corner Bracket

6. Material> Exit

Step 15: Define element types and options.

In any analysis, you need to select from a library of element types and define the appropriate ones for your analysis. For this analysis, you will use only one element type, PLANE183, which is a 2-D, quadratic, structural, higher-order element. The choice of a higher-order element here allows you to have a coarser mesh than with lower-order elements while still maintaining solution accuracy. Also, ANSYS will generate some triangle shaped elements in

the mesh that would otherwise be inaccurate if you used lower-order elements. You will need to specify plane stress with thickness as an option for PLANE183. (You will define the thickness as a real constant in the next step.)

1. Main Menu> Preprocessor> Element Type> Add/Edit/Delete
2. Add an element type.
3. Structural solid family of elements.
4. Choose the 8-node quad (PLANE183).
5. OK to apply the element type and close the dialog box.
6. Options for PLANE183 are to be defined.
7. Choose plane stress with thickness option for element behavior.
8. OK to specify options and close the options dialog box.
9. Close the element type dialog box.

Step 16: Define real constants.

For this analysis, since the assumption is plane stress with thickness, you will enter the thickness as a

real constant for PLANE183. To find out more information about PLANE183, you will use the ANSYS

Help System in this step by clicking on a Help button from within a dialog box.

Structural Tutorial

1. Main Menu> Preprocessor> Real Constants> Add/Edit/Delete
2. Add a real constant set.
3. OK for PLANE183.

Before clicking on the Help button in the next step, you should be aware that the help information may appear in the same window as this tutorial, replacing the contents of the tutorial. After reading the help information, click on the Back button to return to this tutorial.

If the help information appears in a separate window from the tutorial, minimize or close the help window after you read the help information.

4. Help to get help on PLANE183.
5. Hold left mouse button down to scroll through element description.
6. If the help information replaced the tutorial, click on the Back button to return to the tutorial.
7. Enter .5 for THK.
8. OK to define the real constant and close the dialog box.
9. Close the real constant dialog box.

Generate Mesh

Step 17: Mesh the area.

One nice feature of the ANSYS program is that you can automatically mesh the model without specifying

any mesh size controls. This is using what is called a default mesh. If you're not sure how to determine

the mesh density, let ANSYS try it first! Meshing this model with a default mesh however, generates

more elements than are allowed in the ANSYS ED program. Instead you will specify a global element

size to control overall mesh density.

25

Static Analysis of a Corner Bracket

1. Main Menu> Preprocessor> Meshing>

Mesh Tool

2. Set Global Size control.
3. Type in 0.5.
4. OK.
5. Choose Area Meshing.

6. Click on Mesh.
7. Pick All for the area to be meshed (in picking menu). Close any warning messages that appear.
8. Close the Mesh Tool.

Note

The mesh you see on your screen may vary slightly from the mesh shown here. As a result of this, you may see slightly different results during postprocessing. For a discussion of results accuracy, see Planning Your Approach in the Modeling and Meshing Guide.

Step 18: Save the database as mesh.db.

Here again, you will save the database to a named file, this time mesh.db.

1. Utility Menu> File> Save as
2. Enter mesh.db for database file name.
3. OK to save file and close dialog box.

2.1.6. Apply Loads

The beginning of the solution phase.

A new, static analysis is the default, so you will not need to specify analysis type for this problem. Also,

there are no analysis options for this problem.

Step 19: Apply displacement constraints.

You can apply displacement constraints directly to lines.

26 of ANSYS, Inc. and its subsidiaries and affiliates.

Structural Tutorial

1. Main Menu> Solution> Define Loads> Apply> Structural> Displacement> On Lines
2. Pick the four lines around left-hand hole (Line numbers 10, 9, 11, 12).
3. OK (in picking menu).
4. Click on All DOF.
5. Enter 0 for zero displacement.

6. OK to apply constraints and close dialog box.

7. Utility Menu> Plot Lines

8. Toolbar: SAVE_DB.

Step 20: Apply pressure load.

Now apply the tapered pressure load to the bottom, right-hand pin hole. ("Tapered" here means varying

linearly.) Note that when a circle is created in ANSYS, four lines define the perimeter. Therefore, apply

the pressure to two lines making up the lower half of the circle. Since the pressure tapers from a max-

imum value (500 psi) at the bottom of the circle to a minimum value (50 psi) at the sides, apply pressure

in two separate steps, with reverse tapering values for each line.

The ANSYS convention for pressure loading is that a positive load value represents pressure into the

surface (compressive).

1. Main Menu> Solution> Define Loads>

Apply> Structural> Pressure> On Lines

2. Pick line defining bottom left part of the circle (line 6).

27

Static Analysis of a Corner Bracket

3. Apply.

4. Enter 50 for VALUE.

5. Enter 500 for optional value.

6. Apply.

7. Pick line defining bottom right part of circle (line 7).

8. Apply.

9. Enter 500 for VALUE.

10. Enter 50 for optional value.

11. OK.

12. Toolbar: SAVE_DB.

2.1.7. Obtain Solution

2.1.7.1. Step 21: Solve.

1. Main Menu> Solution> Solve> Current
LS

2. Review the information in the status window, then choose File> Close (Windows), or Close (X11/Motif), to close the window.

3. OK to begin the solution. Choose Yes to any Verify messages that appear.

4. Close the information window when solution is done.

Structural Tutorial

ANSYS stores the results of this one load step problem in the database and in the results file, Jobname.RST

(or Jobname.RTH for thermal, Jobname.RMG for magnetic, and Jobname.RFL for fluid analyses). The

database can actually contain only one set of results at any given time, so in a multiple load step or

multiple substep analysis, ANSYS stores only the final solution in the database. ANSYS stores all solutions

in the results file.

Review Results

The beginning of the postprocessing phase.

Note

The results you see may vary slightly from what is shown here due to variations in the mesh.

Step 22: Enter the general postprocessor and read in the results.

1. Main Menu> General Postproc> Read Results> First Set

Step 23: Plot the deformed shape.

1. Main Menu> General Postproc> Plot Results> Deformed Shape
2. Choose Def + undeformed.
3. OK.

You can also produce an animated version of the deformed shape:

4. Utility Menu> PlotCtrls> Animate> Deformed Shape
5. Choose Def + undeformed.
6. OK.
7. Make choices in the Animation Controller (not shown), if necessary, then choose Close.

29

Static Analysis of a Corner Bracket

Step 24: Plot the von Mises equivalent stress.

1. Main Menu> General Postproc> Plot Results> Contour Plot> Nodal Solu
2. Choose Stress item to be contoured.
3. Scroll down and choose von Mises (SE-QV).
4. OK.

You can also produce an animated version of these results:

5. Utility Menu> PlotCtrls> Animate> Deformed Results
6. Choose Stress item to be contoured.
7. Scroll down and choose von Mises (SE-QV).
8. OK.

9. Make choices in the Animation Controller (not shown), if necessary, then choose Close.

Step 25: List reaction solution.

1. Main Menu> General Postproc> List Results> Reaction Solu
2. OK to list all items and close the dialog box.

30 of ANSYS, Inc. and its subsidiaries and affiliates.
Structural Tutorial

3. Scroll down and find the total vertical force, FY.
4. File> Close (Windows), or Close (X11/Motif), to close the window.

The value of 134.61 is comparable to the total pin load force.

Note

The values shown are representative and may vary from the values you obtain.

There are many other options available for reviewing results in the general postprocessor.

You'll see

some of these demonstrated in other tutorials. You have finished the analysis. Exit the program in the next step.

Step 26: Exit the ANSYS program.

When exiting the ANSYS program, you can save the geometry and loads portions of the database (de-

fault), save geometry, loads, and solution data (one set of results only), save geometry, loads, solution

data, and postprocessing data (i.e., save everything), or save nothing. You can save nothing here, but

you should be sure to use one of the other save options if you want to keep the ANSYS data files.

1. Toolbar: Quit.
2. Choose Quit - No Save!
3. OK.

MODULE -12: WORKSHOP TECHNOLOGY

CARPENTRY

Carpentry may be designed as the process of making wooden articles and components such as roofs, floors, partitions, doors and windows. Carpentry involves cutting, shaping and fastening wood and other materials together to produce a finished product. Preparation of joints is one of the important operations in wood work. Joinery denotes connecting the wooden parts using different points such as lap joints, mortise and T- joints, bridle joints, etc.

TOOLS FOR WOODWORKING

The principle hand tools used in a carpentry workshop can be classified into

1. Marking and measuring tool
2. Cutting tool

1. Marking and measuring

- a. **Steel Rules:** Rules are used for measuring dimensions. For measuring and setting out dimensions various types of rules are used in carpentry shop. Steel Rule- Stainless Steel Rule of length 30cm and 60cm. Flexible Measuring Rule- for measuring large dimensions as well as curved or angular surface dimensions.

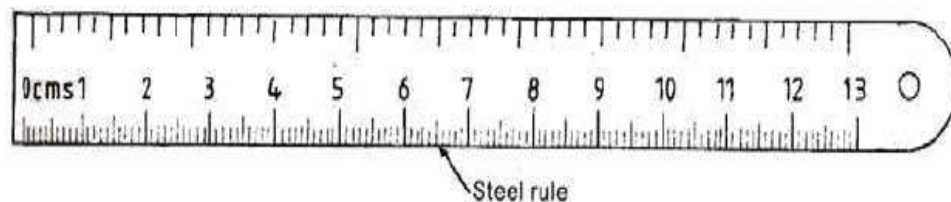


Fig. A view of Steel Rule

- b. **Straight Edge and Squares:** This is a machined flat piece wood or metal having perfectly straight and parallel edges.

- c. **Steel Tape:** It is used for large dimensions, such as marking on boards and checking the overall dimensions of the work.



Fig. A view of Steel Tape

- d. **Marking Gauges:** Gauges are used to mark lines parallel to the edges of a wooden piece. It mainly consists of a wooden stem sliding inside a wooden stock. The stem carries a steel point for marking lines. The stock position on the stem can be varied and fixed rigidly by tightening the thumbscrew.

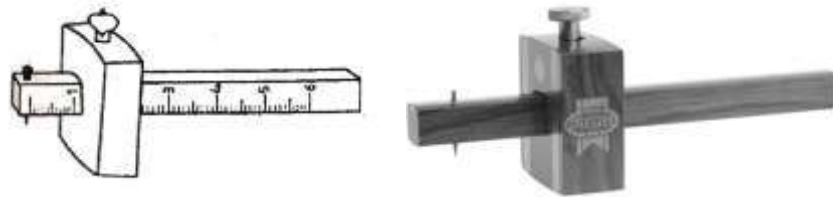


Fig. A view of Marking Gauge

- e. **Mortise gauge**

A mortise gauge has two spurs, one of which is movable. It gauges two lines at once and is used mainly in marking out mortise and tenon joints, slip tongues and similar situations.



Fig. A view of Mortise gauge

- f. **Panel gauge**

A panel gauge is a larger version of the marking gauge. It has a longer stem, fence and pin. It is used to mark large boards to the correct width but can also be useful for marking locations in the centre of a board



Fig. A view of panel gauge

g. Wheel gauge

A wheel gauge is known as such because of its circular shape. It has a small, round blade meaning it can, like the cutting gauge, mark against the wood grain. The wheel gauge is sometimes preferred for smaller, trickier tasks as it is less bulky than other gauges and allows you to see the blade whilst marking.



Fig. A view of wheel gauge

h. Bevel gauge

A sliding T bevel, also known as a bevel gauge or false square is an adjustable gauge for setting and transferring angles. The handle is usually made of wood or plastic and is connected to a metal blade with a thumbscrew or wing nut.

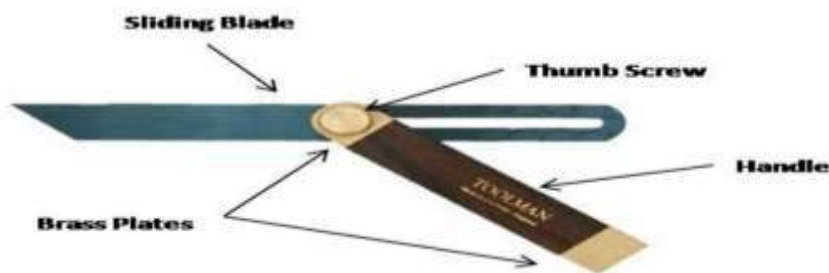


Fig. A view of bevel Gauge

i. Try square: A try square is used for marking lines at right angles to a face or edge and for checking that timber is square. It consists of a stock and a blade, which is permanently fixed at 90° to the stock. The length of the blade, which can vary from 100 mm to 300 mm, determines the size of the square. For accuracy, try squares must be checked from time to time. This is done by selecting a board with a straight edge and using the try square to

mark off a line at right angles. Reverse the square and if the blade of the square coincides with the line, it is accurate.

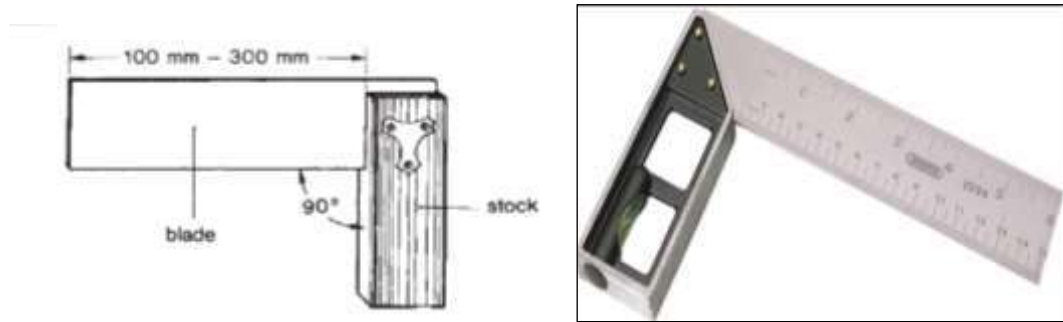


Fig. A view of Try Square

- j. Marking Knife or Scriber:** Marking Knives are used to convert the pencil lines drawn on the wooden surface into deep scratch lines on the surface. They are made of steel with a sharp point at one end and flat blade at the other end.



Fig. A view of Marking Knife

2. Cutting tool

1. Rip Saw

- Best for cutting wood with the grain.
- Not for finish work as the ripping action of the saw produces a coarse, ragged cut.
- Typical blade length is 24" to 28", usually 5-1/2 tpi (teeth per inch).



2. Crosscut Saw

- Best for cutting wood across the grain.
- Produces a smoother cut than rip saws, so it's often used to cut plywood.
- Saws are 10 to 12 tpi for fine work and 7 or 8 tpi for faster cutting. 10 tpi is a good general purpose saw.
- Blade lengths range from 20" to 28", with 26" the most popular.
- A shorter version is the **panel** or **short cut saw**. It can be used for ripping, crosscutting and general cutting of lumber, plywood and particleboard and plastic materials.

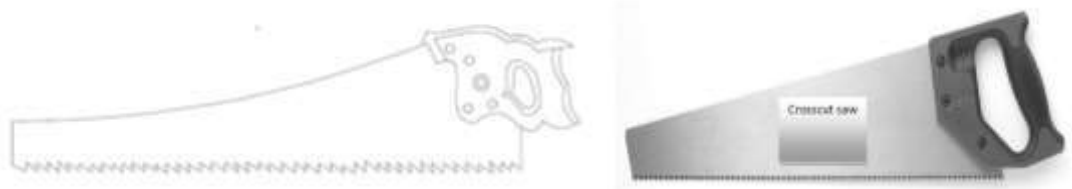


Fig. A view of Crosscut saw

3. Tenon Saw

The tenon saw is used to cut small pieces of wood and most joints. The tenon saw is the most used backsaw. The panel saw is used to make straight cuts in large pieces of sheet wood. The saw has a fine toothed crosscut for sawing plywood, thin wood and large joints.



Fig. A view of Tenon Saw

4. Compass Saw

Compass saw carries a tapered blade, which is long, which is one of the special saw having thin, narrow and flexible blade. With a blade resembling the beak of a swordfish, this type of saw is commonly used for making cutouts on the inside surface of a piece of work. A hole is first bored

inside the portion, which is to be cut out, and the pointed compass saw is pushed into the hole to start the sawing operation. Its blade contains about 12 teeth per cm length.



Fig. A view of Compass Saw

Dovetail Saw

Dovetail saw is shown in Fig. that is little and is closely similar as related to the backsaw or tennon saw. It is lighter and however possesses a thinner blade and finer teeth. The handle is round, to provide a delicate grip for fine cutting. This saw is used where absolutely finer and delicate cutting is required in wood work.



Fig. A view of Dovetail Saw

5. Hacksaw

Hacksaw is shown in Fig., which consists of steel frame and a hacksaw blade. While essentially designed for cutting metal, this tool comes in for a variety of uses in the wood working shop. The frame of hacksaw is designed in different ways, some with pistol grips, others with handles similar to those used on a conventional saw and others with turned handles. Blades of hacksaw are detachable and can be obtained with teeth of varying coarseness.

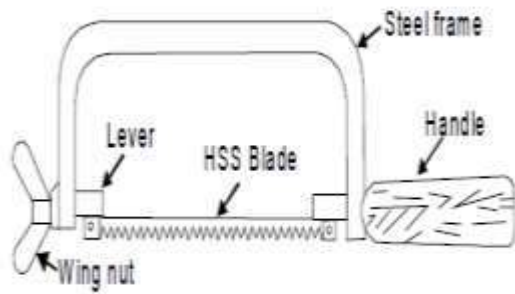


Fig. A view of Hacksaw

DRILLING AND BORING TOOLS:

1. **Bradawl:** - It is a hand operated tool, used to bore small holes for starting a screw or large nail.
2. **Carpenters brace:** it is used for rotating auger bits, twist drills, etc., to produce holes in wood. In some designs, braces are made with ratchet device.
3. **Auger bit:** it is the most common tool used for making holes in wood. During drilling, the lead screw of the bit guides into the wood, necessitating only moderate pressure on the brace. The helical flutes on the surface carry the chips to the outer surface.
4. **Hand drill:** carpenter's brace is used to make relatively large size holes; whereas hand drill is used for drilling small holes. A straight shank drill is used with this tool. It is small, light in weight and may be conveniently used than the brace. The drill bit is clamped in the chuck at its end and is rotated by a handle attached to gear and pinion arrangement.
5. **Gimlet:** it has cutting edges like a twist drill. It is used for drilling large diameter holes with the hand pressure.

CARPENTRY OPERATIONS

1. **Planing :** Planing tools in carpentry. We use planing tools in carpentry works to smoothing the rough wood surface. A special hand plane is used for specific work. You need not so many planes to build nice furniture; you only need some of them.
2. **Marking :** Marking out or layout means the process of transferring a design or pattern to a workpiece, In carpentry and joinery practice a pencil is used for marking while in cabinetmaking a marking knife provides for greater accuracy.
3. **Sawing :** a tool or machine with a blade having sharp teeth that is used for cutting hard material (as wood or metal).
4. Chiseling

5. Finishing

WOOD WORKING JOINT

Joint, in carpentry, junction of two or more members of a framed structure. Joinery, or the making of wooden joints, is one of the principal functions of the carpenter and cabinetmaker. Wood, being a natural material, is not uniform in quality, and moisture, present in the tree during growth, is uneven in cut wood. Wood used for building is subject to movement caused by changes in its moisture content. Though such movement is frequently quite small and accurately predictable, it remains a critical consideration in joint design. Because wood has been used as a building material for centuries throughout the world, the designs of most joints were perfected hundreds of years ago and have changed little since that time. The object of the joint is to fix two members together so that the joint has the greatest possible mechanical strength and is as unobtrusive as possible.

TYPES OF JOINT

1. Dado (Joinery)

Use this joint when you need to put up shelves. A slot is cut into the surface of the wood — a dado is cut perpendicular to the grain and a groove is put parallel to the grain. The slot can either go through the entire surface of the piece of wood or stop just before it goes through.

2. Dovetail Joint

This joint is commonly used when putting together drawers and entails each piece to have a series of pins and tails that interlock together. The pins and tails have a trapezoid shape to increase durability and strength. Glue the pieces together and there's no need for fasteners.

3. Finger Joint

Similar to the dovetail joint, the finger joint also has a series of pins along an edge that are interlocked together using glue. The difference is that the finger joint pins are straight instead of angled. This joint isn't as strong as the dovetail, but it is fairly easy to make with a table saw, wood router, or a jig.

4. Lap Wood Joint

One of the more popular joints used in woodworking, the lap wood joint combines two pieces of wood by cutting away half the thickness of the pieces. This joint is typically used when the two pieces have the same thickness. The portion of wood cut away will fit into the corresponding cutout on the other piece.

5. Mortise and Tenon

One of the strongest and another popular joint, the mortise and tenon is used to attach two pieces of wood at a 90-degree angle. The mortise part of the joint is a hole or cavity cut into one piece of wood. A tenon is the negative of the mortise hole, protruding from the second piece of wood. The tenon is typically around $\frac{1}{3}$ the thickness of the piece of wood. Reinforce this joint using glue and it will be strong and long-lasting.

6. Pocket Hole

Rather than butting two pieces of wood together with glue, the pocket-hole joint goes one step further. This is another popular and strong joint that uses a pocket hole that is cut into one piece of wood with another pilot hole that allows a screw to be driven into the adjoining piece of wood. Our Castle pocket hole machine makes it easy to make a pocket joint. Our low-angle pocket and pilot hole make the joint stronger and there's less chance of the pieces shifting.

7. **Tongue & Groove Joints:-** When joining two matched boards into one, a tongue and groove joint is much stronger than a simple **butt joint**. The tongue and groove joint can be easily created using a **router** with a matched set of **router bits**, or on a table saw using a stacked **dado blade** set. To begin, cut all of the boards you want to use for your tongue and groove assembly to a length of at least one inch longer than the desired finished length using a **circular saw**, or **compound miter saw**.

8. **Basic Butt Joint:-** There is no more basic wood joinery than the butt joint. A butt joint is nothing more than when one piece of wood butts into another (most often at a right angle, or **square** to the other board) and is fastened using mechanical fasteners. This type of joint is often used in wall framing on construction sites. Learn tips for using a butt joint, as well as when to choose another wood joinery type.

9. **Mitered Butt Joint :-** A mitered butt joint is nearly the same as a basic butt joint, except that the two boards are joined at an angle (instead of square to one another). The advantage is that the mitered butt joint will not show any end grain, and as such is a bit more aesthetically pleasing. However, the mitered butt joint isn't all that strong.

WELDING:

Welding is the process of joining similar metals by the application of heat, with or without application of pressure or filler metal, in such a way that the joint is equivalent in composition and

characteristics of the metals joined. In the beginning, welding was mainly used for repairing all kinds of worn or damaged parts. Now, it is extensively used in manufacturing industry, construction industry (construction of ships, tanks, locomotives and automobiles) and maintenance work, replacing riveting and bolting, largely.

Advantages of welding

1. A large number of metals or alloys, both similar and dissimilar can be joined by welding.
2. Welding can be mechanized.
3. A good weld is as strong as the base metal.
4. Welding can join work-pieces through spots, end to end and in a number of other configurations.
5. General welding equipments are not very costly.
6. Portable welding equipments are also available.

Disadvantages

1. Welding gives out harmful radiations, fumes and spatter.
2. Welding results in residual stresses and distortion of the workpieces.
3. To hold and position the parts to be welded, generally jigs and fixtures are required.
4. To produce a good welding job, a skilled welder is required.
5. Heat generated due to welding produces metallurgical changes hence, the structure of welded joint is different than that of parent metal.
6. Before welding, generally edge preparation of the work pieces is required.

Applications of welding

Some of the important applications of welding process are as follows :

1. Aircraft construction (Welding of engine parts, turbine frame, ducts, etc.)
2. Railroad equipments (Air receiver, engine, front and rear hoods, etc.)
3. Piping and pipelines (Open pipe joints, oil and gas pipelines, etc.).
4. Pressure vessels (boilers) and tanks (Joining of nozzles, ends, tanks, etc.).
5. Buildings and bridges (Columns base plates, erection of structures, etc.).
6. Automobile parts (Trucks, buses, cars, cranes, bikes parts, etc.).
7. Machine parts (Frames, beds, tools, dies, etc.).

CLASSIFICATION OF WELDING PROCESS

There are different ways of classifying welding and allied processes.

Modern methods of welding may be classified under two broad categories i.e. plastic welding and fusion welding.

- a. In plastic (pressure) welding**, the metal pieces to be joined are heated to a plastic state and then forced together by external pressure. In this method filler metal is not required. For example, forge welding, electric resistance welding, etc.
- b. In fusion (non-pressure) welding**, the material at the joint is heated to molten state and allowed to solidify. In this method, filler material is required during the process. For example, arc welding, gas welding, etc.

In general, welding and allied processes are classified as follows:

1. Gas welding

- a. Oxy-acetylene welding
- b. Air acetylene welding
- c. Oxy-hydrocarbon welding
- d. Pressure gas welding

2. Arc welding

- a. Gas tungsten arc welding (TIG)
- b. Gas metal arc welding (MIG)
- c. Shielded metal arc welding
- d. Submerged arc welding
- e. Plasma arc welding
- f. Stud arc welding
- g. Electro-slag welding

3. Resistance welding :

- a. Spot welding
- b. Percussion welding
- c. Seam welding
- d. Resistance butt welding
- e. Projection welding

4. Solid state welding

- a. Friction welding
- b. Explosive welding

- c. Ultrasonic welding
- d. Forge welding

5. Radiant energy welding processes :

- a. Electron Beam Welding (EBW)
- b. Laser Beam Welding (LBW)

6. Thermo-chemical welding processes :

- a. Thermo welding
- b. Atomic hydrogen welding

ELECTRIC ARC WELDING

Arc welding is the welding process, in which heat is generated by an electric arc struck between an electrode and the work piece. Electric arc is luminous electrical discharge between two electrodes through ionized gas. Any arc welding method is based on an electric circuit consisting of the following parts:

1. Power supply (AC or DC)
2. Welding electrode
3. Work piece
4. Welding leads (electric cables) connecting the electrode and work piece to the power supply.

Electric arc between the electrode and work piece closes the electric circuit. The arc temperature may reach 10000°F (5500°C), which is sufficient for fusion the work piece edges and joining them. When a long joint is required, the arc is moved along the joint line. The front edge of the weld pool melts the welded surfaces when the rear edge of the weld pool solidifies forming the joint.

Transformers, motor generators and rectifiers' sets are used as arc welding machines. These machines supply high electric currents at low voltage and an electrode is used to produce the necessary arc. The electrode serves as the filler rod and the arc melts the surface so that, the metals to be joined are actually fixed together. Sizes of welding machines are rated according to their approximate amperage capacity at 60% duty cycle, such as 150,200,250,300,400,500 and 600 amperes. This amperage is the rated current output at the working terminal. Main components of Electric arc Welding are following.

1. Transformers

The transformers type of welding machine produces A.C current and is considered to be the least expensive. It takes power directly from power supply line and transforms it to the

voltage required for welding. Transformers are available in single phase and three phases in the market.

2. Motor generators

These are D.C generators sets, in which electric motor and alternator are mounted on the same shaft to produce D.C power as per the requirement for welding. These are designed to produce D.C current in either straight or reversed polarity. The polarity selected for welding depends upon the kind of electrode used and the material to be welded.

3. Rectifiers

These are essentially transformers, containing an electrical device, which changes A.C into D.C by virtue of which the operator can use both types of power (A.C or D.C, but only one at a time). In addition to the welding machine; certain accessories are needed for carrying out the welding work.

4. Welding cables

Two welding cables are required, one from machine to the electrode holder and the other, from the machine to the ground clamp. Flexible cables are usually preferred because of the ease of using and coiling the cables. Cables are specified by their current carrying capacity, say 300 A, 400 A, etc.

5. Electrodes

Filler rods used in arc welding are called electrodes. These are made of metallic wire called core wire, having approximately the same composition as the metal to be welded. These are coated uniformly with a protective coating called flux. While fluxing an electrode; about 20mm of length is left at one end for holding it with the electrode holder. It helps in transmitting full current from electrode holder to the front end of the electrode coating. Flux acts as an insulator of electricity. Figure.4 shows the various parts of an electrode.

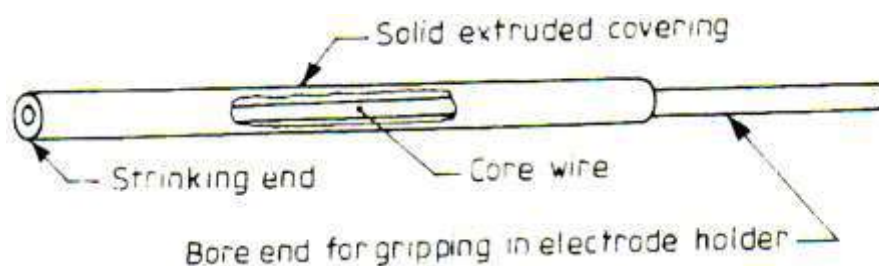


Fig. A view of Parts of an electrode

In general, electrodes are classified into five main groups; mild steel, carbon steel, special alloy steel, cast iron and non-ferrous. The greatest range of arc welding is done with electrodes in the mild steel group.

Various constituents like titanium oxide, potassium oxide, cellulose, iron or manganese, Ferro silicates, carbonates, gums, clays, asbestos, etc., are used as coatings on electrodes. While welding, the coating or flux vaporizes and provides a gaseous shield to prevent atmospheric attack. The size of electrode is measured and designated by the diameter of the core wire in SWG and length, apart from the brand and code names; indicating the purpose for which there are most suitable.

Electrodes may be classified based on thickness of the coated flux. As

1. Dust coated or light coated
2. Semi or medium coated and
3. Heavily coated or shielded

Electrodes are also classified based on materials, as

1. Metallic and
2. Non-metallic or carbon

Metallic arc electrodes are further sub-divided into

1. Ferrous metal arc electrode (mild steel, low/medium/high carbon steel, cast iron, stainless steel, etc)
2. Non-ferrous metal arc electrodes (copper, brass, bronze, aluminum, etc).

In case of non-metallic arc electrodes, mainly carbon and graphite are used to make the electrodes.

BLACKSMITHY TOOLS AND OPERATIONS, HOT WORKING AND COLD WORKING PROCESS

INTRODUCTION: Smithy or Forging is the oldest shaping process used for producing small articles for which accuracy in size is not so important. The parts are shaped by heating them in an open fire or hearth by the blacksmith and shaping them through applying compressive forces using a hammer. The process of giving the desired shape of a metal piece by heating and hammering is also known as forging. The metal is heated up to a Desire temperature known as a forging temperature. When the forging is done by hand tool manually then it is called as hand forging and when the same forging is performed by the power hammering then it is called power forging.

Hand forging process is also known as black-smithy work which is commonly employed for the production of small articles using hammers on heated jobs. It is a manually controlled process even though some machinery such as power hammers can also be sometimes used. Black-smithy is, therefore, a process by which metal may be heated and shaped to its requirements by the use of blacksmith tools either by hand or power hammer.

Advantages of Forging

1. It refines the structure of the metal.
2. It increases strength.
3. It saves time, material and labor.

Forging Tools and Equipment

1. Furnace or Hearth

The furnace is used for heating the metal piece. The furnace consists of four legs and a cast iron or steel body with an iron bottom, a chimney and a flue.

The main part of the forging furnace

2. Hearth

The iron bottom where a fire is lighted is called a hearth. It is provided with firebrick lining.

3. Tuyere

A pipe coming from the bottom or rear of the furnace is known as a tuyere. It is used to supply the air at high pressure to the furnace.

4. Hood

The upper part of the furnace is called a hood. It is made up of mild steel with the firebrick inside it.

5. Chimney

The chimney is fitted on the upper end of the hood. It is used for the purpose of easy escaping of exhausting gases and smoke.

Tools & Equipment Used in Smithy & Forging

1. Smith's forge
2. Anvil
3. Swage block
4. Hammers
5. Tongs

- 6. Bench vice
- 7. Hardie
- 8. Fullers
- 9. Chisels
- 10. Flatters
- 11. Punch and Drift
- 12. Set Hammer

1. Smith's Forge or Hearth

It is used for heating purpose during the forging operation. The structure of hearth is made of cast iron or cast steel. It has four - legged support, an hearth known as bottom, a chimney along with hood . An opening is also provided on the rear side of the structure to supply the air into the furnace. The hearth is covered by fire bricks lining . For quenching purpose, a water tank is also provided in front side of forge . Air under pressure is supplied to the furnace by the blower.

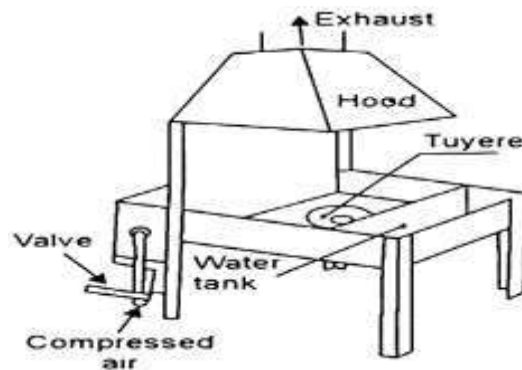


Fig. A view of open hearth furnace

2. Anvil

The anvil is an important smiths tool. It is used for supporting the work while hot metal hammering. The hardie hole is of square shape and is used for holding square shanks of swages fullers etc. while the Pritchel hole is of circular shape used for bending rods of small diameter and as a die for hot punching.

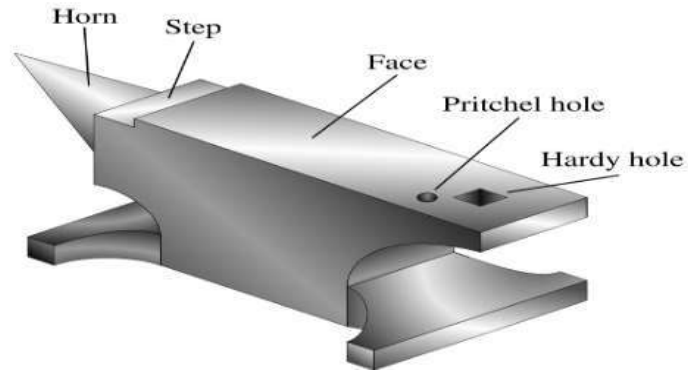


Fig. A view of Anvil

3. Swage Block

It is a block of cast steel consisting of a number of slots of different shapes and sizes along its four side faces. It has through holes from top face to bottom face which vary in shapes and sizes. It is used for mainly squaring, sizing, heading, bending, punching and forming operations .The swage block is supported on a cast iron base. It is specified according to size of block or by weight .

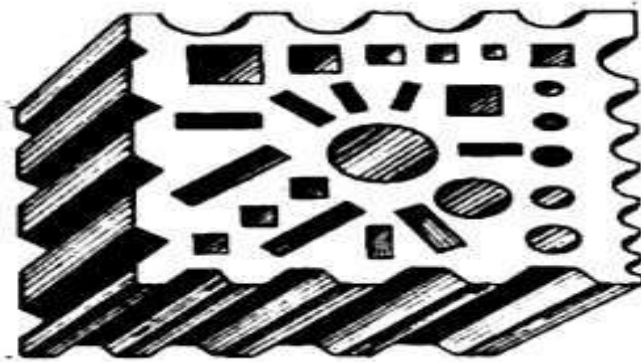


Fig. A view of Swage Block

4. Hammers

1. Ball-Peen Hammer

Ball-Peen Hammers are named, depending upon their shape and material and specified by their weight. A ball peen hammer has a flat face which is used for general work and a ball end, particularly used for riveting.



Fig. A view of Ball-Peen Hammer

2. Cross-Peen Hammer

It is similar to ball peen hammer, except the shape of the peen. This is used for chipping, riveting, bending and stretching metals and hammering inside the curves and shoulders.



Fig. A view of cross-peen Hammer

3. Sledge Hammer

It has double faces on both ends as shown in figure. Sledge hammers are comparatively heavier than hand hammers. Therefore, they are used for heavy type of forging work when heavy blows are needed.

4. Straight-Peen Hammer

This is similar to cross peen hammer, but its peen is in - line with the hammer handle. It is used for swaging, riveting in restricted places and stretching metals.

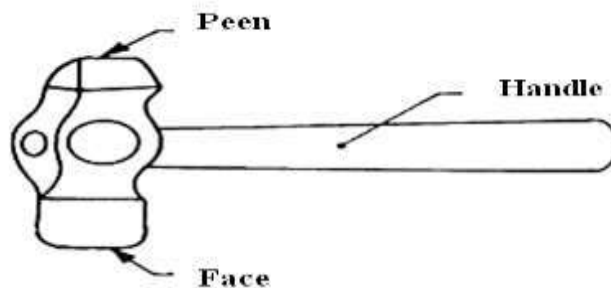


Fig. A view of straight peen hammer

5. TONGS: The tongs are used for holding the hot metal while is being worked. These are made of mild steel. The various types of tongs commonly used for holding work are as follows:

- a) **Closed Mouth Tong :** A closed mouth tong is used for holding thin sections.
- b) **Open Mouth Tong :** An open mouth tong is suitable for holding heavier stock.
- c) **Round Hollow Tong :** A round hallow tong is use for holding square, hexagonal and orthogonal work.
- d) **Square Hollow Tong:** A square hollow tong is used for holding square, hexagonal and octagonal section.
- e) **Pick-up tong:** A pick - up tong is used for picking up round bars, but not for holding work during forging.

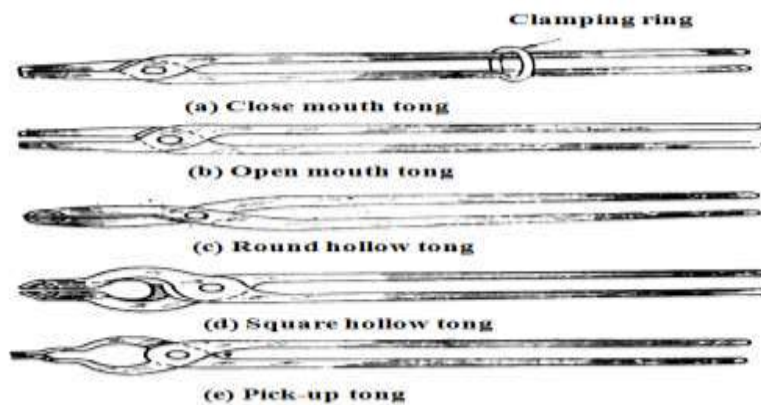


Fig. A view of Tongs

6. Bench vice:

The bench vice is a work holding device. It is the most commonly used vice in a fitting shop.

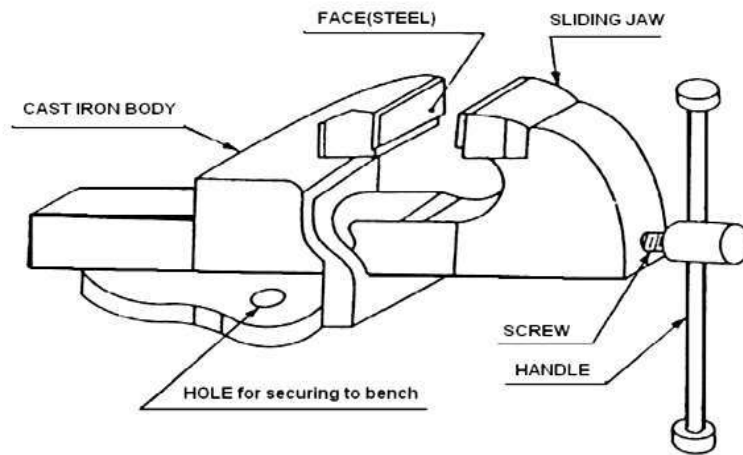


Fig. A view of Bench Vice

7. Hardie

It is fitted in the hardie hole provided in the tail of anvil. It has a cutting edge at the top of body. During cutting or shearing operations, chisels are used in conjunction with this bottom cutting tool. It is made by high carbon steel.

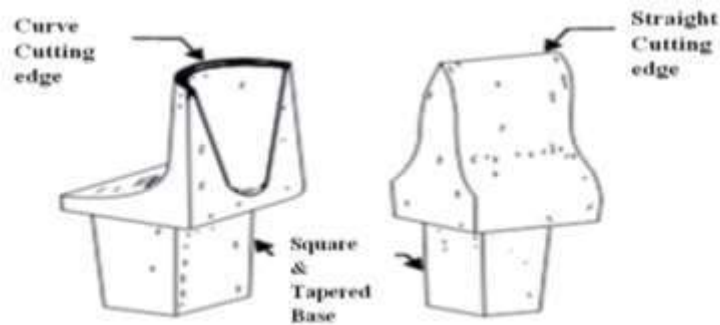


Fig. A view of Hardie

8. Fullers

These are also made of tool steel (high carbon steel). They are used in pairs (top and bottom). Bottom-one part of fuller is held in hardie hole of anvil with its square shape of shank. They are used for necking down or to reduce the cross section of a job. In cases, they are also used in drawing out operation.

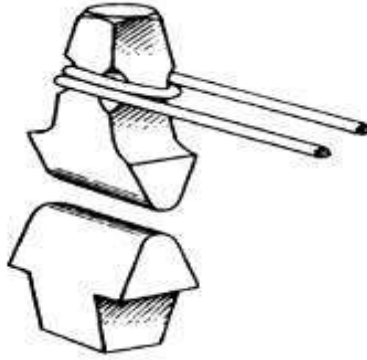


Fig. A view of Top and Bottom Fullers

9. *Flatters*

Flatters have flat faces with sharp or rounded edges and are positioned on the work piece and struck with a sledge hammer or other hammer. The set hammer is most often used for setting in shoulders, while the flatter is a good finishing tool and should be used specifically to leave a good finish on flat surfaces.

10. Set hammer

A set hammer generally used in forging shop . It is used for finishing corners in shouldered work where the flatter would be inconvenient. It is also used for drawing out the gorging job.

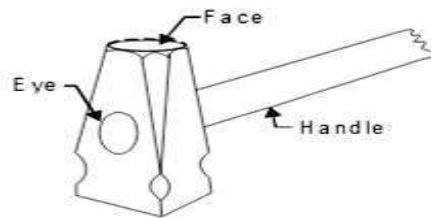


Fig. A view of Set hammer

11. Drift

Drift generally used in forging shop. It is a tapered rod made of tool steel. Holes are opened out by driving through a larger tapered punch called a drift. A drift punch is constructed as a tapered rod, with the hammer acting on the large end of the taper.

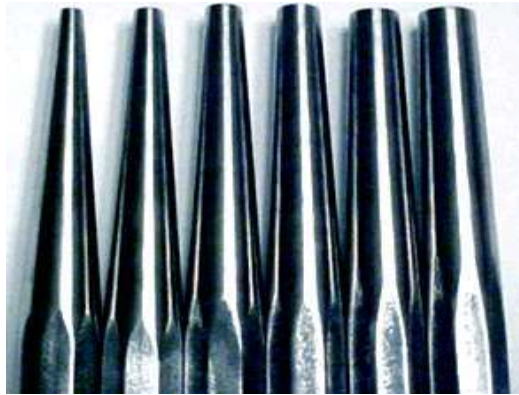


Fig. A view of drift punch

12. Chisel

Chisels used in metal work can be divided into two main categories: cold chisels and hot chisels

A. Cold chisel

A cold chisel is a tool made of tempered steel used for cutting 'cold' metals, meaning that they are not used in conjunction with heating torches, forges, etc. Cold chisels are used to remove waste metal when a very smooth finish is not required or when the work cannot be done easily with other tools, such as a hacksaw, file, bench shears or power tools. The name cold chisel comes from its use by blacksmiths to cut metal while it was cold as compared to other tools they used to cut hot metal. Because cold chisels are used to form metal, they have a less-acute angle to the sharp portion of the blade than a woodworking chisel. This gives the cutting edge greater strength at the expense of sharpness. Cold chisels come in a variety of sizes, from fine engraving tools that are tapped with very light hammers, to massive tools that are driven with sledgehammers. Cold chisels are forged to shape and hardened and tempered (to a blue colour) at the cutting edge.

- a) **Flat chisel:** These are the flat chisel, the most widely known type, which is used to cut bars and rods to reduce surfaces and to cut sheet metal that is too thick or difficult to cut with tin snips.
- b) **Cross cut chisel:** The cross cut chisel is used for cutting grooves and slots. The blade narrows behind the cutting edge to provide clearance.
- c) **Round nose chisel:** The round nose chisel is used for cutting semi-circular grooves for oil ways in bearings.

d) **Diamond point chisel:** The diamond point chisel is used for cleaning out corners or difficult places and pulling over centre punch marks wrongly placed for drilling.

B. Hot chisel

A hot chisel is used to cut metal that has been heated in a forge to soften the metal. One type of hot chisel is the hot cut hardy, which is used in an anvil hardy hole with the cutting edge facing up. The hot workpiece to be cut is placed over the chisel and struck with a hammer. The hammer drives the workpiece into the chisel, which allows it to be snapped off with a pair of tongs. This tool is also often used in combination with a "top fuller" type of hot cut, when the piece being cut is particularly large.

13. Beak Iron

Beak iron generally used in forging shop. It is also known as small anvil made of forged steel. Its upper front end consists of horn and upper back end comprises of flat tail. Its taper shank is inserted into the hardie hole of the anvil. It is commonly used as anvil for small forge work.

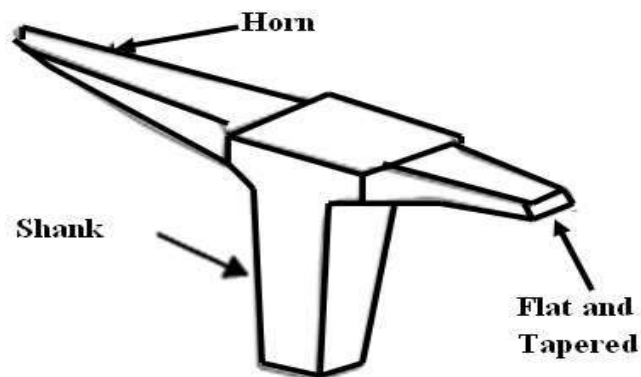


Fig. A view of Beak Iron

LATHE MACHINE

In a machine shop, metals are cut to shape on different machine tools. A lathe is used to cut and shape the metal by revolving the work against a cutting tool. The work is clamped either in a chuck, fitted on to the lathe spindle or in-between the centers. The cutting tool is fixed in a tool post, mounted on a movable carriage that is positioned on the lathe bed. The cutting tool can be fed on

to the work, either lengthwise or cross-wise. While turning, the chuck rotates in counter-clockwise direction, when viewed from the tail stock end.

PRINCIPAL OF A LATHE

Lathe is a machine tool which holds the work-piece securely between the two rigid and strong supports, called as centers or in a chuck or face plate, while the work piece revolves. The cutting tool is rigidly held and supported in a tool post and is fed against the revolving workpiece. While the workpiece revolves about its own axis, the tool is made to move in parallel or at an inclination with the axis of a material to be cut. Hence, the main function of a lathe is to remove metal from a workpiece to give it desired shape and size. The material from the workpiece is removed in the form of chips. Fig. shows the working principle of the lathe machine. Also, to cut the material properly, the tool material should be harder than the workpiece material.

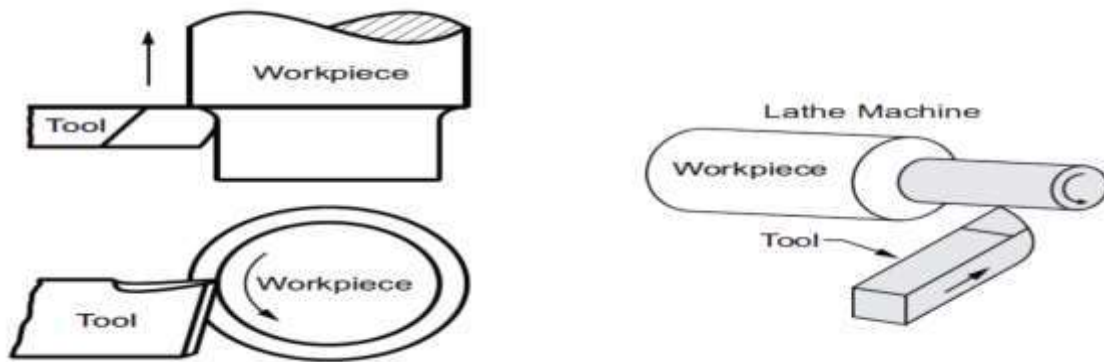


Fig. A view of working principle of lathe machine

BASIC ELEMENTS OF LATHE MACHINE

a) Bed

The foundation of lathe is bed. It is an essential part of a lathe, which must be strong and rigid. Head stock and tailstock are located on either end of the bed and carriage rest over the lathe bed and slides on it. It carries all parts of the machine and resists the cutting forces. The carriage and the tailstock move along the guide ways provided on the bed. It is usually made of cast iron.

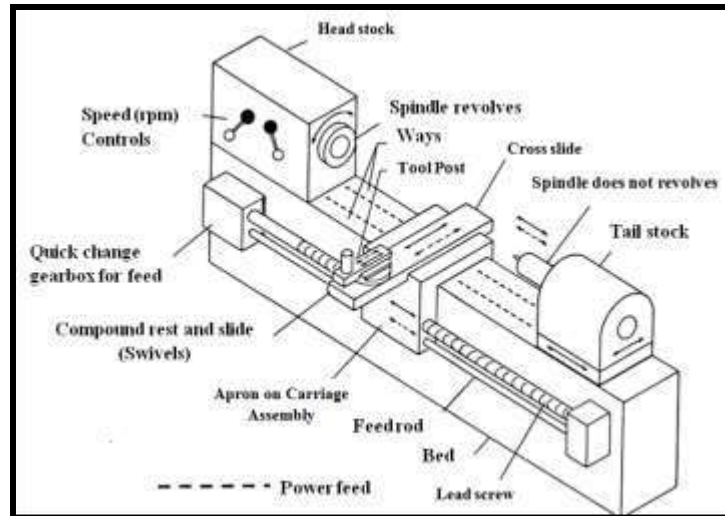


Fig. A view of Basic element of Lathe machine

b) Head stock

The headstock is a box-like casting mounted permanently on the bed to the left hand end of the machine. The headstock supports the spindle (hollow rotating shaft used to hold the workpiece) and contains a gearbox by which the spindle may be rotated at various speeds.

Functions of the headstock:

- To support the spindle.
- To carry driving mechanism for the workpiece.
- To give multiple speeds to the spindle.

c) Tailstock

It is used to support the right hand end of a long work piece. It may be clamped in any position along the lathe bed. The tail stock spindle has an internal Morse taper to receive the dead center that supports the work. Drills, reamers, taps may also be fitted into the spindle, for performing operations such as drilling, reaming and tapping.

d) Carriage

It is used for supporting, guiding and feeding the tool against the work-piece during the operation on the lathe. The lathe carriage is located between the headstock and tailstock of the lathe. It can be moved left or right between the headstock and tailstock either by hand wheel or by power-feed. It carries the cutting tool and precisely controls its movements.

e) Saddle

It slides along the bed ways of the lathe and supports the cross-slide, compound rest and tool post.

f) Cross-slide

It is mounted on the top of the saddle and moves in a direction perpendicular to the axis of the main spindle.

g) Compound Rest

It supports the tool post. By swiveling the compound rest on the cross slide, short tapers may be turned to any desired angles.

h) Tool Post

The tool post holds the tool holder or the tool, which may be adjusted to any working position.

i) Apron

It is bolted to the front of the saddle. It houses the gears and controls for the carriage and feed mechanism.

j) Lead Screw

It is a long threaded shaft, located in front of the carriage, running from the head-stock to the Tailstock. It is geared to the spindle and controls the movement of the tool, either for automatic feeding or for cutting threads.

k) Centers

There are two centers known as dead center and live center. The dead center is positioned in the tail stock spindle and the live center, in the head-stock spindle. While turning between centers, the dead center does not revolve with the work while the live center revolves with the work.

Feed mechanism

It is used to transmit the motion from headstock spindle to the carriage by using various units. The movement of the tool relative to the work-piece is known as feed. The lathe tool can have longitudinal, cross and angular feed.

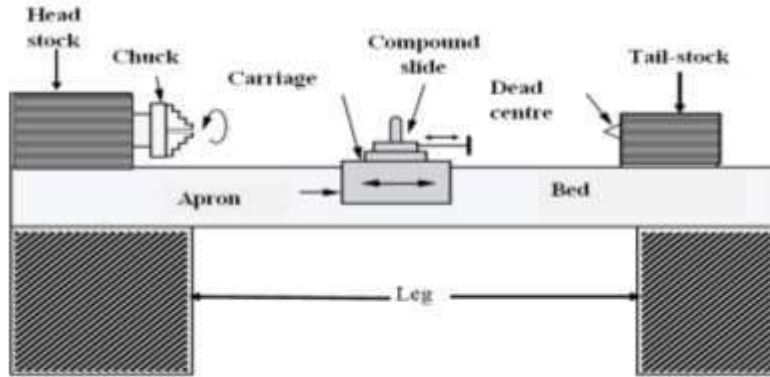


Fig. A view of block diagram of Lathe machine Thread cutting mechanism

It uses the rotation of the lead screw to traverse the tool along the work-piece for producing screw threads. It consists of pair of half-nuts, which are capable of moving in or out of mesh with the lead screw. Lead screw is a long threaded shaft, which is used as a master screw, and it is brought into operation only when threads have to be cut. In all other time, it is disengaged from the gearbox and remains stationary.

Work-Holding Devices

a) Three-jaw universal or self centering chuck

It is used for holding regular objects like round bars, hexagonal rods, etc. Three jaw universal or self centering chuck : Three jaws and three square slots or holes are provided on the circumference of the body. By inserting the key in any one slot, all jaws can be moved simultaneously. Speedy centering of the workpiece. Cannot hold large size of workpiece.

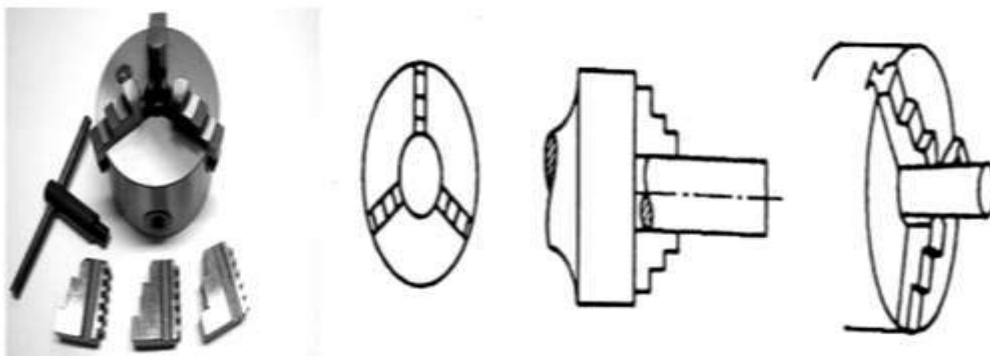


Fig. A view of Three-Jaw Chuck

b) Four Jaw chuck

Used to hold square, rectangular regular & irregular shapes of work pieces. Initially to set the workpiece it takes more time. This chuck includes four independent jaws Four square holes on circumference of the body By using key jaw can be taken in or out independently.

Advantages :-

1. Any type of work piece can be held easily
2. High grip is possible as four jaws are employed.

Disadvantages:-

1. Centering is a little difficult process
2. Semi skilled labors are required

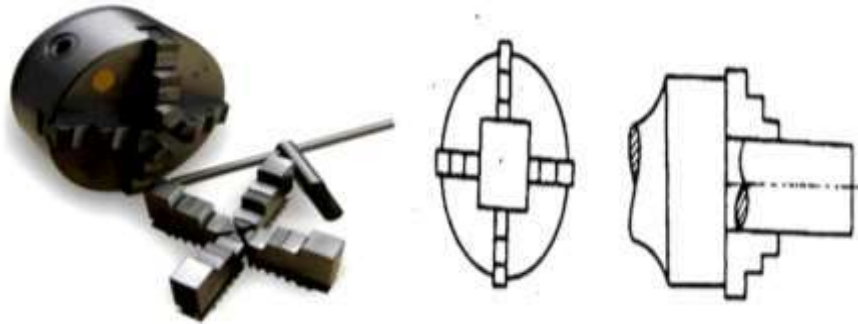


Fig. A view of Four Jaw chuck

c) Magnetic lathe Chuck:

In this chuck, magnetic force is used for holding the work piece. Permanent-electromagnetic technology changed the manufacturing world's view of using magnets for machining operations. These newer chucks were more powerful and the clamp forces generated were predictable and accurate. With this evolution, turning on a magnetic lathe chuck has become more accepted as the best way for presenting the whole workpiece to the machine tool. **Advantages:** Work pieces in which damage due to the jaws of chucks is not tolerated can be effectively machined by using this chuck. If the work to be held is of very small size and cannot be hold by the above three.

Disadvantages: All type of jobs cannot be held , Size of the job affects the efficiency of the holding and All type of materials cannot be held as it works on magnetic property only magnetic materials can be held.



Fig. A view of Magnetic chuck

Faceplate

It is a plate of large diameter, used for turning operations. Certain types of work that cannot be held in chucks are held on the faceplate with the help of various accessories. It is a circular metal (usually cast iron) plate which fixes to the end of the lathe spindle. The workpiece is then clamped to the faceplate, typically using t-nuts in slots in the faceplate, or less commonly threaded holes in the faceplate itself.

LATHE OPERATIONS

- 1. Turning:** Cylindrical shapes, both external and internal, are produced by turning operation. Turning is the process in which the material is removed by a traversing cutting tool, from the surface of a rotating work piece. The operation used for machining internal surfaces is often called the boring operation in which a hole previously drilled is enlarged. For turning long work, first, it should be faced and center drilled at one end and then supported by means of the tail-stock centre.

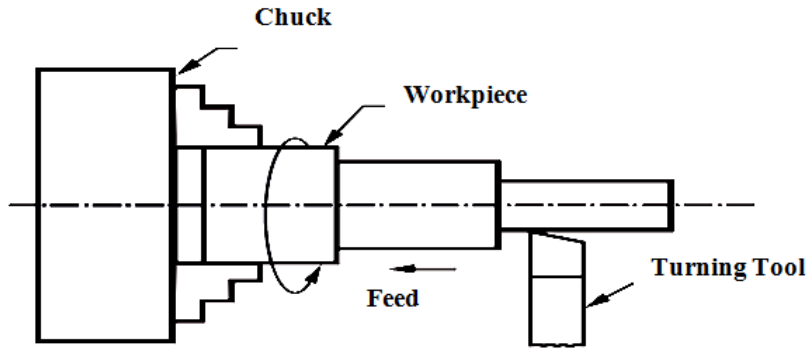


Fig. A view of setup for turning on lathe machine

2. **Taper Turning:** A taper is defined as the uniform change in the diameter of a work piece, measured along its length. It is expressed as a ratio of the difference in diameters to the length. It is also expressed in degrees of half the included (taper) angle. Taper turning refers to the production of a conical surface, on the work piece on a lathe. Short steep tapers may be cut on a lathe by swiveling the compound rest to the required angle. Here, the cutting tool is fed by means of the compound slide feed handle. The work piece is rotated in a chuck or face plate or between centers.

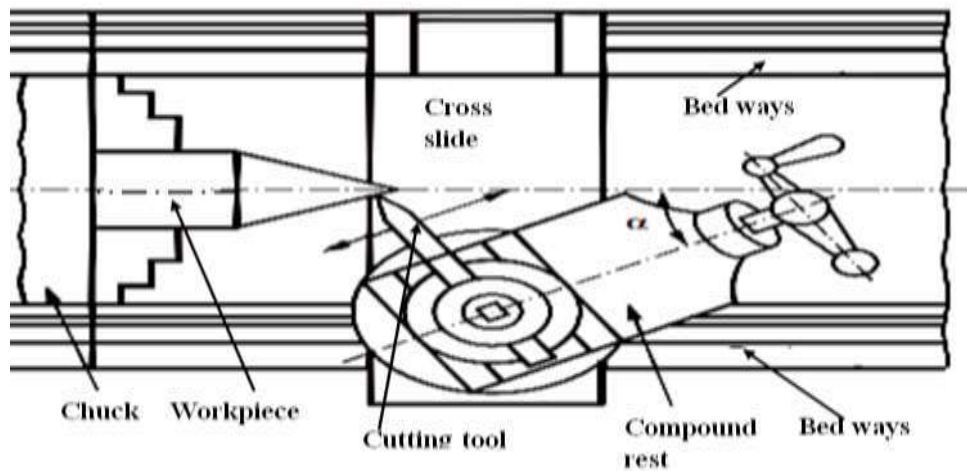


Fig. A view of set for taper turning on lathe machine

3. **Boring:** Boring is enlarging a hole and is used when correct size drill is not available. However, it should be noted that boring cannot make a hole.

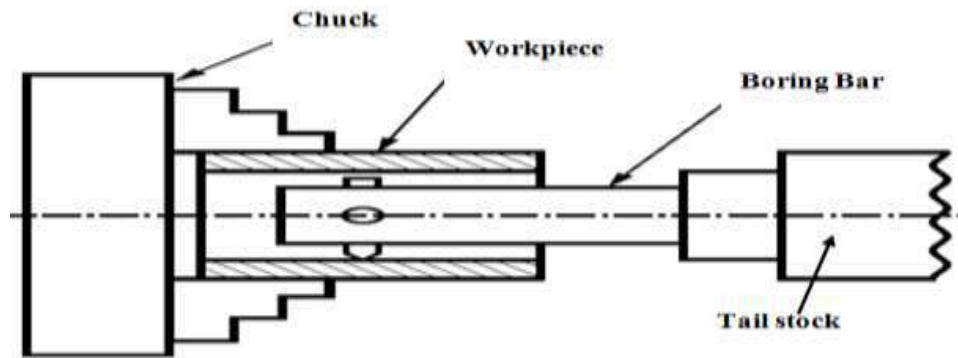


Fig. A view of Setup for boring on lathe machine

4. Facing: Facing is a machining operation, performed to make the end surface of the work piece, flat and perpendicular to the axis of rotation. For this, the work piece may be held in a chuck and rotated about the lathe axis. A facing tool is fed perpendicular to the axis of the lathe. The tool is slightly inclined towards the end of the work piece. Purpose of facing:

- To have a reference plane to mark and measure the step length of work.
- To have a face at right angle to the axis of the work.
- To remove the roughness surface on the faces of the work and have finished faces instead
- To maintain the total length of the work.

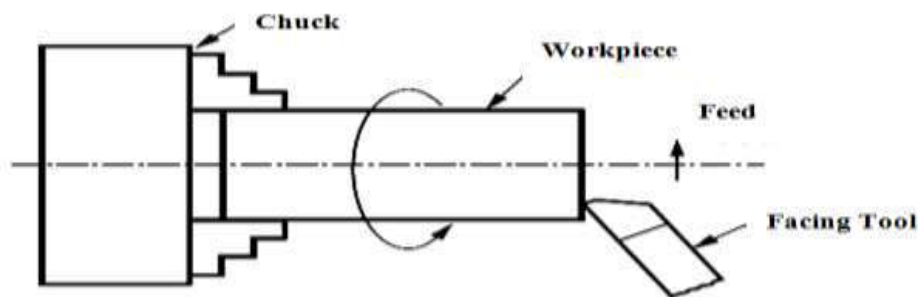


Fig. A view of Setup for facing on lathe machine

5. Drilling: Holes that are axially located in cylindrical parts are produced by drilling operation, using a twist drill. For this, the work piece is rotated in a chuck or face plate. The tail stock spindle has a standard taper. The drill bit is fitted into the tail stock spindle directly or through drill chuck. The tail stock is then moved over the bed and clamped on it near the work. When the job rotates, the drill bit is fed into the work by turning the tail stock hand wheel.

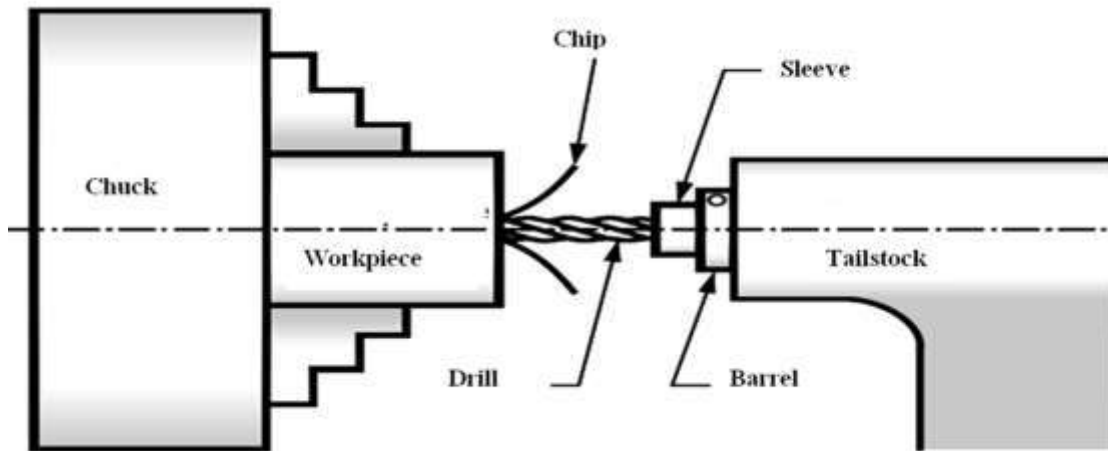


Fig. A view of Setup for drilling on a lathe

6. **Reaming:** Reaming is a finishing operation because a very small amount of material is removed during the operation. During the operation, the work-piece is held in a chuck or faceplate and the reamer shank is fitted in a sleeve or inserted in the tapered hole of the tailstock spindle.

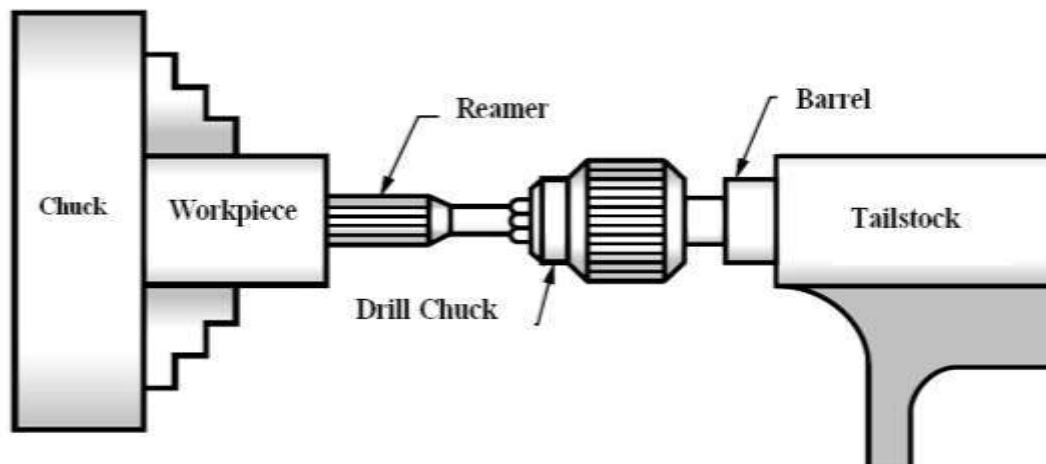


Fig. A view of Setup for reaming on a lathe

7. **Knurling:** It is the process of embossing a diamond shaped regular pattern on the surface of a work piece using a special knurling tool. This tool consists of a set of hardened steel rollers in a holder with the teeth cut on their surface in a definite pattern. The tool is held rigidly on the tool post and the rollers are pressed against the revolving work piece to squeeze the metal against the multiple cutting edges. The purpose of knurling is to provide an effective gripping surface on a work piece to prevent it from slipping when operated by hand.

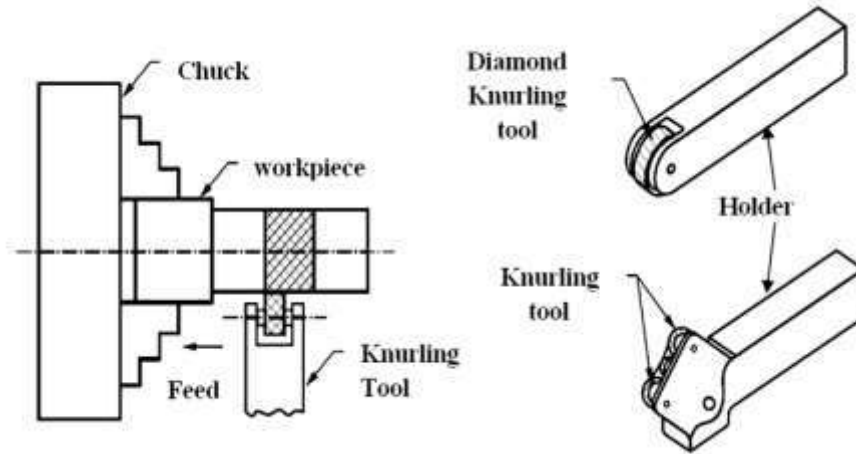


Fig. A view of Knurling and Knurling Tool

8. **Chamfering:** It is the operation of beveling the extreme end of a work piece. Chamfer is provided for better look, to enable nut to pass freely on threaded work piece, to remove burrs and protect the end of the work piece from being damaged. To permit for easy assembly of mating components and provide better appearance.

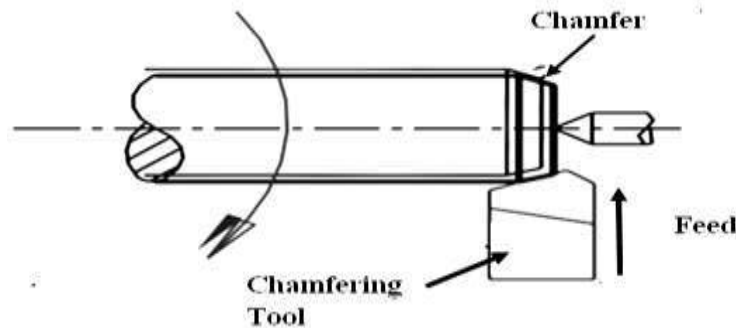


Fig. A view of Chamfering operations

9. **Threading:** Threading is nothing but cutting helical groove on a work piece. Threads may be cut either on the internal or external cylindrical surfaces. A specially shaped cutting tool, known as thread cutting tool, is used for this purpose. Thread cutting in a lathe is performed by traversing the cutting tool at a definite rate, in proportion to the rate at which the work revolves.

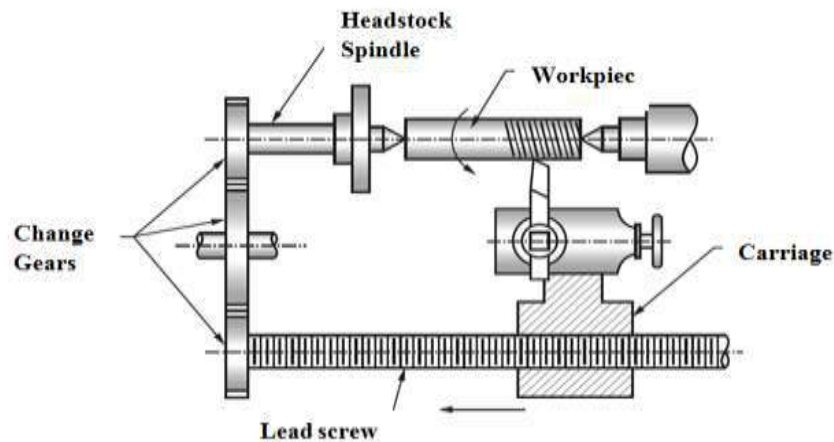


Fig. A View of Lathe machine setting for Thread Cutting

10. Counter-boring : The operation, which is used for enlarging only limited portion of the hole, is called as counter-boring and the tool used for this purpose is called as counter bore. The cutting edges of counter bore may have straight or spiral teeth.

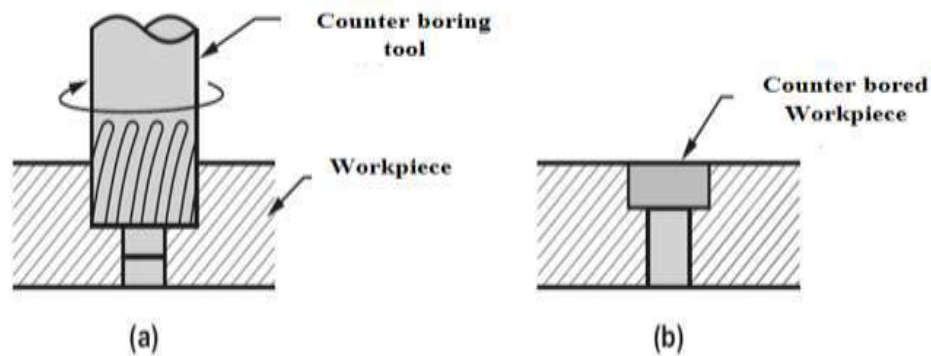


Fig. A view of Counter-boring operation

11. Counter-sinking: Countersinking operation is used for enlarging the end of a hole and to give it a conical shape for a short distance. The standard countersinks have the included angles of 60° , 82° or 90° and cutting edges of tool are at the conical surface.

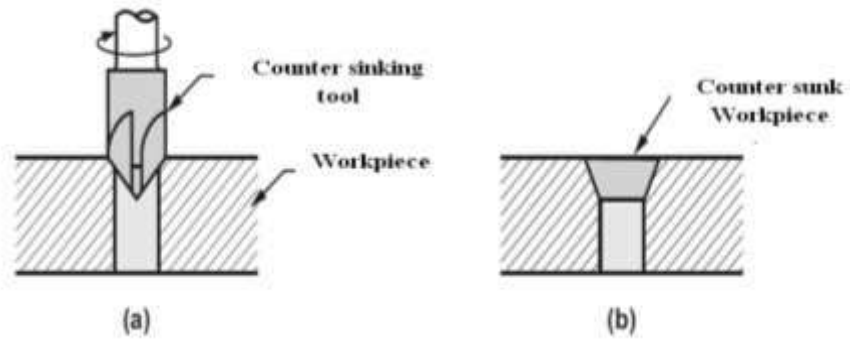


Fig. A view of Counter-sinking operation

12. Tapping: Tapping is an operation of cutting internal threads by using a cutting tool called as tapping. For tapping purpose, the machine should be equipped with a reversible motor or some other reversing mechanism. A tap is considered as a bolt with accurate threads cut on it and the threads act as cutting edges, which are hardened and ground.

MODULE-13: WEB DESIGN AND MAT LAB

Web design is the visual aesthetics and page layout of a website. It goes hand-in-hand with **web development** in the creation of a static website or dynamic web application.

- A website is a group of web pages (Index/Home, about us , contact us).
- Assigned with a domain name(www.yourwebsite.com)
- Hosted on an internet server(Bluehost, Godaddy , Bigrock, Hostgator),
- Interlinked with each other through navigation (Menu/ Hyperlinks),

Even if you don't consider yourself a creative person, it's still a good idea to learn web design. No matter whether you want to **make static websites** or dynamic web applications, design is an important part of the process. The design is the first thing people notice when they arrive on a website, and if it's not good enough, they'll leave. You don't want to create a site that frustrates people, do you?

If you do identify yourself as a creative person, you might even consider a career as a web designer. Today, there is a huge need for competent web designers with up-to-date skills. It's not an opportunity to be sneezed at.

Learn coding and you'll be a valuable asset to many. But learn coding and design and you'll be second to none!

Web Design Overview

The web design process starts with a visual concept, which you could sketch by hand or with software like Photoshop. Then, you use **HTML** and **CSS** to build the website. HTML and CSS are the codes for writing web pages. HTML handles the basic structure and 'bones' of your page, while CSS handles the style and appearance.

If you're a good web designer, you'll also pay attention to concepts like responsive design, aesthetics, usability and accessibility when building your site.

Responsive design is a popular technique for making websites look good and function well on additional devices, like phones and tablets. It does this by setting different CSS rules for different browser widths.

Want a live demo of responsive design? If you're viewing this page on a computer, reduce the width of your browser window and see what happens.

Aesthetics plays a big role in web design, since it's all about how web pages look. You've probably seen a lot of websites that look shocking. Learn a bit of aesthetic theory and hopefully your website won't be one of them!

Usability is another important component of web design. This is all about how intuitive a website is, and how easy it is for users to find or do what they want.

Finally, there's **accessibility** – a very important web design practice. Accessibility is all about making web pages viewable by people that use assistive devices to browse the web – including the deaf and blind.

PROCESS OF WEB DESIGNING

There are numerous steps in the web site design and development process. From gathering initial information, to the creation of your web site, and finally to maintenance to keep your web site up to date and current.

The exact process will vary slightly from designer to designer, but the basics are the same.

1. Information Gathering
2. Planning
3. Design
4. Development
5. Testing and Delivery
6. Maintenance

INFORMATION GATHERING

The first step in designing a successful web site is to gather information. Many things need to be taken into consideration when the look and feel of your site is created.

This first step is actually the most important one, as it involves a solid understanding of the company it is created for. **It involves a good understanding of *you*** – what your business goals and dreams are, and how the web can be utilized to help you achieve those goals.

It is important that your web designer start off by asking a lot of questions to help them understand your business and your needs in a web site.

Certain things to consider are:

- **Purpose**

What is the purpose of the site? Do you want to provide information, promote a service, sell a product... ?

- **Goals**

What do you hope to accomplish by building this web site? Two of the more common goals are either to make money or share information.

- **Target Audience**

Is there a specific group of people that will help you reach your goals? It is helpful to picture the “ideal” person you want to visit your web site. Consider their age, sex or interests – this will later help determine the best design style for your site.

- **Content**

What kind of information will the target audience be looking for on your site? Are they looking for specific information, a particular product or service, online ordering...?

PLANNING:

Using the information gathered from phase one, it is time to put together a plan for your web site. This is the point where a site map is developed.

The site map is a list of all main topic areas of the site, as well as sub-topics, if applicable. This serves as a guide as to what content will be on the site, and is essential to developing a consistent, easy to understand navigational system. The end-user of the web site – aka your customer – must be kept in mind when designing your site. These are, after all, the people who will be learning about your service or buying your product. A good user interface creates an easy to navigate web site, and is the basis for this.

During the planning phase, your web designer will also help you decide what technologies should be implemented. Elements such as what CMS (content management system) such as WordPress to incorporate, will any contact forms be needed, etc. are discussed when planning your web site.

DESIGNING:

Drawing from the information gathered up to this point, it’s time to determine the look and feel of your site. Target audience is one of the key factors taken into consideration. A site aimed at teenagers, for example, will look much different than one meant for a financial institution. As part

of the design phase, it is also important to incorporate elements such as the company logo or colors to help strengthen the identity of your company on the web site.

Your web designer will create one or more prototype designs for your web site. This is typically a .jpg image of what the final design will look like. Often times you will be sent an email with the mock-ups for your web site, while other designers take it a step further by giving you access to a secure area of their web site meant for customers to view work in progress.

Either way, your designer should allow you to view your project throughout the design and development stages. The most important reason for this is that it gives you the opportunity to express your likes and dislikes on the site design.

In this phase, communication between both you and your designer is crucial to ensure that the final web site will match your needs and taste. It is important that you work closely with your designer, exchanging ideas, until you arrive at the final design for your web site.

DEVELOPMENT:

The developmental stage is the point where the web site itself is created. At this time, your web designer will take all of the individual graphic elements from the prototype and use them to create the actual, functional site.

This is typically done by first developing the home page, followed by a “shell” for the interior pages. The shell serves as a template for the content pages of your site, as it contains the main navigational structure for the web site. Once the shell has been created, your designer will take your content and distribute it throughout the site, in the appropriate areas.

Elements such as the CMS (content management system) like WordPress, interactive contact forms, or ecommerce shopping carts are implemented and made functional during this phase, as well.

This entire time, your designer should continue to make your in-progress web site available to you for viewing, so that you can suggest any additional changes or corrections you would like to have done.

On the technical front, a successful web site requires an understanding of front-end web development. This involves writing valid HTML / CSS code that complies to current web standards, maximizing functionality, as well as accessibility for as large an audience as possible.

TESTING AND DELIVERY: At this point, your web designer will attend to the final details and test your web site. They will test things such as the complete functionality of forms or other scripts, as well as testing for last minute compatibility issues (viewing differences between different web browsers), ensuring that your web site is optimized to be viewed properly in the most recent browser versions.

A good web designer is one who is well versed in current standards for web site design and development. The basic technologies currently used are HTML and CSS (Cascading Style Sheets). As part of testing, your designer should check to be sure that all of the code written for your web site validates. Valid code means that your site meets the current web development standards – this is helpful when checking for issues such as cross-browser compatibility as mentioned above.

Once you give your web designer final approval, it is time to deliver the site. An FTP (File Transfer Protocol) program is used to upload the web site files to your server. Some web designers offer domain name registration and web hosting services as well, or have recommendations as to where you can host your site. Once these accounts have been setup, and your web site uploaded to the server, the site should be put through one last run-through. This is just precautionary, to confirm that all files have been uploaded correctly, and that the site continues to be fully functional.

Other final details include plugin installation (for WordPress or other CMS driven web sites and SEO (Search Engine Optimization). SEO is the optimization of your web site with elements such as title, description and keyword tags which help your web site achieve higher rankings in the search engines. The previously mentioned code validation is something that plays a vital role in SEO, as well. There are many WordPress plugins available that further enhance the default WordPress functionality – many of which directly relate to improving your SEO, as well.

There are a lot of details involved in optimizing your web site for the search engines – enough to warrant its own post. This is a very important step, because even though you now have a web site, you need to make sure that people can find it!

MAINTANANCE:

The development of your web site is not necessarily over, though. One way to bring repeat visitors to your site is to offer new content or products on a regular basis. Most web designers will be more than happy to continue working together with you, to update the information on your web site. Many designers offer maintenance packages at reduced rates, based on how often you anticipate making changes or additions to your web site.

If you prefer to be more hands on, and update your own content, there is something called a CMS (Content Management System) such as Word Press can be implemented to your web site. This is something that would be decided upon during the Planning stage. With a CMS, your designer will utilize online software to develop a database driven site for you.

A web site driven by a CMS gives you the ability to edit the content areas of the web site yourself. You are given access to a back-end administrative area, where you can use an online text editor (similar to a mini version of Microsoft Word). You'll be able to edit existing content this way, or if you are feeling more adventurous, you can even add new pages and content yourself. The possibilities are endless!

It's really up to you as far as how comfortable you feel with updating your own web site. Some people prefer to have all the control so that they can make updates to their own web site the minute they decide to do so. Others prefer to hand off the web site entirely, as they have enough tasks on-hand that are more important for them to handle directly.

That's where the help of your web designer comes in, once again, as they can take over the web site maintenance for you – one less thing for you to do is always a good thing in these busy times! Other maintenance type items include regular site backups, WordPress upgrades, additional plugin installation, etc.

READY TO DESIGN THE WEB SITE:

- `<html>` */Html documents must start with document type declaration*/
- `<head>`
- `<title>farmers buddy site...</title>` */ tittle reflect the Page title*/
- `</head>`
- `<body bgcolor=darkkhaki>` */ The visible part of the html document between <body > and </body > */
- `<center>`
- `<table width="875" align="center" cellpadding="0" cellspacing="0">`
- `<tr>` */ tr shows table row */
- `<td>` */ td shows table data */
- ``

- </td>
- </tr>
- </table>
-

- <table width="875" align="center" cellpadding="0" cellspacing="0">
- <tr>
- <td align="center">
-
- HOME | CROPS | SOIL | FERTILIZERS | MARKET | QUERY | LOGOUT
-
- </td>
- </tr>
- </table>
- </br> </table>
-

- <table width="875" align="center" cellpadding="0" cellspacing="0">
- <tr>
- <td align="center">
- <h1>
- <U>Welcome to the Farmers Buddy</U>
- </br>
- </br>
- <h4>
- Farmer Buddy is useful for farmers and agricultural students to obtain information regarding various crops, the fertilizers usage for these crops, the soil condition in which these crops yield more, and the suitable climatic and environmental condition for these crops.
- </h1>

- </body>
- </html>



MATLAB:

In this module we will cover following topic which are given below:

1. Introduction of MATLAB
2. Features of MATLAB
3. Uses of MATLAB
4. Environment
5. Data Types and Variables
6. MATLAB Matrix
7. Plotting with MATLAB

INTRODUCTION TO MATLAB:- MATLAB (matrix laboratory) is a fourth-generation high-level programming language and interactive environment for numerical computation, visualization and programming. MATLAB is developed by Math Works. It allows matrix manipulations; plotting of functions and data; implementation of algorithms; creation of user interfaces; interfacing with programs written in other languages, including C, C++, Java, and FORTRAN; analyze data; develop algorithms; and create models and applications. It has numerous built-in commands and math functions that help you in mathematical calculations, generating plots, and performing numerical methods. Matlab is a program for doing numerical computation. It was

originally designed for solving linear algebra type problems using matrices. It's name is derived from MATrix LABoratory. zMatlab is also a programming language that currently is widely used as a platform for developing tools for Machine Learning.

MATLAB's Power of Computational Mathematics

MATLAB is used in every facet of computational mathematics. Following are some commonly used mathematical calculations where it is used most commonly:

- Dealing with Matrices and Arrays
- 2-D and 3-D Plotting and graphics
- Linear Algebra Algebraic Equations
- Non-linear Functions
- Statistics
- Data Analysis
- Calculus and Differential Equations
- Numerical Calculations
- Integration
- Transforms
- Curve Fitting
- Various other special functions

Features of MATLAB Following are the basic features of MATLAB:

It is a high-level language for numerical computation, visualization and application development.

It also provides an interactive environment for iterative exploration, design and problem solving.

It provides vast library of mathematical functions for linear algebra, statistics, Fourier analysis, filtering, optimization, numerical integration and solving ordinary differential equations.

It provides built-in graphics for visualizing data and tools for creating custom plots.

MATLAB's programming interface gives development tools for improving code quality, maintainability, and maximizing performance.

It provides tools for building applications with custom graphical interfaces.

It provides functions for integrating MATLAB based algorithms with external applications and languages such as C, Java, .NET and Microsoft Excel.

Uses of MATLAB :-

MATLAB .is widely used as a computational tool in science and engineering encompassing the fields of physics, chemistry, math and all engineering streams. It is used in a range of applications including:

signal processing and Communications

image and video Processing

control systems

test and measurement

computational finance

computational biology

2. ENVIRONMENT

Local Environment Setup :-

Setting up MATLAB environment is a matter of few clicks. The installer can be downloaded from http://in.mathworks.com/downloads/web_downloads: MathWorks provides the licensed product, a trial version and a student version as well. You need to log into the site and wait a little for their approval. After downloading the installer the software can be installed through few clicks.

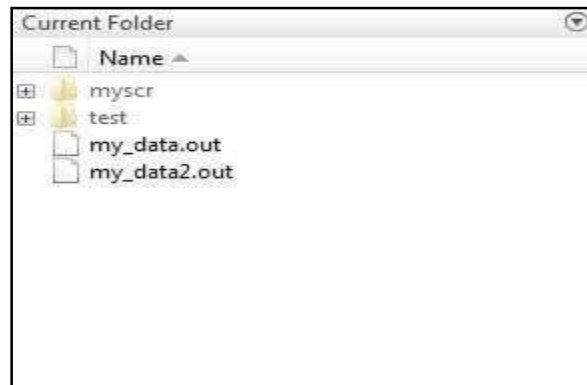


MATLAB development IDE can be launched from the icon created on the desktop. The main working window in MATLAB is called the desktop. When MATLAB is started, the desktop appears in its default layout:

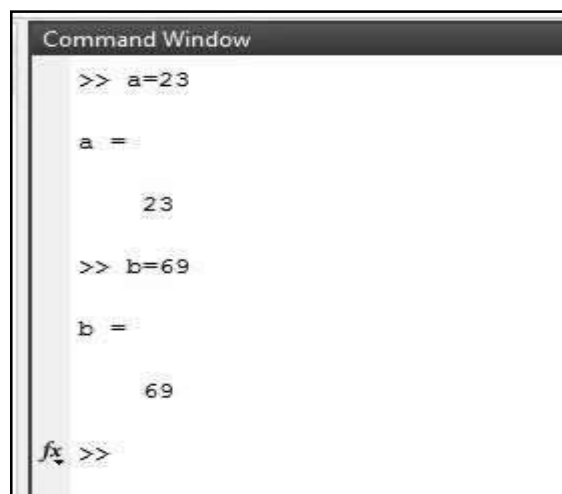


The desktop has the following panels:

Current Folder - This panel allows you to access the project folders and files.

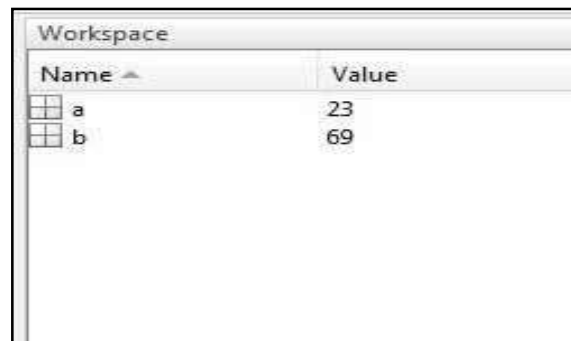


Command Window - This is the main area where commands can be entered at the command line.



It is indicated by the command prompt (>>)

Workspace - The workspace shows all the variables created and/or imported from files.



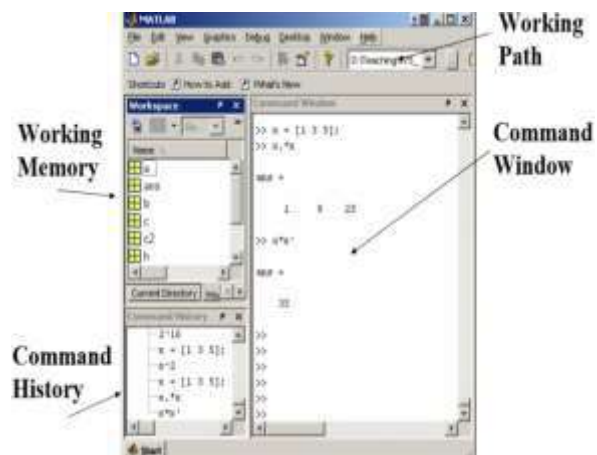
Command History - This panel shows or rerun commands that are entered at the command line

Set up GNU Octave

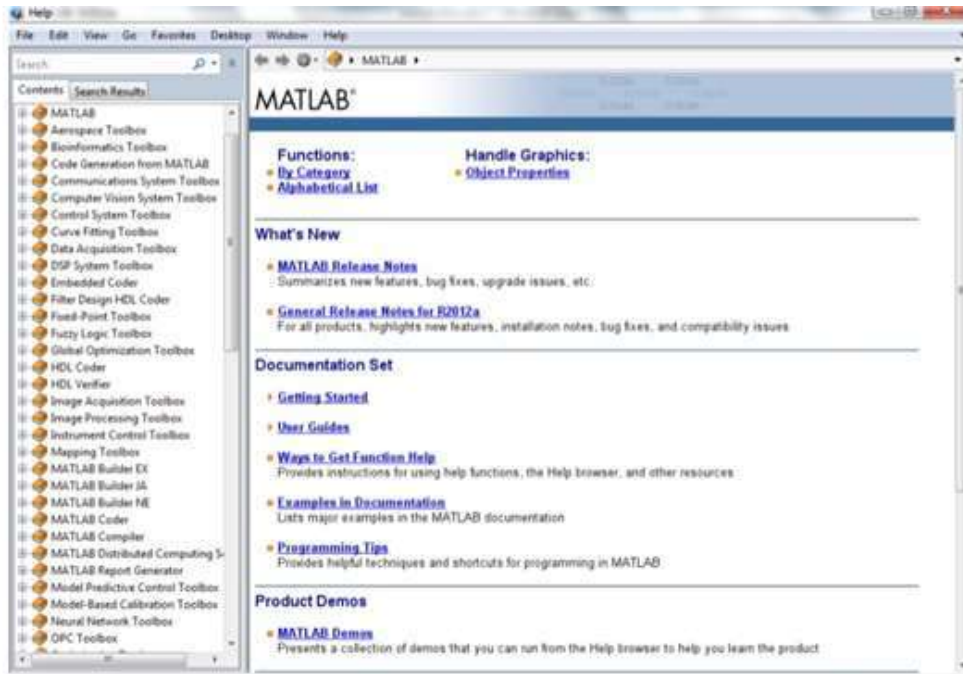
If you are willing to use Octave on your machine (Linux, BSD, OS X or Windows), then kindly download latest version from <http://www.gnu.org/software/octave/download.html>. You can check the given installation instructions for your machine.

Opening Matlab:-

```
7/14/2013 5:58 PM
7/15/2013 9:01 AM
simulink
7/15/2013 6:09 PM
simulink
7/25/2013 7:57 AM
7/25/2013 7:58 AM
chdir test
prog4
7/29/2013 8:55 AM
a=23
b=69
```

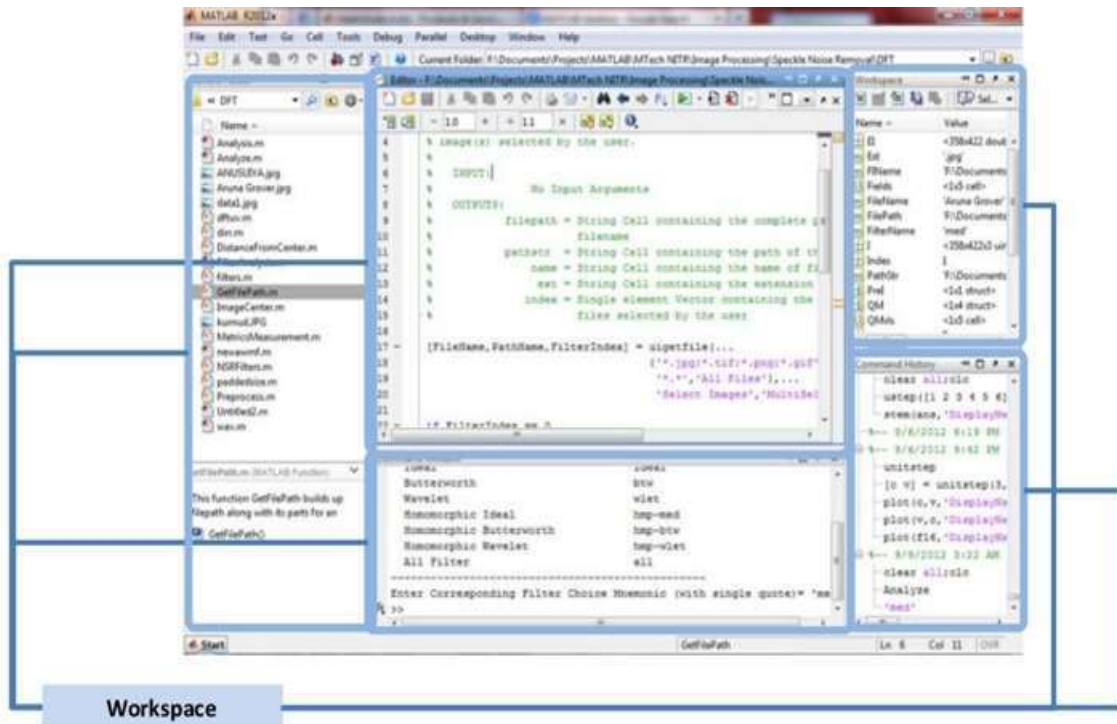


MATLAB DESKTOP:-

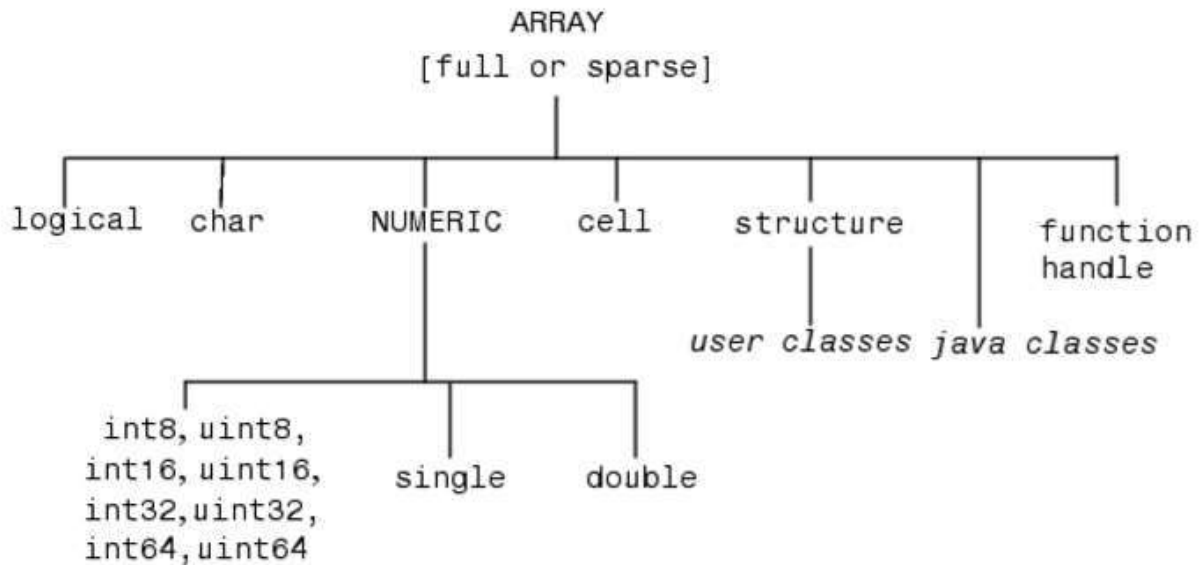


Help Window

The main window characterized by the MATLAB command prompt (>>)



Data Types:-



Variables

Have not to be previously declared zVariable names can contain up to 63 characters

Variable names must start with a letter followed by letters, digits, and underscores.

Variable names are case sensitive

Matlab Special Variables

ans Default variable name for results

pi Value of π

eps Smallest incremental number

inf Infinity

NaN Not a number.g. 0/0

realmin The smallest usable positive real number

realmax The largest usable positive real number

Matlab Assignment & Operators

Assignment = a = b(assign bto a)

Addition + a + b

Subtraction - a - b

Multiplication * or .* a*b or a.*b

Division / or ./ a/b or a ./b

Power ^ or .^ a^b or a.^b

Matlab Matrices

Matlab treats all variables as matrices. For our purposes a matrix can be thought of as an array, in fact, that is how it is stored.

Vectors are special forms of matrices and contain only one row OR one column. Scalars are matrices with only one row AND one column,

A matrix with only one row is called a row vector. A row vector can be created in Matlab as follows (note the commas):

```
»rowvec= [12 , 14 , 63]
```

```
rowvec=
```

```
12 14 63
```

A matrix with only one column is called a column vector. A column vector can be created in MATLAB as follows (note the semicolons):

```
»colvec= [13 ; 45 ; -2]
```

```
colvec=
```

```
13 45 -2
```

A matrix can be created in Matlab as follows (note the commas AND semicolons):

```
»matrix = [1 , 2 , 3 ;4 , 5 ,6 ;7 , 8 , 9]
```

```
matrix =
```

```
1 2 3 4 5 6 7 8 9
```

Some matrix functions in Matlab:

```
X = ones(r,c)    % Creates matrix full with ones
X = zeros(r,c)   % Creates matrix full with zero
A = diag(x)      % Creates squared matrix with vector x in diagonal
[r,c] = size(A)  % Return dimensions of matrix A
+ - * /         % Standard operations
.+ .-* ./      % Wise addition, subtraction,...
v = sum(A)       % Vector with sum of columns
```

Some powerful matrix functions in Matlab

```
X = A'          % Transposed matrix
X = inv(A)      % Inverse matrix squaredmatrix
X = pinv(A)     % Pseudo inverse
X = chol(A)     % Cholesky decomp.
d = det(A)      % Determinant
[X,D] = eig(A)  % Eigenvalues and eigenvectors
[Q,R] = qr(X)   % QR decomposition
[U,D,V] = svd(A) % singular value decomp
```

Save data in files

```
save('myfile', 'VAR1', 'VAR2', ...)
```

or

```
save('myfile', 'VAR1', 'var2')
```

Load data from files

```
load('filename')
```

```
load ('filename')
```

```
load filename.ext
```

```
load filename-ascii
```

```
load filename-mat
```

File Formats

mat-> Binary MAT-file form

ascii-> 8-digitASCII form

ascii-tabs Delimit array elements with tabs

Plotting with Matlab

Matlab has a lot of function for plotting data. The basic one will plot one vector vs. another. The first one will be treated as the abscissa (or x) vector and the second as the ordinate (or y) vector. The vectors have to be the same length.

```
>> plot (time, dist) % plotting versus time
```

Matlab will also plot a vector vs. its own index. The index will be treated as the abscissa vector. Given a vector “time”and a vector “dist”we could say:

```
>> plot (dist)% plotting versus index
```

Plotting with Matlab

```
»a = 1:100;
```

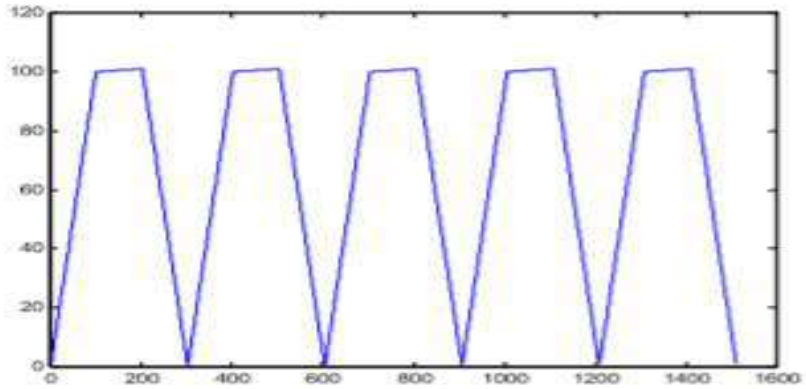
```
»b = 100:0.01:101;
```

```
»c = 101:-1:1;
```

```
»d = [a b c];
```

```
»e = [d d d d d];
```

```
»plot(e)
```

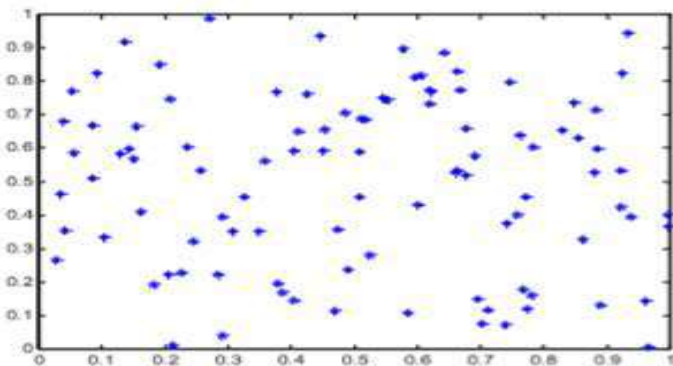



Plotting with Matlab

```
»x = rand(1,100);
```

```
»y = rand(1,100);
```

```
»plot(x,y,'*')
```



Plotting with Matlab

There are commands in Matlab to "annotate" a plot to put on axis labels, titles, and legends.

For example:

```
>> % To put a label on the axes we would use:
```

```
>> x label('X-axis label')
```

```
>> y label('Y-axis label')
```

```
>> % To put a title on the plot, we would use:
```

```
>> title ('Title of my plot')
```

Vectors may be extracted from matrices. Normally, we wish to plot one column vs. another. If we have a matrix “mydata” with two columns, we can obtain the columns as a vectors with the assignments as follows:

```
>> first_vector = mydata( : , 1); % First column
```

```
>> second_vector = mydata( : , 2); % Second one
```

```
>>% and we can plot the data
```

```
>> plot (first_vector , second_vector)
```


A

READY (Rural and Entrepreneurship Awareness Development Yojana) Programme-4 10-Weeks Experiential Learning On-Campus Manual



In the partial fulfillment of the award of the Degree Of BACHELOR OF TECHNOLOGY In AGRICULTURAL ENGINEERING ORGANIZED BY

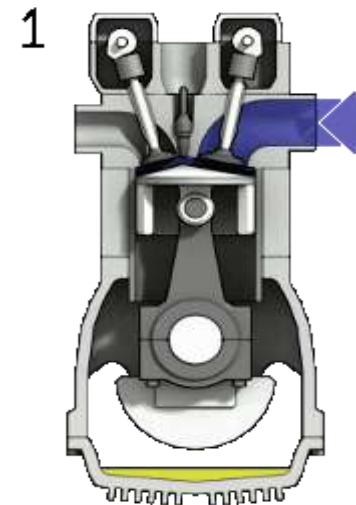
MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY, AKBARPUR, AMBEDKAR NAGAR (U.P.) 224122 (A CONSTITUENT COLLEGE OF) NARENDRA DEVA UNIVERSITY OF AGRICULTURE & TECHNOLOGY KUMARGANJ, AYODHYA (U.P) 224229

Presentation on

I.C engine and Manufacturing of small hand tools at workshop of MCAET

Presented by-

1. Anurag
2. Aman Awasthi
3. Amit Sharma
4. Ankit Maurya
5. Pawan Kumar Yadav
6. Shivanshu
7. Shubham Mishra



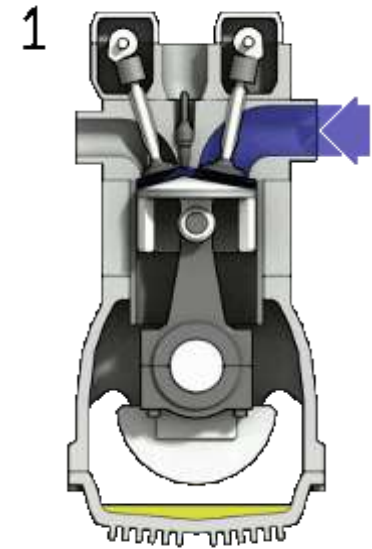
Content

- 1. 5 HP Kirloskar engine dismantling and assembling**
- 2. Manufacturing of small hand tools at workshop of MCAET**

INTERNAL COMBUSTION ENGINE



Introduction



A heat engine is a device which transforms the chemical energy of a fuel into thermal energy and uses this thermal energy to produce mechanical work.

> Chemical energy is released when the fuel-air mixture is burnt in the combustion chamber.

> I.C engines directly convert chemical energy of the fuel into useful mechanical work.

> The gas produced in this reaction rapidly expands forcing the piston down the cylinder on the power stroke.

Four stroke Engine

(I.C. Engine)

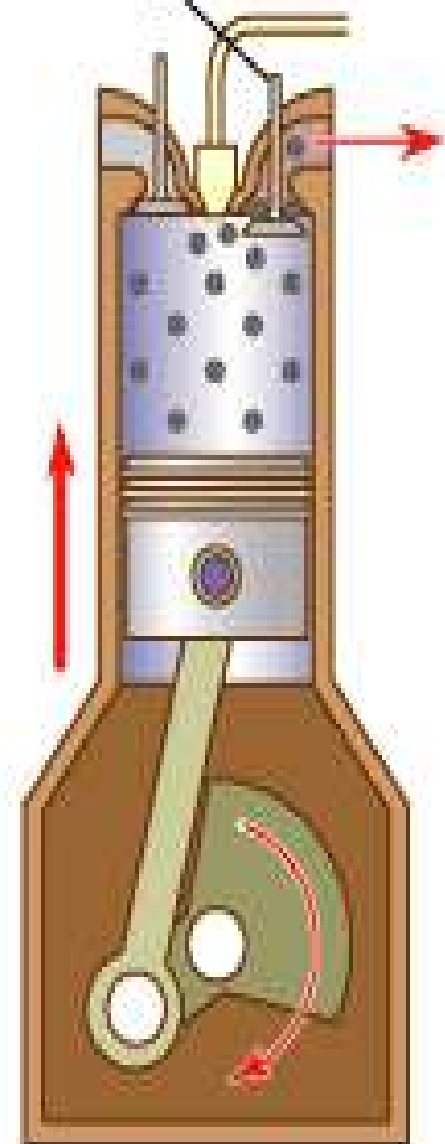
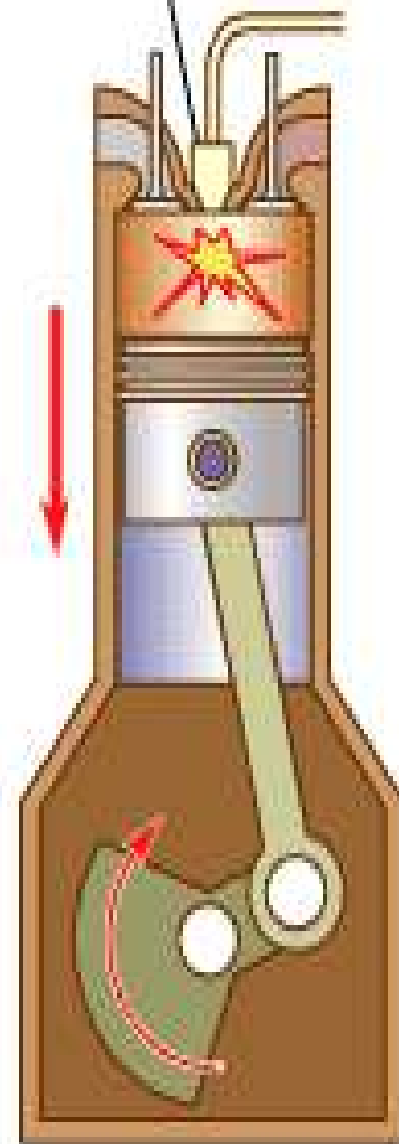
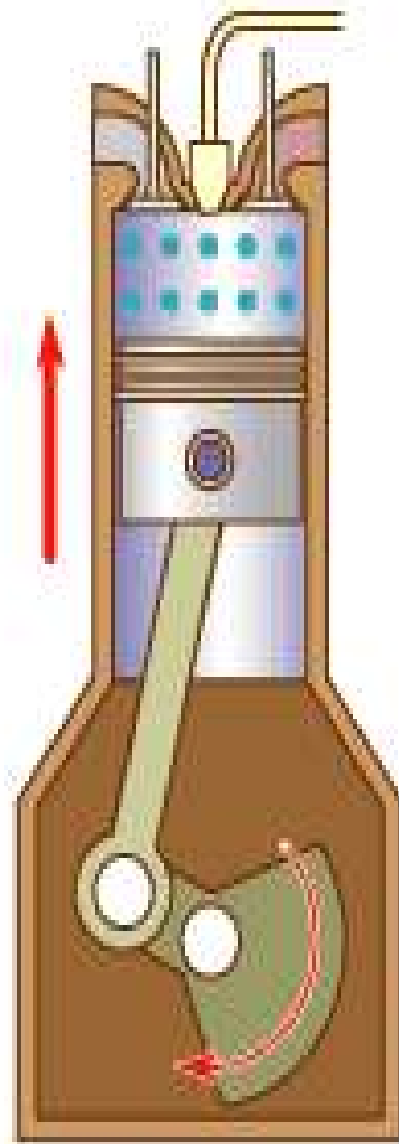
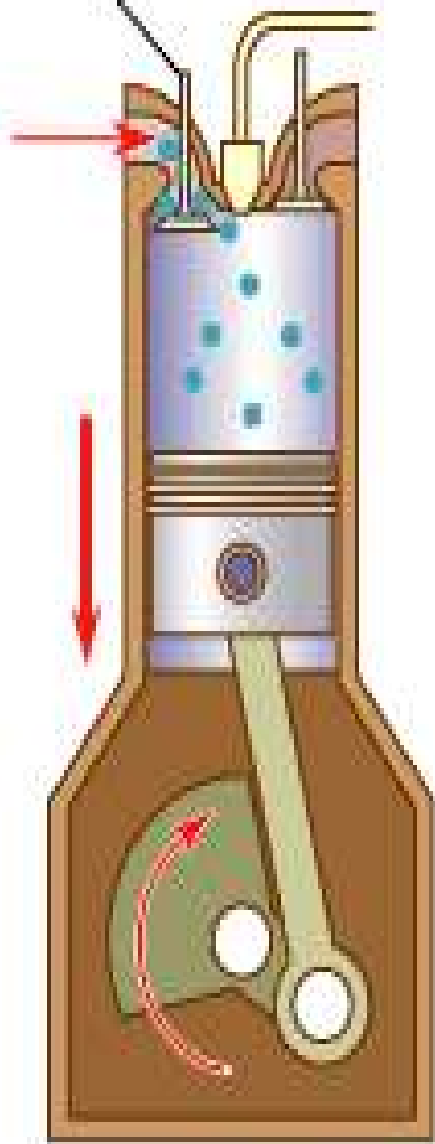
Construction

1. It consists of
 - Cylinder piston assembly
 - Connecting rod
 - Crankshaft
 - Cylinder head
 - Crank case
 - Inlet and Exhaust valve.
 - Water jacket (for cooling purpose)

intake valve

fuel injector

exhaust valve



intake

compression

power

exhaust

Working

1. Suction stroke :

- Due to pressure difference inlet valve opens and air is sucked into the cylinder
- Piston moves from TDC to BDC.
- Crankshaft rotates through 180 degree.

2. Compression stroke :

- Inlet and Exhaust valve are closed
- Piston moves from BDC to TDC.

- Pressure and temperature of charge increases.
- Crankshaft rotates through 360 degree i.e. one complete revolution.

3. Expansion stroke :

- Fuel is injected through fuel injector before the piston reaches TDC.
- Temperature of air is high enough to ignite the Fuel.
- Sudden increase in the temp. and pressure.

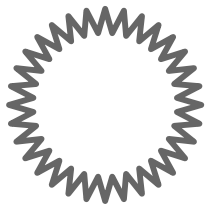
- Combustion products pushes the piston in the downward direction due to high pressure.
- Heat energy transform to mechanical energy.
- Piston moves from TDC to BDC
- Crankshaft rotates through 540 degree.
- Both inlet and exhaust valves are closed.
- **Exhaust stroke** - Exhaust valve opens as the piston moves
from BDC to TDC

- Piston pushes the product of combustion through exhaust valve into atmosphere.

Examples of Four stroke engines:

For Heavy vehicles:

- Tractors



Measuring Tools & Special Tools



OBJECTIVES

- ✓ IDENTIFY VARIOUS TYPES OF WRENCH, THEIR USES AND MAINTENANCE.
- ✓ DETERMINE THE CORRECT USE OF SELECTED TOOLS.

INTRODUCTION

A WRENCH is a tool for turning nuts or bolts, usually made of steel.

They are named

(1) from their shape

(2) from the object on which they are used tap wrench & pipe wrench

(3) from their construction, such as the spanner wrench and ratchet wrench.

DOUBLE ENDED WRENCH--

They has openings, open at each end of the hand to fit two different sizes of nuts or bolt heads.



CLOSE END WRENCH (BOX WRENCH)

--> similar to single ended wrench but entirely enclosed a nut.



COMBINATION WRENCH

WRENCH-has two types of opening of the same size.



12-POINT BOX WRENCH and double ring spanner

designed with 12 notches, or point inside a closed end, which permits a turning of nuts where only a short pull of the wrench possible.



ADJUSTABLE WRENCH

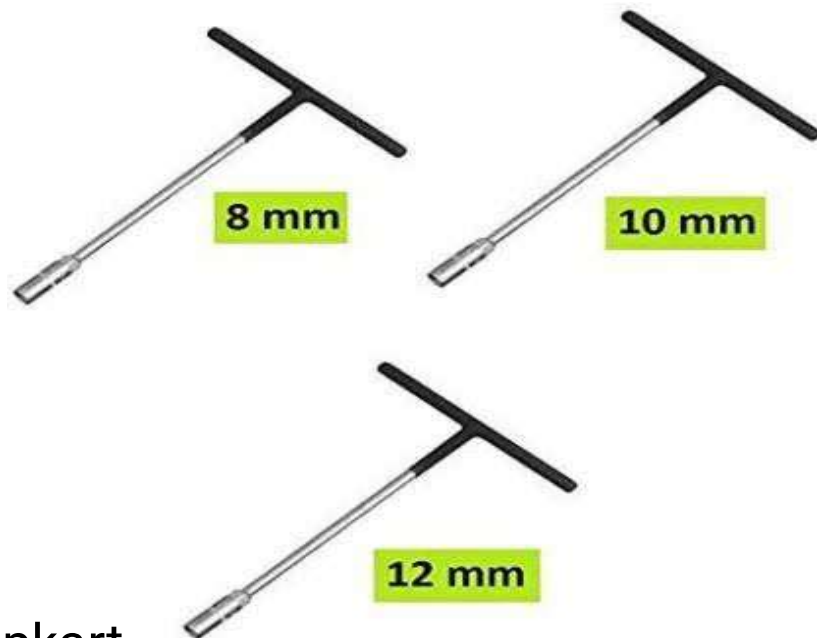
WRENCH-have movable jaws, which make it adjustable to various sizes of nuts. A heavy type of this wrench

is called a monkey wrench



T-SOCKET WRENCH

WRENCH - is made in the form of T where the socket in the end is made in a variety of shapes, such as square, hexagonal, octagonal, it is generally used to jobs when there is insufficient space to permit the use of an ordinary wrench.



ALLEN WRENCH

- (Key wrench) is made of hexagon-shaped stock to fit the holes in the head of set screw or socket head screws.



**ALLEN WRENCH or
HEX KEY**



TORQUE WRENCH

- is used when it is necessary to know the amount of turning or twisting force being applied to a nut.



Feeler Gauge

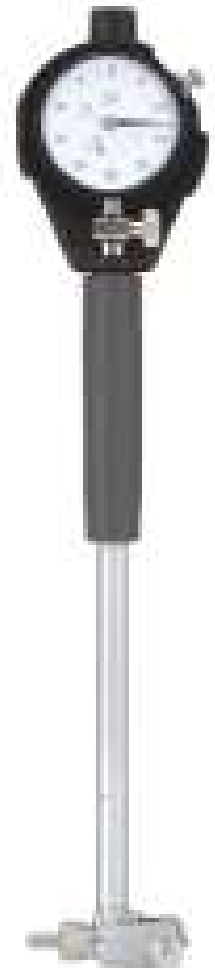
The feeler gauge is a simple tool used to measure gap-widths.

The feeler or thickness gauge is used to determine space or clearance between two objects.



Bore Gauge –

A Bore Gauge is used to measure the inside diameter of a hole or cylinder.



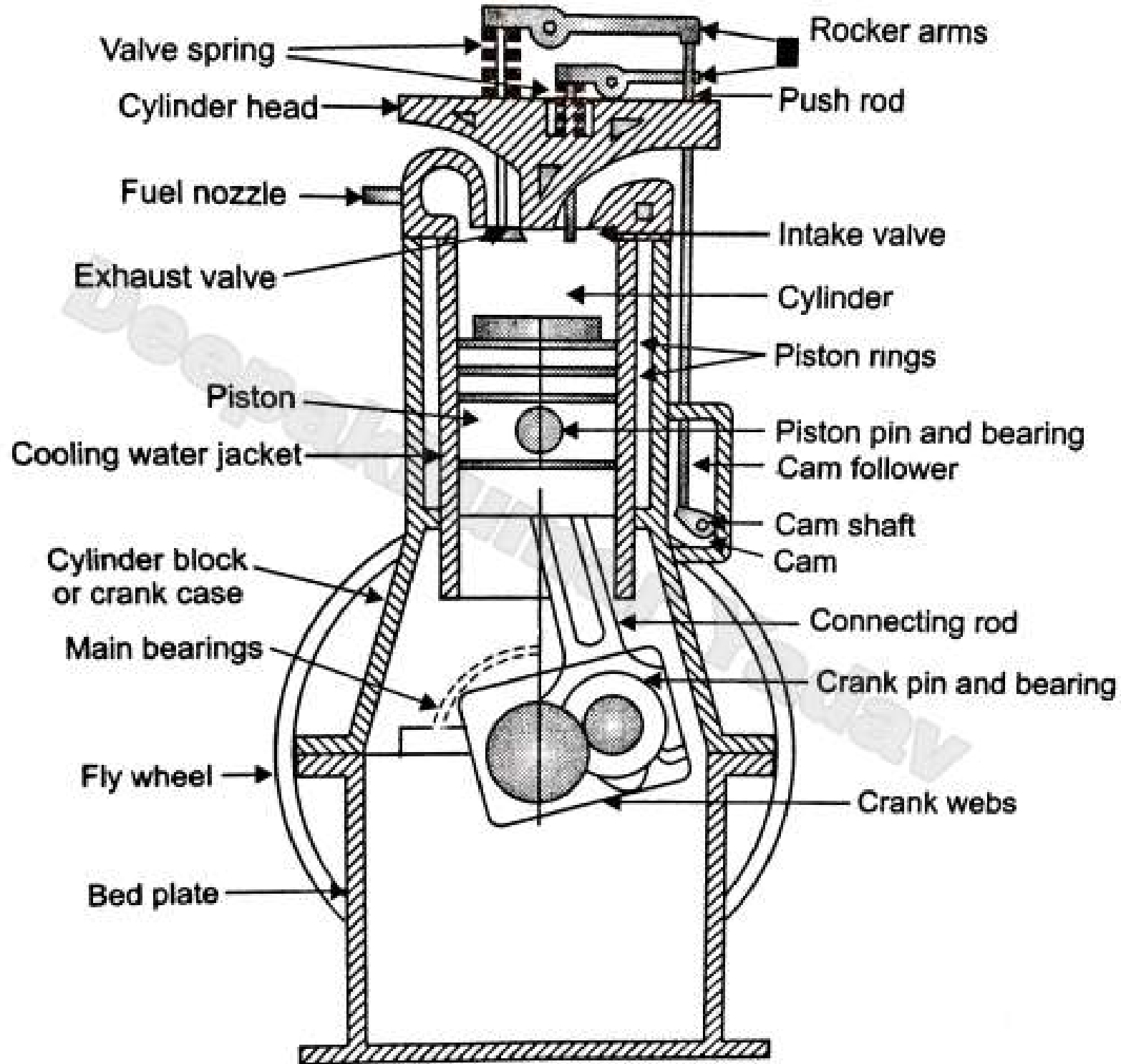
Piston Ring Expander –

Piston ring expanders are the correct technical method of opening piston rings from pistons.



GUIDELINES IN USING WRENCHES:

- >Always select a wrench which fits the nut or bolt properly. A wrench that is too large may slip off the nut and possibly cause an accident.
- >Whenever possible, it is advisable to pull rather than push on a wrench in order to avoid injury if the wrench should slip.
- >Always be sure that the nut is fully seated in the wrench jaw.



Major Components of Diesel Engine

Source of figure Wikipedia

Components of 5 HP Kirloskar engine used material

1. **Cylinder :**

- withstand 2000 centigrade temperature.
- Material : cast iron , steel alloy , aluminium alloy

2. **Cylinder Head :**

- Contain nozzle for Diesel Engine.
- Material : cast iron , steel alloy , aluminium alloy
- Gasket : copper or asbestos for air tight seal.

3. Piston :

- Function : Transmit force to connecting rod.
- Material : Aluminium

4. Connecting rod :

- Function : Transmit force from piston to crankshaft
- Material : Special steel alloy or Aluminium alloy

5. Piston rings :

- Construction : Two sets of rings
- Function : To provide air tight seal to prevent leakage of burnt gases or oil
- Material : Special steel alloy.

6. Crankshaft :

- Power is developed during working stroke.
- Material : Special steel alloy.

7. Crankcase :

- Act as a sump for lubricating oil.
- Material : cast iron

8. Flywheel :

- Function : It stores excess energy during power stroke and return energy during other stroke

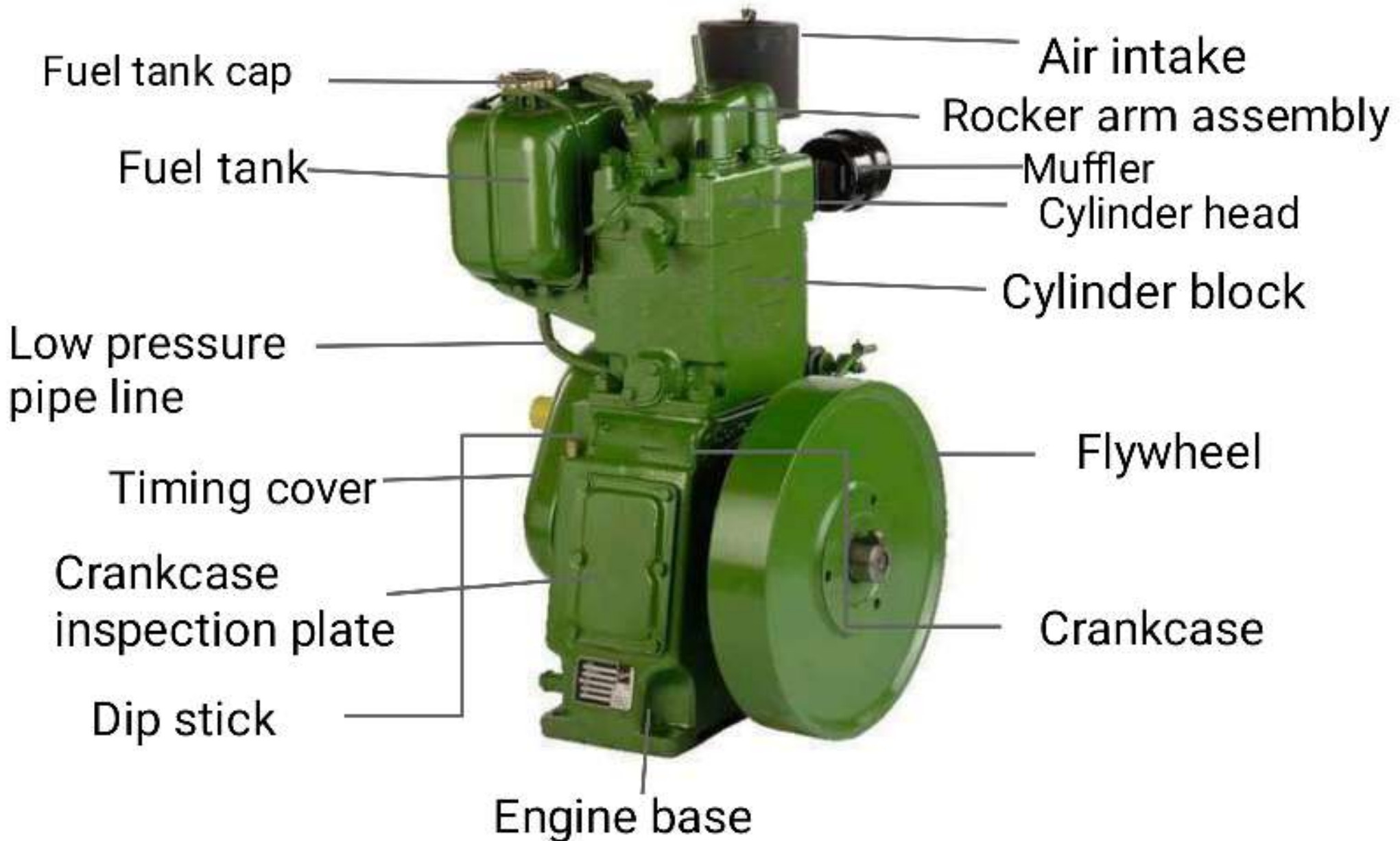
It maintain the speed of crankshaft constant.

Engine Dismantling and Assembling

5hp Kirloskar diesel engine

The major parts of engine are cylinder head, cylinder block and crankcase. Various tools used for this purpose were spanner both open and ring spanner adjustable torque wrench.

External part of engine



Cylinder head consists of the following:

1. Rocker arm
2. Inlet and Exhaust valve
3. Inlet manifold
4. Muffler

cylinder head

1. Rocker arm

The rocker arm is the part responsible for transmitting the movement of the camshaft towards the intake and exhaust valves of the engine,



Inlet and Exhaust valve

The inlet valves seal the intake port , through which the air flows into the combustion chamber and exhaust valve control the flow of combustion gases and let them stream out after the combustion cycle.



inlet and exhaust valve

Air intake manifold

Air Intake - The air intake system supplies the air to the engine with proper quantity and right temperature.



Muffler

A muffler or silencer is a device for reducing the noise emitted by the exhaust of an internal combustion engine



Cylinder block consists of:

1. Water jacket
2. Cylinder
3. Piston
4. Connecting rod



**A view of farm machinery lab 5 HP
Kirloskar engine dismantling**

Cylinder block consists of:

The cylinder is the power unit of the engine. This is where fuel is burned and converted into mechanical energy that powers the vehicle.



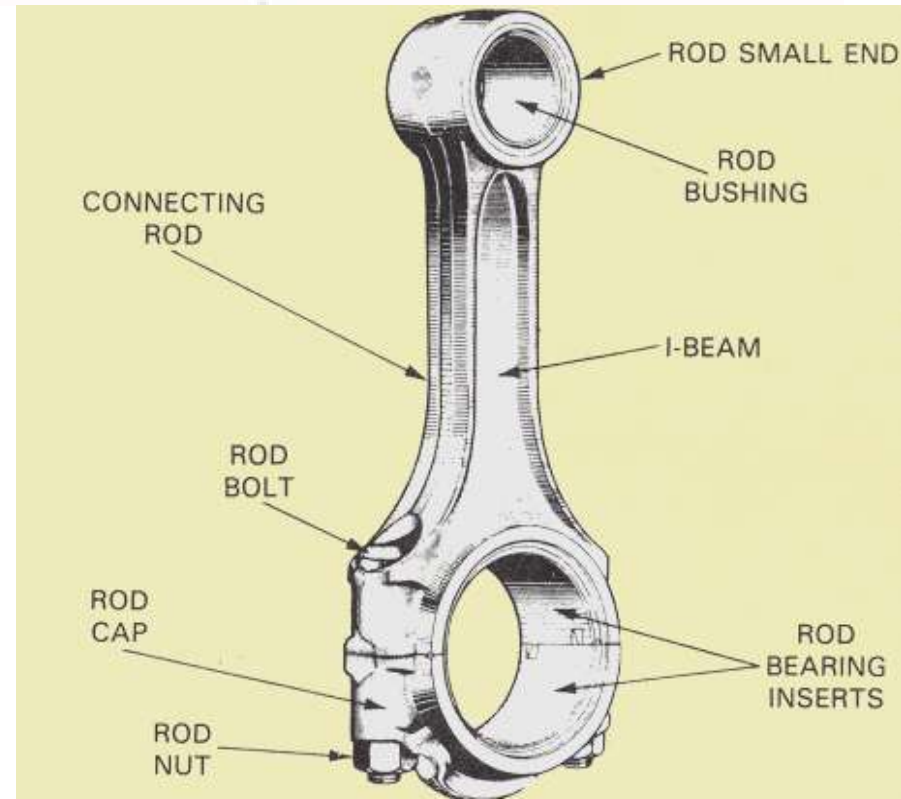
cylinder liner

The cylinder liner, acting as the inner wall of cylinders, forms a sliding surface for the piston rings while retaining the lubricant within.



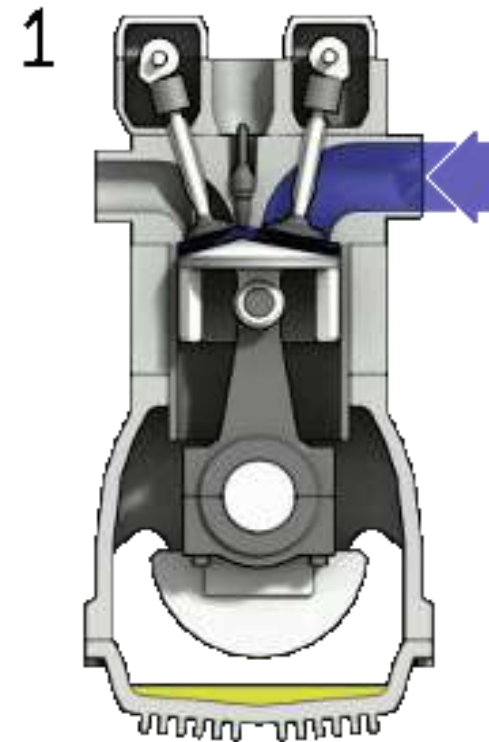
Connecting rod

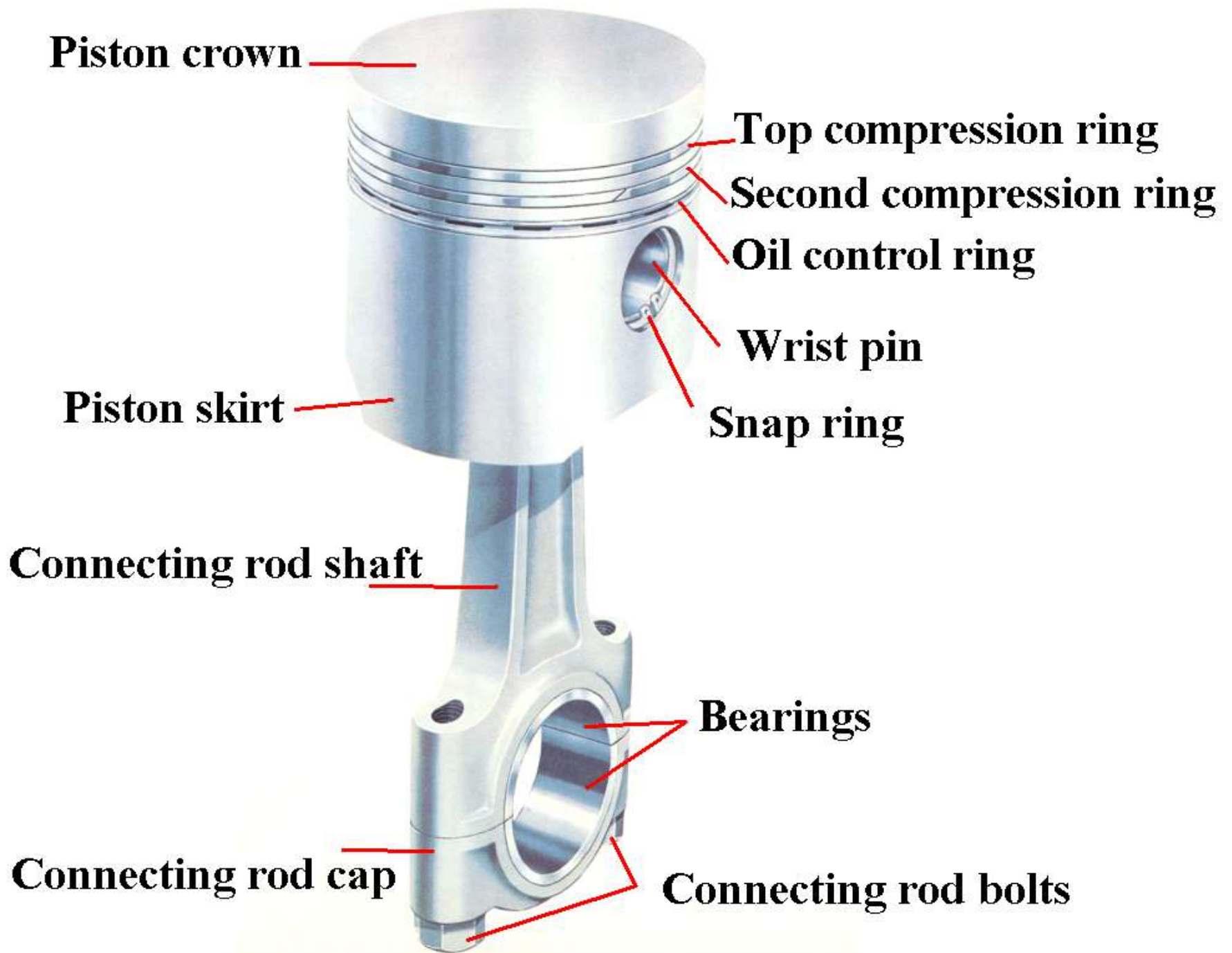
The connecting rod connects the piston to the crankshaft. It can rotate at both ends so that its inclination angle can change as the piston moves up and down and the crankshaft rotates.



Piston

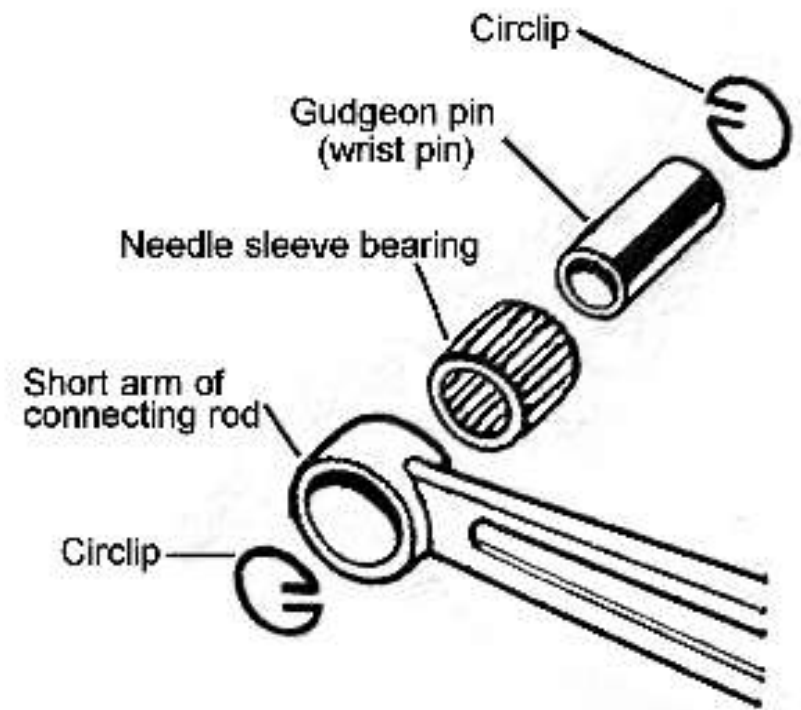
It is cylindrical in shape fitted tightly inside the cylinder. It moves up and down inside the cylinder bore and transmits the force exerted by the combustion of fuel to the crankshaft.





Gudgeon pin (Piston pin)

It is the pin which links the connecting rod with the piston



Piston rings

They prevent the fuel/air mixture and exhaust in the combustion chamber from leaking into the sump during compression and combustion.



Crankcase consists of:

1. Crankshaft
2. Tappet
3. Flywheel
4. Cam and crank gear
5. Oil sump

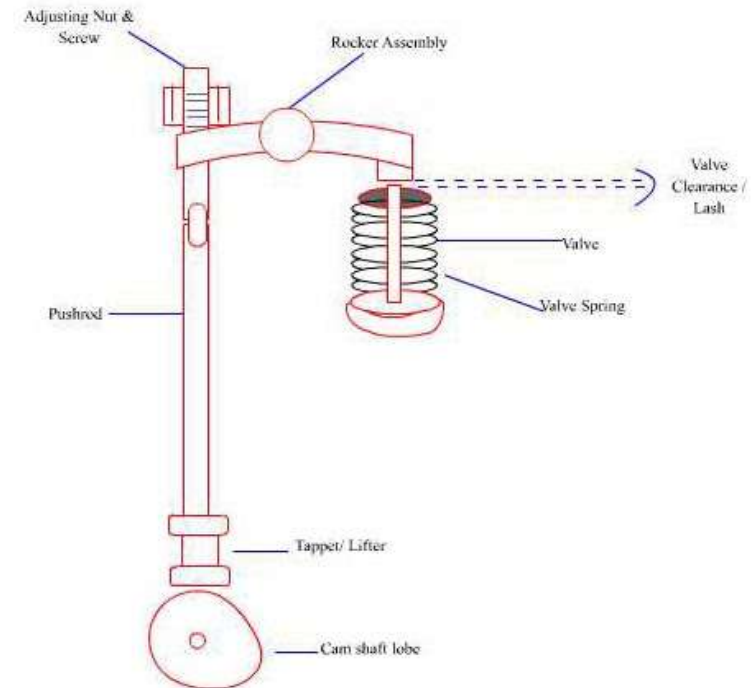
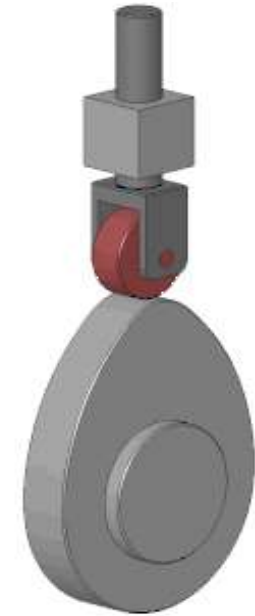
Crankshaft

The crankshaft converts up and down motion of the piston into circular motion.



Tappet

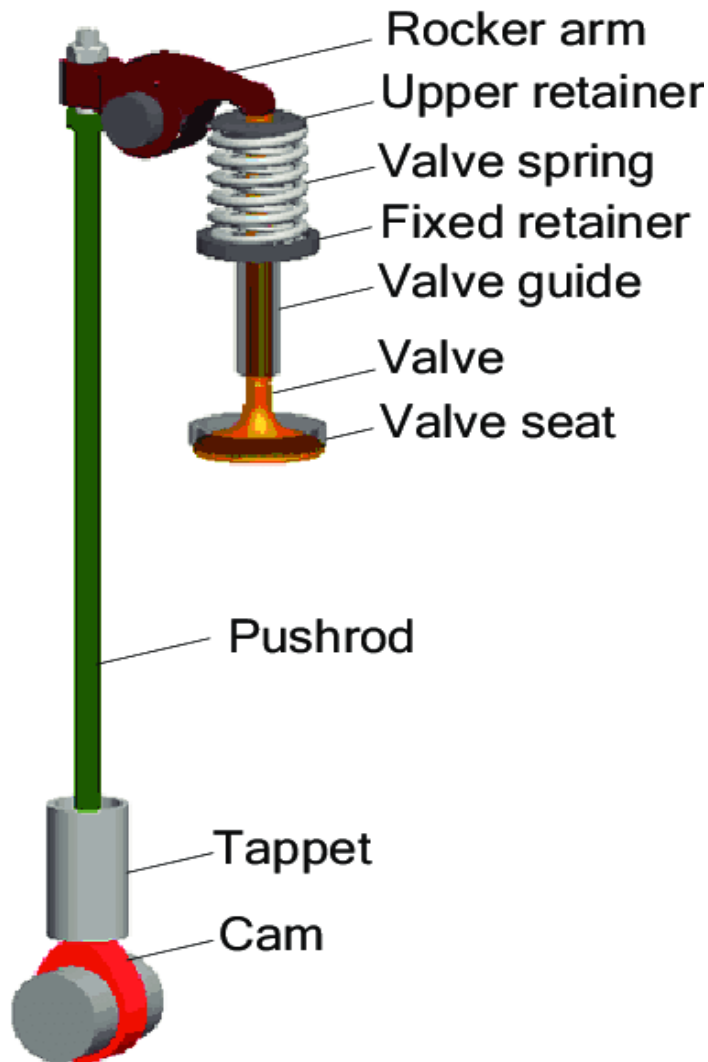
A tappet is most commonly a component in an internal combustion engine which converts the rotating motion of the camshaft into linear motion of the valves, either directly or indirectly.



VALVE TRAIN DIAGRAM

Push Rod

To operate the rocker arm.



Flywheel

A flywheel is a heavy disk or wheel that is attached to a rotating shaft.

To store energy during power strokes.



Cam

Used to operate the valves.

Designed in a way to open the valves in correct time and to keep open for necessary duration



4. Cam and crank gear

To operate valves and fuel injection.

The camshaft is connected via the timing chain and sprockets at a 1:2 ratio to the crankshaft and therefore revolves once for every two turns of the crank.



Source of figure from machinery lab

Sump (Oil pan)

- >Sump surrounds the crankshaft
- >Contains oil, which collects in the bottom of the sump (the oil pan).

Terminology in I.C engines

Bore > The inside diameter of the cylinder is known as bore.

Stroke > Maximum distance traveled by the piston inside the cylinder in one direction is known as stroke. Equals twice the radius of the crank.

Top Dead Center > (TDC) Extreme position of piston at the top of the cylinder.

Bottom Dead Center > (BDC) Extreme position of piston at the bottom of the cylinder

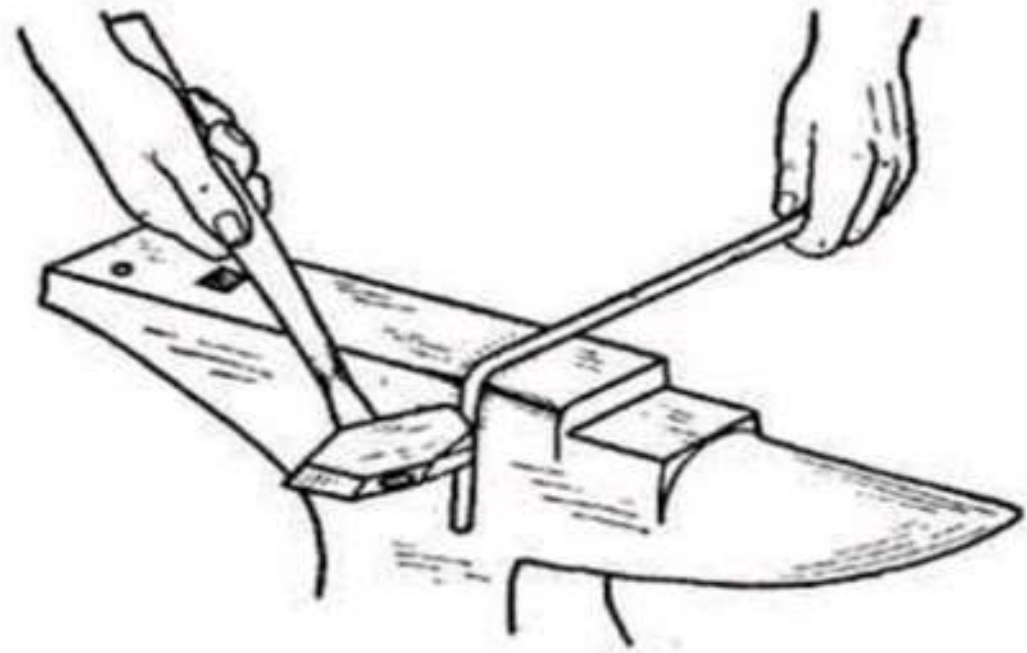


A view of farm machinery lab

Manufacturing of small hand tools at workshop of MCAET



Smithing & Forging



WORKSHOP TECHNOLOGY

Workshop technology is the type of technology which deals with different processes by which component of a machine or equipment are made.

Workshop practise gives the basic working knowledge required for the production of various engineering products.

Black Smithy tools and operations working process

INTRODUCTION: Smithy or Forging is the oldest shaping process used for producing small articles for which accuracy in size is not so important.

. The process of giving the desired shape of a metal piece by heating and hammering is also known as forging.

Forging Tools and Equipment

1. Furnace or Hearth \Rightarrow The furnace is to used for heating the metal piece.
2. Hearth - The iron bottom where a fire is lighted is called Hearth.
3. Tuyere - It is used to supply the air at high pressure to the furnace.
4. Hood - it is made up to mild steel with the firebrick inside it.

5. Chimney - it is used for the purpose of easy escaping of exhausting gases and smoke.



Fig. A view of open hearth furnace

Tools & Equipment Used in Smithy & Forging

1. Smith's forge - It is used for heating purpose during the forging operation.

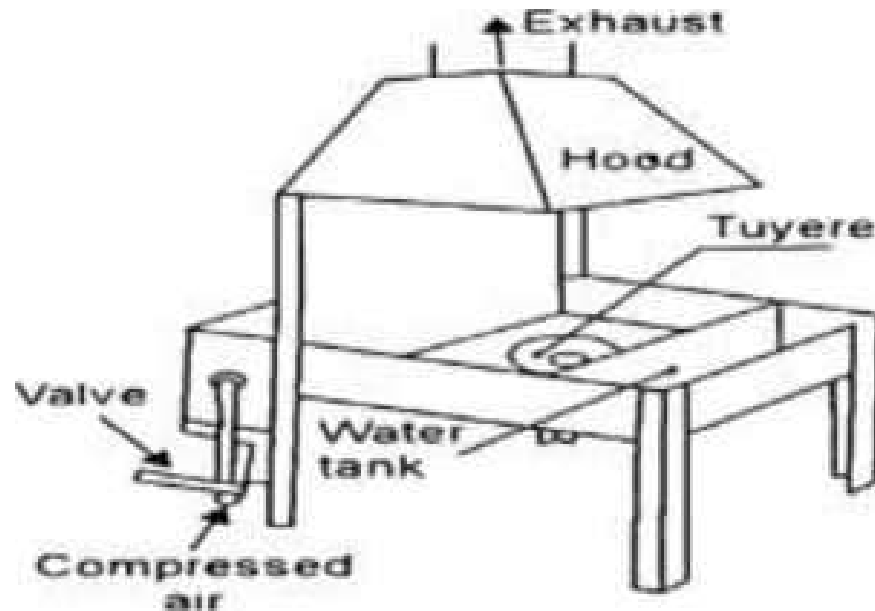


Fig. A view of open hearth furnace

2. Anvil - The anvil is an important smiths tool. It is used for supporting the work while hot metal hammering.

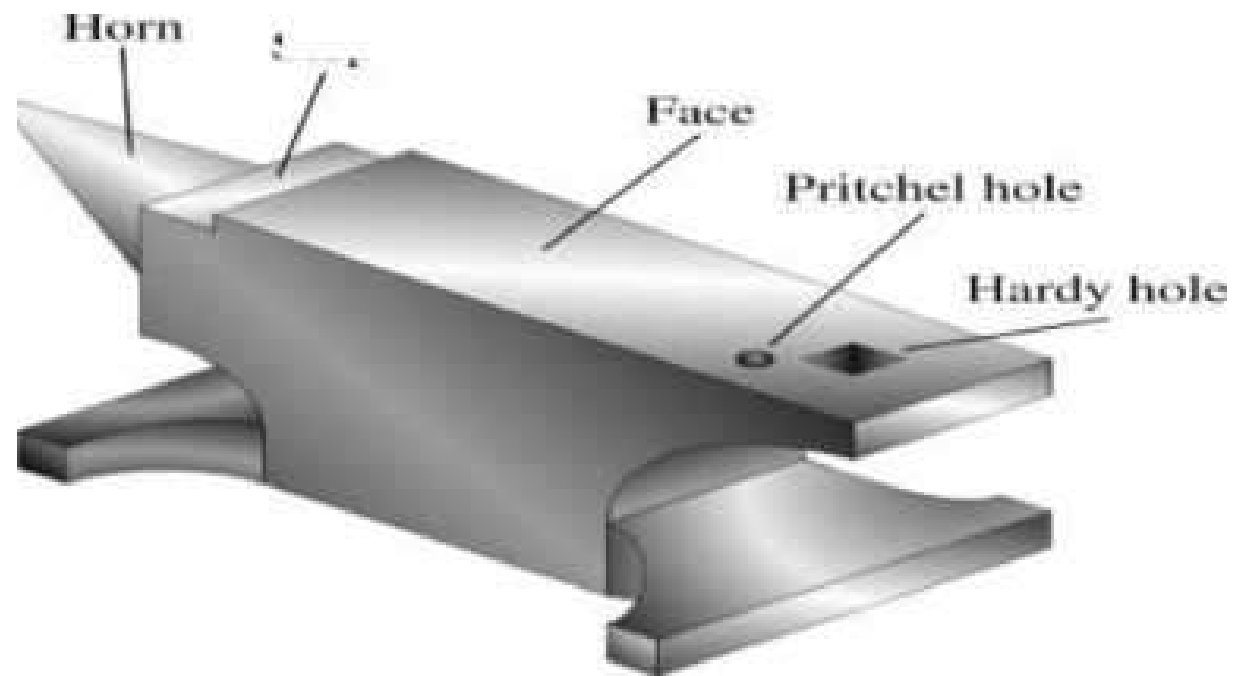


Fig. A view of Anvil

3 . Hammers -

1. Ball-Peen Hammer - Ball-Peen Hammers are named, depending upon their shape and material and specified by their weight.



Fig. A view of Ball-Peen Hammer

2. Cross-Peen Hammer -

This is used for chipping, riveting, bending and stretching metals and hammering inside the curves and shoulders.



Fig. A view of cross-peen Hammer

Tongs -

The tongs are used for holding the hot metal while it is being worked. These are made of mild steel. The various types of tongs commonly used for holding work are as follows:



Fig. A view of Tongs

Together we made this tool
in mcaet collage workshop



Grass cutting Talwar



Khurpi



**Thank you for
paying attention.**

A Training Report
on
Ten Weeks Experiential Learning on Campus
(READY-412)



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

Saksham Jaiswal E-10449/18

Md Hasnain E-10438/18

Ashu Singh E-10435/18

Prashant Maurya E-10445/18

Rakesh pal E-10447/18

Md Afsar Warsi E-10439/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY
KUMARGANJ, AYODHYA (U.P.) 224229
DECEMBER 2021

ACKNOWLEDGEMENT

I gratefully thanks to God who gives the knowledge of **Shrimad Bhagwat Geeta** which is helpful to handle any situation.

I would like to thank all those with whom I worked and whose thoughts and insights helped me in increasing my knowledge and understanding of working in the organization

We pay our sincere and deep gratitude to our honourable Vice-Chancellor **Dr. Brijendra Singh, A.N.D.U.A.T Kumarganj Ayodhya**; needless to say, all this would not have been Possible without his blessing & encouragement.

We would like to express our sincere and heartiest gratitude to our Dean **Er. Mahendra Rai** and ADSW **Er. Ram Jeet Singh** for the constant motivation and proper guidance during the entire tenure of the study.

We have paucity of words to express our almost grate fullness and regard for moral encouragement and staunch support and selfless help rendered by **Dr. Pramod Kumar Mishra, Assistant professor, FMPE, MCAET**.

Finally, I thankful to all my classmates and to all of them who directly or indirectly helped me in the completion of the report successfully.

DATE:

Saksham jaiswal E-10449/18

PLACE:

Md Hasnain E-10438/18

Md Afsar Warsi E-10439/18

Prashant Maurya E-10445/18

Rakesh pal E-10447/18

Ashu singh E-10435/18

ABSTRACT

A practical training is method of implementing and converting your theoretical knowledge into a practical use. The more one can go under practical training, the more he will be able to accuracy and experience in his field. Therefore, ten-week experiential learning on campus (student READY) is a most important part of study curriculum in engineering education field. We are student of B. Tech (Agricultural Engineering) at **Mahamaya College of Agricultural Engineering & Technology, Akbarpur Ambedkar Nagar (UP)**. Ten weeks training programme was successfully completed on campus in partial fulfilment of the requirement for the degree of bachelor of technology in agricultural engineering. This report emphasis on the knowledge and practical training as well, gained during this ten week on campus training. It includes the activities carried out on different days, tasks, problems and their solutions, area covered during the whole program as well. In this report a brief history and introduction of MCAET has been provided and also various tasks and training activities has been mentioned. The process and method carried out during the program, conclusion of the training and some suggestion and recommendation has been mentioned.

TABLE OF CONTENTS

| Sr. No. | Topics | Page No. |
|----------------|--------------------|-----------------|
| 1. | Acknowledgement | i |
| 2. | Abstract | ii |
| 3. | Table of contents | iii |
| 4. | List of tables | iv |
| 5 | List of figures | v |
| 6. | Introduction | 1 |
| 7. | Practical training | 2-24 |
| 8. | Conclusions | 25 |
| 9. | References | 26 |

LIST OF TABLES

| Table.No | Table description | Page number |
|-----------------|---|--------------------|
| 2.1 | Global Ranking: Crop Wise | 6 |
| 2.2 | Global Ranking: Total Pulses | 7 |
| 2.3 | Observation Table of pulse milling efficiency | 23 |

LIST OF FIGURES

| Fig no. | Figure description | Page no. |
|----------------|--|-----------------|
| 1.1 | A view of MCAET | 1 |
| 2.1 | Types of pulses | 2 |
| 2.2 | Total Area | 8 |
| 2.3 | National Scenario-Total Production | 8 |
| 2.4 | PKV mini dal mill | 10 |
| 2.5 | CIAE dehusking and splitting machine | 11 |
| 2.6 | D.P.R. mill | 12 |
| 2.7 | Splitting unit | 12 |
| 2.8 | Side view of machine | 13 |
| 2.9 | Feeding hopper | 13 |
| 2.10 | Cyclone Separator | 14 |
| 2.11 | Maintenance of the machine | 14 |
| 2.12 | Dehusking And Splitting | 16 |
| 2.13 | Unpolished pulse | 17 |
| 2.14 | Flow diagram of drying mill method of pigeon pea | 29 |
| 2.15 | Flow diagram of wet milling of pigeon pea | 21 |

INTRODUCTION

Practical training is an important part of completing a degree in the partial fulfillment of award of degree of bachelor of technology in agricultural engineering we were required to undergo ten weeks on campus training. We learnt many things i.e., types of pulses, there current scenario in market, the way the pulses are milled, pulse milling machines and other various equipment. There were daily tasks and lessons come to us and we solve them. We were deeply observed and corrected as well.

Objectives

1. To study about various component of dal mills
2. To study about the process of pulse milling from its cleaning to its polishing



Fig. 1.1 A view of MCAET (Anon. 2021c)

Institute Profile

Mahamaya College of Agricultural Engineering and Technology (MCAET) was started at main campus Kumarganj during 2003 with admission of students in B. Tech. (Agri. Engg.) course and was later shifted to Ambedkar Nagar during 2005 after completion of college and hostel buildings. College has 6 departments namely Basic Engineering Applied Science, Farm Machinery and Power Engineering, Irrigation and Drainage Engineering, Soil and Water Conservation Engineering, Processing and Food Engineering and Renewable Energy Engineering. A view of MCAET is shown in Fig. 1.1.

Practical Training

Pulses are the edible seeds of pod bearing plants are widely grown throughout the world. Pulses have a high protein content ranging from 20-30 % and this makes them important in human food from the point of view of nutrition. Because of this high protein content, they are also known as “poor man’s meat”. An alternative name for pulses is “legumes”, which is common in many parts of the world. In India, the term “gram” is commonly used for dry legume seeds with husk, while split decorticated grains are called “dhal”. Like many leguminous crops, pulses play a key role in crop rotation due to their ability to fix nitrogen. Green gram, red gram, Bengal gram, horse gram, cluster bean, field bean, cow pea is some of the common types of pulses. In general, their protein content is high and is commonly more than twice that of cereal grains, usually constituting about 20 % of the dry weight of seeds. Pulse seeds are also sources of other nutritionally important materials, such as vitamins and minerals. Milling of pulses is removal of outer husk/hulls and splitting the grain into two equal halves. The husk/hull is more tightly held by the kernel of some pulses poses problems. The alternate wetting and drying method are used to facilitate de-husking and splitting of pulses. The traditional method of milling yields only 65-70 % as compared to 82-85 % potential yield (Sahay and Singh, 2020). Also, traditional methods result in high losses in the form of powder and broken. Therefore, it is necessary to improve the traditional methods of pulse milling to increase the total yield of de-husked and split pulses and reduce losses.



Fig. 2.1 Types of pulse (Anon.2021a)

❖ Types of pulses in India

Pulses are grown in all three seasons. The three crop seasons for the commodity are:

- **Kharif** – Arhar (Tur), Urd (Blackgram), Moong (Greengram), Lobia (Cowpea), Kulthi (Horsegram) and Moth;
- **Rabi** – Gram, Lentil, Pea, Lathyrus and Rajmash
- **Summer** – Greengram, Blackgram and Cowpea

The most common pulses used in every household in India (as shown in Fig. 2.1) are: -

1. **Pigeon pea**-commonly known as red gram or tur or Arhar, is a very old crop of this country. After gram, arhar is the second most important pulse crop in the country. It is mainly eaten in the form of split pulse as ‘dal’. Seeds of arhar are also rich in iron, iodine, essential amino acids like lysine, threonine, cystine and arginine etc. More than 80 % of tur production comes from 6 states of Maharashtra, MP, Karnataka, UP, Gujarat and Jharkhand (Anon,2021d).

a. Nutrient value in pigeon pea (Anon. 2021d)

- Protein - 22.3 %
- Fat - 1.7 %
- Minerals - 3.5 %
- Fiber - 1.5 %
- Carbohydrate - 57.6 %
- Calcium - 73 mg/100 g
- Phosphorus - 304 mg/100 g
- Iron - 5.8 mg/100 g
- Moisture - 13.4 %
- Calorific value - 335 Kcal/100 g

- b. **Climate:** Pigeon pea is predominantly a crop of tropical areas mainly cultivated in semi-arid regions of India. Pigeon pea can be grown with a temperature ranging from 26⁰C to 30⁰C in the rainy season (June to October) and 17⁰C to 22⁰C in the post rainy (November to March) season (Anon.2021a). Pigeon pea is very sensitive to low radiation at pod development, therefore flowering during the monsoon and cloudy weather, leads to poor pod formation.

- c. Soil type and its preparation** -It is successfully grown in black cotton soils, well drained with a pH ranging from 7.0 - 8.5. Pigeon pea responds well to properly tilled and well drained seedbed (Anon. 2021a). A deep ploughing with soil turning plough in fallow/waste lands, zero tillage sowing under intensive cropping system and Broad Bed Furrow/Ridge: furrow planting in low lying as well as intercropping areas is recommended. Raised Bed method of planting by dibbling at 2 inches depth with Row to Row distance 4 to 5 feet also 15 feet gap (2 pairs of Tur on bed) under intercropping of soybean under transplanting (Dharwad method/SPI), 5 X 3 and 3 X 1.5 feet spacing is recommended (Sahay and Singh, 2020).
- d. Sowing time**-Early Maturing varieties - First fortnight of June; Medium & Late Maturing Varieties - Second fortnight of June. Line sowing by seed drill or desi plough or by dibbling on the ridge and beds, both are recommended as per the area
- 2. Black gram** - Black gram (*Vigna Mungo* L.), is one of the important pulses crop, grown throughout the country. The crop is resistant to adverse climatic conditions and improve the soil fertility by fixing atmospheric nitrogen in the soil. It has been reported that the crop produces equivalent to 22.10 kg of N/ha., which has been estimated to be supplement of 59 thousand tons of urea annually. The pulse 'Black gram' plays an important role in Indian diet, as it contains vegetable protein and supplement to cereal based diet. It contains about 26 % protein, which is almost three times that of cereals and other minerals and vitamins (Anon.2021a). Besides, it is also used as nutritive fodder, especially for milk animals. Madhya Pradesh, Uttar Pradesh and Andhra Pradesh are major blackgram growing states area-wise. The highest yield was recorded by the state of Bihar (898 kg/ha) followed by Sikkim (895 kg/ha) and Jharkhand (890 kg/ha). The National yield average is 585 kg/ha. The lowest yield was recorded in the state of Chhattisgarh (309 kg/ha) followed by Odisha (326 kg/ha) and J&K (385 kg/ha) (Anon.2021b).

a. Nutrient value (Anon. 2021d)

- Protein – 24 %
- Fat - 1.4 %
- Minerals - 3.2 %
- Fiber - 0.9 %
- Carbohydrate - 59.6 %
- Calcium - 154 mg/100 g

- Iron - 9.1 mg/100 g
 - Calorific value - 347 Kcal/100 g
 - Moisture - 10.9 %
- a. **Climate:** During kharif, it is cultivated throughout the country. It is best suited to rice fallows during rabi in southern and south-eastern parts of India. Blackgram needs relatively heavier soils than green gram.
 - b. **Soil:** Black gram can be grown on variety of soils ranging from sandy soils to heavy cotton soils. The most ideal soil is a well-drained loam with pH of 6.5 to 7.8 (Anon. 2021a). Black gram cannot be grown on alkaline and saline soils. Land is prepared like any other kharif season pulse crop. However, during summer, it requires a thorough preparation to give a pulverized free from stubbles and weeds completely.
3. **Lentil-**Lentil is a valuable human food, mostly consumed as dry seeds (whole decorticated, seed decorticated and split). In India, its mostly consumed as 'Dal' by removal of outer skin and separation of cotyledons. It is easy to cook and easily digestible with high biological value. Dry leaves, stems, empty and broken pods are used as valuable cattle feed. Lentil is also called as **Masur and Malka** (bold seeded).The Lentil growing states in India are Madhya Pradesh, Uttar Pradesh, Bihar, Chhattisgarh, Haryana, Punjab, Maharashtra, Rajasthan, etc.
 - a. **Climate-**Lentil requires cold climate. It is very hardy and can tolerate frost and severe winter to a great extent. It requires cold temperature during its vegetative growth and warm temperature at the time of maturity. The optimum temperature for growth is 18-30⁰ C (Anon. 2021d). Its range of cultivation extends to an altitude of 3,500 m in north-west hills.
 - b. **Soil type and field preparation-**Well drained, loam soils with neutral reaction are best for lentil cultivation. Acidic soils are not fit for growing lentil. The soil should be friable and weed free so that seeding could be done at uniform depth. On heavy soils, one deep ploughing followed by two to three cross harrowing should be done. After harrowing, the field should be levelled by giving a gentle slope to ease irrigation. Lentil is grown on a wide range of soils ranging from light loamy sand to heavy clay soil in northern parts, and in moderately deep, light black soil in Madhya Pradesh and Maharashtra.

❖ Benefit of pulses-

1. Bengal gram is very useful to treat diabetes. Experiments have shown that the intake of this pulse enhances the utilization of glucose.
2. Bengal gram is a valuable astringent for use in dyspepsia, vomiting, indigestion etc related disorders.
3. All the pulses are very rich in Iron thus are very good to cure anemia.
4. Cooked germinated gram is a wholesome food for children and individual and One must include these in their daily diet.
5. During menstruation, pulses are very good. It provides you energy and abides the pain.
6. The green gram is one of the healthiest stuffs. It is the rich source of chlorophyll, thus enhances your immune system and body as well.
7. Pigeon pea which is also called 'masoor dal' is rich in vitamin A, thus a very good thing for health purposes.
8. Bengal gram is very beneficial for skin and hair diseases. It cures allergic skin diseases like eczema, scabies, itching etc.
9. Black gram is valuable in digestive system disorders. It should be given in form of decoction.
10. A fine paste of pigeon pea shall be applied on the bald patches. It cures baldness.
11. The leaves of pigeon pea are the excellent remedy for Jaundice.
12. Pulses are always a type of beauty-aid. It can be used a face pack or mask too.
13. Water in which green grams are soaked is an excellent remedy for cholera, chicken-pox, typhoid, measles and many more.

Table 2.1 Global Ranking: Crop Wise (Anon. 2021b)

| Crop | Area | % to Total | Production | % to Total | Productivity |
|---------------------|---------------|-------------------|-------------------|-------------------|---------------------|
| Chickpea | 135.40 | 16.77 | 131.02 | 17.95 | 968 |
| Lentil | 43.45 | 5.38 | 49.52 | 6.78 | 1140 |
| Pigeon pea | 62.20 | 7.70 | 47.42 | 6.50 | 762 |
| Other pulses | 566.49 | 70.15 | 502.12 | 68.78 | 886 |
| Total pulses | 807.54 | | 730 | | 904 |

Table-2.2 Global Ranking: Total Pulses (Anon. 2021b)

| Country | Area | | Country | Production | |
|--------------|--------|------------|--------------|------------|-----------|
| | Area | % to world | | Prod. | %to world |
| India | 281.70 | 34.88 | India | 183.11 | 25.08 |
| Niger | 48.41 | 6.00 | Canada | 61.05 | 8.36 |
| Myanmar | 38.88 | 4.81 | Myanmar | 54.37 | 7.45 |
| Nigeria | 33.33 | 4.12 | China | 44.73 | 6.13 |
| China | 28.84 | 3.57 | Brazil | 29.46 | 4.04 |
| Brazil | 28.55 | 3.54 | Australia | 27.04 | 3.70 |
| Canada | 24.22 | 3.00 | Nigeria | 25.60 | 3.51 |
| Australia | 19.18 | 2.38 | USA | 22.33 | 3.06 |
| Russia | 17.01 | 2.11 | Russian | 20.84 | 2.85 |
| Pakistan | 14.804 | 1.83 | Niger | 13.63 | 1.87 |
| World | 807.54 | | World | 730.07 | |

The given data shows that production (as shown in Table 2.2) of different type of pulses in different countries, their area covered (as shown in Table2.1), yield, and total production. The given data is provided by F.A.O. in there 2016 report and the present value to be expected to be higher than before

❖ States' Scenario's

Twelfth plan (T.E 2012-2015): In India, total pulse area and production irrespective of Twelfth plan was 238.55 lakh hectares and 182.53 lakh tones respectively. Out of the total area, 53.58 lakh hectares is confined to Madhya Pradesh alone,(as shown in Fig. 2,2) earning a good pulse status and position contributing a remarkable 22.46 % of the country's total area and a production of 48.38 lakh tones ,there by ranking first both in area and production followed by Rajasthan in area (36.01 lakh hectares, 15.09 % of the total area).While Rajasthan ranked third in production with 11.68 % of the total pulse production and Maharashtra, which ranked second (24.04 lakh tones or 13.17 % of the total production); Uttar Pradesh was hardly placed at the forth rank in production (18.25 lakh tones or 10.0 % of the total production) (as shown in Fig. 2.3) and fifth rank in respect of area (23.37 lakh

ha or 9.79 %). The highest yield was recorded in Jharkhand (1021 kg/ha) followed by Bihar (976 kg/ha) and Madhya Pradesh (903 kg/ha). The lowest yield was observed in the state of Odisha (515 kg/ha) followed by Rajasthan (592 kg/ha) and Karnataka (614 kg/ha). The overall area, production and production and productivity increasing trend during the last three plan period (Anon.2021b).

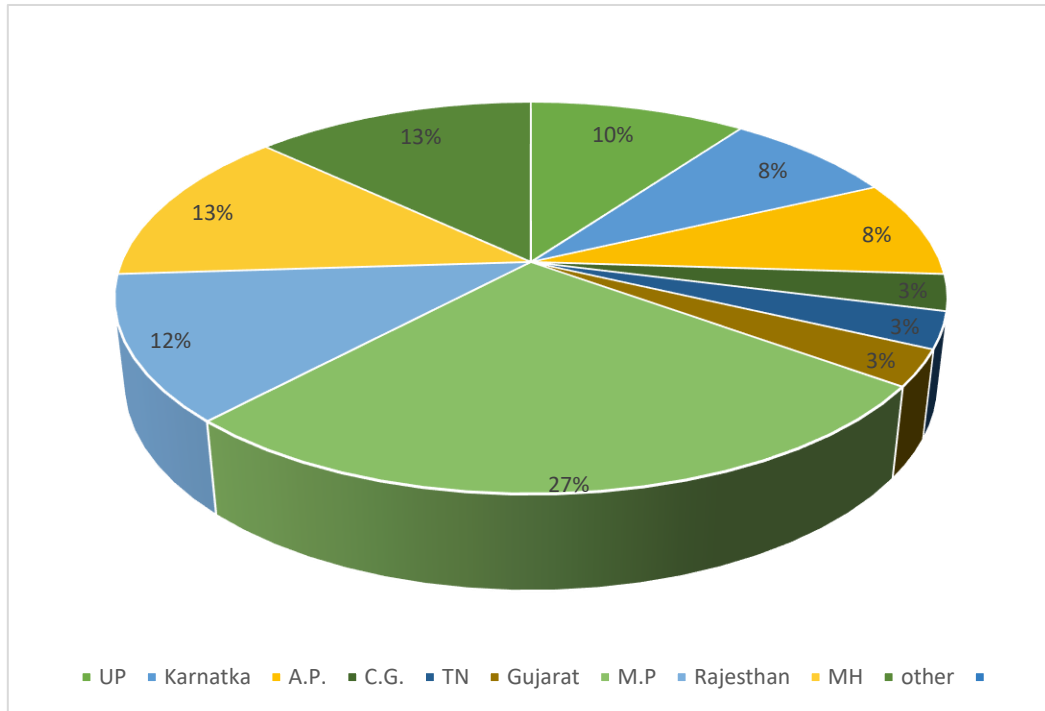


Fig. 2.2 Total Area (Anon. 2021b)

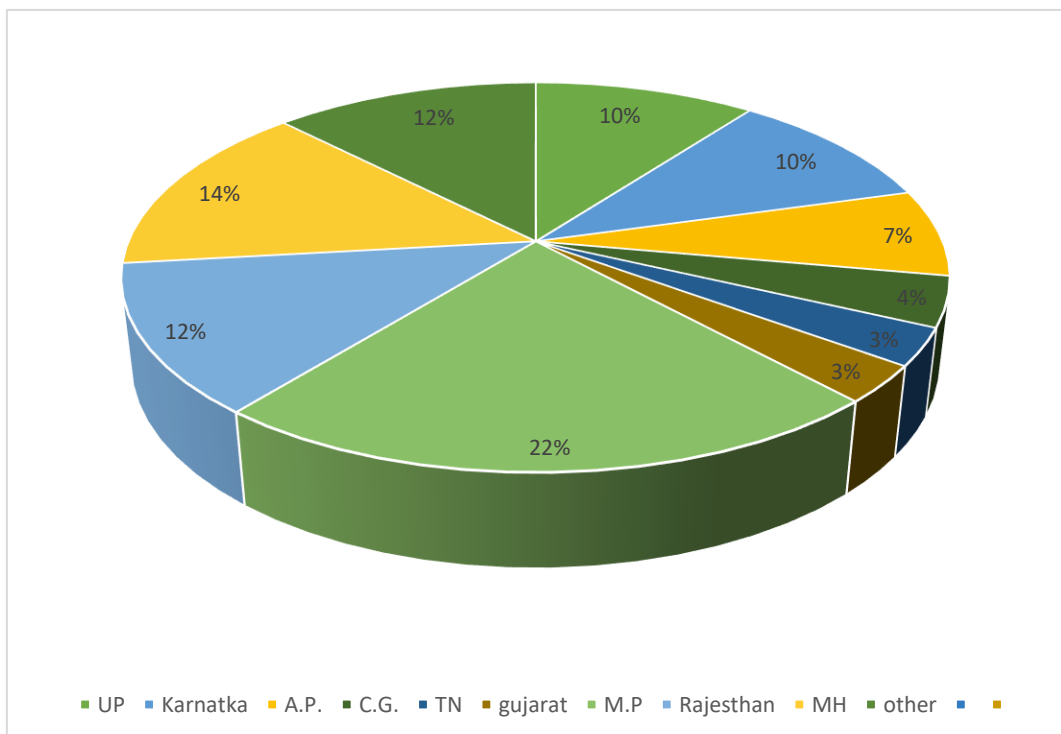


Fig. 2.3 National Scenario-Total Production (Anon.2021b)

❖ Definition of terms used in pulse processing

- **Gram:** Dry legume seeds with husk
- **Decortications/dehusking:** Removal of outer husk from gram
- **Splitting of pulses:** Breaking a seed in to two halves
- **Milling of pulses:** Removing the husk and splitting the grains into two halves
- **Dhal:** Split decorticated grains
- **Gota:** Unhusked pulse grains coming out of the roller mill
- **Dust/chunni:** Powder obtained as byproduct from the milling operation of pulses
- **Brokens:** Broken grains coming out of the roller along with dhal
- **Cleaning:** Removing the various inorganic impurities present in the raw grains
- **Grading:** Separating the cleaned grains based on size
- **Conditioning:** loosening of the husk to facilitate its separation from the kernel, thus reducing the milling losses (e.g. Hydrothermal treatment, water treatment, heating, use of salt or chemicals)
- **Polishing:** Mixing edible oil and water with dhal by publishing through a screw conveyer to impart desirable color and shine to milled pulses

❖ Pulse processing machine available on campus

PKV mini dal mill-

- The mill consists of four units viz., splitting unit, sieve, aspirator and polisher. The premilling treatment is given by soaking difficult to mill pulses grains in sodium bicarbonate solution.
- The splitting unit is comprised of two emery discs run 1.0 hp, single phase electric motor. One of the discs is fixed and another is revolving type. The clearance between them is adjusted by screw mechanism operated by hand wheel.
- The capacity of this unit is 40-45 kg/h for pigeon pea and around 60 kg/h for Mungbam and urdbean. The sieve unit consists of two reciprocating type of easily removable. Different sizes of sieves are required for various grain sizes.
- It separates mixture in three different parts coming out from individual outlets, lower one is for broken, middle for dal and upper are retains the mixture of husked and dehusked grains



Fig. 2.4 PKV mini dal mill

CIAE dehusking and splitting machine

- CIAE Bhopal has developed a low cost dehusking and splitting dal mill for rural use. The machine consists of an abrasive carbon dum roller dehusker and has a capacity of 100 kg/h.
- This machine can be owned, operated and manned by less skilled people of rural and semi-urban areas. The mill operates with a 1.5 KW, 3 phase electric motor.
- The cost of milling was estimated to be Rs. 14.0 per quintal.
- The average recovery in case of pigeon pea, mungbean and urdbean was claimed to be 75 % and 74 % each, respectively. As water treatment is recommended with the mill, the use of edible oil in the process of dehusking has been completely eliminated in this process.



Fig. 2.5 CIAE dehusking and splitting machine

D.P.R dal mill

- This mill is designed to be used by farmers at cottage scale with a view to enable them to market their produce after primary processing so as to augment their income.
- It comprises of hopper, screw conveyor, emery rollers and cylindrical separators. The mill has a capacity of 50 kg/h. The mill can be operated with the help of paddles.
- The dal is treated with 10 % sodium bi-carbonate solution followed by tempering and drying to 10 % moisture content.
- It gives 75 % dehusking for pigeon pea grains. The mill was found effective for urd bean, chickpea, soybean etc.
- The yield of head dal is 50 kg/h and broken amount to 5-6 %. Only one labor is required to operate this mill.



Fig 2.6 D.P.R. mill

❖ **Disassembling and maintenance of dal mill**

1. Top view of machine:

From this angle we can see the splitting unit of DPR dal mill where the splitting of pulses takes place by removing cotyledon and husk separately (as shown in Fig.2.7)



Fig. 2.7 Splitting unit

2. Side view of machine:

As from the Fig 2.8 we can see the working process D.P.R dal mil it consists of pully, v belt and a 1.5hp single phase motor having an rpm of 1400



Fig. 2.8 Side view of machine

3. Feeding hopper:

The feeding hopper is used for putting pulses in it which then relay to the splitting unit (as shown in Fig. 2.9). The feeding hopper is made of cast iron and have a capacity of 15 kg at a time.



Fig. 2.9 Feeding hopper

4. Cyclone separator:

The cyclone separator(as shown in Fig 2.10) is used to remove husk from dehusked pulses and store then at the other place the cyclone separator has two ports the one on the lower ends drop the heavy materials while the upper one can be used to remove finer husk particles and can be released in air



Fig. 2.10 Cyclone Separator

5. Greasing and Maintenance: After the opening of outer components, we started working on the inner components as the machine was used long ago, we started its maintenance by clearing the dust and oiling the components for smooth run (as show in Fig. 2.11)



Fig. 2.11 Maintenance of the machine

❖ Pulse milling process

- Basic processes in dhal milling are cleaning, de-husking, splitting, separation and bagging. Major variation is involved with de-husking process only.
 - Dahls like Aarahar, urad, moong and lentil are difficult to de-husk as a result repeated operation by dehusking rollers are required.
 - Rewetting and drying are done to loosen portions of husk sticking after repeated rolling.
 - Linseed oil is used to impart shine or better appeal to the milled dhal.
 - The removal of the outer husk and splitting the grain into two equal halves is known as milling of pulses.
 - To facilitate de-husking and splitting of pulses alternate wetting and drying method is used. In India trading milling methods produce de-husked split pulses.
 - Loosening of husk by conditioning is insufficient in traditional methods.
 - To obtain complete de-husking of the grains a large number of abrasive forces is applied in this case as a result high loss occur in the form of broken and powder.
 - In India, there are two conventional pulses milling methods; wet milling method and dry milling method.
 - The latter is more popular and used in commercial mills. The dry milling quality is found to be good and on an average 70-72 % dhal recovery is reported.
 - Wet milled dhal is of better taste than dry milled dhal, but takes longer cooking time.
- There is no common processing method for all types of pulses. However, some general operations of dry milling method such as cleaning and grading, rolling or pitting, oiling, moistening, drying and milling have been described here.
- **Cleaning and grading:** Pulses are cleaned from dust, chaff, grits, etc., and graded according to size by a reel type or rotating sieve type cleaner.
 - **Pitting:** The clean pulses are passed through an emery roller machine. Husk is cracked and scratched in this operation. This is to facilitate the subsequent oil penetration process for the loosening of husk. The clearance between the emery roller and cage (housing) gradually narrows from inlet to outlet. As the material is passed through the narrowing clearance mainly cracking and scratching of husk takes place by friction between pulses and emery. Some of the pulses are dehusked and split during this operation which are then separated by sieving.

- **Pretreatments with oil:** The scratched or pitted pulses are passed through a screw conveyor and mixed with some edible oil like linseed oil (1.5 to 2.5 kg/tonne of pulses). Then they are kept for about 12 hours for diffusion of the oil.
- **Conditioning of pulses:** Conditioning of pulses is done by alternate wetting and drying. After sun drying for a certain period, 3-5 % moisture is added to the pulse and tempered for about eight flours and again dried in the sun. Addition of moisture to the pulses can be accomplished by allowing water to drop from an overhead tank on the pulses being passed through a screw conveyor. The whole process of alternate wetting and drying is continued for two to four days until all pulses are sufficiently conditioned. Pulses are finally dried to about 10 to 12 % moisture content.
- **De-husking and Splitting:** Emery rollers, known as Goat machine are used for the dehusking of conditioned pulses. About 50 % pulses are de-husked in a single operation (in one pass). De-husked pulses are split into two parts also, the husk is aspirated off and dehusked split pulses are separated by sieving. The tail pulses and unsplit de-husked pulses are again conditioned and milled. The whole process is repeated two to three times until the remaining- pulses are de-husked and split (as shown in Fig. 2.12).



Fig. 2.12 Dehusking And Splitting

- **Polishing:** Polish is given to the de-husked and split pulses by treating them with a small quantity of oil and/or water.



Fig. 2.13 Unpolished Pulse

❖ **Equipment's required for pulse processing**

- **Vibratory sieve separator:** For cleaning of raw grains
- **Cleaner with aspirator:** For removing lighter impurities such as dust, husk, broken of insects etc. **Destoner:** To separate mud and stones from raw grains
- **Auger Mixer/Screw conveyor:** For mixing water/oil/red earth during conditioning and polishing of grains/dhal
- **Pulse scourer:** An emery scourer (emery roller) machine is used to obtain cracking and scratching of clean pulses passing through it.
- For losing the husk to facilitate the subsequent oil penetration this required. Gradually the clearance between the emery roller and cage (housing) is narrowed from inlet to outlet.
- Cracking and scratching of husk takes mainly by friction between pulses and emery as the material passed through the narrowing clearance. During the operation some of the are de husked and split which are separated by sieving.
- **Pulse splitter:** For splitting and dehusked grains into two halves
- **LSU Drier:** For conditioning of the grains before milling
- **Emery coated rollers:** For dehusking and milling of pulses.
- **Rotating reel grader:** For separating the dhal based on size and soundness, in which separate compartments with different size screens are present. Various sizes of dhal though the openings of these screens and graded dhal are bagged separately

❖ **Methods of Milling of Pulses**

1. Dry milling method of pigeon pea

- It is generally practiced in Madhya Pradesh and Uttar Pradesh.
- In this, the pulses are subjected to pitting in a roller and then oil treatment by applying 0.5 - 2.0 % linseed oil or any edible oil.
- Then the pulses are spread in the drying yard for sun drying for 2 - 4 days.
- The pulses are tempered by heaping and covering during the nights in between these days.
- After sun drying, again pulses are moistened uniformly with about 5 % water and kept as such on heaps overnight for moisture equilibrium.
- Then, these pulses are allowed to pass from the roller for splitting and dehusking.
- About, 50 % of the pulses are dehusked and split in first operation. After this, the husk is removed by aspiration and split dhal are separated from the mixture of husked and un-husked whole pulses.
- The mixture is once again moistened and dried in the sun and then dehusked and split.
- This process of alternate wetting and drying is repeated until almost all the remaining pulses are converted in to split dhal.
- The average yield of dhal ranges from 68-75 %.

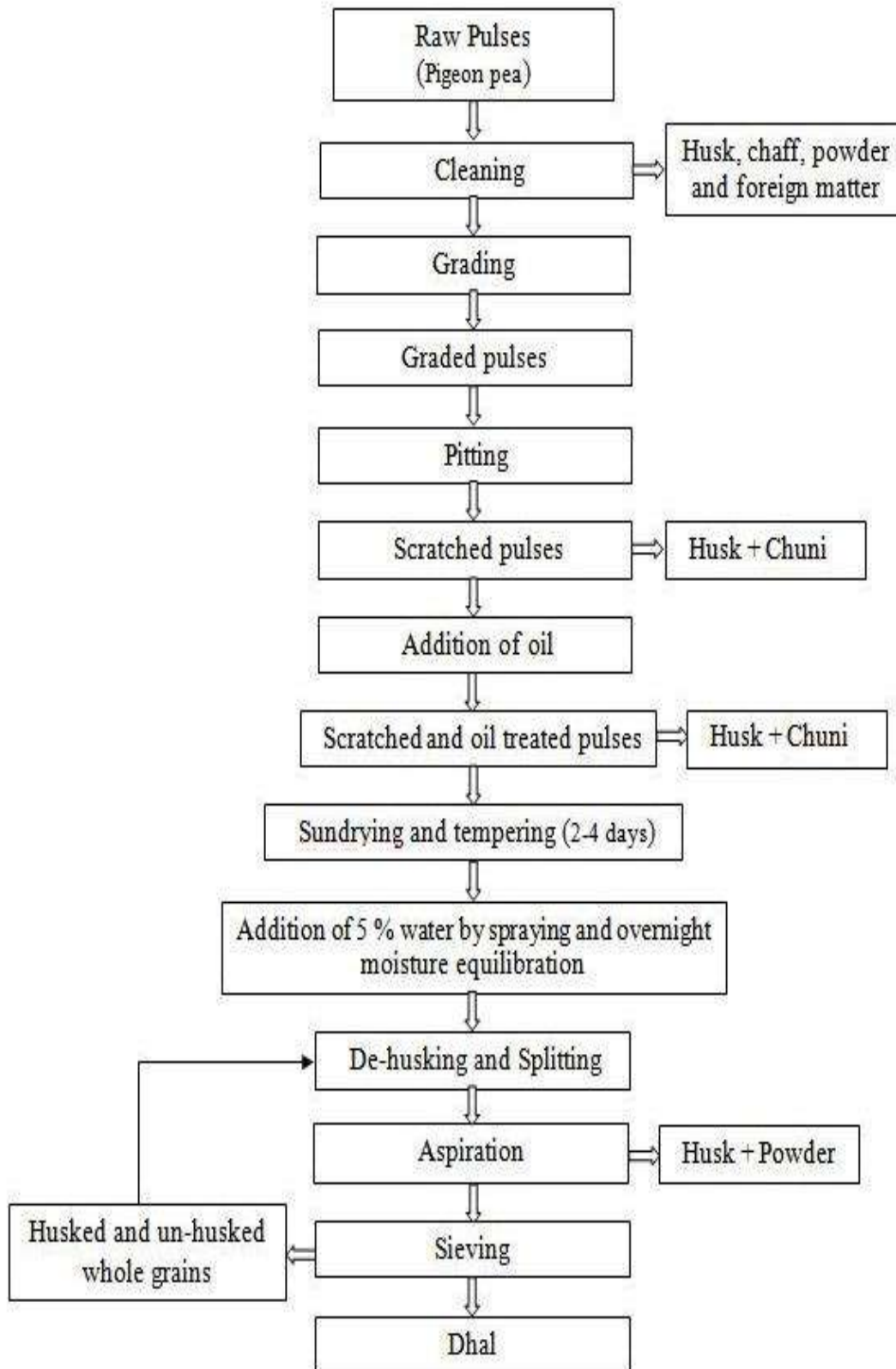


Fig. 2.13 Flow diagram of drying mill method of pigeon pea (Anon. 2021a)

As from above flow chart the process of pulse milling is a long process first the raw pulses are cleaned by removing husk and other unwanted materials. The next process involves grading which helps to identify the good materials and bad materials so we can stop them from mixing. Usually the grading is done on the basis of size. After that the pulse surfaces are scratched so the upper layer gets out in form of husk and chunni which can be used as animal food. After that the addition of oil takes place usually some edible oil like linseed oil are used. Then conditioning of pulses is done by alternate wetting and drying. After sun drying for a certain period, 3-5 % moisture is added to the pulse and tempered for about eight hours and again dried in the sun. Addition of moisture to the pulses can be accomplished by allowing water to drop from an overhead tank on the pulses being passed through a screw conveyor. The whole process of alternate wetting and drying is continued for two to four days until all pulses are sufficiently conditioned. Pulses are finally dried to about 10 to 12 % moisture content. Emery rollers, known as Gota machine are used for the dehusking of conditioned pulses. About 50 % pulses are de-husked in a single operation (in one pass). De-husked pulses are split into two parts also, the husk is aspirated off and dehusked split pulses are separated by sieving. The tail pulses and unsplit de-husked pulses are again conditioned and milled. The whole process is repeated two to three times until the remaining pulses are de-husked and split.

2. Wet milling method of pigeon pea

- The grains are soaked in water for 3-12 hours in this method of milling. The soaked pulses are mixed with red earth at about 5 % thoroughly.
- The mixture is kept in heaps overnight. The whole mixture is then dried in the sun for 2-4 days until the husk of the grain are shriveled and loosened.
- The pulses are tempered overnight in between these days. By sieving, the red earth is separated from the pulses. The dried grains are dehusked and split in disc sheller.
- The dhal and other fractions are separated. In a single milling operation, about 95 % of the pulses are dehusked and split.
- The rest material again pretreated and milled to convert into dhal.
- The red earth may facilitate in increasing the rate of drying and in loosening the husk. This method requires about 5 to 7 days for processing of a batch of pulses.

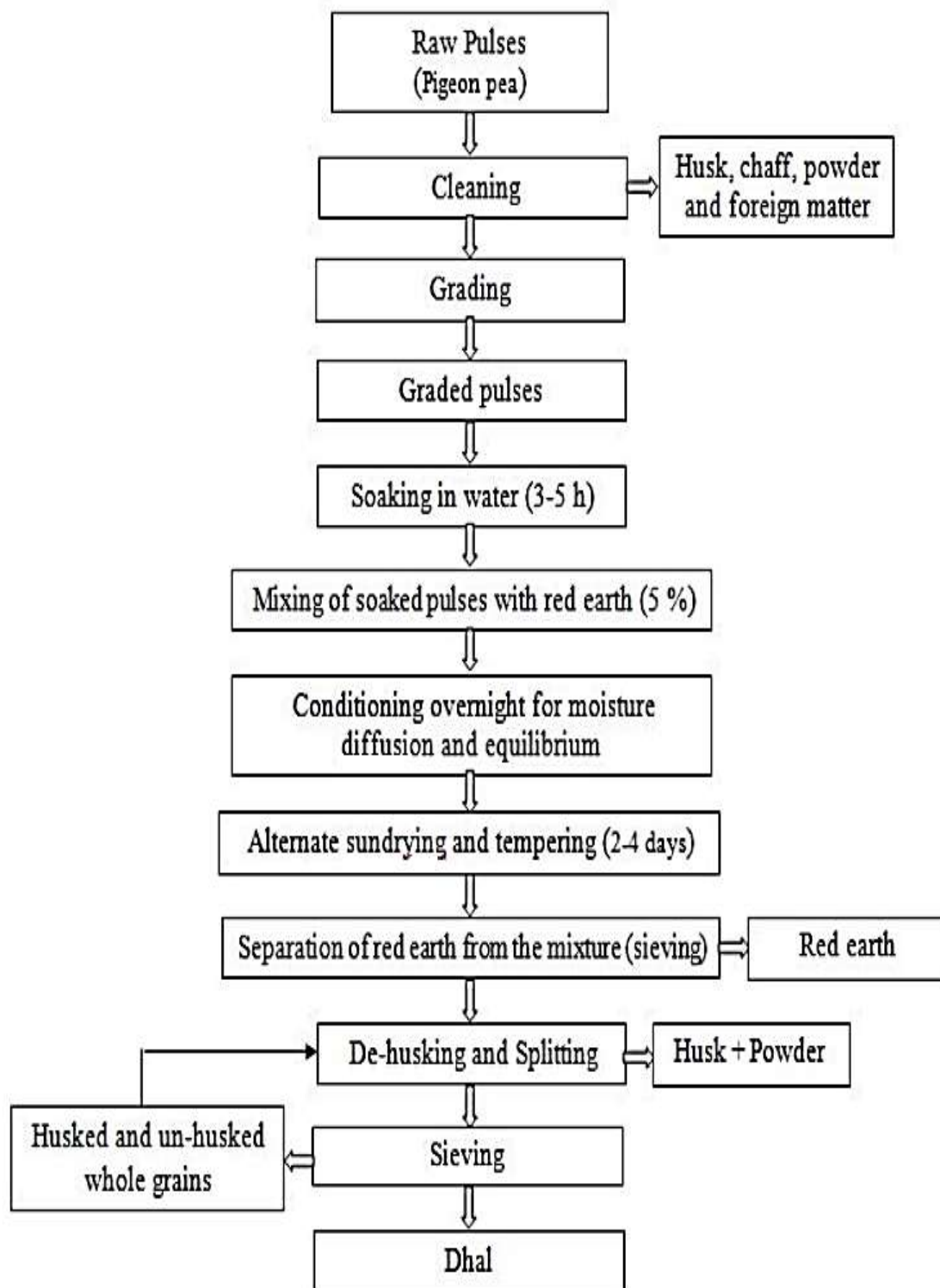


Fig. 2.15 Flow diagram of drying mill method of pigeon pea

3. Pantnagar process of pigeon pea milling

- In this process the pigeon pea after cleaning and grading are passed through an emery roller mill for scratching.
- The pitted grains are 10 % sodium bicarbonate solution and tempered for 4 hours in shade.
- Then the grains are dried under sun to 9.5 % moisture content followed by milling in a concentric cylinder roller mill.
- The milled grains are cleaned and graded with the help of blower, cyclone separator and reel grader.
- Dhal recovery is 80 % in this method

4. CIAE method pigeon pea milling

- In this method use of edible oil in pretreatment process is eliminated.
- First the pigeon pea, green gram and black gram is cleaned and fed to the roller mill developed at CIAE for scratching
- After cleaning the scratched grains are soaked in tap water at ambient temperature for 30 minutes in case of pigeon pea and hour for black gram and green.
- The water is the drained off and the grains are dried to 9-10 % moisture content.
- Such conditioned grains are again fed to the roller mill to produce dehulled split cotyledons.

❖ Calculation

Dehusking efficiency: the yield of dehulled product material as a percentage of original seed weigh

$$E_{husking} = \frac{N1 - N2}{N1} \times 100$$

Where N_1, N_2 = amount of unhusked grains before and after husking

Pulse Milling Efficiency – The overall efficiency of the pulse milling system can be estimated with the help of the equation.

$$E = \left(1 - \frac{M_{uh}}{M_t}\right) \left(1 - \frac{M_b}{M_t}\right) \times H_t \times 100$$

M_{uh} = mass of unhusked grains

M_t = mass of grains fed to the system

M_b = mass of broken

H_t = actual mass of husk removed during milling

Table 2.3 Observation Table of pulse milling efficiency

| Sr. No | Types of pulses | M _t | M _{uh} | M _b | H _t | E _{husking} | E |
|--------|-----------------|----------------|-----------------|----------------|----------------|----------------------|---------|
| 1 | Chana | 10 kg | 1.25 kg | .5 kg | .75 kg | 87.5 % | 73.69 % |

❖ **Economical report of a dal mill**

Tips to remember-

1. Check whether you have already had sufficient space for establishing the plant or not. If you have your own space then its good but if not start thinking about renting a place
2. Determination whether you will start project with your own personal capital. In this case of finance, you will need to provide the collateral security to the banks.
3. The machine prize varies on some common aspects which are product quality output and type of dal that will be processed
4. The major two segment in a project are technical aspects & project economics.

A. Technical aspects B:

- Production capacity: 159kg/h.
- Number of shifts:2
- Daily production capacity: 2.5 tons
- Capacity utilization: 70 %
- Annual production: 6 %
- The loss during dehusking :6 %
- Net production:500ton/annual
- Working days :300
- Infrastructure requirement-
- Covered area: 1000sq.ft
- Power requirement:25kw
- Water: minimal

B. Project economics-

a. Fixed capital (Rs in lakhs)-

- Land own
- Site development= 0.45 L₹
- Building (working shed 750 sq. ft) = 4.87 L₹

- Plant and machinery= 1.84 L₹
- Misc. fixed assets= 0.50 L₹
- Preliminary/ pre-operative expenses= 0.30 L₹

Total cost= 7.96 L₹

b. Working capital requirement (Rs in lakhs)-

- Raw materials and consumables (1 months) = 9.23 L₹
- Finished good (1 week) = 2.87 L₹
- Receivables (1 week) = 2.93 L₹
- Working expenses (1 month) = 0.42 L₹

Total = 15.45 L₹

1. Working capital to be financed as:

- Margin money = 3.86 L₹
- Bank finance = 11.59 L₹
- Term loan (75 %) = Rs 5.97 L₹
- Promoter equity (25 %) = Rs 1.99 L₹

Total = 7.96 L₹

2. Cost of production & profit:

- Capacity utilization = 70 %
- Output=500 MT/annum
- Annual revenue = 135 L₹

The cost of various type of pulses varies hence we have taken an avg 27000₹/ton

Benefit cost ratio = 2.93

❖ **Distribution:**

After preparation of the goods distribution is the most successful and proven way of marketing. In the initial days, you can either send the finished packets to the retail counters or you can send the goods to wholesalers currently institutional markets are also a great way to earn profit

CONCLUSIONS

As from perspective of an agricultural engineer, this 10-week experiential learning help us to gain valuable lessons like it made us think about whole process from which pulses goes through so it can be available for common people to buy from market. Based on the following conclusions is drawn below.

1. Gain practical and theoretical knowledge of pulses milling machine.
2. Know about component of D.P.R mill.
3. Knowing about correct method for pre milling treatment of pulses.
4. Gain knowledge about how to the milling machines work and their efficiency.
5. Gain knowledge of dusking and polishing of pulses.
6. As from the observation we found that the dehusking efficiency and pulses milling efficiency of PVK dal mill is 87.5 % and 73.69 % respectively.

With a vote of thanks and gratefulness for reading this report thoroughly and for giving me this wonderful opportunity to grow my vision in this field. I conclude this report with a great lot in my mind.

REFERENCES

1. Anonymous 2021a. A website <https://ecourses.icar.gov.in/> is visited on date 12/12/2021
2. Anonymous 2021b. A website <https://www.fao.org> is visited on date 12/12/2021
3. Anonymous 2021c. A website <https://www.nduat.org> is visited on date 13/12/2021.
4. Anonymous 2021d. A website <https://vikaspedia.in> is visited on date 13/12/2021.
5. Sahay K.M and Singh K.K, Unit Operations of Agricultural Processing, 2020

A Training Report
on
Ten Weeks Experiential Learning on Campus
READY-412



In the partial fulfillment of award of the Degree
of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

Yash Vardhan Singh E-10455/18

Ashwani Tiwari E-10436/18

Pawan Singh E-10444/18

Padam Kant Dubey E-10442/18

Sachin Sharma E-10448/18

Narendra Kumar E-10440/18

Vimlendra Mani Pandey E-10454/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY
KUMARGANJ, AYODHYA (U.P.) 224229
DECEMBER 2021

ACKNOWLEDGEMENT

I gratefully thanks to God who gives the knowledge of **Shrimad Bhagwat Geeta** which is helpful to handle any situation.

I would like to all those with whom I worked and whose thoughts and insights helped me in increasing my knowledge and understanding of working in the organization.

We pay our sincere and deep gratitude to our honorable Vice-Chancellor **Dr. Brijendra Singh, A.N.D.U.A.T Kumarganj Ayodhya**; needless to say, all this would not have been Possible without his blessing & encouragement.

We would like to express our sincere and heartiest gratitude to our Dean **Er. Mahendra Rai** and ADSW **Er. Ram Jeet Singh** for the constant motivation and proper guidance during the entire tenure of the study.

We have paucity of words to express our almost grate fullness and regard for moral encouragement and staunch support and selfless help rendered by **Dr. Pramod Kumar Mishra, Assistant professor, FMPE, MCAET**.

Finally, I thankful to all my classmates and to all of them who directly or indirectly helped me in the completion of the report successfully.

DATE:

Yash Vardhan Singh E-10455/18

PLACE:

Ashwani Tiwari E-10436/18

Pawan Singh E-10444/18

Padam Kant Dubey E-10442/18

Sachin Sharma E-10448/18

Narendra Kumar E-10440/18

Vimlendra Mani Pandey E-10454/18

ABSTRACT

A practical training is method of implementing and converting your theoretical knowledge into a practical use. The more one can go under practical training, the more he will be able to accuracy and experience in his field. Therefore, ten-week experiential learning on campus is a most important part of study in engineering education field. We are student of B.Tech (Agricultural Engineering) at **Mahamaya College of Agricultural Engineering & Technology, Akbarpur Ambedkar Nagar (UP)**. Ten weeks experiential learning programme was successfully completed on campus in partial fulfilment of the requirement for the degree of bachelor of technology in agricultural engineering.

This report emphasis on the knowledge and practical training gained during this ten-week experiential learning on campus. It includes the activities carried out on different days, tasks, problems and their solutions, area covered during the whole program as well. In this report a brief history and introduction of MCAET has been provided and also various tasks and training activities has been mentioned. The process and method carried out during the program, conclusion of the experiential learning and some suggestion and recommendation has been mentioned.

TABLE OF CONTENTS

| Sr. no. | Topics | Page no. |
|----------------|----------------------|-----------------|
| 1. | Acknowledgement | i |
| 2. | Abstract | ii |
| 3. | Table of contents | iii |
| 4. | List of tables | iv |
| 6. | List of figures | v-vi |
| 7. | List of abbreviation | vii |
| 8. | Introduction | 1 |
| 9. | Practical training | 2-40 |
| 10. | Conclusions | 41 |
| 11. | References | 42 |

LIST OF TABLES

| Table no. | Table description | Page no. |
|------------------|--|-----------------|
| 2.1 | Infiltration rate of soil | 12 |
| 2.2 | Observation data of experiment | 16 |
| 2.3 | Bit used in 6-inch boring | 29 |
| 2.4 | Types and application of major type of emitters to different crops | 33 |
| 2.5 | Various design parameters considered for drip irrigation systems | 35 |
| 2.6 | Drip irrigation system performance parameter | 35 |
| 2.7 | Bill of quantities for the specified drip irrigation systems | 37 |
| 2.8 | Information of ground water level at Katahari. | 39 |

LIST OF FIGURES

| Figure no. | Figure description | Page no. |
|-------------------|---|-----------------|
| 1.1 | A view of MCAET | 1 |
| 2.1 | Evaporation Pan | 3 |
| 2.2 | Micrometre | 4 |
| 2.3 | Taking Reading of Evaporation Pan | 4 |
| 2.4 | Measuring of Pan Dimension | 7 |
| 2.5 | Marking Level on Pan | 7 |
| 2.6 | Marking Level on Pan-II | 8 |
| 2.7 | Filling Water in Evaporation | 8 |
| 2.8 | Measuring Water level | 9 |
| 2.9 | Cumulative Evaporation | 9 |
| 2.10 | Infiltration curve | 11 |
| 2.11 | Instrument used in infiltrometer | 12 |
| 2.12 | Measuring rod | 13 |
| 2.13 | Inserting the ring | 14 |
| 2.14a | Inserting the outer ring-I | 14 |
| 2.14b | Inserting the outer ring-II | 15 |
| 2.15 | Observing the water level | 15 |
| 2.16 | Recording the data | 16 |
| 2.17 | Infiltration curve | 17 |
| 2.18 | Percussion drilling setup | 19 |
| 2.19 | Drilling mud circulation system for the rotary method | 21 |
| 2.20 | Common types of rotary drill bits | 21 |
| 2.21 | Hydraulic rotary drilling with reverse circulation | 23 |
| 2.22 | Rotary-Percussion Drilling | 24 |
| 2.23 | Rotary drill machine | 25 |
| 2.24 | A view of rotary bit | 27 |
| 2.25 | A view of circulation system | 28 |
| 2.26 | A view of drilling done at campus | 28 |
| 2.27 | A view of profile of well | 29 |

| | | |
|------|----------------------------------|----|
| 2.28 | Layout of drip irrigation system | 38 |
|------|----------------------------------|----|

LIST OF ABBREVIATION

| Abbreviation | Full Form |
|---------------------|------------------------------|
| DTH | Down The Hole |
| AGL | Above Ground Level |
| BGL | Bottom Ground Level |
| DN | Diametre Nominal |
| HDPE | High Density Polyethylene |
| PN | Pressure Nominal |
| OD | Outer Diameter |
| ID | Inner Diameter |
| LDPE | Low Density polyethylene |
| ISI | Indian Standards Institution |
| BS | Bachelor of Science |
| PVC | Polyvinyl Chloride |
| h | Hours |
| MTA | Male Threaded Adapter |
| FTA | Female Threaded Adapter |

INTRODUCTION

Practical training is an important part of completing a degree in the partial fulfillment of award of degree of bachelor of technology in agricultural engineering we were required to undergo ten weeks on campus training. We learnt many things i.e., drilling of soil, evaporimeter, infiltrometer and drip irrigation and other various equipment.

There were daily tasks and lessons come to us and we solve them. We were deeply observed and corrected as well.

Objectives

1. To study about various component of drilling system.
2. To study about evaporimeter and infiltrometer.



Fig. 1.1 A view of MCAET (Anon. 2021c)

Institute Profile

Mahamaya College of Agricultural Engineering and Technology (MCAET) was started at main campus Kumarganj during 2003 with admission of students in B.Tech.(Agri. Engg.) course and was later shifted to Ambedkar Nagar during 2005 after completion of college and hostel buildings. College has 06 departments namely Farm Machinery and Power Engineering, Irrigation and Drainage Engineering, Soil and Water Conservation Engineering, Renewable Energy Engineering, Processing and Food Engineering and Basic Engineering and Applied Science. A view of MCAET is shown in Fig. 1.1.

Practical Training

Measurement of Evaporation

Introduction

Evaporation is a type of vaporization that occurs on the surface of a liquid as it changes into the gas phase. The surrounding gas must not be saturated with the evaporating substance. When the molecules of the liquid collide, they transfer energy to each other based on how they collide with each other.

Why do we need to calculate evaporation?

Evaporation is an essential part of the water cycle because it allows large amounts of water to move from bodies of water on Earth up into the atmosphere. Water vapor in the atmosphere condenses into clouds, which move around the globe and release precipitation. This process ensures that we receive fresh rain water for the plants on Earth, and allows us to receive fresh water for drinking. Ninety percent of the evaporation that occurs as a part of the water cycle happens from the oceans, representing massive amounts of surface area on Earth. The remaining ten percent of evaporation comes from transpiration, or water loss in plants. The oceans near the Equator, which are tropical regions, are quite warm. When they receive enough of the sun's heat, this energy causes the water molecules at the surface to move very quickly and undergo a phase change from liquid to gas. This causes the molecules to escape from the water's surface and enter the atmosphere as water vapor. The water cycle would not exist without the process of evaporation.

Method to calculate evaporation

Evaporation is measured by means of **evaporimeters**.

Evaporimeters

Evaporimeters are pans containing water which are exposed to atmosphere. The loss of water by evaporation is measured at regular intervals.

Apparatus used in Evaporimeter

During the measurement of the evaporation, different type of apparatus is used:

- Evaporation pan
- Measuring scale
- Bucket

Introduction

The evaporation pan of this standard set (as shown in Fig. 2.1) is made of stainless steel and has the dimensions of a “class A “evaporation pan, namely 254 mm (10 inches) in height and 1206 mm (47.5 inches) in diameter. The evaporation pan is installed on the wooden support, which is set and levelled on the ground in a grassy location, away from bushes, trees and other obstacles which obstruct a natural air flow around the pan, thus representing open water in an open area. The stilling well is installed in the evaporation pan and levelled with the adjustable levelling foot.



Fig. 2.1 Evaporation Pan (Anon. 2021a)

Daily the result of evaporation and precipitation is measured within the still well, by means of a high-quality evaporation micrometer (as shown in Fig. 2.2) with a measuring range of 100 mm and an accuracy of 0.02 mm. This accuracy can be obtained because the still well prevents rippling of the water surface. The amount of evaporation is a function of temperature, humidity, wind and other ambient conditions. In order to relate the evaporation to wind current or expected conditions, the maximum and minimum temperature as well as the amount of air passed are recorded with the evaporation. For a more exact use of the evaporation pan it is recommended to use an additional wind path meter.



Fig. 2.2 Micrometre (Anon. 2021a)

For automatic measurement of the evaporation use can be made of a level sensor. The level sensor consists of a sensitive pressure transducer built in a stainless-steel housing. The sensor has a pressure range of 0-20 mbar, accuracy 25 %. Output signal 0-20 mA, power supply voltage 8-28 V (Anon. 2021a). The sensor is supplied with 5 m cable. The sensor is read-out with a datalogger. To configure and read-out the datalogger and to process the measuring data, use is made of the evaporation pan software.

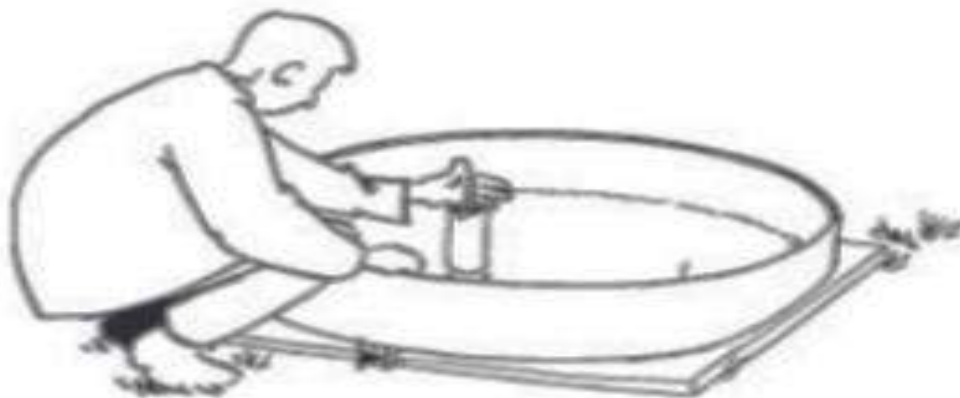


Fig. 2.3 Taking reading of evaporation pan (Anon. 2021a)

Measuring principle

An evaporation pan provides a measurement of the combined effect of temperature, humidity, wind speed and sunshine on the reference crop evapotranspiration ET_o . The principle of the evaporation pan is the following:

- The pan is installed in the field.
- The pan is filled with a known quantity of water (the surface area of the pan is known and the water depth is measured).
- The water is allowed to evaporate during a certain period of time (usually 24 h). For example, each morning at 7 o'clock a measurement is taken. The rainfall, if any is measured simultaneously.
- After 24 h, the remaining quantity of water (i.e., water depth) is measured.
- The amount of evaporation per time unit (the difference between the two measured water depths) is calculated; this is the pan evaporation: E_{pan} (in mm/24 hours)
- The E_{pan} is multiplied by a pan coefficient, K_{pan} , to obtain the ET_o .

Formula:

$$ET_o = K_{pan} \times E_{pan} \quad \text{..... eq. 2.1}$$

Where,

ET_o = reference crop evapotranspiration

K_{pan} = pan coefficient

E_{pan} = pan evaporation

If the water depth in the pan drops too much (due to lack of rain), water is added and the water depth is measured before and after the water is added. If the water level rises too much (due to rain) water is taken out of the pan and the water depths before and after are measured (as shown in Fig. 2.3).

Determination of K_{pan}

When using the evaporation pan to estimate the ET_o , in fact, a comparison is made between the evaporation from the water surface in the pan and the evapotranspiration of the standard grass. Of course, the water in the pan and the grass do not react in exactly the same way to the climate. Therefore, a special coefficient is used (K_{pan}) to relate one to the other.

The pan coefficient, K_{pan} , depends on:

- The type of pan used.
- The pan environment: if the pan is placed in a fallow or cropped area.

- The climate: the humidity and windspeed.

Note: For the Class A evaporation pan, the K_{pan} varies between 0.35 and 0.85. Average

$K_{\text{pan}} = 0.70$ (Anon. 2021a)

Evaporation Measurement Done on Our Campus

Procedure:

Step 1: Level the ground so that pan should be in level.

Step 2: Measuring the dimension of Evaporation Pan (as shown in Fig. 2.4).



Fig. 2.4 Measuring of pan dimension

Step 3: Water level in pan is marked by pen below 5 cm from the top (as shown in Fig. 2.5 & Fig. 2.6).



Fig. 2.5 Marking level on pan-I



Fig. 2.6 Marking level on pan-II

Step 4: Fill the known quantity of water in the Pan up to 20.4 cm and water is allowed to evaporate during a certain period of time (as shown in Fig. 2.7).



Fig. 2.7 Filling water in evaporation

Step 5: Water level is measured with the tape or scale (as shown in Fig. 2.8).



Fig. 2.8 Measuring water level

Step 6: On measuring water level at certain interval of time, the graph obtains by change in water table within the pan by evaporation (as shown in Fig. 2.9):

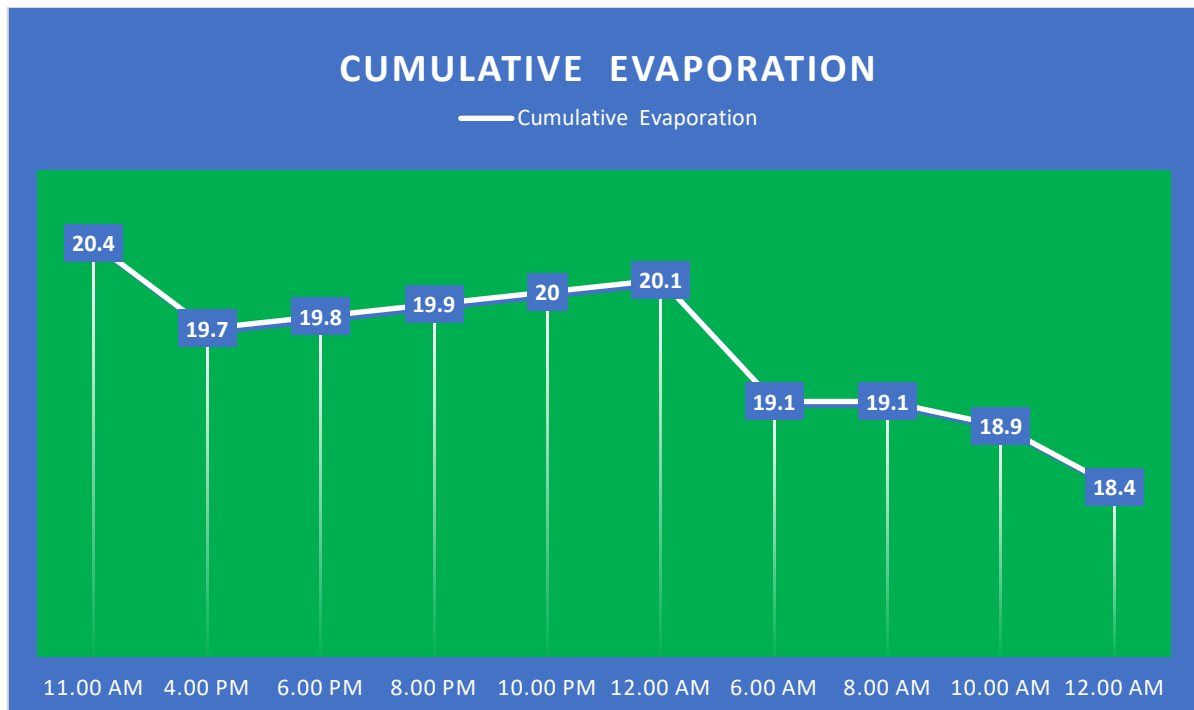


Fig. 2.9 Cumulative Evaporation

Result

During Experiment, on observing the data's of experiment we found that the Evaporation Rate is given below

Evaporation rate:

Water level on 26/10/2021: 20.4 cm

Water level on 27/10/2021: 18.4 cm

Difference in water level in 24 h : 2 cm

Evaporation Rate = 2 cm/day

Measurement of Infiltration rate

Introduction

Infiltration is the process of water penetrating the ground surface. The intensity of this process is called the infiltration rate. The infiltration rate is expressed in terms of the volume of water per ground surface and per unit of time [l/t, for instance mm/min]. The infiltration capacity of the soil indicates the maximum infiltration rate at a certain moment. Under certain circumstances, it may be necessary to determine the infiltration capacity of the soil, for instance in infiltration areas or infiltration basins.

The Double Ring Infiltrometer is suitable for almost any type of soil and is applied in irrigation and drainage projects, groundwater and infiltration basins, in optimising water availability for plants and to determine the effects of cultivation.

Infiltration

Water infiltrates the soil during a shower or irrigation. If moistening exceeds the infiltration capacity, water ponds the ground surface. In that case, the infiltration rate equals the infiltration capacity. This will cause in homogeneous soils a saturated top layer, with below a near-saturated zone which will expand by wetting of the underlying soil.

The **infiltration capacity** of a soil decreases rapidly over time during infiltration. The course of infiltration capacity in time is expressed in terms of the **infiltration curve** (as shown in Fig. 2.10).

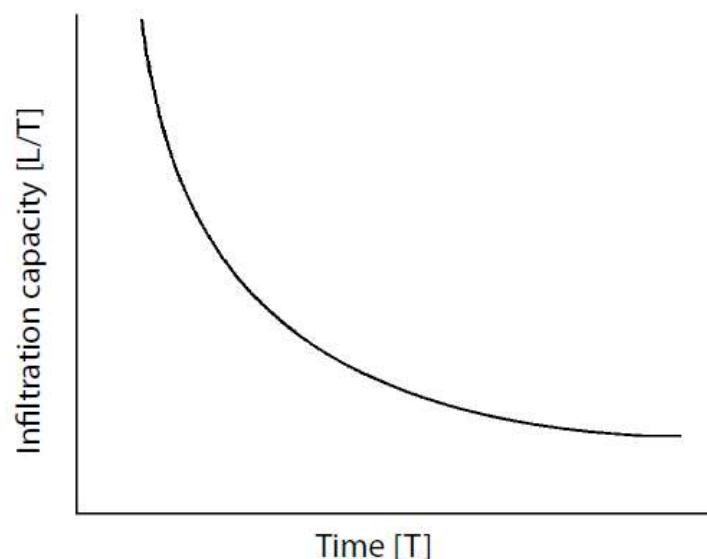


Fig. 2.10 Infiltration curve

The initial infiltration capacity in dry grounds is high, which is caused by a large matrix suction of the soil. In the near-saturated zone, potential differences are less; the water content hardly causes any variance in matrix suction. Consequently, the infiltration capacity decreases usually within a couple of hours until it reaches a constant value almost equalling the saturated hydraulic conductivity (the enclosure of air bubbles during infiltration prevents maximum saturation). Infiltration rate of soil is given in the Table 2.1.

Table 2.1 Infiltration rate of soil

| Soil type | Constant infiltration rate (mm/h) |
|-------------|-----------------------------------|
| Sand | > 30 |
| Sandy loam | 20 - 30 |
| Loam | 10 - 20 |
| Clayey loam | 5 - 10 |
| Clay | 1 - 5 |

Double Ring Infiltrometer

The Double Ring Infiltrometer is a simple instrument used for determining water infiltration of the soil. The rings are partially inserted into the soil and filled with water, after which the speed of infiltration is measured. The double ring limits the lateral spread of water after infiltration. The standard set consists of three pairs of inner and outer rings, allowing synchronic measuring. This saves time and produces reliable average data.

The standard double ring infiltrometer set consists of

- 1) Inner and outer rings,
- 2) A driving plate,
- 3) An impact absorbing hammer,
- 4) Measuring bridges and measuring rods with floats.



Fig. 2.10 Instrument used in infiltrometer (Anon. 2021a)

Instrument used in infiltrometer is shown in Fig. 2.11.

The pairs of stainless-steel infiltration rings have the following diameters: 28/53 cm, 30/55 cm and 32/57 cm. The ring's height is 25 cm and it has one cutting edge. The purpose of the outer ring is to have the infiltrating water act as a buffer zone against infiltrating water straining away sideways from the inner ring (this applies in particular for heterogeneous soils). Steel pull-out hooks allow removal of the rings. The varying diameters make them easy to stow and transport. Each inner ring has a synthetic measuring bridge (3), the measuring rod (1) with float (4) moves freely up and down through a small tube (2) in the measuring bridge (as shown in fig. 2.12). The measuring rod indicates the water level. The float is positioned in the middle of the inner ring. As the measuring rod moves freely through the tube, the wind hardly affects measuring. The measuring rods have a millimeter calibration. The galvanized steel driving plate is cross-shaped with a beating head in the middle.

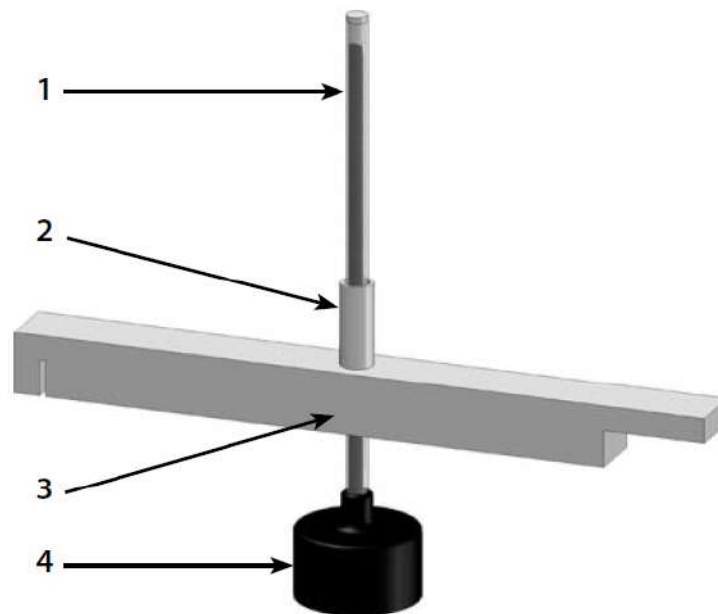


Fig. 2.12 Measuring rod (Anon. 2021a)

It is used for hammering in the 28 -57 cm infiltration rings. Pins located at the bottom of the ring ensure proper placement and allows the outer ring to be centrally positioned. The shape of the driving plate spreads the effect of the hammering and does not damage the rim. This also ensures undisturbed insertion into the soil. The steel hammer is impact-absorbing; its head contains lead bullets flowing in the direction of the stroke upon impact. Its nylon cups prevent damage to the driving plate.

Infiltration Measurement Done on Our Campus

Procedure

Step 1: Insert the inner ring (30 cm diameter) into the soil at least for 15 cm depth by using hammer (as shown in Fig. 2.13).



Fig. 2.13 Inserting the ring (Anon. 2021a)

Step 2: Also, insert the outer ring (60 cm diameter) ring into the soil for 15 cm depth to create a protection bund or buffer area around inner ring (as shown in Fig. 2.14a and 2.14b)



Fig. 2.14a Inserting the outer ring-I



Fig. 2.14b Inserting the outer ring-II

Step 3: Pouring water into both the rings for the depth of 70-100 mm. The pounding water should be done quickly. The water in outer area of inner ring or within the two rings prevents the lateral movement of water from the infiltrometer.

Step 4: Record the time when test begins, and note the water level on the measuring rod. Initially the observations should be taken at lesser time intervals (as shown in fig. 2.15).



Fig. 2.15 Observing the water level

Step 5: After lapse of 1-2 minutes, record the drop in water level in the inner ring area (as shown in Fig. 2.16).

Step 6: Continue the test until the rate of water level drop becomes constant. It is suggested that at a given site at least two infiltration tests should be carried out to have a correct result.



Fig. 2.16 Recording the data

Observation data of experiment is given in Table 2.2

Table 2.2 Observation data of experiment

| Time (min.) | Depth of water fall from reference (cm) |
|------------------------|--|
| 0 | 0.00 |
| 3 | 0.30 |
| 6 | 0.35 |
| 9 | 0.40 |
| 12 | 0.40 |
| 18 | 0.50 |
| 24 | 0.60 |
| 30 | 0.70 |

| | |
|----|------|
| 42 | 0.90 |
| 54 | 1.10 |

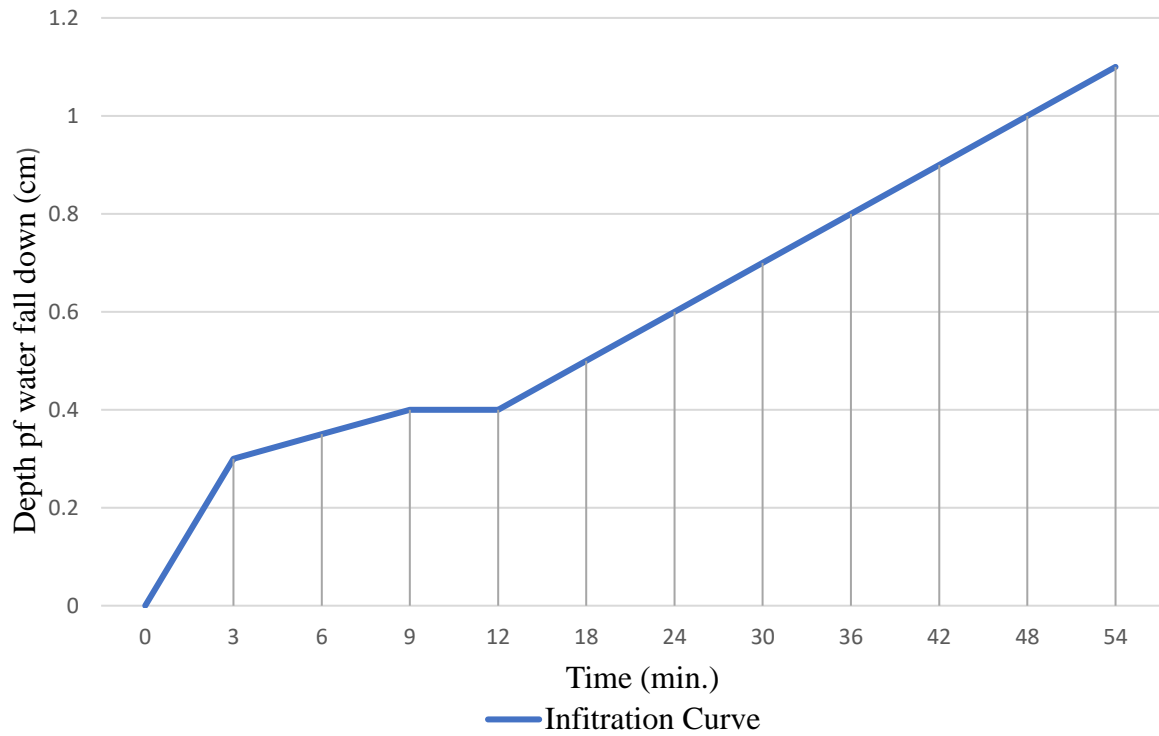


Fig. 2.17 Infiltration curve

Infiltration curve is shown in Fig. 2.17.

Result

During Experiment, On Observing the data's of experiment we found that the infiltration rate is 10 mm/h

Infiltration Rate = 10 mm/hr

Drilling of soil

Drilling is a cutting process that uses a drill bit to cut a hole of circular cross section in solid materials. The drill bit is usually a rotary cutting tool, often multipoint. The bit is pressed against the work-piece and rotated at rates from hundreds to thousands of revolutions per minute.

Need of Drilling

Drilling is executed to determine the environmental hygiene of the soil and to determine the structural quality of the building. The purpose of the drilling must be determined in advance. If necessary, monitoring wells can be placed in the boreholes to determine the quality and behaviour of the groundwater.

Method of drilling

- Percussion drilling (also known as ‘Cable tool drilling’)
- Rotary drilling
- Rotary-Percussion drilling (or ‘Rotary-cum-Hammer drilling’)

Percussion Drilling

Percussion drilling is also known as ‘cable tool drilling’ or ‘standard drilling’, and it is accomplished with the help of a standard well-drilling rig, percussion tools and a bailer. Basically, the drilling procedure involves a regular lifting and dropping of a string of tools. On the lower end, a drill bit breaks/cuts the rock or other earth materials by impact. Thus, by repeated pounding and breaking/cutting operations, a borehole is formed. In particular, the percussion drilling equipment consists of a tool string (comprising a rope/swivel socket, a set of drilling jars, a drill stem, and a drill bit) suspended by a cable from a walking beam (truck mounted or tripod) or operated from a diesel engine, which lifts and drops the tool string (as shown in Fig. 2.18). Thus, the percussion/cable tool drilling rig consists of a mast, a multiline hoist, a walking beam and an engine. In modern designs, the entire assembly is truck mounted for easy portability.

The most important part of the tool string is the drill bit (having a sharp chisel edge) which crushes/breaks almost all types of earth materials. The length of drill bits varies from 1 to 3 m and they weight up to 1500 kg (Todd 1980). Drill bits of various shapes are manufactured for drilling in different subsurface formations. The drill stem is a long steel bar that provides additional weight to the bit and its lengths helps in maintaining a straight vertical hole while drilling in hard rock. Drilling jars consist of a pair of narrow linked steel bars and help in loosening the tools when they stick in the hole. Under normal tension on the drilling line, the

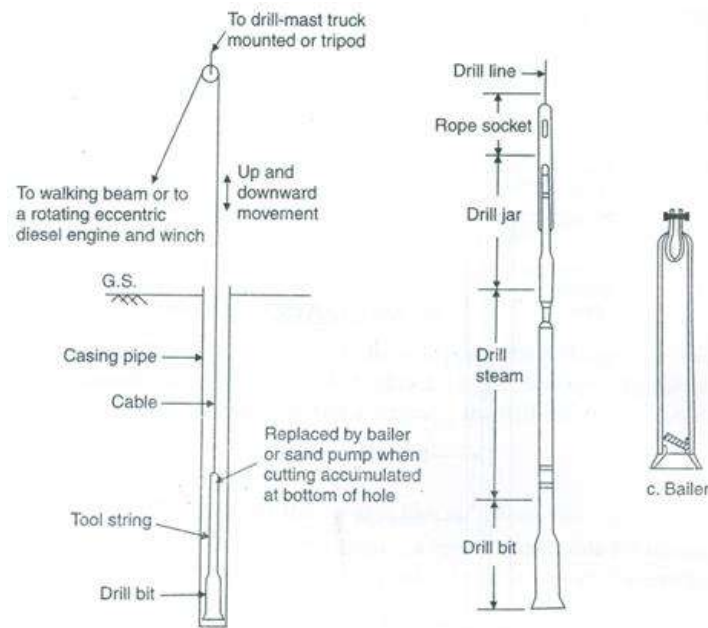


Fig. 2.18 Percussion drilling setup

jars remain fully extended. When tools get stuck, the drilling line is slackened and then lifted upward. This causes an upward blow to the tools because of which tools are released. Swivel/rope socket connects the tool string to the cable. The wire cable, which carries and rotates the drilling tool on each upstroke, is known as drill line (as shown in Fig. 2.18). Drill cuttings are removed from the well by a bailer or sand bucket (as shown in Fig. 2.18). A bailer consists of a section of pipe with a valve at the bottom and a ring at the top for attachment to the bailer line. The valve allows the cuttings to enter the bailer but prevents them from escaping. After filling, the bailer is hoisted to the surface and emptied. Drilling is accomplished by regular lifting and dropping of the tool string. As a result, the drilling line is rotated, the drill bit forms a round hole through the formation, the tool string is lifted and the hole is bailed. The cable tool method is capable of drilling holes of 8 to 60 cm in diameter through consolidated rock materials to depths of 600 m (Todd 1980). It is least effective in unconsolidated sand and gravel formations, especially quicksand, because the loose material slumps and caves around the drill bit.

Advantages

Advantages of the percussion drilling method are:

- a) It is highly versatile in its ability to drill satisfactorily over a wide range of geologic conditions.
- b) Minimum water is required for drilling, a matter of concern in arid and semi-arid regions.

- c) Reasonably accurate sampling and logging of the formation material can be readily achieved.
- d) The simplicity of design, ruggedness, and easy maintenance and repair of the rigs and tools are important advantages in isolated areas.
- e) Rough checks on the water quality and yield from each water-bearing stratum can be made as drilling progresses.

Drawbacks

Drawbacks of the percussion drilling method are:

- a) Slower drilling rate.
- b) Limitation of the drilling depth.
- c) Necessity of driving casing coincidentally with drilling in unconsolidated geologic formations.
- d) Difficulty in pulling casing from deep boreholes.

Rotary Drilling

Rotary drilling method is a rapid method for drilling in unconsolidated formations. It consists of a rotating drill bit for cutting the borehole with a continuously circulated drilling fluid (usually a mixture of water and bentonite). The drilling fluid is forced through the hollow drill pipe on to the drill bit by a mud pump for removing the materials loosened by the drill bit (i.e., cuttings). The cuttings are carried upward in the hole by the rising mud, which flow to a settling pit where the cuttings settle out and the mud fluid overflows to a storage pit from where it is recirculated again (as shown in Fig. 2.19). The mud forms a clay lining on the wall of the borehole, which provides an adequate support for the wall of the hole, and hence casing is not normally required during drilling. The rotary drilling rig consists of a mast (derrick), a hoist, a power-operated revolving table that rotates the drill stem and bit, a pump for drilling mud, and an engine. Deep wells up to 45 cm in diameter, and even larger with a reamer, can be constructed by the rotary drilling method (Todd 1980).

Drill bits for rotary drilling (as shown in Fig. 2.20) are available in different forms and commonly used designs are:

- a) Fishtail drill bit.
- b) Cone-type rock drill bit.
- c) Carbide button drill bit.

The speed of rotation of drill bit in the borehole is 30 to 60 rpm. Drilling mud is essentially bentonite clay and the density of the mud fluid varies from 1.02 to 1.14 g/cm³. The upward velocity of flow in the borehole is 0.7 to 1 m/s (Raghunath 2007). Initially, rotary drilling was

employed for drilling oil wells and its application to water-well drilling has gradually increased over the years.

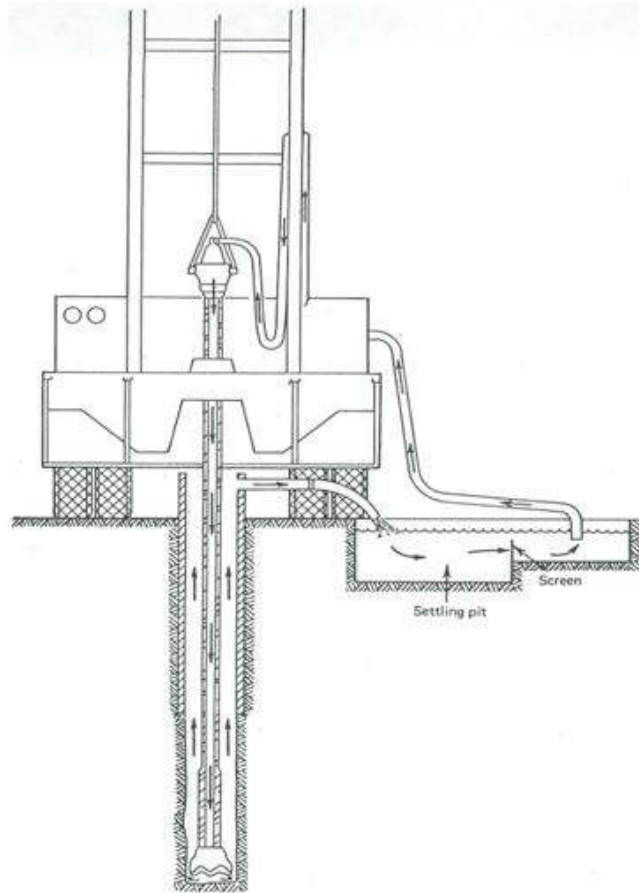


Fig. 2.19 Drilling mud circulation system for the rotary method (Todd 1980)

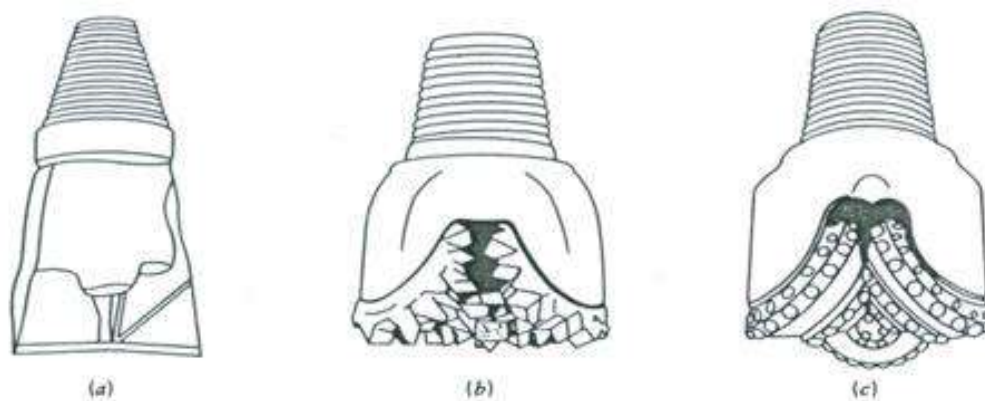


Fig. 2.20 Common types of rotary drill bits (Todd 1980)

Advantages

The main advantages of the rotary drilling method are:

- a) Fast drilling rate.
- b) No requirement of casing during drilling.
- c) The convenience for electric logging.

Disadvantages

There are also some disadvantages of this drilling method, which are:

- a) High equipment cost.
- b) More complex operation.
- c) Necessity to remove mud cake (clay lining) during well development.
- d) The problem of lost circulation in highly permeable or cavernous geologic formations.

Reverse-Circulation Rotary Method

The reverse-circulation rotary method is a modified form of the standard rotary method of drilling. In this method, the direction of water flow is reversed, i.e., from the annular space between the drill pipe and the wall of the hole through the drill bit into the hollow drill pipe upwards and discharged by a large-capacity pump into a large settling pit where cuttings settle out. The clear water returns to the borehole by gravity flow (as shown in Fig. 2.21). Relatively high velocity of water in the drill pipe (usually > 2 m/s) enables the cuttings to be carried to the ground surface without the use of clay or other additives; the use of additives will increase viscosity which is not desirable for this method.

In this system, drilling is done without a casing and hydrostatic pressure is used to support the walls of a borehole during drilling. Water level in the borehole is maintained at about 2 m above natural level or at ground level. The settling pit is about three times the volume of the material to be removed from the borehole. The diameter of the borehole is large compared to the drill pipe so that the velocity of the descending water in the annular space is low (≤ 30 cm/s), and the drill bit and drill pipe are rotated at speeds ranging from 10 to 40 rpm (Raghunath 2007). The diameter of drill bits varies from 0.4 to 1.8 m. The reverse-circulation rotary rigs generally can drill to depths of 125 m; though suitable modifications with air-lift pumping can substantially increase this depth limit (Todd 1980).

The reverse-circulation rotary method has become increasingly popular for drilling large-diameter boreholes in unconsolidated geologic formations. In fact, it is the most rapid drilling technique available for unconsolidated formations. The large diameters facilitate completion of the wells by artificial gravel packing. The minimum borehole diameter should be about 40 cm in order to avoid the erosion of the sides of the borehole (Todd 1980), thereby restricting

the downward velocity of the water in the borehole. The main disadvantage of this method is that it requires a large quantity of water to be readily available.

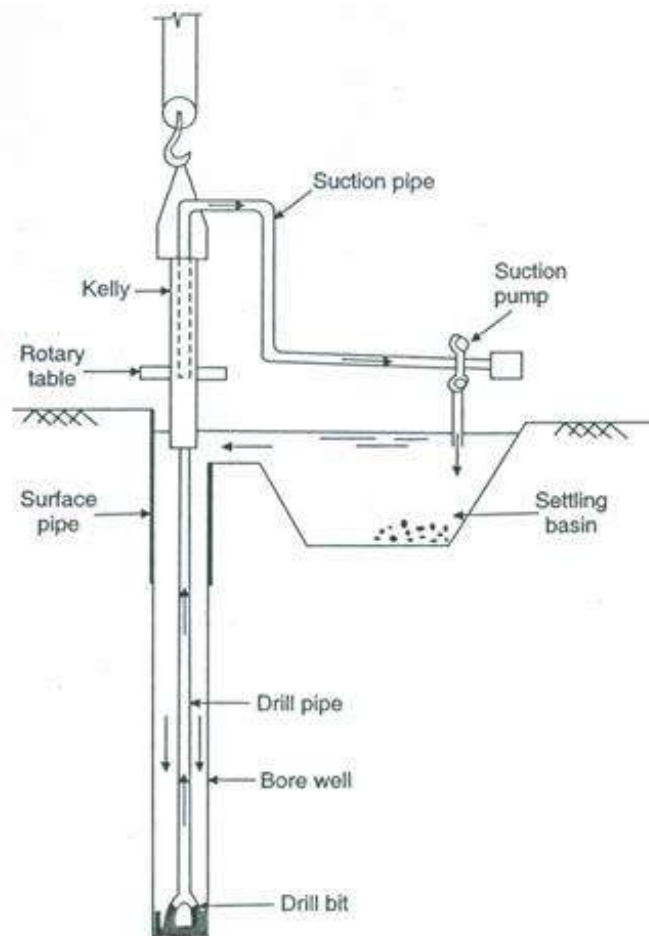


Fig. 2.21 Hydraulic rotary drilling with reverse circulation (Anon. 2021d)

Rotary Percussion Drilling

This method of drilling combines the percussion effect of cast tool drilling and the rotary action of rotary drilling. It is also known as ‘Rotary-cum-Hammer drilling’. It uses compressed air as the drilling fluid which provides the fastest method for drilling in hard-rock formations (Todd 1980); it can drill 15-20 cm holes to a depth of 120 m in 10-15 h (Raghunath 2007). A rotating drill bit, with the action of a pneumatic hammer delivers 10 to 20 impacts (blows) per second to the bottom of the hole. The diameter and depth of the hole is limited by the volume of air that can be exhausted through the hammer to remove the cuttings. A flush pump is used for flushing the hole and bringing the cuttings to the ground surface. Air compressor, pump and prime mover are usually mounted on a truck.

Compressed air must be supplied at a pressure of 750 to 1350 kN/m² (to effectively remove the cuttings) and free air supply of at least 9 to 10 m³/min for drilling 15 cm holes. The upward velocity in the space outside the drill pipe should be about 900 m/min. The rotation speed of the drill bit should be from 15 to 50 rpm (Raghunath 2007). Reduced speed is required for drilling in harder and more abrasive rocks. In case of caving formations or incidence of large quantities of water, this method is not suitable. In this situation, the conventional rotary drilling with mud as a drilling fluid works satisfactorily (Todd 1980). A view of rotary percussion drilling is shown in Fig. 2.22.

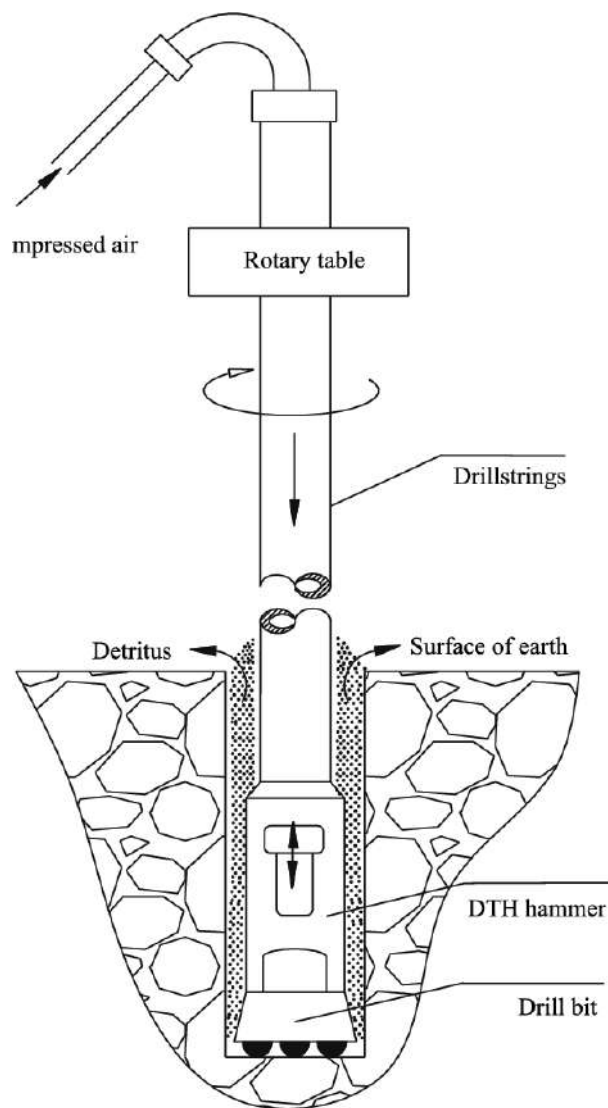


Fig. 2.22 Rotary-Percussion Drilling (Anon. 2021d)

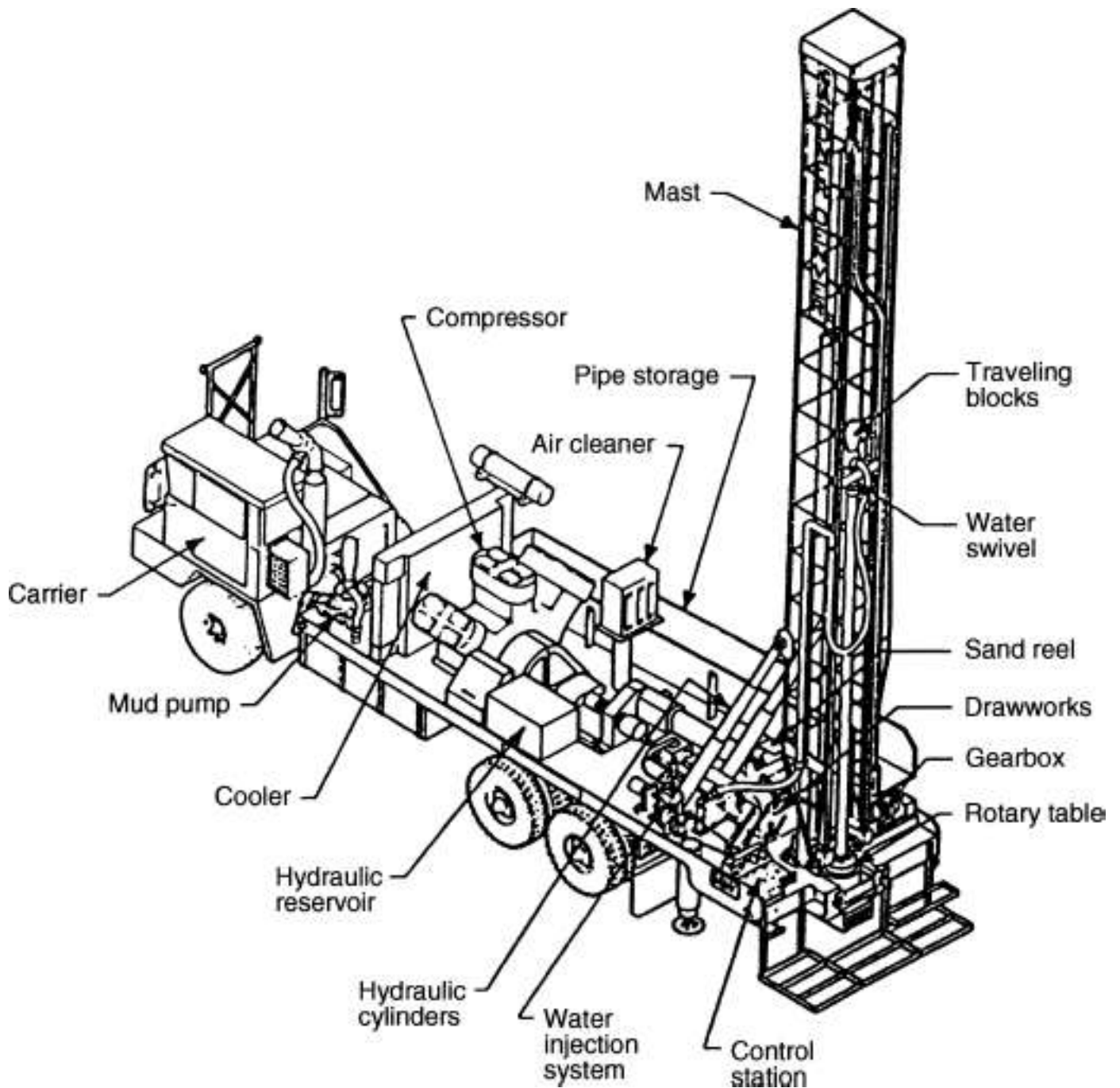


Fig. 2.23 Rotary drill machine (Anon. 2021a)

Component of drill machine

The basic rotary drilling system (as shown in Fig. 2.23) consists of four groups of components. The prime movers, hoisting equipment, rotating equipment, and circulating equipment all combine to make rotary drilling possible.

1. Prime Movers

The prime movers in a rotary drilling rig are those pieces of equipment that provide the power to the entire rig. Steam engines provided the power to the early drill rigs. Gas and diesel engines became the norm after World War II.

Recently, while diesel engines still compose the majority of power sources on rotary rigs, other types of engines are also in use; more so in the oil and gas industry than in the water well sector. Natural gas or gasoline engines are commonly used, as are natural gas or gasoline powered reciprocating turbines, which generate electricity on site. The resulting electricity is used to power the rig itself. The energy from these prime movers is used to power the rotary equipment, the hoisting equipment, and the circulating equipment, and on large rigs may be used as well to provide incidental lighting, water, and compression requirements not associated directly with drilling.

2. Hoisting Equipment

The hoisting equipment on a rotary rig consists of the tools used to raise and lower whatever other equipment may go into or come out of the well. The most visible part of the hoisting equipment is the derrick, the tall tower-like structure that extends vertically from the well hole. This structure serves as a support for the cables (drilling lines) and pulleys (draw works) that serve to lower or raise the equipment in the well.

For instance, in rotary drilling, the wells are dug with long strings of pipe (drill pipe) extending from the surface down to the drill bit. If a drill bit needs to be changed, either due to wear and tear or a change in the subsurface rock, the whole string of pipe must be raised to the surface. In deep wells, the combined weight of the drill pipe, drill bit, and drill collars (thicker drill pipe located just above the bit) may be in excess of thousands of pounds. The hoisting equipment is used to raise all of this equipment to the surface so that the drill bit may be replaced, at which point the entire chain of drill pipe is lowered back into the well. The height of a rig's derrick can often be a clue as to the depth of the well being dug. Drill pipe traditionally comes in 20 ft sections, which are joined together as the well is dug deeper and deeper. This means that even if a well is 1200 ft deep, the drill string must still be taken out in 20 ft sections. However, if the derrick is tall enough, multiple joints of drill pipe may be removed at once, speeding up the process a great deal.

3. Rotating Equipment

The rotating equipment on a rotary drilling rig consists of the components that actually serve to rotate the drill bit, which in turn digs the hole deeper and deeper into the ground. The rotating equipment consists of a number of different parts, all of which contribute to transferring power

from the prime mover to the drill bit itself. The prime mover supplies power to the rotary, which is the device that turns the drill pipe, which in turn is attached to the drill bit. A component called the swivel, which is attached to the hoisting equipment, carries the entire weight of the drill string, but allows it to rotate freely.

The drill pipe (which, when joined together, forms the drill string) consists of 20 ft sections of heavy steel pipe. The pipes are threaded so that they can interlock together. Drill pipe is manufactured to meet specifications laid out by the American Petroleum Institute (API), and others, which allows for a certain degree of homogeneity for drill pipes across the industry.

Below the drill pipe are drill collars, which are heavier, thicker, and stronger than normal drill pipe. The drill collars help to add weight to the drill string, right above the bit, to ensure there is enough downward pressure to allow the bit to drill through hard rock. The number and nature of the drill collars on any particular rotary rig can be altered depending on the down hole conditions experienced while drilling.

Rotary Drill Bits

The drill bit (as shown in Fig. 2.24) is located at the bottom end of the drill string, and is responsible for actually making contact with the subsurface layers, and drilling through them. The drill bit is responsible for breaking up and dislodging rock, sediment, and anything else that may be encountered while drilling. There are dozens of different drill bit types, each designed for different subsurface drilling conditions. Different rock layers experienced during drilling may require the use of different drill bits to achieve maximum drilling efficiency. It can be a long process to change bits, due to the fact that the whole drill string must be removed; but using the correct drill bit, or replacing a worn bit, can save a great deal of time during drilling. Drill bits are chosen given the underground formations expected to be encountered.



Fig. 2.24 A view of rotary bit

4. Circulating System

The final component of rotary drilling consists of the circulating system (as shown in Fig. 2.25). There are a number of main objectives of this system, including cooling and lubricating the drill bit, removing debris and cuttings, and coating the walls of the well with a mud type-cake. The circulating system consists of drilling fluid, which is circulated down through the well hole throughout the drilling process. The components of the circulating system include drilling fluid pumps, compressors, related plumbing fixtures, and specialty injectors for the addition of additives to the fluid flow stream.



Fig. 2.25 A view circulation system

Drilling done at campus

There are three drilling, which is given in Fig. 2.26

1. Exploratory well – 14.75 inches
2. Observation well – 6.00 inches
3. Piezometric well – 4.00 inches



a) 12-inch Boring



b) 6-inch Boring



c) 4-inch Boring

Fig. 2.26 A view of drilling done at campus

Profile of well

The profile of well is shown in Fig. 2.27.

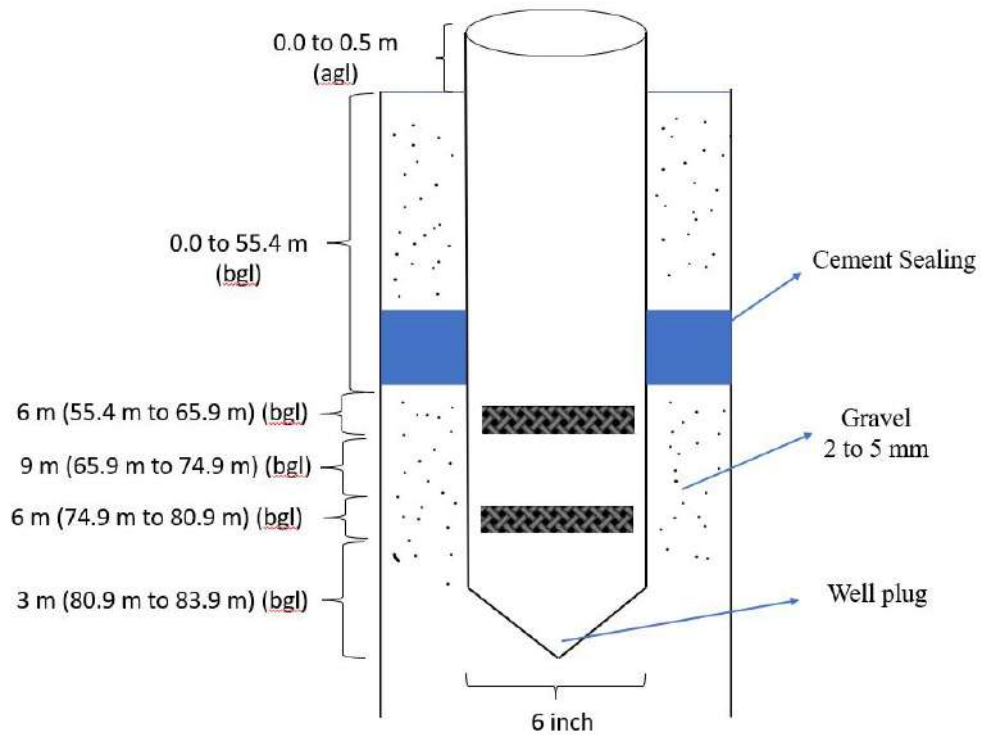


Fig. 2.27 A view of profile of well

Bit used in 6-inch boring (as given in Table 2.3)

Table 2.3 Bit used in 6-inch boring

| Bit size | Depth up to which used |
|------------|------------------------|
| 08.50 inch | 200 m |
| 12.25 inch | 83 m |
| 14.75 inch | 63 m |
| 20.00 inch | 27 m |

Design of Drip Irrigation System for 1 ha Mango Crop

Drip irrigation is an efficient method of irrigation in which water is applied at the plant bottom at a rate nearly equal to consumptive use and thereby avoid the conventional losses like evaporation, percolation, and runoff. It is a slow process of application of water above and beneath the soil surface in the form of drops tiny stream or miniature spray. Water is applied at a point source from where water is sprayed onward in all direction and wet the root zone area. In principle it is a slow flow rate, low rate, frequent and long duration method of application of water. There other name of drip irrigation—drop irrigation, trickle irrigation, sip irrigation, dilution irrigation, daily flow irrigation, micro irrigation.

Advantage:

Easier management, saving of labour, saving of water (30-70 % water is saved), better growth and yield of crop, efficient use of fertilizer, less effect of insect and paste attack, low quality water or saline water can be used by the impact of drop application of water, salt will be displaced towards outer corner, problem soil (high infiltration rate of soil) is suitable in drip irrigation, this is an erosion and runoff free system.

Disadvantage:

Initial cost is high, technical knowledge for installation and design is needed, clogging of emitters, services are not available in remote area.

Objectives

- (i) To design efficient type of piping system to discharge the water at a predefined rate at the root zones of the plant (Mango);
- (ii) To find out the sizes like diameter and thickness, length of different sizes of pipes to be connected in different parts of the network. Viz. main, sub main, manifold and lateral;
- (iii) Maximum number of plants to be accommodated in the specified land areas;
- (iv) To find total pressure head of water required at entry of the crop field at actual; duration of irrigation required per day;
- (v) To calculate the pressure head, energy and power consumption required at the entry to the crop field;
- (vi) To find out the emission uniformities of the irrigation system; the requirement of pressure regulation/throttling if any between sub main and manifold;
- (vii) To estimate the bill of quantities of the piping systems with detail specifications, fittings and other components;
- (viii) Selection of the pump, its type, pressure head, capacity, design points and operating points.

Materials and Methods

Efforts have been exercised to develop the efficient piping network with minimum pipe diameter and length for high value horticultural crops like mango to have the higher emission uniformities, minimum wastage of water, minimum consumption of power, higher pressure balancing, minimum time of irrigation and pressure head, optimum water supply at the root zone and other associated parameters and to achieve the efficient drip irrigation systems with maximum savings of these precious consumables. While designing the drip irrigation system, highest water required for the plant throughout its lifecycle and peak rate of evapo-transpiration are considered for calculation of water requirement. Selection of drippers should be based on water requirement, soil type, water availability, electricity availability etc to emit enough water to fulfil water requirement within predefined time. Totally optimized, efficient and long-life system ensures saving in water, early maturity and a bountiful harvest, season after season, years after years.

The land of new alluvial agro-climatic zone with sandy loam type soil and crop field area of 1 hectare and fruit crops like mango have been considered for development of the efficient type of drip irrigation systems through computational analysis. Multi loop type piping network where both ends of the lateral are connected to the manifold and a closed network has been formed through sub main and main pipes.

Procedure

System design starts with selection of the suitable emitter depending on type of crop, water requirement, operating time, soil type, and water quality. The length and size of lateral lines are determined based on the lateral line flow rate, field size, etc. Similarly, the size and length of the sub-main pipe is determined. Each sub-main is an individual unit with its own control valve. The whole area is then divided into different sub-main units and the number of sub-main units that can operate at any one time is based on the existing pumping / water source capacity. Sections should be designed such that the discharge is similar for all the sections. To determine the appropriate length of the sub-main pipe, reference. The mainline is then planned connecting all the sub-mains by taking the shortest possible route. The length of the main pipe can be determined based on the flow rate so that frictional head loss is within specified limits and total pressure head required for the system is within pump / water source capacity. If there is no pump, then the pump requirement is worked out from total discharge and pressure head required for the system. Depending on the flow rate and water quality, a suitable filtration device is selected. The total quantity of all the components is calculated from the layout to prepare a cost estimate.

- **Water Requirement**

The water requirement of plants depends on many factors viz. temperature, humidity, soil type, wind velocity, growth stage, shade / sun, etc. Plants absorb soil moisture and transpire it to the atmosphere during the process of photosynthesis. Water requirement of the plant per day is equivalent to the rate of potential evapo-transpiration per day. Evapo-transpiration is the quantity of water transpired by the plants plus the quantity of water retained in the plant tissue and water evaporated from the soil surface. The reference values for evapo-transpiration are normally available for a particular area at the nearest meteorological observatory.

Water requirement can be calculated as:

$$\text{WR (l/day)} = \text{ET} \times \text{K}_c \times \text{C}_p \times \text{Area} \quad \text{..... eq. 2.2}$$

Where,

ET is evapo-transpiration (mm per day)

K_c is crop factor

C_p is canopy factor

Area in sq. meter

- **Operating Time / Irrigation Schedule**

Operating (irrigation) time is the duration of irrigation system operation that provides the required amount of water for the plants. It can be calculated as follows:

$$\text{Irrigation time (h/day)} = \text{WR (l/day)} / \text{Application rate (l/h)} \quad \text{..... eq. 2.3}$$

- **Selection of Emitter**

The emitter is the most important part of a drip system because it delivers water at the desired rate to the plant and maintains water application uniformity over the entire irrigated area. An emitter should match particular field conditions including type of crop, spacing of the plants, terrain, water requirement, water quality, operating time, pressure head, etc. Types and application of major type of emitters to different crops is given in Table 2.4. Some of the criteria that can be applied to the selection of dripper are given below:

1. Reliability against clogging and malfunctioning
2. Emission uniformity
3. Simple to install and maintain
4. Pressure compensation in case of undulated terrain
5. Percentage area wetted

6. Flow rate
7. Operating pressure
8. Cost

Table 2.4 Types and application of major type of emitters to different crops

| Type of Emitter | Flow Rate (lph) | Operating Pressure (m) | Application to type of crop and terrain |
|---|-----------------|------------------------|---|
| Micro-tube, Online dripper, Inline drippers | 1-10 | 1-10 | Vegetable and fruit crops on flat terrain |
| Self or Pressure compensating dripper | 1-10 | 10-30 | Vegetable and fruit crops on uneven land |
| Line source tube / Thin walled Tape | 1-5 | 1-15 | Long row crops |
| Micro Sprinkler / Micro Jet | 20-100 | 5-50 | Vegetable and nursery crops |
| Mini Sprinkler | 500-1000 | 10-20 | Closely spaced crops |

- **Design of Lateral**

In most of the drip systems LLDPE laterals of 12 mm to 16 mm size are used. An important point to consider while designing the lateral pipe is the slope of the field. If the average slope of the field is less than 3 % in the direction of the lateral, laterals can lie along the slope. However, if the slope of the field is more than 3 %, laterals should be used along the contours. Taking into consideration all of these limitations the maximum allowable length of laterals can be calculated from flow equations like the Hazen-Williams equation.

$$H_f = 5.35 Q^{1.852} L / D^{4.871} \quad \text{..... eq. 2.4}$$

Where,

H is pressure loss due to friction (m); l

Q is total discharge of lateral (lps);

L is length of lateral (m);

D is inside diameter (cm).

To cover the range of emitter discharge and spacing, a parameter called Specific Discharge Rate (SDR) is used. It is actually flow per unit length of the lateral. It can be calculated as given below.

$$\text{Lateral SDR (lph/m)} = \text{Emitter flow rate (lph)} / \text{Spacing between two emitters} \quad \text{..... eq. 2.5}$$

$$\text{Lateral SDR (lph/m)} = \text{Discharge from lateral (lph)} / \text{Length of lateral (m)} \quad \text{..... eq. 2.6}$$

- **Design of the sub-main**

The sub-main pipe is designed similarly to the lateral lines because it is also a perforated pipe whose discharge reduces along the length of the pipe. Depending on the flow rate, various sizes of PVC / HDPE / LLDPE pipes are used as sub-main pipes in micro irrigation system.

$$\text{Sub-main SDR (lph/m)} = \text{Lateral SDR (lph/m)} \times \text{Length of the lateral (m)} / \text{Spacing between two laterals (m)} \quad \text{..... eq. 2.7}$$

$$\text{Sub-main SDR (lph/m)} = \text{Total Discharge from the Sub main (lph)} / \text{Length of the sub main (m)} \quad \text{..... eq. 2.8}$$

- **Selection of Filter**

The filtration requirement depends on the size of the flow path in the emitter, quality of water and flow in the mainline. IMS Kits use screen filters because water is stored in a storage tank. For large systems, depending on water quality, different filters or combination of filters can be used. For large flow requirements filters can be connected in parallel using manifolds so that pressure loss across the filters is within limits.

- **Selection of Pump / Total Head Requirement**

The head (pressure) required at the inlet of the mainline or filter is calculated as follows:

$$\text{Head (m)} = \text{Operating pressure (m)} + \text{Mainline friction loss (m)} + \text{fittings loss (m)} + \text{Filter loss (m)} + (-) \text{Elevation difference (m)}. \quad \text{..... eq. 2.9}$$

For a centrifugal pump the total head requirement is calculated as follows:

$$\text{Total Head (m)} = \text{Suction head (m)} + \text{Delivery head (m)} + \text{Operating pressure (m)} + \text{Mainline friction loss (m)} + \text{fittings loss (m)} + \text{Filter loss (m)} + (-) \text{Elevation difference} \quad \text{..... eq. 2.10}$$

The horsepower requirement is calculated as follows:

$$\text{Horsepower (HP)} = \text{Flow (lps)} \times \text{Total Head (m)} / 75 \times \text{Motor efficiency} \times \text{Pump efficiency} \quad \text{..... eq. 2.11}$$

Table 2.5 Various design parameters considered for drip irrigation systems

| Sr. No. | Parameter | Value / Data |
|----------------|--|---------------------------|
| 1. | Total numbers of plant | 100 |
| 2. | Numbers of row of plant | 10 |
| 3. | Number of plants in each row and covered by each lateral | 5 |
| 4. | Spacing of plant (m x m) | 10*10 |
| 5. | Number of laterals | 20 |
| 7. | Length of main (m) | 50 |
| 8. | Length of each lateral (m) | 47.5 |
| 10. | Thickness of lateral (mm) | 1-3 |
| 11. | Peak water requirement by each plant (lit/day/plant) | 180 |
| 12. | Total areas (L x W) of the crop field (m x m) = (sq-m) | 10000(100*100) |
| 13. | Distance between two adjacent lateral (m) | 10 |
| 14. | Number of plants covered by each lateral | 05 |
| 15. | Distance between two adjacent plants along each row (m) | 10 |
| 16. | Total length of sub main (m) | 97.25 |
| 18. | Nos of emitters/plant | 06 |
| 19. | Types of emitters | Short orifice type |
| 20. | Recommended discharge (l/h) | 04 |

Various design parameters considered for drip irrigation systems is given in Table 2.5.

Results and Discussions

Computational analysis and simulation have been made for the piping network within the crop field areas. Hazen-William's formula has been used for finding out the pressure loss against the flow through the piping network. Pressure head, water supply rate(capacity), power requirement and other performance parameters have been computed and furnished in Table 2.6.

Table 2.6 Drip irrigation system performance parameter

| Sl. No | Parameters | Unit | Value(s) |
|---------------|------------------------|-------------|-----------------|
| 1. | Total number of plants | Number | 100 |

| | | | |
|------------|---|-------------|----------------------|
| 2. | Total flow rate of water in the main pipe at the entry to the crop-field | litres/hour | 1200 |
| 3. | Duration of irrigation required per day | hours | 8 |
| 4. | Discharge through each dripper | liters/hour | 4 |
| 5. | Discharge per plant | litres/day | 24 x 8 = 192 |
| 8. | Minimum requirement of water for all plants per day | litres/day | 172 x 100 = 17200 |
| 12. | Capacity of pump | litres/hour | 9000 |
| 16. | Power requirement at the electric-motor for normal operation of the system (Considering centrifugal pump efficiency:65% and motor efficiency:80%) | watt | 102.08 |
| 18. | Emission Uniformities | (%) | 98 |

Savings of power and energy at very high level can be achieved within the requirement of the relevant standard. Savings of water consumption per day and labour also appeared in appreciable amount and bill of quantities of the required materials have been optimized. Emission Uniformities in the range of 98% and higher-pressure balancing have been achieved through the provisions of suitable pipes, pump, fittings, accessories since the flow of water takes place in both directions in such type of closed loop type network. Pressure variation along the sub main and also along the individual lateral are appeared in much lower range in closed loop type piping network resulting the achievement of better pressure balancing throughout the network within the crop field.

With the specified design of drip irrigation systems with multi loop (closed end) type piping network, better performances in terms of power consumptions, emission uniformities, savings of power and water, lower ranges in pressure regulations, higher pressure balancing, better yield, higher water use efficiency, minimum sizes of pipe, valves and fittings and other associated parameters can be achieved. As the crop field area increases, savings of energy and water becomes more significant.

Note: During design assume that pan coefficient is 0.7, crop coefficient is 0.8 and crop coefficient is 0.8.

Bill of quantities for the specified drip irrigation systems is given in Table 2.7.

Table 2.7 Bill of quantities for the specified drip irrigation systems

| Sr. No. | Item | Size | Specification | Quantities |
|--------------------|-------------------------------|--|---|-------------|
| 1. Pipes | | | | |
| i) | Main | 50 mm | HDPE pipes | 50 m x 1 |
| ii) | Sub main | 35 mm | HDPE pipes | 97.25 m x 2 |
| iv) | Lateral | 12 mm | LDPE pipes | 47.5 m x 20 |
| 2. Valves | | | | |
| i) | Isolation valve (Ball Valves) | Valve orifice 0.032 inch | Made of brass | 5 sets |
| ii) | Air relief Valve | DN-25 (¾") Valve for 3500 l/h, length 122 mm | Working pressure 85 psi or 6kg/cm ² | 1 set |
| iii) | Safety relief Valve | DN-63 | Working pressure 85 psi or 6 kg/cm ² | 1 set |
| 3. | Pump | 9000 l/h DN-25 mm to DN-80 mm | Centrifugal Pump Speed N-1450/2900 rpm at 50 Hz | 1 set |
| 4. | Strainer | 120 mesh /130 microns | Epoxy coated metal body, PN 10 bar, washout drain valve | 1 set |
| 5. Fittings | | | | |
| i) | Tee | DN 50x50x40 | made of PVC | 20 sets |
| ii) | Elbow | DN 40X40 | made of PVC | 7 sets |
| iii) | Gromate | - | made of rubber | 20 sets |
| iv) | Take -off | - | made of PVC | 20 sets |
| v) | End cap | - | made of PVC | 21sets |

| | | | | |
|----|-----------------------|-----------------------------|--|------------|
| | MTA | - | made of PVC | 7 sets |
| | FTA | - | made of PVC | 7 sets |
| 6. | Dripper | 0.2-0.35 mm ² | Orifice type, made of PVC or PE | 600 pieces |
| 7. | Pressure Gauge | DN-63, Bourdon SS-316 | Dial type digital, Ranges 0-21 kg/cm ² | 1 set |
| 8. | Flow meter | DN-40 for 600-6000 l/h | Operating pressure 10 kg/cm ² | 1 set |

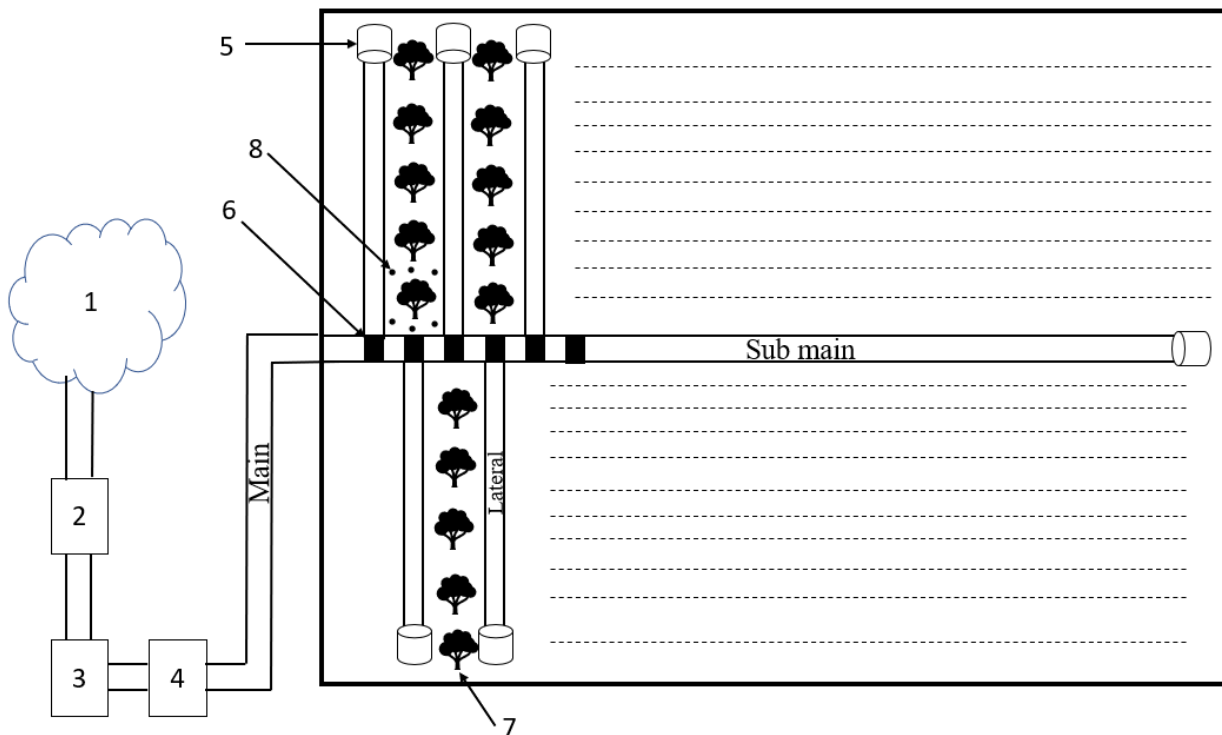


Fig. 2.28 Layout of drip irrigation system

Layout of drip irrigation system (as shown in Fig. 2.28).

Information of Ground water level at Katahari

For this information we visited to Katahari and Annawan and take the data about the water level as given in Table 2.7.

Table 2.7 Information of Ground water level at Katahari.

| Sr. No. | Farmer Names | Ground water level (feet) | Contact Number |
|---------|--------------------|---------------------------|----------------|
| 1 | Shasibala Mishra | 100 | 8299678984 |
| 2 | Keshav Ram Yadav | 100 | 9792989671 |
| 3 | Bachalal Kanojia | 35 | 8948928204 |
| 4 | Ram Jiavan | 35 | 9453207669 |
| 5 | Avdhesh Pal | 40 | - |
| 6 | Santram Verma | 40 | 9519540343 |
| 7 | Mastram Verma | 40 | 9918113847 |
| 8 | Kushiram Verma | 40 | - |
| 9 | Ram Bhuwan Mishra | 40 | - |
| 10 | Bharat Yadav | 110 | 9918061821 |
| 11 | Jamuna Prashad | 90 | - |
| 12 | Ajay Pratap Verma | 30 | 9450050470 |
| 13 | Muniram Verma | 25 | 9415784526 |
| 14 | Anup Tiwari | 90 | 9795122773 |
| 15 | Rajmani Tiwari | 40 | 9795453308 |
| 16 | Jagram Vishwakarma | 40 | 9795226445 |
| 17 | Mohanlal | 50 | - |
| 18 | Chrashekhar Verma | 50 | 9792558594 |
| 19 | Arun Verma | 120 | 9919132624 |
| 20 | Anil Pal | 100 | - |
| 21 | Ramagya Verma | 85 | 7043755707 |
| 22 | Amresh Verma | 85 | 9616422842 |
| 23 | Umesh Tiwari | 85 | 8545867166 |
| 24 | Keshav Ram | 70 | 9161854400 |
| 25 | Ram Ujagir | 70 | - |
| 26 | Shiv Prashad Singh | 70 | - |

| | | | |
|-----------|------------|-----|---|
| 27 | Ramroop | 70 | - |
| 28 | Amit Verma | 100 | - |

CONCLUSIONS

A lot of knowledge is gained from training which include a detail study on drilling of soil and irrigation technique which incorporates various activities. Based on that, the following conclusions is drawn below.

1. Gain practical (virtually) and theoretical knowledge of drilling machine.
2. Know about layout of micro irrigation system.
3. Knowing about correct method uses of tools.
4. Gain knowledge about to measuring the pressure head loss in the field.
5. Gain knowledge of evaporimeter.
6. We are aware with the information related to infiltrometer.

With a vote of thanks and gratefulness for reading this report thoroughly and for giving me this wonderful opportunity to grow my vision in this field. I conclude this report with a great lot in my mind.

REFERENCES

1. Anonymous 2021a. A website <http://www.eijklkamp.com> is visited on date 3/12/2021
2. Anonymous 2021b. A website <https://www.researchgate.net> is visited on date 5/12/2021.
3. Anonymous 2021c. A website <https://www.nduat.org> is visited on date 5/12/2021.
4. Anonymous 2021d. A website <https://www.ecourse.icar.gov.in> is visited on date 7/12/2021
5. Michael, A.M. & Ojha, T.P. 2020. Principles of Agricultural Engineering (Volume I), Jain Brothers.
6. Raghunath, H.M. (2007). Ground Water. Third Edition, New Age International Publishers, New Delhi.
7. Todd, D.K. (1980). Groundwater Hydrology. John Wiley & Sons, New York

A Training Report
on
Ten Weeks Experiential Learning on Campus
READY-412



In the partial fulfillment of award of the Degree
of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

Aman Awasthi E-10426/18

Amit Sharma E-10428/18

Ankit Maurya E-10429/18

Anurag E-10434/18

Pawan Kumar Yadav E-10443/18

Shivanshu E-10452/18

Shubham Mishra E-10453/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY
KUMARGANJ, AYODHYA (U.P.) 224229
DECEMBER 2021

ACKNOWLEDGEMENT

An outstanding group of people have come together to make this report possible. We pay my sincere and deep gratitude to our honorable **Vice-Chancellor Dr. Brijendra Singh, Acharya Narendra Deva University of Agriculture and Technology Kumarganj, Ayodhya (U.P)**; needless to say, all this would not have been possible without his blessing and encouragement.

We would like to express our sincere and heartiest gratitude to my **Dean Er. Mahendra Rai and ADSW Er. Ram Jeet Singh** for constant motivation and proper guidance during the entire tenure of the study.

We would also like to express our utmost gratefulness and regard for moral encouragement, supports and selfless help rendered by **Dr. P.K. Mishra** (Assistant Professor), Department of Farm Machinery and Power Engineering, during the period of our study.

Finally, We are thankful to our parents and our friends for their inspiration and moral support, co-operation and encouragement, without which it was very hard to achieve this goal, hope to continue support with all of you in the future.

Place: -

AMAN AWASTHI- ID No. E-10426/18

Date: -

AMIT SHARMA – ID No. E-10428/18

ANKIT MAURYA – ID No. E-10429/18

ANURAG – ID No. E-10434/18

SHIVANSHU- ID No. E-10452/18

SHUBHAM MISHRA – ID No. E – 10453/18

PAWAN KUMAR YADAV- ID No. E-10443/18

ABSTRACT

A practical training is method of implementing and converting your theoretical knowledge into a practical use. The more one can go under practical training, the more he will be able to accuracy and experience in his field. Therefore, ten weeks experiential learning on campus (student READY) training is a most important part of study curriculum in engineering education field. We are student of B.Tech (Agricultural Engineering) at **Mahamaya College of Agricultural Engineering & Technology, Akbarpur, Ambedkar Nagar (UP)**. Ten weeks training programme was successfully completed on campus in partial fulfillment of the requirement for the degree of bachelor of technology in agricultural engineering.

In our training period, we come to know about basics of IC engine AV-1 model 5 HP single cylinder Kirloskar engine, dismantling and assembling procedure, engine settings. We have also study about blacksmith workshop to making agricultural hand tools.

“Doing engineering with human touch”

TABLE OF CONTENTS

| Sr. No. | Topics | Page No. |
|----------------|----------------------|-----------------|
| 1. | Acknowledgement | i |
| 2. | Abstract | ii |
| 3. | Table of contents | iii |
| 4. | List of tables | iv |
| 6. | List of figures | v |
| 7. | List of abbreviation | vi |
| 8. | Introduction | 1-2 |
| 9. | Practical training | 3-29 |
| 10. | Conclusions | 30 |
| 11. | References | 31 |

LIST OF TABLES

| Table no. | Table description | Page no. |
|------------------|--------------------------|-----------------|
| 2.1 | Specification of engine | 14 |
| 2.2 | Component of I C engine | 17 |

LIST OF FIGURES

| Fig. no. | Figure description | Page no. |
|-----------------|--|-----------------|
| 1.1 | A view of MCAET | 2 |
| 2.1 | A view of I C engine | 3 |
| 2.2 | A View of rocker arm assembly box | 6 |
| 2.3 | A View of cylinder head | 7 |
| 2.4 | A View of cylinder block | 8 |
| 2.5 | A View of crankcase | 10 |
| 2.6 | A View of piston | 12 |
| 2.7 | A View of FIP system | 13 |
| 2.8 | A View of valve | 13 |
| 2.9 | A View of 5 hp Kirloskar stationary | 14 |
| 2.10 | A View of forging furnace | 19 |
| 2.11 | A View of anvil | 20 |
| 2.12 | A View of ball-peen hammer | 21 |
| 2.13 | A View of tong during working | 21 |
| 2.14 | A View of top and bottom fuller | 22 |
| 2.15 | A View of swage block | 22 |
| 2.16 | A View of Hardie | 23 |
| 2.17 | A View of selecting mild steel rod | 24 |
| 2.18 | A View of Breaking Coal into Small Pieces | 25 |
| 2.19 | A View of putting a piece of wood over the tuyere | 25 |
| 2.20 | A View of ignition of fire | 26 |
| 2.21 | A View of putting coal over the tuyere | 26 |
| 2.22 | A View putting mild steel rod inside the fire | 27 |
| 2.23 | A View of hammering process to cast the mild steel rod | 27 |
| 2.24 | A View of half completion of grass sword | 28 |

LIST OF ABBREVIATION

| Abbreviation | Full Form |
|---------------------|------------------------|
| et al | and others |
| I C | Internal combustion |
| TDC | Top Dead Centre |
| BDC | Bottom Dead Centre |
| & | And |
| Fig, | Figure |
| i.e. | That is |
| PSI | Pounds per Square Inch |
| hp | Horse Power |
| lbs.ft | Pound Foot |
| FIP | Fuel Injection Pump |
| Anon. | Anonymous |

INTRODUCTION

India is an agricultural based country most of the population is depending on farming. India has a problem of high population and low level of land productivity, low level of farm mechanization, insufficient power availability as compared to the developed nations. Even average land holders in Japan use proper mechanization for agriculture which led to great achievement for increasing crop productivity. But in India for small farmer's mechanization is difficult even though steps were taken. The student approaching the subject of farm machinery engineering might well consider the types of the problems most frequently encountered in the field, together with general methods ordinarily employed in pursuing these problems. According to Kepner et al (1978) the variety of problems that might be encountered is wide; most of them can be grouped into following general classification.

1. Development of a new type of machine.
2. Improvement of a machine, development of a new model similar to existing machines.
3. Comparative testing of several machines or evaluation of the performance of a particular machine.
4. Studies relating to the more efficient utilization of existing machines or their adaptability to special situations.
5. Research studies of fundamental problems not specifically related to a particular machine, such as the study of the soil dynamics in relation to tillage and traction.

India is basically an agriculture country where more than 60 % of population, enough food has to produce. This cannot produce with my convectional bullock drawn implement so there was need felt to invent such machine which speed up the agricultural production due to this reason tractor was invented which get power through their basic unit engine.

Objective: -

1. To study about AV-1 model 5 hp single cylinder Kirloskar I C engine.
2. To study about to making agricultural hand tools

ABOUT THE INSTITUTE



Fig. 1.1: Mahamaya College Agricultural Engineering and Technology, Ambedkar Nagar (anon. 2021a)

The Mahamaya College of Agricultural Engineering and Technology (MCAET) a constituent college of Acharya Narendra Deva University of Agricultural and Technology, Kumarganj, Ayodhya was established in 2002 by the elevation of Department of Agricultural Engineering of College of Agriculture. The college was shifted in its newly constructed building at Ambedkar Nagar during 2005. The college is located at 5 km away from Akbarpur proper on Akbarpur – Faizabad road and is at a distance of 100 km. from the University Head Quarter, Kumarganj, Ayodhya. College is functioning with its mandates, mission and objectives acquainting rural people of Uttar Pradesh in particular and of country in general in the field of Agricultural Engineering and Technology. The Academic and residential campus of the college is spread over on an area of about 7 acres. The College imports every year undergraduate degree programme (B.Tech.) in Agricultural Engineering, Mechanical Engineering and Computer Science & Engineering with intake capacity of sixty, forty and forty students, respectively.

Department:

1. Department of Farm Machinery & Power Engineering.
2. Department of Soil & Water Conservation Engineering.
3. Department of Irrigation & Drainage Engineering.
4. Department of Food & Process Engineering
5. Department of Renewable Energy Engineering.
6. Department of Basic Engineering & Applied Sciences.

Practical Training

Engine: -

Engine can be defined as it is a device which convert one form of energy into another form of energy. (as shown in Fig. 2.1)

OR

The engine can be defined as it is a device which converts the chemical energy into heat or thermal energy and then into the mechanical energy.

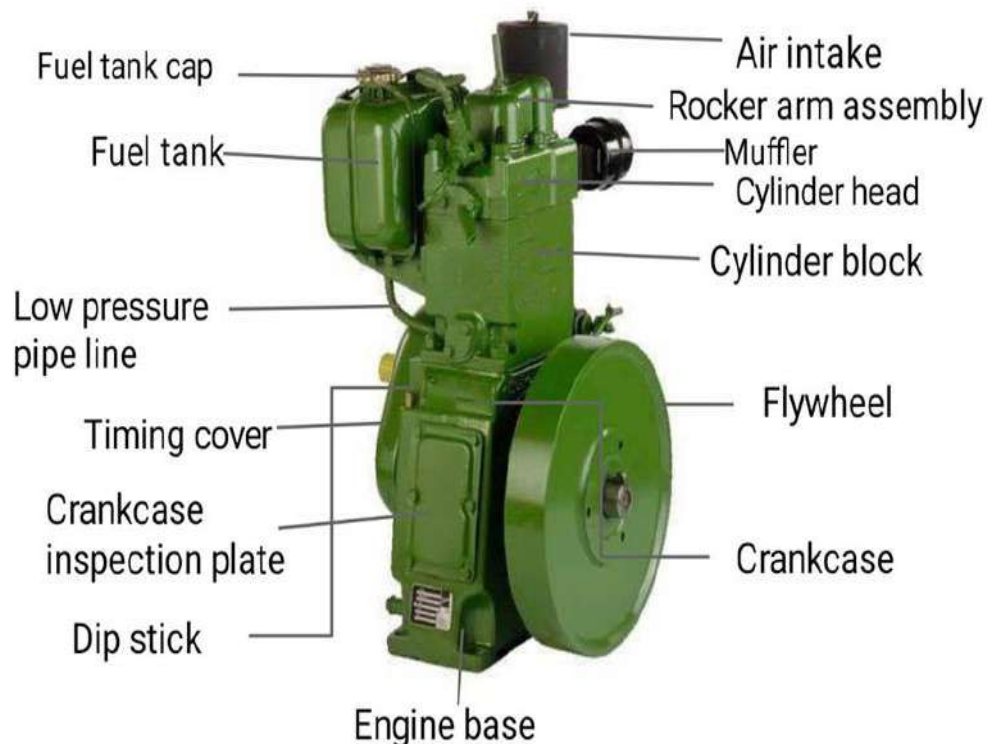


Fig. 2.1: A View of IC Engine (Anon. 2021c)

Systems of Engine

- Air Intake/ Exhaust System
- Cooling System
- Lubrication System
- Fuel Supply System
- Governing System

Part of an Engine

1. Rocker arm assembly
2. Cylinder head
3. Cylinder block

4. Crankcase

Some common terms used in engine are given below:

1. Stroke: - Distance between TDC position and BDC position of piston.
2. Bore: - Diameter of linear.
3. Swept Volume: - Air between while BDC to TDC position.
4. Clearance Volume: - Air present at top of the piston while piston at TDC.
5. Live Stroke: - Stroke at which we get power.
6. Dead Stroke: - Stroke at which we don't get power.
7. TDC: - It is the upper most position of the piston in the cylinder.
8. BDC: - It is the lower most position of the piston in the cylinder.

Tools

The tools that we used are divided into following types: -

1. General purpose tools/ Handle tools.
2. Special purpose tools.
3. Measuring tools.

A. General purpose tools/Handle tools

This type of tools mainly contains following types of tools

1. Open spanner
2. Ring spanner
3. Screw driver – flat beam & flip type
4. Hammer – Ball pin or soft hammer
5. Plier or combination plier.

Soft socket box contains

1. Long extension
2. Socket
3. Short extension
4. Ratchet

B. Special Tools

1. Piston ring compression: Used to fit cylinder into the liner
2. Piston ring expander
3. Torque Wrench: To give accurate torque
4. 3 leg gear puller: Used to remove crank gear
5. Filter remover – chain type
6. Vice grip plier

7. Scraper: To remove carbons
8. Cylinder liner puller: To remove cylinder from liner
9. Piston groove cleaner: Used to clean the grooves in the piston

Discussion some other special tools

1. **Valve lifter:** Decrease the tension of spring and remove inlet and exhaust valve.
2. **Compressor tester:** To measure pressure of cylinder.
3. **Valve grind stick:** To remove carbon.

C. Measuring Tools

1. Dial gauge: Used to measure the diameter of cylinder liner.
2. Micro meter: Used to measure outer diameter.
3. Analog dial vernier caliper: Used to measure inner and outer diameter and also depth cylinder liner
4. Feeler gauge: Used to measure rpm of engine
5. Engineering scale and tape
6. Universal Joint

Proper method of opening Nuts & Bolts

- First open all nuts at exactly half position
- Now open all nuts at one thread
- Then open all nuts two thread and so on till it gets not open

Tension Valve on different part of engine

- a. Cylinder block: 62 lbs. ft
- b. Cylinder head: 94 lbs. ft
- c. Connecting rod (big end): 40 lbs. ft
- d. Balancing weight: 62 lbs. ft = 104.7 mm

Procedure to Dismantling of Kirloskar Engine

1. Rocker Arm assembly box (Fig. 2.2)

- a. Cover plate: - It is also known as the tappet cover. It prevents the entrance of dust, dirt and other foreign materials from entering in the rocker box. It is fitted to rocker box by a screw or nut. It was opened with the help of ring or open-end spanner.
- b. Decompression lever
- c. Rocker arm
- d. Rocker arm shaft

- e. Bush bearing: it is between rocker arm shaft and rocker arm
- f. Mounting hole



Fig. 2.2: A View of Rocker Arm Assembly Box

2. Cylinder Head (Fig. 2.3): - The various parts mounted on cylinder head are: -

- a. Breathing
- b. Fuel Injection Pump
- c. Inlet manifold
- d. Exhaust manifold
- e. Silencer or muffler

Parts of cylinder head are:

1. Cylinder head
2. Inlet valve
3. Exhaust valve
4. Exhaust manifold & Silencer
5. Inlet manifold & air cleaner
6. Injector
7. Water outlet
8. Nozzle tip
9. Breather tube
10. Valve seat
11. Margin

12. Neck
13. Stamp
14. Locking groove
15. Tip
16. Valve returning spring
17. Valve returning seat
18. Catcher

Removing of Cylinder Head: -

1. The nuts of all valve's arrangement were gradually removed by giving half turn at a time in sequence until all of them were quite loose.
2. The cooling system was drained, the radiator hose & other components were disconnected
3. The inlet & exhaust manifold were removed
4. The injector & spark plug were removed.
5. The cylinder head was separated from the cylinder block. The gasket was removed.

It is advised that the gasket must be changed every time the engine is assembled.

After the removal of cylinder head, the next step was to scrap the traces of carbon which was formed on the walls of combustion chamber & top of the piston, after dismantling of piston from the crankcase. The scraper should be made by soft mild steel.



Fig. 2.3: A View of Cylinder Head

Details about holes on cylinder head is shown in Fig. 2.3

- a. Push rod holes: because push rods are connected
- b. Water outlet holes: water enters through it
- c. Water jacket holes – 4
- d. Injector hole
- e. Stud hole
- f. Dummy plug: At side of head block used for water safety

3. Cylinder Block (Fig. 2.4)

- a. Gasket – Thin plate on top of block
- b. Cylinder liner: It has two types i.e.; dry and wet
- c. Stud
- d. Water inlet hole – at bottom of block
- e. Push rod
- f. Push rod inspection cover plate
- g. Water jacket holes – 4
- h. Piston
- i. Piston ring
- j. Blow pipe hole



Fig. 2.4: A View of Cylinder Block

4. Valve Assembly

It consists following parts:

- ❖ Valve
- ❖ Valve Spring
- ❖ Spring Retainer
- ❖ Catcher
- ❖ Valve sheet insert

A single cylinder engine has two valves or two ports depending upon their types i.e., whether engine is 4-stroke or 2-stroke.

In the Kirloskar AV-1 single cylinder engine, one inlet and one exhaust valve are provided. The parts of a valve are:

- Valve tip
- Lock groove
- Stem
- Neck
- Face
- Margin
- Valve Head

5. **Tappet Clearance:** The clearance between the valve tip and rocker arm is called the tappet clearance. It is about 0.20 mm for inlet valve and about 0.25 mm for the exhaust valve.

6. **Crankcase (Fig. 2.5 a & b):** - The crankcase consists of various parts as illustrated below:

- ❖ Crank shaft
- ❖ Crank pin
- ❖ Cam shaft
- ❖ Tappet
- ❖ Cam lobe
 - For inlet valve
 - For exhaust valve
 - For Fuel injection pump
- ❖ Cam locking hole
- ❖ Cam
- ❖ Governor

- ❖ Governor weight
- ❖ Weight returning spring
- ❖ Governor pin
- ❖ Engine Starting handle
- ❖ Shim
- ❖ Crank gear
- ❖ Wood ruff key
- ❖ Main general
- ❖ Fly wheel
- ❖ Plunger type oil pump
- ❖ Strainer
- ❖ Fulcrum pin
- ❖ Bush bearing
- ❖ Crank balancing weight
- ❖ Oil filter
- ❖ Timing gear cover
- ❖ Oil seal
- ❖ Timing gear
- ❖ Flange (mounting bracket)
- ❖ Crank wave
- ❖ Dip stick

High pressure pipe which one end connected to the fuel injection pump and other end connected to the injector.



Fig. 2.5 (a)

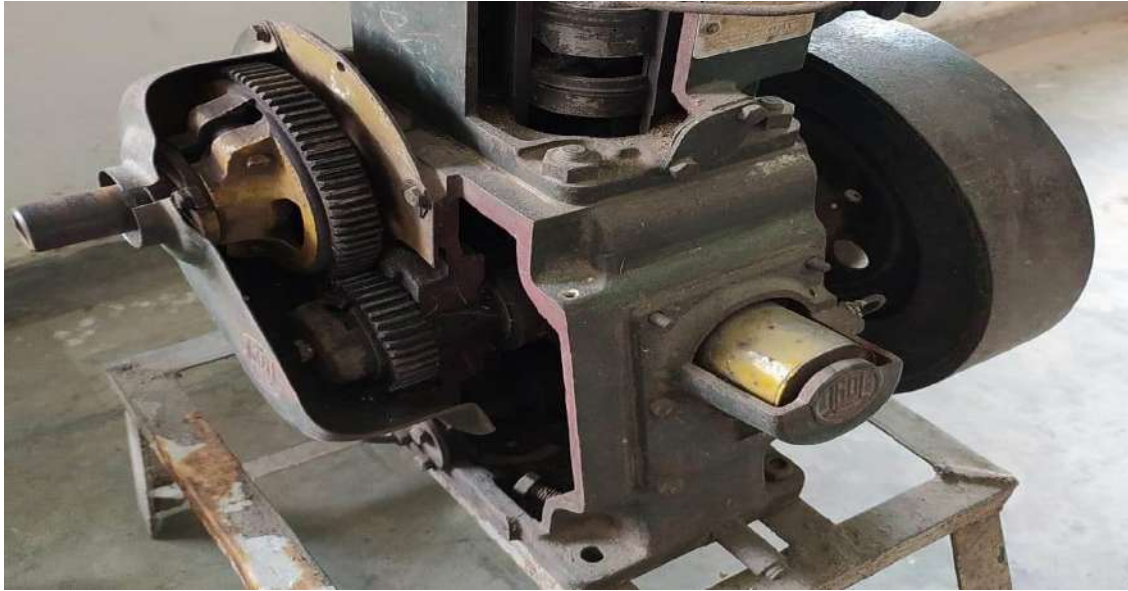


Fig. 2.5 (b)

Fig. 2.5 (a) & (b): A View of Crankcase

7. Removing the piston & crankcase assembly: -

- Then, the crankshaft and the First of all the gear cover was taken out. Then the crank gear and the cam gear were taken out by removing their locking keys.
 - After this, the piston was removed from the crankshaft. The nuts and bolts were removed from the big end of the connecting rod. The piston was taken out of the crankcase.
 - The thrust of the piston is balanced by the balancing weight of ballasting weight. They were also removed from their positions.
 - The tappets were removed from their position.
 - Camshafts were removed from their position.
 - The oil in the sump was drained and was collected in a container. The crankcase was cleaned and was inspected for the traces of impurities present in the oil. All the fine particles were cleaned from the crankcase and oil sump.
- All the parts of the engine were thoroughly observed and their functioning were studied.

Piston (Fig. 2.6)

1. Piston head
2. Combustion chamber
3. Valve packet
4. Ring groove
5. Thrust side
6. Non thrust side

7. Skirt reinforcement



Fig. 2.6 A View of Piston

Fuel Injector pump (FIP)

The FIP system as shown in Fig. 2.7

Part Name

The different parts of FIP system are given below: -

- a. End cap or rotating cap
- b. Pressure adjusting screw and nut cap
- c. Spindle
- d. Injector body
- e. Dowel: Used for locking nozzle
- f. Needle wall
- g. Nozzle cap
- h. Spindle retainer spring
- i. Copper washer: Used to seal the compression



Fig. 2.7: A View of FIP System

Valve Parts (Fig. 2.8)

1. Valve head
2. Margin face
3. Valve neck
4. Valve stem
5. Valve groove
6. Valve tip



Fig. 2.8: A View of Valve



Fig. 2.9: A View of 5 hp Kirloskar Stationary

Table 2.1: Specification of Engine (Fig. 2.9) are follows:

| Name | Kirloskar 5 hp stationary engine |
|-------------------------|----------------------------------|
| Type | AV-1 |
| No. of cylinder | 1 |
| Bore | 80 mm |
| Stroke | 110 mm |
| Fuel | High speed diesel |
| Cubic capacity | 553 cc |
| Oil pump capacity | 2.85 liters |
| Fuel tank capacity | 4.87 liters |
| Compression ratio | 16.5:1 |
| Cooling | Water cooled |
| FI pump | Bush type |
| Fuel injection timing | 27 ⁰ before TDC |
| Fuel injection pressure | 3000 PSI |
| Bumping clearance | 0.90 to 1.5 mm |

| | |
|-----------------------------|---------|
| Maximum piston ring end gap | 0.88 mm |
| Piston top ring clearance | 0.05 mm |
| Compression ring clearance | 0.05 mm |
| Oil ring clearance | 0.25 mm |
| Small end bearing clearance | 0.05 mm |

Sequence of assembling of 5h.p. Single Cylinder Kirloskar AV-1 Diesel Engine: -

- Crankshaft
- Camshaft
- Crank gear
- Cam gear
- Ballasting weight
- Piston
- Cylinder block Fuel Injection Pump
- Cylinder head
- Fuel Injector
- Tappets
- Push Rods
- Rocker box
- Rocker arms
- Rocker box cover
- Fuel pipelines
- Flywheel
- Gear cover
- Fuel tank
- Inspection cover
- Muffler
- Air Cleaner

Procedure for assembling

- a. Fill the engine oil in sump.
- b. To fit the cam shaft and place the tappet.
- c. Connect the big end of connecting rod to crank pin (40 lbs. ft. by torque wrench).
- d. To fit the F.I.P mounting plate and crankcase inspection plate.

- e. Add the Cylinder block and fill the sim between cylinder block and crankcase for proper bumping clearance (62 lbs. ft. torque by torque wrench)
- f. Add the cylinder head and fill the gasket (94 lbs. ft.).
- g. Fix the push rod on the tappet.
- h. Fit the Fuel tank.
- i. Set the High-pressure line.
- j. Add the Rocker arm assembly and set the tappet clearance.

Different Adjustments in The Engine (as shown in Table 2.1): -

- a. **End –play of crank shaft:** - it can be done by adjusting thrust washer & can be measured by filler gauge.
- b. **Oil clearance:** -it is adjusted between crankpin and big end & also between main journal & main bearing.
- c. **Bumping clearance**
- d. **Side clearance of connecting rod**
- e. **Timing gear setting**
- f. **Tappet clearance adjustment**
- g. **Side clearance of piston ring**
- h. **End clearance of piston ring**
- i. **Fuel timing:** -
 1. Initially, the valve seat and the valve of the FIP are removed for the observation of the fuel injection.
 2. The flywheel is rotated until the inlet and outlet valves are in overlapping position (dancing positioning of rocker arms).
 3. The cam gear and the crank gear are set on their punch mark marked on them.
 4. At this time the piston is at TDC position which is the position of end of exhaust stroke of previous cycle and start of suction stroke of next cycle.
 5. The flywheel is again rotated to one cycle to bring the piston at TDC of compression stroke. At this stroke the fuel must be injected in the combustion chamber 27^0 before the end of the compression stroke.
 6. If the fuel injection timing gets disturbed at this position also, the adjustment is done through shim. If the fuel before 27^0 (advanced), the shims are added and if the fuel is injected after 27^0 (retard), the shims are removed.
- j. Thus, by adjusting the stroke length through the application of shims the fuel timing is corrected.

The components of I C Engine, their uses and materials by which they made up of as shown in Table 2.2.

Table 2.2: Component of I C Engine

| Sr. No. | Name of component | Use of Component | Material |
|---------|-------------------|--|---|
| 1 | Rocker arm | To control opening & closing of valve | Steel |
| 2 | Cylinder Block | It is the houses crankshaft, cam shaft, piston & other engine parts. | Gray cast iron, Aluminum alloy |
| 3 | Cylinder Head | It is bolted to the cylinder block by means of studs | Cast iron |
| 4 | Cylinder liner | It acts as a seal for the water jackets | Grained cast iron |
| 5 | Crankcase | To shield the crankshaft & connecting rod from debris | Cast iron, Aluminum alloy or alloy steels |
| 6 | Piston | It is the first part to begin movement & to transmit over | Cast iron, Cast steel & Aluminum alloy |
| 7 | Piston Rings | To seal the cylinder & combustion space & reduce friction | Cast iron |
| 8 | Connecting Rod | It connects piston & crankshaft | Drop forged steel |
| 9 | Crankshaft | Converts the reciprocating motion into rotational motion to the flywheel | Cast iron, Forged steel |
| 10 | Camshaft | Valves are operated by the action of the camshaft | Cast iron |
| 11 | Flywheel | To store energy during power strokes | Cast iron |
| 12 | Push Rod | To operate the rocker arm | Solid aluminum |
| 13 | Balance weight | To compensate vibration | Steel |
| 14 | Cam gear | To operate valves & fuel injection | Steel or cast iron |

| | | | |
|----|-------------|---------------------------------------|-------------|
| 15 | Gudgeon pin | To connect connecting rod with piston | Steel alloy |
|----|-------------|---------------------------------------|-------------|

MANUFACTURING OF AGRICULTURAL HAND TOOLS

❖ BLACKSMITHY TOOLS AND OPERATIONS, HOT WORKING AND COLD WORKING PROCESS

INTRODUCTION: Smithy or Forging is the oldest shaping process used for producing small articles for which accuracy in size is not so important. The parts are shaped by heating them in an open fire or hearth by the blacksmith and shaping them through applying compressive forces using a hammer. The process of giving the desired shape of a metal piece by heating and hammering is also known as forging. The metal is heated up to a Desire temperature known as a forging temperature. When the forging is done by hand tool manually then it is called as hand forging and when the same forging is performed by the power hammering then it is called power forging. Hand forging process is also known as black-smithy work which is commonly employed for the production of small articles using hammers on heated jobs. It is a manually controlled process even though some machinery such as power hammers can also be sometimes used. Black-smithy is, therefore, a process by which metal may be heated and shaped to its requirements by the use of blacksmith tools either by hand or power hammer.

Advantages of Forging

1. It refines the structure of the metal.
2. It increases strength.

It saves time, material and labor.

Forging Tools and Equipment

1. Furnace or Hearth

The furnace is used for heating the metal piece. The furnace consists of four legs and a cast iron or steel body iron bottom a Chimney and below.

The main part of the forging furnace (as shown in Fig. 2.10 (a) & (b))

2. Hearth

The iron bottom where a fire is lighted is called Hearth. It is provided with firebrick lining.

3. Tuyere

A pipe coming from the bottom or rear of the earth is known as Tuyere. It is used to supply the air at high pressure to the furnace.

4. Hood

The upper part of the Furnace is called a hood. It is made up to mild steel with the firebrick inside it.

5. Chimney

The chimney is a fit on the upper end of the Hood. it is used for the purpose of easy escaping of exhausting gases and smoke.



Fig. 2.10 (a): A View of Forging Furnace

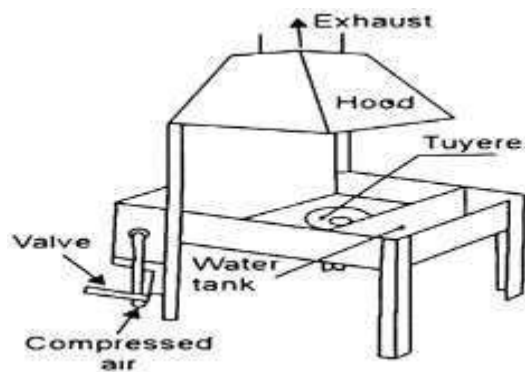


Fig. 2.10 (b): A View Open Forging Furnace (Anon. 2021b)

Tools & Equipment Used in Smithy & Forging

1. Smith's forge
2. Anvil
3. Swage block
4. Hammers
5. Tongs
6. Bench vice
7. Hardie
8. Fullers
9. Chisels
10. Flatters
11. Punch and Drift
12. Set Hammer

1. Smith's Forge or Hearth

It is used for heating purpose during the forging operation. The structure of hearth is made of cast iron or cast steel. It has four - legged support, and hearth known as bottom, a chimney along with hood. An opening is also provided on the rear side of the structure to supply the air into the furnace. The hearth is covered by fire bricks lining. For quenching purpose, a water tank is also provided in front side of forge. Air under pressure is supplied to the furnace by the blower.

2. Anvil

The anvil (as shown in Fig. 2.11) is an important smith's tool. It is used for supporting the work while hot metal hammering. The Hardie hole is of square shape and is used for holding square shanks of swages fullers etc. while the Pritchel hole is of circular shape used for bending rods of small diameter and as a die for hot punching.

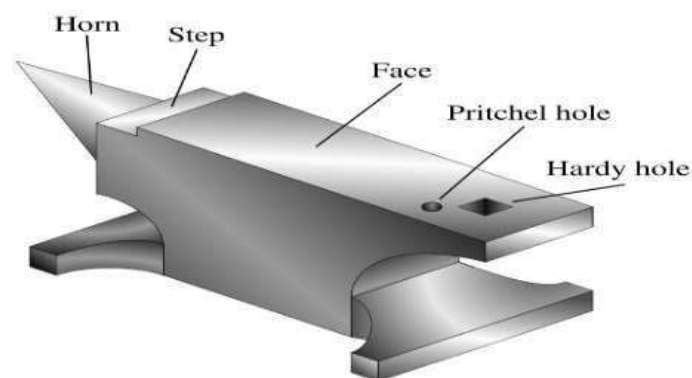


Fig. 2.11: A View of Anvil (Anon. 2021b)

3. Ballpeen Hammer

Ballpeen Hammers (as shown in Fig. 2.12) are named, depending upon their shape and material and specified by their weight. A ball peen hammer has a flat face which is used for general work and a ball end, particularly used for riveting.



Fig. 2.12: A View of Ball-Peen Hammer (Anon. 2021b)

4. **Tongs:** The tongs (as shown in Fig. 2.13) are used for holding the hot metal while it is being worked. These are made of mild steel. The various types of tongs commonly used for holding work are as follows:
- Closed Mouth Tong:** A closed mouth tong is used for holding thin sections.
 - Open Mouth Tong:** An open mouth tong is suitable for holding heavier stock.
 - Round Hollow Tong:** A round hollow tong is used for holding square, hexagonal and orthogonal work.
 - Square Hollow Tong:** A square hollow tong is used for holding square, hexagonal and octagonal section.
 - Pick-up tong:** A pick - up tong is used for picking up round bars, but not for holding work during forging.



Fig. 2.13: A View of Tong During Working

5. Fullers

These are also made of tool steel (high carbon steel). They are used in pairs (top and bottom as shown in Fig.2.14). Bottom-one part of fuller is held in Hardie hole of anvil with its square shape of shank. They are used for necking down or to reduce the cross section of a job. In cases, they are also used in drawing out operation.

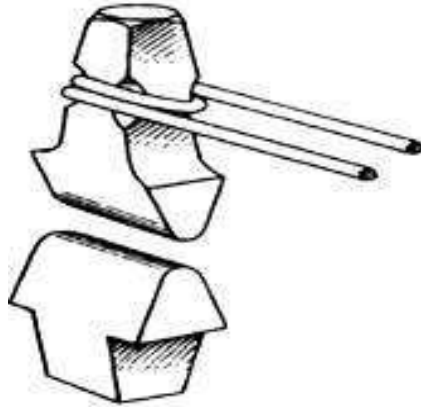


Fig. 2.14: A View of Top and Bottom Fuller (Anon. 2021 b)

6. Swage Block (as shown in Fig. 2.15)

It is a block of cast steel consisting of a number of slots of different shapes and sizes along its four side faces. It has through holes from top face to bottom face which vary in shapes and sizes. It is used for mainly squaring, sizing, heading, bending, punching and forming operations. The swage block is supported on a cast iron base. It is specified according to size of block or by weight.

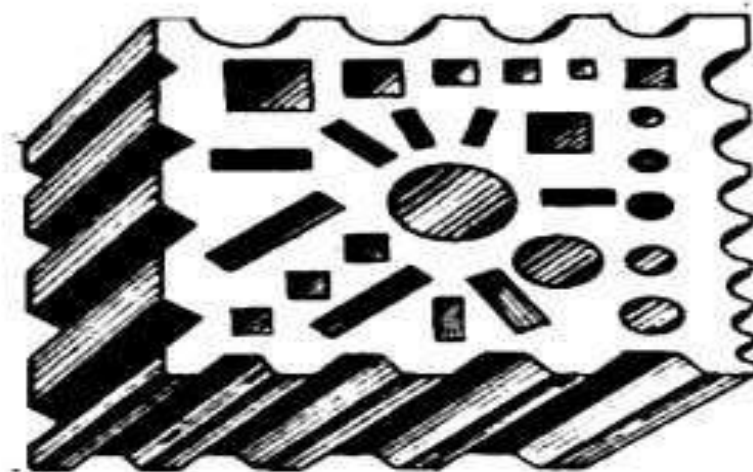


Fig. 2.15: A View of Swage Block (Anon. 2021 b)

7. Hardie (as shown in Fig. 2.16)

It is fitted in the Hardie hole provided in the tail of anvil. It has a cutting edge at the top of body. During cutting or shearing operations, chisels are used in conjunction with this bottom cutting tool. It is made by high carbon steel.

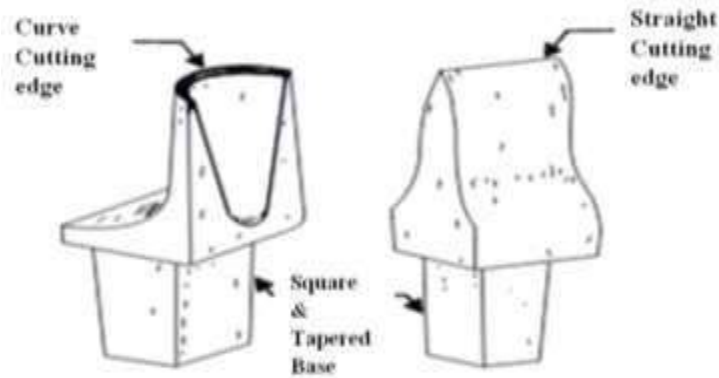


Fig. 2.16: A View of Hardie (Anon. 2021 b)

8. Chisel

Chisels used in metal work can be divided into two main categories: cold chisels and hot chisels.

A. Cold chisel

A cold chisel is a tool made of tempered steel used for cutting 'cold' metals, meaning that they are not used in conjunction with heating torches, forges, etc. Cold chisels are used to remove waste metal when a very smooth finish is not required or when the work cannot be done easily with other tools, such as a hacksaw, file, bench shears or power tools. The name cold chisel comes from its use by blacksmiths to cut metal while it was cold as compared to other tools, they used to cut hot metal. Because cold chisels are used to form metal, they have a less-acute angle to the sharp portion of the blade than a woodworking chisel. This gives the cutting-edge greater strength at the expense of sharpness. Cold chisels come in a variety of sizes, from fine engraving tools that are tapped with very light hammers, to massive tools that are driven with sledgehammers. Cold chisels are forged to shape and hardened and tempered (to a blue color) at the cutting edge.

1. **Flat chisel:** These are the flat chisel, the most widely known type, which is used to cut bars and rods to reduce surfaces and to cut sheet metal that is too thick or difficult to cut with tin snips.

2. **Cross cut chisel:** The cross-cut chisel is used for cutting grooves and slots. The blade narrows behind the cutting edge to provide clearance.
3. **Round nose chisel:** The round nose chisel is used for cutting semi-circular grooves for oil ways in bearings.
4. **Diamond point chisel:** The diamond point chisel is used for cleaning out corners or difficult places and pulling over center punch marks wrongly placed for drilling.

B. Hot chisel

A hot chisel is used to cut metal that has been heated in a forge to soften the metal. One type of hot chisel is the hot cut hardy, which is used in an anvil hardy hole with the cutting edge facing up. The hot workpiece to be cut is placed over the chisel and struck with a hammer. The hammer drives the workpiece into the chisel, which allows it to be snapped off with a pair of tongs. This tool is also often used in combination with a "top fuller" type of hot cut, when the piece being cut is particularly large.

9. Beak Iron

Beak iron generally used in forging shop. It is also known as small anvil made of forged steel. Its upper front end consists of horn and upper back end comprises of flat tail. Its taper shank is inserted into the Hardie hole of the anvil. It is commonly used as anvil for small forge work.

Procedure to Making Grass Sword are: -

1. Taking 12mm three mild steel rod whose length 3.1 ft. (as shown in Fig.2.18)
2. Clean the open tuyere and removed the burn ash from there.
3. Start manual blower and simultaneously check the air pressure by one person into the tuyere.
4. If air is not blow properly toward tuyere by the blower, then check air leakage or clean the connecting pipe of blower to tuyere with help of mild steel rod.
5. Now break down the coal into small pieces with the help of hammer. (as shown in Fig. 2.17)
6. Then put the small pieces of wood over the tuyere. (as shown in Fig. 2.19)
7. Now, spread the little amount of inflammable oil over pieces of wood for consume the time of catching the fire. (as shown in Fig. 2.20)
8. When fire catch properly and reached as required temperature then put the pieces of coal over it. (as shown in Fig. 2.21)

9. Now, keep wait a couple of minutes to catch fire into the pieces of coal by giving proper supply of air with help of manual blower which connected behind the furnace.
10. Now, put the mild steel rod inside the fire and catch it with help of tong until it not heated i.e., one turn into brick red in color. (as shown in Fig. 2.22)
11. When it heated take it out from the fire and put it on anvil face, with help of hammer start hammering onto it to give required shape. (as shown in Fig. 2.23)
12. Repeat the process until it not turns to required shape but remember that one side tapered during hammering process (as shown in Fig. 2.24).
13. When it turns into flat shape then try to give l- shape from 1ft to processing end.
14. Now, put it cold water (quenching process) for chilled and keep wait for chilling it.
15. After chilled put another side into furnace for heating.
16. Take it out from the furnace when turn it into brick red in color.
17. After put it anvil face and start hammering to cast in v- shape for handling purpose.
18. Now, put it into cold water chilled i.e., quenching.
19. Now, taking 5 cm piece of timber wood whose length 30 cm and make it in cylindrical in shape with help of sliding saw.
20. Now put V-shape of mild steel rod into piece of wood using ball peen hammer hammering one side.
21. At last, using file to give sharpen edge of tapered side of grass sword. And also using two steel ring lower side of wooden handle to proper hold of mild steel rod into handle during action time for shock compensate.



Fig. 2.17: A View of Breaking Coal into Small



Fig. 2.18: A View of Selecting mild Steel



Fig. 2.19: A View of Putting a Pieces Of wood over the



Fig. 2.20: A View of Ignition of Fire



Fig. 2.21: A View of Putting Coal over the Tuyere



Fig. 2.22: A View Putting mild steel rod inside the fire



Fig. 2.23: A View of hammering process to cast the mild steel rod



Fig. 2.24: A View of half completion of grass sword

CONCLUSIONS

We are gain a lot of knowledge which include a detail study of single cylinder stationary engine and black smith workshop. During these ten weeks we are reached on the following conclusions which are mention below: -

1. Learn details study of dismantling & assembling of AV-1 Model Kirloskar single cylinder.
2. Learn about proper settings of engine.
3. During this experiential learning learn proper way of using tools to avoid injuries.
4. Gain knowledge about black smith workshop.
5. We also learn procedure, how to making agriculture hand tools in forging process in black smith workshop.
6. We also gain experience of four stroke 5 hp single cylinder stationary engine.

With a vote of thanks and gratefulness for reading this report thoroughly and for giving me this wonderful opportunity to grow my vision in this field. We conclude this report with a great lot in my mind.

REFERENCES

1. Anonymous 2021c. A website wikimapia.org/1219162/Budini-tractor-training-centre is visited on date 02/12/2021.
2. Anonymous 2021b. A website <https://ecourses.icar.gov.in> is visited on date 02/12/2021.
3. Anonymous 2021a. A website nduat.org is visited on 02/12/2021.
4. Sahay J .

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

AMAN AWASTHI

ID. No. E-10426/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Aman Awasthi** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-20

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Aman Awasthi** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-20
Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
OR
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

AMIT SHARMA

ID. No. E-10428/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Amit Sharma** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-02
Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com


Certificate

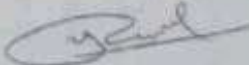
This is to certify that, **Mr/Miss Amit Sharma** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-02**
Dated: **11 Oct 2021**




Mr. Nilesh Patil
Training Co-ordinator


Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ANKIT MAURYA

ID. No. E-10429/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Ankit Maurya** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-08**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Ankit Maurya** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-08**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ANURAG

ID. No. E-10434/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**
KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Anurag** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-17**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Anurag** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-17

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ASHU SINGH

ID. No. E-10435/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Ashu Singh** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-11**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, Mr/Miss Ashu Singh has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-11

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ASHWANI TIWARI

ID. No. E-10436/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Ashwani Tiwari** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-21**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Ashwani Tiwari** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-21**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

MD. HASNAIN

ID. No. E-10438/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**
KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

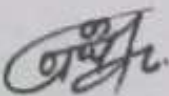
This is to certify that, **Mr/Miss Md Hasnain** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

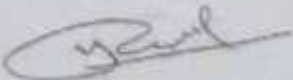
- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-18

Dated: 11 Oct 2021




Mr. Nilesh Patil
Training Co-ordinator


Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Md Hasnain** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-18**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

Mohd AFSAR WARSI

ID. No. E-10439/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

P3THREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Mohd Afsar Warsi** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-15

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Mohd Afsar Warsi** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-15

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

NARENDRA KUMAR

ID. No. E-10440/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

P3 AG SOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

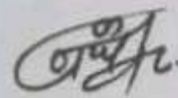
Certificate

This is to certify that, **Mr/Miss Narendra Kumar** has successfully completed five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized internship from **02 August 2021 to 04 September 2021** on following subjects.

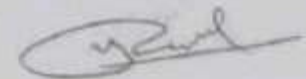
- Micro irrigation design.
- Automation in irrigation system
- PRA techniques used in the irrigation project.
- Operation and maintenance of irrigation project.

Certificate No.- **P3 -Aug 21 / C-12**

Dated: **05 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator



Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Narendra Kumar** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/ D-12

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

PADAM KANT DUBEY

ID. No. E-10442/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Padam Kant Dubey** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-05**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Padam Kant Dubey** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-05**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report

on

Ten Week Industrial Attachment/Internship

READY-411



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN

AGRICULTURE ENGINEERING

Submitted by

PAWAN KUMAR YADAV

ID. No. E-10443/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Pawan Kumar Yadav** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-07

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Pawan Kumar Yadav** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-07

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship

READY-411



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

PAWAN SINGH

ID. No. E-10444/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021



PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.

07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Pawan Singh** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-13**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Pawan Singh** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-13

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

PRASHANT MAURYA

ID. No. E-10445/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**
KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Prashant Maurya** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-14

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Prashant Maurya** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-14**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report

on

Ten Week Industrial Attachment/Internship

READY-411



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN

AGRICULTURE ENGINEERING

Submitted by

RAKESH KUMAR PAL

ID. No. E-10447/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

P3 AG SOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Rakesh Kumar Pal** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-16

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

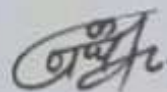
Certificate

This is to certify that, **Mr/Miss Rakesh Kumar Pal** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

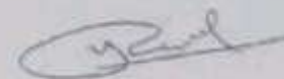
- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-16

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator



Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SACHIN SHARMA

ID. No. E-10448/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Sachin Sharma** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-01**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Sachin Sharma** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-01**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SAKSHAM JAISWAL

ID. No. E-10449/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Saksham Jaiswal** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-06**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

P3 AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

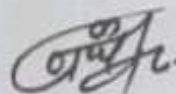
Certificate

This is to certify that, **Mr/Miss Saksham Jaiswal** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

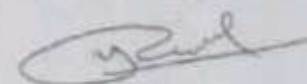
- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-06

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator



Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SHIVANSHU

ID. No. E-10452/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**
KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Shivanshu** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-10

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Shivanshu** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-10

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SHUBHAM MISHRA

ID. No. E-10453/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021



PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.

07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Shubham Mishra** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-19

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Shubham Mishra** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- P3 -Aug 21 / D-19

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

VIMLENDRA MANI PANDEY

ID. No. E-10454/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**
AKBARPUR AMBEDEKAR NAGAR (U.P) 224122
**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**
KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Vimlendra Mani Panday** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- **P3 -Aug 21/C-03**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

PTHREE AGSOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aafpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Vimlendra Mani Panday** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-03**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

A Training Report
on
Ten Week Industrial Attachment/Internship
READY-411



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

YASH VARDHAN SINGH

ID. No. E-10455/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

P3 AG SOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3agfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Yash Vardhan Singh** has successfully completed online five week Internship Program on **Basic of Soil and Water Conservation Engineering**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **02 August 2021 to 04 September 2021** on following subjects.

- Practical Concepts in Soil Mechanics.
- Advance Surface Hydrology.
- Practical Concepts in Watershed Management and Soil and Water Conservation .
- Introductory of Hydroponics and RS & GIS.

Certificate No.- P3 -Aug 21/C-04

Dated: 11 Oct 2021



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

P3 AG SOLUTIONS FARMERS PRODUCER COMPANY LTD.



07, Mahagaon, Post Chondi Amba, Tq. Basmat, Dist-Hingoli, 431512 (MH)

CIN. No:U01400MH2021PTC360629

E-mail: p3aqfpc@gmail.com

Certificate

This is to certify that, **Mr/Miss Yash Vardhan Singh** has successfully completed Online five week Internship Program on **Advance Irrigation and Precision Agriculture**. Pthree Agsolutions Farmers Producer Company Ltd. organized training from **05 September 2021 to 09 October 2021** on following subjects.

- Micro Irrigation Design.
- Automation in Irrigation System
- PRA Techniques used in the Irrigation Project.
- Operation and Maintenance of Irrigation Project.

Certificate No.- **P3 -Aug 21 / D-04**

Dated: **11 Oct 2021**



Mr. Nilesh Patil
Training Co-ordinator

Mr. Rahul Rajput
Training Co-ordinator

College of Fisheries**Details of Students Passed Out in last five Years(2021-22,2020-21,2019-20,2018-19 and 2017-18)****Session : 2021-22(Training for 8 weeks)**

| S.N | Name of Student | Id No. | Work Place | Date | Activity | Current Position |
|------------|------------------------|---------------|------------------------------|-------------|---------------------|-------------------------|
| 1 | Abhinesh Kumar | F-10353/18 | Haryana Aqua Food, Haryana | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 2 | Abhishek Singh | F-10354/18 | Nothern Aqua Farm, Haryana | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 3 | Gaurav Tiwari | F-10355/18 | Blue Stone Life Science,A.P. | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 4 | Katyayani Singh | F-10356/18 | Deva Feed Barabanki | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 5 | Manoj Kumar | F-10359/18 | Haryana Aqua Food | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 6 | Narendra Kumar | F-10360/18 | Royal Health Muktsar,Punjab | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 7 | Rahul Kumar | F-10361/18 | Royal Health Muktsar | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 8 | Ram Karan | F-10362/18 | Haryana Aqua Food | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 9 | Ram Ujagir | F-10363/18 | Royal Health Muktsar,Punjab | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 10 | Sarvajeet Singh | F-10364/18 | Haryana Aqua Food | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 11 | Shivm Saroj | F-10365/18 | Blue Stone Life Science,A.P. | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 12 | Sonal Chaudhary | F-10367/18 | Deva Feed Barabanki | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 13 | Tanuj Bharti | F-10368/18 | Haryana Aqua Food | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |

| | | | | | | |
|----|--------------------|------------|------------------------------|----------|---------------------|-----------------|
| 14 | Vikash Gupta | F-10369/18 | Nothern Aqua Farm, Haryana | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 15 | Vikas Kumar Tiwari | F-10370/18 | Blue Stone Life Science,A.P. | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 16 | Vipendra Singh | F-10371/18 | Nothern Aqua Farm, Haryana | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |
| 17 | Yashsvee | F-10372/18 | Deva Feed Barabanki | 17.09.21 | Fish/Shrimp Culture | Just Passed Out |

Session 2020-21(8 weeks duration)

| S.N | Name of Student | Id No. | Work Place | Date | Activity | Current Position |
|-----|---------------------|-----------|--------------------------------|-------------------|---|---------------------|
| 1 | Aditya Kr. Upadhyay | F-9896/17 | Fazilnagar-Kushinagar | 25.03.2021 onward | Local Survey and Aquarium preparation at Home | - |
| 2 | Ambrish Singh | F-9897/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | PG,Hissar |
| 3 | Anoop Kumar | F-9898/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Persuing graduation |
| 4 | Anuj Tiwari | F-9899/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Pvt. Job |
| 5 | Ashish Singh | F-9900/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | PG.ANDUAT |
| 6 | Bramhadev Yadav | F-9901/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Pvt. Job |
| 7 | Madhuri Maurya | F-9902/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Job preparation |
| 8 | Mohammad Aslam | F-9903/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Pvt. Job |
| 9 | Mohammed Rizwan | F-9904/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | PG,Hissar |

| | | | | | | |
|----|---------------------|-----------|--------------------------------|-------------------|---------------------------------------|----------------------------------|
| 10 | Nikhil Singh | F-9905/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | UG Persuing |
| 11 | Pramod Kr. Vind | F-9906/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Pvt. Job |
| 12 | Raghunath | F-9907/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Pvt. Job |
| 13 | Ram Lakhan Kumar | F-9908/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | - |
| 14 | Satish Yadav | F-9909/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Pvt. Job |
| 15 | Shiv Kumar | F-9911/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | - |
| 16 | Sudhir Rajvanshi | F-9912/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | - |
| 17 | Suneel Verma | F-9913/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | - |
| 18 | Suraj Shukla | F-9914/17 | Maholi,Mishrik Sitapur | 25.03.2021 onward | Local Survey and Aquarium preparation | Pvt. Job |
| 19 | Surendra Kr. Maurya | F-9915/17 | Badlapur- Jaunpur | 25.03.2021 onward | Local Survey near by Home | - |
| 20 | Vijay Pal Chaudhary | F-9916/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | Preparation for higher education |
| 21 | Virendra Pratap | F-9917/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | PG Kerala |
| 22 | Zuned Ahmad | F-9918/17 | At Home During Corona Pandemic | 25.03.2021 onward | Local Survey near by Home | B.Ed. |

Session : 2019-20

| S.N | Name of Student | Id No. | Work Place | Date | Activity | Current Position |
|------------|------------------------|---------------|---|---|------------------------|-------------------------|
| 1 | Alok Kumar | F-9327/16 | S.R Trading company Fatehabad, Haryana | 7 th August to 01 Oct, 2019 | Fish/Shrimp Culture | Pvt. Job |
| 2 | Amaresh Kumar | F-9328/16 | Pancham Aqua Farm, Mimbai | 27.7.19 - 28.9.19 | Fish/Shrimp Culture | Pvt. Job |
| 3 | Anil Gupta | F-9329/16 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 4 | Arya Singh | F-9330/16 | - | - | Fish/Shrimp Culture | P.G CAU Tripura |
| 5 | Deepansu | F-9331/16 | Kash Fish Hatchery Motihari, Bihar | 11.08.19 – 8.10.2019 | Fish/Shrimp Culture | PG Manglore |
| 6 | Devarshi Ranjan | F-9332/16 | Hariom Aqua Pvt. LtD. Gujrat | 11 Aug, -5 October, 2019. | Fish/Shrimp Culture | PG Bihar |
| 7 | Himanshu Singh | F-9333/16 | S.R Trading company Fatehabad, Haryana | 7 th August to 01 Oct, 2019 | Fish/Shrimp Culture | PG, NADUAT |
| 8 | Price Verma | F-9335/16 | - | - | Fish/Shrimp Culture | - |
| 9 | Sandeep Mishra | F-9338/16 | Hariom Aqua Pvt. LtD. Gujrat | 11 Aug, -5 October, 2019. | Fish/Shrimp Culture | JRF,N.B.FGR |
| 10 | Shiv Janam Verma | F-9339/16 | - | - | Fish/Shrimp Culture | Pvt. Job |

| | | | | | | |
|----|---------------|-----------|--|---|---------------------|---------------------|
| 11 | Shiv Kumar | F-9340/16 | Jogini Aqua Farm, Gujrat | 14 th August to 20 October, 2019 | Fish/Shrimp Culture | JRF,CIFRI Allahabad |
| 12 | Sunil Kumar | F-9341/16 | - | - | Fish/Shrimp Culture | - |
| 13 | Suraj Yadav | F-9342/16 | S.R Trading company Fatehabad, Haryana | 7 th August to 01 Oct, 2019 | Fish/Shrimp Culture | - |
| 14 | Susheel Kumar | F-9343/16 | - | - | Fish/Shrimp Culture | - |
| 15 | Vikas Kumar | F-9345/16 | - | - | Fish/Shrimp Culture | - |
| 16 | Vinod Kumar | F-9346/16 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 17 | Vivek Chauhan | F-9347/16 | S.R Trading company Fatehabad, Haryana | 7 th August to 01 Oct, 2019 | Fish/Shrimp Culture | PG Hisar |

| Session : 2018-19 | | | | | | |
|-------------------|------------------|-----------|---|------------------|---------------------|------------------|
| S.N | Name of Student | Id No. | Work Place | Date | Activity | Current Position |
| 1 | Ajay Kumar Verma | F-8579/15 | Pancham Aqua Farm, Maharastra | 18.2.19-20.5.19 | Fish/Shrimp Culture | - |
| 2 | Akhilesh Kumar | F-8580/15 | Rameshwar Enterprise Medicine and Aquaequipment, Gujrat | 21.2.19-20.5.19 | Fish/Shrimp Culture | -- |
| 3 | Anil Singh | F-8581/15 | Rising Aqua Solution, Surat, Gujarat | 28.2.19-20.5.19. | Fish/Shrimp Culture | - |
| 4 | Anoop Kumar | F-8582/15 | Rameshwar Enterprise | 21.2.19- | Fish/Shrimp | - |

| | | | | | | |
|----|--------------------------|-----------|---|----------------------|------------------------|-----------------------|
| | | | Medicine and Aquaequipment, Gujrat | 20.5.19 | Culture | |
| 5 | Arvind Kumar Verma | F-8583/15 | Pancham Aqua Farm, Maharastra | 18.2.19- 20.5.19 | Fish/Shrimp Culture | SRF,NBFGR, Lucknow |
| 6 | Ashish Sahu | F-8584/15 | Vanita Sea Food Pvt.Ltd. Gujrat | 18.2.19- 20.5.19 | Fish/Shrimp Culture | PG,Kerala |
| 7 | Atul Kumar | F-8585/15 | Pancham Aqua Farm, Maharastra | 18.2.19- 20.5.19 | Fish/Shrimp Culture | - |
| 8 | Bablu Kumar | F-8586/15 | Haryana Aqua Food, Fatehabad | 20.2.19- 20.5.19 | Fish/Shrimp Culture | Pvt.Job |
| 9 | Durgesh Kumar Bharti | F-8587/15 | Haryana Aqua Food, Fatehabad | 20.2.19- 20.5.19 | Fish/Shrimp Culture | Pvt.Job |
| 10 | Durgesh Kumar Verma | F-8588/15 | Haryana Aqua Food, Fatehabad | 20.2.19- 20.5.19 | Fish/Shrimp Culture | Project Fellow |
| 11 | Hari Shankar Patwa | F-8589/15 | Rameshwar Enterprise Medicine and Aquaequipment, Gujrat | 21.2.19- 20.5.19 | Fish/Shrimp Culture | Pvt.Job |
| 12 | Hemant Kumar Pathak | F-8590/15 | Rising Aqua Solution, Surat, Gujarat | 28.2.19- 20.5.19. | Fish/Shrimp Culture | Pvt.Job |
| 13 | Ishwar Chandra | F-8591/15 | Pancham Aqua Farm, Maharastra | 18.2.19- 20.5.19 | Fish/Shrimp Culture | Pvt.Job |
| 14 | Mayank Bhushan Singh | F-8592/15 | Haryana Aqua Food, Fatehabad | 26.2.19- 18.5.19 | Fish/Shrimp Culture | PG,ANDUAT |
| 15 | Narendra Kumar Maurya | F-8593/15 | Haryana Aqua Food, Fatehabad | 20.2.19- 20.5.19 | Fish/Shrimp Culture | Pvt.Job |
| 16 | Pankaj Kumar Gautam | F-8594/15 | Haryana Aqua Food, Fatehabad | | Fish/Shrimp Culture | Pvt.Job |
| 17 | Pragati Gupta | F-8595/15 | Institute of Applied Sciences, Allahabad | - | Fish/Shrimp Culture | PG, Bengal |
| 18 | Pravesh Kumar | F-8596/15 | Indepsica Mumabai | 1.3.19-15.5.19 | Fish/Shrimp Culture | Pvt.Job |

| | | | | | | |
|----|----------------------|-----------|---|------------------|---------------------|---------------|
| 19 | Pravind Kumar | F-8597/15 | Haryana Aqua Food, Fatehabad | 20.2.19-20.5.19 | Fish/Shrimp Culture | PG,Manglore |
| 20 | Rajesh Jayaswal | F-8598/15 | Haryana Aqua Food, Fatehabad | | Fish/Shrimp Culture | PG,Manglore |
| 21 | Ram Singh | F-8599/15 | Rameshwar Enterprise Medicine and Aquaequipment, Gujrat | 21.2.19-20.5.19 | Fish/Shrimp Culture | Pvt.Job |
| 22 | Ravi Kumar | F-8600/15 | Haryana Aqua Food, Fatehabad | 20.2.19-20.5.19 | Fish/Shrimp Culture | - |
| 23 | Rituraj Singh | F-8601/15 | Haryana Aqua Food, Fatehabad | 26.2.19-18.5.19 | Fish/Shrimp Culture | PG Brakatulla |
| 24 | Samridhi Gururani | F-8602/15 | Institute of Applied Sciences, Allahabad | - | Fish/Shrimp Culture | PG, Pantnagar |
| 25 | Santosh Kumar | F-8603/15 | Vanita Sea Food Pvt.Ltd. Gujrat | 18.2.19-20.5.19 | Fish/Shrimp Culture | Pvt. Job |
| 26 | Satendra Kumar | F-8604/15 | Haryana Aqua Food, Fatehabad | 26.2.19-18.5.19 | Fish/Shrimp Culture | Pvt. Job |
| 27 | Satya Veer | F-8605/15 | Haryana Aqua Food, Fatehabad | 26.2.19-18.5.19 | Fish/Shrimp Culture | Pvt. Job |
| 28 | Saurabh Singh Parmar | F-8606/15 | Haryana Aqua Food, Fatehabad | 26.2.19-18.5.19 | Fish/Shrimp Culture | Pvt. Job |
| 29 | Shivaji Kanojiya | F-8607/15 | Rising Aqua Solution, Surat, Gujarat | 28.2.19-20.5.19. | Fish/Shrimp Culture | PG,ANDUAT |
| 30 | Shivam Singh | F-8608/15 | Indepsica Mumabai | 1.3.19-15.5.19 | Fish/Shrimp Culture | Pvt. Job |
| 31 | Shyam Lal | F-8609/15 | Haryana Aqua Food, Fatehabad | 26.2.19-18.5.19 | Fish/Shrimp Culture | Pvt. Job |
| 32 | Vipin Kumar | F-8611/15 | Pancham Aqua Farm, Maharastra | 18.2.19-20.5.19 | Fish/Shrimp Culture | Pvt. Job |
| 33 | Vivek Kumar | F-8612/15 | Haryana Aqua Food, Fatehabad | 20.2.19-20.5.19 | Fish/Shrimp Culture | Pvt. Job |

Session : 2017-18

| S.N | Name of Student | Id No. | Work Place | Date | Activity | Current Position |
|------------|--------------------------|---------------|---|-----------------|------------------------|-------------------------|
| 1 | Abhishek Kumar | F-7891/14 | Fortune Fisheries, Nagpur | 8.2.18-30.4.18 | Fish/Shrimp Culture | - |
| 2 | Ajay Yadav | F-7892/14 | Silver Sea Food, Gujrat | 19.2.18-14.5.18 | Fish/Shrimp Culture | Teacher |
| 3 | Amit | F-7893/14 | - | - | Fish/Shrimp Culture | Pvt.Job |
| 4 | Amit Kumar Mishra | F-7894/14 | Godavari Aqua Farm,Gujrat | 15.2.18-5.5.18 | Fish/Shrimp Culture | Preparation for Job |
| 5 | Ankush Verma | F-7895/14 | - | - | Fish/Shrimp Culture | Preparation for Job |
| 6 | Arjun Kumar | F-7896/14 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 7 | Arpit shakya | F-7897/14 | Benchmark Aquaculture Pvt. Ltd.,Gujrat | 25.2.18-10.5.18 | Fish/Shrimp Culture | Pvt. Job |
| 8 | Ashish Kumar | F-7898/14 | Godavari Aqua Farm,Gujrat | 15.2.18-5.5.18 | Fish/Shrimp Culture | Pvt. Job |
| 9 | Ashish Kumar | F-7899/14 | SV Aquaculture, Navsari | 02.2.18-5.4.18 | Fish/Shrimp Culture | Pvt. Job |
| 10 | Brahma Nand Gupta | F-7900/14 | West Coast Frozen Food, Maharashtra | 20.2.18-20.5.18 | Fish/Shrimp Culture | PG, Baraktullah |
| 11 | Dharmendra Avasthi | F-7901/14 | SV Aquaculture, Gujrat | 2.2.18-3.4.18 | Fish/Shrimp Culture | Pvt. Job |
| 12 | Dheeraj Kumar Kashyap | F-7902/14 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 13 | Kamlesh Kumar Yadav | F-7904/14 | Benchmark Aquaculture Pvt. Ltd.,Gujrat | 25.2.18-10.5.18 | Fish/Shrimp Culture | N.G.O |
| 14 | Kishan Prajapati | F-7905/14 | SV Aquaculture, Gujrat | 2.2.18-3.4.18 | Fish/Shrimp Culture | Pvt. Job |
| 15 | Mohit Verma | F-7906/14 | Fortune Fisheries, Nagpur | 8.2.18-30.4.18 | Fish/Shrimp Culture | Preparation |
| 16 | Nirdesh | F-7907/14 | Godavari Aqua Farm,Gujrat | 15.2.18-5.5.18 | Fish/Shrimp Culture | Preparation for Job |

| | | | | | | |
|----|----------------------|-----------|--|-----------------|---------------------|---------------------|
| 17 | Pradeep Kumar | F-7908/14 | Fish and Fisheries(Cage culture), Nagpur | 8.2.18-30.4.18 | Fish/Shrimp Culture | - |
| 18 | Raj Kamal Mishra | F-7909/14 | Godavari Aqua Farm,Gujrat | 15.2.18-5.5.18 | Fish/Shrimp Culture | PG,RAU,Bihar |
| 19 | Ravendra Kumar | F-7910/14 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 20 | Ravi Kumar | F-7911/14 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 21 | Ravi Kumar Rawat | F-7912/14 | Pancham Aqua Farm,Mumbai | 1.2.18-10.5.18 | Fish/Shrimp Culture | Pvt. Job |
| 22 | Rudresh Kumar Yadav | F-7913/14 | Silver Aqua Research Center, Gujrat | 19.2.18-14.5.18 | Fish/Shrimp Culture | B.T.C |
| 23 | Sanjeev Kumar | F-7914/14 | Blue Vision Aqua Pvt. Ltd. | 1.2.18 -31.3.18 | Fish/Shrimp Culture | Pvt. Job |
| 24 | Satyendra Mishra | F-7915/14 | West Coast Frozen Food, Maharashtra | 20.2.18-20.5.18 | Fish/Shrimp Culture | Pvt. Job |
| 25 | Shiv Bhushan Pandey | F-7917/14 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 26 | Shiv Narayan Lal | F-7918/14 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 27 | Shiwam Dubey | F-7919/14 | - | - | Fish/Shrimp Culture | Y.P-II |
| 28 | Shravan Kumar Tiwari | F-7920/14 | - | - | Fish/Shrimp Culture | Pvt. Job |
| 29 | Suneel Kumar | F-7922/14 | Benchmark Aquaculture Pvt. Ltd.,Gujrat | 25.2.18-10.5.18 | Fish/Shrimp Culture | Pvt. Job |
| 30 | Vaibhav singh | F-7923/14 | SV Aquaculture, Gujrat | 2.2.18-3.4.18 | Fish/Shrimp Culture | Pvt. Job |
| 31 | Vijay Yadav | F-7924/14 | Silver Sea Food, Gujrat | 19.2.18-14.5.18 | Fish/Shrimp Culture | Preparation for job |
| 32 | Vivek Kumar | F-7925/14 | Silver Sea Food, Gujrat | 19.2.18-14.5.18 | Fish/Shrimp Culture | Preparation for job |

Aqua-farming, aquarium fabrication and value-added product preparation during SRP



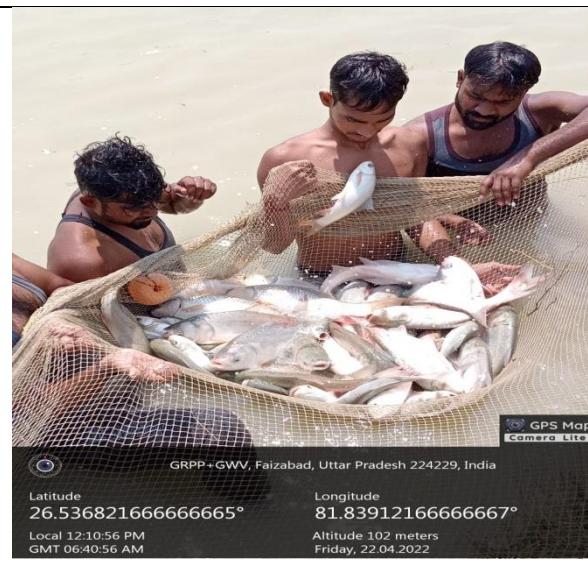
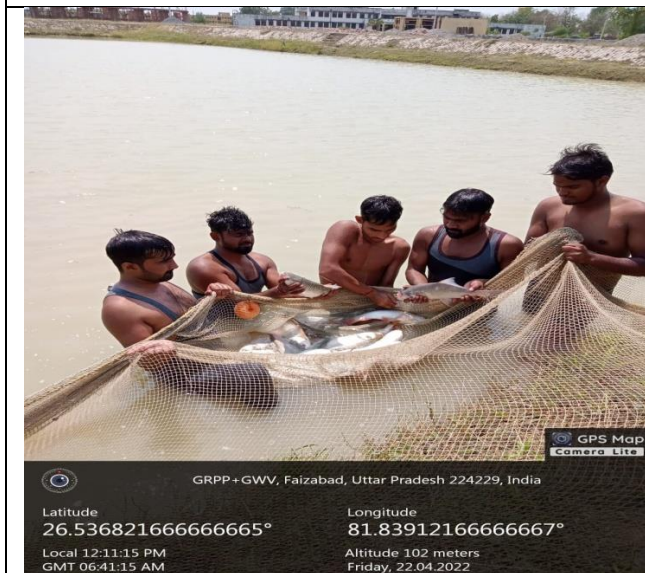
Pond preparation during SRP Aqua-farming

Pond preparation during SRP Aqua-farming



Plankton evaluation during SRP Aqua-farming

Aerator installation during SRP Aqua-farming



Gear operation during SRP Aqua-farming

Gear operation during SRP Aqua-farming



Aquarium preparation during SRP- Aquafarming



Aquarium decoration during SRP- Aquafarming



Value added fish product preparation



Value added fish product preparation

Activities during SRP – In- plant attachment



Weighing of feed during SRP In-plant attachment



Weighing of chemicals during SRP In-plant attachment



Seed stocking during SRP- In- plant attachment



Feeding tray checking during SRP- In- plant attachment



Observation of shrimp health during SRP In-plant attachment



Observation of shrimp health during SRP In-plant attachment

Students' involvement in ELP and SRP

- Students undergoing SRP program get practical exposure related to fish and shrimp farming. During this period, they upgrade field knowledge related to seed rearing, feed and medicine application and different aquaculture practices.
- The students are also attached to different village level aqua-farm. During this village attachment program. they interact with the small, marginal fish farmers and aqua-preneur. They also become aware of farmers' problems and provide the solution to fulfil the technological gap regarding management practices.
- Through SRP students, fish farmers and aqua-preneur are mutually benefitted.

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY
AKBARPUR, AMBEDKAR NAGAR, 224122**

10 WEEKS INDUSTRIAL INTERNSHIP/ATTACHMENT

List of 4th year (Agricultural Engineering) students:-

| Sr. No. | NAME | ID No. | Training At | Mobile No. |
|----------------|------------------|---------------|--|-------------------|
| 1. | AJAY KUMAR | E-9381/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 7524995588 |
| 2. | ASHWANY CHAUHAN | E-9382/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) 2. Tafe Agency, Akbarpur (6weeks) | 9695207021 |
| 3. | ABHIMANYU | E-9383/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 9140783128 |
| 4. | ASHISH KUMAR | E-9384/16 | 1. Maa Traders(TAFE), Gorakhpur (10weeks) | 7651871229 |
| 5. | ARVIND CHAUDHARY | E-9385/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) 2. United Sale's (TAFE), Akbarpur (6weeks) | 9721151655 |
| 6. | AMIT GUPTA | E-9386/16 | 1. CMERI- Centre of Excellence | 7800371976 |

| | | | | |
|-----|--------------------|-----------|--|------------|
| | | | for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | |
| 7. | ANIRUDH SHARMA | E-9387/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 8273355249 |
| 8. | AVDHESH KUMAR | E-9388/16 | 1. Maa Traders (TAFE), Gorakhpur, (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 8604174955 |
| 9. | ASHISH PAL | E-9389/16 | 1. Gramin Kalyan Avam Krishi Anushandhan Sansthan, Prayagraj (10weeks) | 8858563670 |
| 10. | ABHISHEK PANDEY | E-9391/16 | 1. Central Farm Machinery Testing & Training, Budni (4weeks) 2. CADD CONCEPTS, Kanpur (6weeks) | 7985289881 |
| 11. | BADAL PATEL | E-9392/16 | 1. Geeta Tractors, Ayodhya (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 8318422628 |
| 12. | BHAVESH KUMAR | E-9393/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 8318458164 |

| | | | | |
|-----|------------------------|-----------|--|------------|
| | | | 2. Jai Maa Tractor, Kasganj (6weeks) | |
| 13. | BEERESH BAJPAI | E-9394/16 | 1. Annakut Biscuit Co. Pvt. Ltd. (Parle-G), Kanpur (10weeks) | 7007382030 |
| 14. | DHEERAJ SINGH | E-9394/16 | 3. Central Farm Machinery Testing & Training, Budni(4weeks) 4. Confederation of Indian Industry(GMR Group), Chhindwara(M.P.)(4weeks) 5. Ayodhya Automobiles, Akbarpur(2weeks) | 8318414479 |
| 15. | DIVYANSHU MISHRA | E-9497/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 7800662259 |
| 16. | HEMCHANDRA PATEL | E-9400/16 | 1. Gramin Kalyan Avam Krishi Anushandhan Sansthan, Prayagraj (10weeks) | 8787237902 |
| 17. | KM. POOJA DEVI | E-9401/16 | 1. Vaishali Tractor, Lucknow (10weeks) | 6386263734 |
| 18. | KRISHNA VISHWAKARMA | E-9402/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 7388883629 |
| 19. | KARAN PRATAP SINGH | E-9403/16 | 1. ICAR- Central Institute of Agricultural Engineering, | 9648119221 |

| | | | | |
|-----|-------------------------------|-----------|--|------------|
| | | | Bhopal (10weeks) | |
| 20. | MANIK LAL | E-9404/16 | 1. Geeta Tractors, Lucknow Road, Faizabad (10weeks) | 9598344649 |
| 21. | NARENDRA KUMAR | E-9405/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) 2. Gramin Kalyan Avam Krishi Anushandhan Sansthan, Prayagraj (6weeks) | 9452039625 |
| 22. | NISHANT SINGH | E-9406/16 | M/S Chaudhary Tractors(TAFE), Gajraula (10weeks) | 7500117263 |
| 23. | NAURANG KUMAR PRAJAPATI | E-9407/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) 2. United Sale's (TAFE), Akbarpur, (6weeks) | 8765359072 |
| 24. | NAVEEN UPADHYAY | E-9408/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 6394039625 |
| 25. | PRAVESH PRATAP | E-9411/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar | 6186910862 |

| | | | | |
|-----|----------------------|-----------|---|------------|
| | | | (4weeks) | |
| 26. | PUSHPENDRA SINGH | E-9412/16 | 1. MAA TRADER'S (TAFE), GORAKHPUR (10weeks) | 6394615416 |
| 27. | PRAKISHINI MAURYA | E-9413/16 | 1. Lucknow Producer's Cooperative Milk Union Ltd., Lucknow (8weeks) 2. Sonalika Sahara, Kanpur (2weeks) | 9455265650 |
| 28. | PRATHAM SINGH | E-9414/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 8400167008 |
| 29. | PRADEEP KUMAR | E-9415/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 9027252362 |
| 30. | PRASHANT SHUKLA | E-9416/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar(4weeks) 2. Confederation of Indian Industry(GMR Group), Chhindwara(M.P.)(4weeks) 3. Ayodhya Automobiles, Akbarpur(2weeks) | 9670135009 |

| | | | | |
|-----|---------------------------|-----------|--|------------|
| 31. | SUDHAKAR BHARTI | E-9417/16 | 1. AVS AUTOSALES(TAFE), BHADOHI (10weeks) | 8858891364 |
| 32. | SHUBHAM CHAUDHARY | E-9418/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) 2. Confederation of Indian Industry(GMR Group), Chhindwara(M.P.)(4weeks) 3. Ayodhya Automobiles, Akbarpur(2weeks) | 6392992408 |
| 33. | SURYA PRAKASH YADAV | E-9419/16 | 1. Aryan Motor's (MAHINDRA), Lucknow (10weeks) | 7355736118 |
| 34. | SHAILESH VERMA | E-9420/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 9451980054 |
| 35. | SHUBHAM SINGH | E-9421/16 | 1. Gramin Kalyan Avam Krishi Anushandhan Sansthan, Prayagraj (10weeks) | 9839164501 |
| 36. | SHIVAM MISHRA | E-9423/16 | John Deere Dealership, Prayagraj (10weeks) | 7880346472 |
| 37. | SIDDHESH KUMAR DUBEY | E-9424/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) 2. Confederation of Indian Industry(GMR Group), Chhindwara(M.P.)(4weeks) 3. Ayodhya Automobiles, | 7905502438 |

| | | | | |
|-----|--------------------|-----------|--|------------|
| | | | Akbarpur(2weeks) | |
| 38. | SHIVAM TOMAR | E-9425/16 | 1. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) 2. Mahindra & Mahindra Tractors, Kasganj (6weeks) | 9761679448 |
| 39. | UMESH KUMAR | E-9426/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 8127837189 |
| 40. | VIKASH | E-9427/16 | 1. Aryan Motor's (MAHINDRA), Lucknow (10weeks) | 7007558908 |
| 41. | VIPUL YADAV | E-9428/16 | 1. CMERI- Centre of Excellence for Farm Machinery, Ludhiana (6weeks) 2. Northern Region Farm Machinery Testing & Training Institute, Hisar (4weeks) | 9795320921 |
| 42. | VIPIN PRAJAPATI | E-9429/16 | 1. MAA TRADER'S (TAFE), GORAKHPUR (10weeks) | 7985600748 |

INTERNSHIP SCHEDULE (2014-15)

| Place | Batch | A | B | C | D |
|-------|--|---|------------------------------|-----------------------------|-----------------------------|
| | Clinical Phase-I | 15.01.2015 to 25.02.2015 | 15.01.2015 to 25.02.2015 | 15.01.2015 to 25.02.2015 | 15.01.2015 to 25.02.2015 |
| | Zoo and Wild life management LKO | 26.02.2015 to 05 03.2015 | 06.03.2015 to 13.03.2015 | 24.04.2015 to 01.05.2015 | 02.05.2015 to 09.05.2015 |
| | Vaccine production (B.P. section Lucknow) | 06.03.2015 to 13.03.2015 | 14.03.2015 to 21.03.2015 | 02.05.2015 to 09.05.2015 | 11.05.2015 to 18.05.2015 |
| | Deep frozen semen production (LKO) | 14.03.2015 to 21.03.2015 | 26.02.2015 to 05.03.2015 | 11.05.2015 to 18.05.2015 | 24.04.2015 to 01.05.2015 |
| | Poultry production and management (Kumarganj) | 23.03.2015 to 30.03.2015 | 31.03.2015 to 07.04.2015 | 06.03.2015 to 13.03.2015 | 26.02.2015 to 05.03.2015 |
| | Cattle & Buffalo production and management (Kumarganj) | 31.03.2015 to 07.04.2015 | 08.04.2015 to 15 .04.2015 | 14.03.2015 to 21.03.2015 | 14.03.2015 to 21.03.2015 |
| | Fish and duck production and management (Kumarganj) | 08.04.2015 to 15.04.2015 | 16..04.2015 to 23.04.2015 | 23.03.2015 to 30.03.2015 | 23.03.2015 to 30.03.2015 |
| | Equine management and horse riding (Kumarganj) | 16.04.2015 to 23.04.2015 | 24.04.2015 to 01.05.2015 | 31.03.2015 to 07.04.2015 | 31.03.2015 to 07.04.2015 |
| | Disease control campaign (Kumarganj) | 24.04.2015 to 01.05.2015 | 02.05.2015 to 09.05.2015 | 08.04.2015 to 15.04.2015 | 08.04.2015 to 15.04.2015 |
| | Sheep and goat production and management (Kumarganj) | 02.05.2015 to 09.05.2015 | 10.05.2015 to 18.05.2015 | 16.04.2015 to 23.04.2015 | 16.04.2015 to 23.04.2015 |
| | Pig production and management (Kumarganj) | 11.05.2015 to 18.05.2015 | 23.03.2015 to 30.03.2015 | 26.02.2015 to 05.03.2015 | 06.03.2015 to 13.03.2015 |
| | Clinical training phase-II | 19.05.2015to 27.06.2015 | 19.05.2015to 27.06.2015 | 19.05.2015to 27.06.2015 | 19.05.2015to 27.06.2015 |
| | Reporting to Kumarganj Comprehensive examination – Written -Viva-voce | 29.06.2015 30.06.2015 01.07.2015 to on ward | | | |

College of Veterinary Science & A.H.
Internship schedule (2018-19)

Date of registration: 7/1/19

| S. No. | Date | Days | Group A | Group B |
|--------|--------------------|------|---|--|
| 1. | 15/1/19 to 25/1/19 | 11 | Poultry Production and Management, (Kumarganj) | Cattle and buffalo production and management (Kumarganj) |
| 2. | 26/1/19 to 5/2/19 | 11 | Cattle and buffalo production and management, (Kumarganj) | Poultry Production and Management (Kumarganj) |
| 3. | 6/2/19 to 7/3/19 | 30 | Clinical Phase I (Badshahbagh, Lucknow) | Clinical Phase I (Khandasa Veterinary Hospital, Ayodhya) |
| 4. | 8/3/19 to 17/3/19 | 10 | Vaccine Production(B P Section, Lucknow) | Zoo and Wild Life Management (Lucknow) |
| 5. | 18/3/19 to 27/3/19 | 10 | Zoo and Wild Life Management (Lucknow) | Vaccine Production(B P Section, Lucknow) |
| 6. | 28/3/19 to 26/4/19 | 30 | Clinical Phase II (Khandasa Veterinary Hospital, Ayodhya) | Clinical Phase II (Badshahbagh, Lucknow) |
| 7. | 27/4/19 to 31/5/19 | 5 | Deep Frozen Semen Production (Kumarganj) | Equine Management and Horse Riding, (Kumarganj) |
| 8. | 1/5/19 to 5/5/19 | 5 | | Disease control campaign (Kumarganj) |
| 9. | 6/5/19 to 10/5/19 | 5 | Equine Management and Horse Riding, (Kumarganj) | Fish and Duck Production and Management, (Kumarganj) |
| 10. | 11/5/19 to 15/5/19 | 5 | Fish and Duck Production and Management, (Kumarganj) | Pig Production and Management, (Kumarganj) |
| 11. | 16/5/19 to 20/5/19 | 5 | Pig Production and Management, (Kumarganj) | Sheep and goat production and management, (Kumarganj) |
| 12. | 21/5/19 to 25/5/19 | 5 | Sheep and goat production and management, (Kumarganj) | Deep Frozen Semen Production (Kumarganj) |
| 13. | 26/5/19 to 30/5/19 | 5 | Disease control campaign (Kumarganj) | |
| 14. | 1/6/19 to 30/6/19 | 30 | Clinical Phase III (Anand Nagar Bhitari Veterinary Hospital, Ayodhya) | Clinical Phase III (TVCC, Kumarganj) |
| 15. | 1/7/19 to 6/7/19 | 6 | Comprehensive examination | Comprehensive examination |


 11/1/19


 11.01.19

INTERNSHIP SCHEDULE -2021

Date of registration: 1-2/04/2021

| Place \ Batch | A | B |
|---|---|---|
| Clinical Phase | 12.04.2021 to 10.07.2021 (Nearby Veterinary Hospitals) | 12.04.2021 to 10.07.2021 (Nearby Veterinary Hospitals) |
| Zoo and Wild life management (Lucknow) | 12.07.2021 to 21.07.2021 | 22.07.2021 to 31.07.2021 |
| Vaccine production (B.P. section Lucknow) | 22.07.2021 to 31.07.2021 | 12.07.2021 to 21.07.2021 |
| Extended Clinical Phage | 02.08.2021 to 18.08.2021 (Nearby Veterinary Hospitals) | 02.08.2021 to 18.08.2021 (Nearby Veterinary Hospitals) |
| Pig production and management (Kumarganj) | 20.08.2021 to 24.08.2021 | 25.08.2021 to 29.08.2021 |
| Disease control campaign (Kumarganj) | 25.08.2021 to 29.08.2021 | 20.08.2021 to 24.08.2021 |
| Equine management and horse riding (Kumarganj) | 30.08.2021 to 03.09.2021 | 04.09.2021 to 08.09.2021 |
| Sheep and goat production and management (Kumarganj) | 04.09.2021 to 08.09.2021 | 30.08.2021 to 03.09.2021 |
| Cattle and Buffalo production and management (Kumarganj) | 09.09.2021 to 13.09.2021 | 14.09.2021 to 18.09.2021 |
| Poultry production and management (Kumarganj) | 14.09.2021 to 18.09.2021 | 09.09.2021 to 13.09.2021 |
| Deep frozen semen production (Kumarganj) | 20.09.2021 to 24.09.2021 | 25.09.2021 to 28.09.2021 |
| Fish and duck production and management (Kumarganj) | 25.09.2021 to 28.09.2021 | 20.09.2021 to 24.09.2021 |
| Comprehensive examination – Written and Viva-voce | 29.09.2021 to on ward | |

J.P. Singh
27/7/21
Internship In-charge
Kumarganj

INTERNSHIP SCHEDULE -2022 (Old Batch)

Date of registration: 8-9/03/2022

| S. No. | Place of posting | Batch |
|--------|---|--|
| 1. | Disease control campaign (Kumarganj) | 10.03.2022 to 15.03.2022 |
| 2. | Pig production and management (Kumarganj) | 16.03.2022 to 21.03.2022 |
| 3. | Equine management and horse riding (Kumarganj) | 22.03.2022 to 27.03.2020 |
| 4. | Clinical Phase-I | 28.03.2022 to 11.05.2022 (Badshahbagh, Lucknow) |
| 5. | Vaccine production (B.P. section Lucknow) | 12.05.2022 to 20.05.2022 |
| 6. | Zoo and Wild life management (Lucknow) | 21.05.2022 to 31.05.2022 |
| 7. | Sheep and goat production and management (Kumarganj) | 01.06.2022 to 08.06.2022 |
| 8. | Clinical training phase-II | 09.06.2022 to 24.07.2022 (Milkipur Veterinary Hospital, Ayodhya) |
| 9. | Cattle and Buffalo production and management (Kumarganj) | 25.07.2022 to 03.08.2022 |
| 10. | Poultry production and management (Kumarganj) | 04.08.2022 to 12.08.2022 |
| 11. | Deep frozen semen production (Kumarganj) | 13.08.2022 to 24.08.2022 |
| 12. | Fish and duck production and management (Kumarganj) | 25.08.2022 to 04.09.2022 |
| 13. | Comprehensive examination -Written and Viva-voce | 05.09.2022 on word |



(J.P. Singh)

Internship In-charge

INTERNSHIP SCHEDULE -2022 (New Batch)

Date of registration: 1-2/02/2022

| Place | Batch | A | B | C | D |
|---|-------|----------------------|----------------------|----------------------|----------------------|
| Clinical Phase (at state Veterinary Hospitals) | | 10.02.22 to 23.04.22 | 10.02.22 to 23.04.22 | 10.02.22 to 23.04.22 | 10.02.22 to 23.04.22 |
| Zoo and Wild life management (Lucknow) | | 25.04.22 to 15.05.22 | 16.05.22 to 04.06.22 | 10.06.22 to 30.06.22 | 01.07.22 to 20.07.22 |
| Vaccine production (B.P. section Lucknow) | | 16.05.22 to 04.06.22 | 25.04.22 to 15.05.22 | 01.07.22 to 20.07.22 | 10.06.22 to 30.06.22 |
| Pig production and management (Kumarganj) | | 06.06.22 to 20.06.22 | 21.06.22 to 05.07.22 | 25.05.22 to 08.06.22 | 10.05.22 to 24.05.22 |
| Disease control campaign (Kumarganj) | | 21.06.22 to 05.07.22 | 06.06.22 to 20.06.22 | 10.05.22 to 24.05.22 | 25.04.22 to 09.05.22 |
| Equine management and horse riding (Kumarganj) | | 06.07.22 to 20.07.22 | 21.07.22 to 04.08.22 | 25.04.22 to 09.05.22 | 25.05.22 to 08.06.22 |
| Sheep and goat production and management (Kumarganj) | | 21.07.22 to 04.08.22 | 06.07.22 to 20.07.22 | 23.09.22 to 06.10.22 | 22.11.22 to 06.12.22 |
| Cattle and Buffalo production and management (Kumarganj) | | 05.08.22 to 19.08.22 | 20.08.22 to 03.09.22 | 07.11.22 to 21.11.22 | 23.09.22 to 06.10.22 |
| Poultry production and management (Kumarganj) | | 20.08.22 to 03.09.22 | 05.08.22 to 19.08.22 | 22.11.22 to 06.12.22 | 07.11.22 to 21.11.22 |
| Clinical phase at Clinical Complex Kumarganj | | | | | |
| Medical unit | | 05.09.22 to 20.09.22 | 23.10.22 to 07.11.22 | 21.07.22 to 05.08.22 | 07.09.22 to 22.09.22 |
| Surgical unit | | 21.09.22 to 06.10.22 | 07.10.22 to 22.10.22 | 06.08.22 to 21.08.22 | 22.08.22 to 06.09.22 |
| Gynaecological unit | | 07.10.22 to 22.10.22 | 21.09.22 to 06.10.22 | 22.08.22 to 06.09.22 | 06.08.22 to 21.08.22 |
| Diagnostic unit | | 23.10.22 to 07.11.22 | 05.09.22 to 20.09.22 | 07.09.22 to 22.09.22 | 21.07.22 to 05.08.22 |
| Clinical phase at Clinical Complex out of State | | 09.11.22 to 08.12.22 | 09.11.22 to 08.12.22 | 08.10.22 to 05.11.22 | 08.10.22 to 05.11.22 |
| Deep frozen semen production (Kumarganj) | | 10.12.22 to 25.12.22 | 26.12.22 to 09.01.23 | 07.12.22 to 21.12.22 | 07.01.23 to 23.01.23 |
| Milk plant and milk technology (Kumarganj) | | 26.12.22 to 09.01.23 | 10.01.23 to 23.01.23 | 07.01.23 to 23.01.23 | 22.12.22 to 06.01.23 |
| Meat technology/abattoirs (Kumarganj) | | 10.01.23 to 23.01.23 | 10.12.22 to 25.12.22 | 22.12.22 to 06.01.23 | 07.12.22 to 21.12.22 |
| Evaluation –Written and Viva-voce/Presentation/Project report/Record evaluation | | 24.01.23 to on ward | | | |

(Signature)
23/1/22

(J.P. Singh)

Internship In-charge

INTERNSHIP SCHEDULE -2018-19 (SVBPUAT)

Date of registration: 26/2/19

| Place | Batch | A | B | C |
|---|-------|--|---|--|
| Pig production and management (Kumarganj) | | 02.03.2019 to 06.03.2019 | 07.03.2019 to 11.03.2019 | 12.03.2019 to 16.03.2019 |
| Disease control campaign (Kumarganj) | | 12.03.2019 to 16.03.2019 | 02.03.2019 to 06.03.2019 | 07.03.2019 to 11.03.2019 |
| Sheep and goat production and management (Kumarganj) | | 07.03.2019 to 11.03.2019 | 12.03.2019 to 16.03.2019 | 02.03.2019 to 06.03.2019 |
| Clinical Phase-I | | 18.03.2019 to 16.04.2019 I (Badshahbagh, Lucknow) | 18.03.2019 to 16.04.2019 (Anand Nagar Bhitari Veterinary hospital Ayodhya) | 18.03.2019 to 16.04.2019 (Havlac road Lucknow) |
| Zoo and Wild life management (Lucknow) | | 27.04.19 to 06.05.19 | 17.06.19 to 26.06.19 | 17.04.19 to 26.04.19 |
| Vaccine production (B.P. section Lucknow) | | 17.04.19 to 26.04.19 | 06.06.19 to 15.06.19 | 27.04.19 to 06.05.19 |
| Clinical training phase-II | | 07.05.19 to 05.06.19 (Milkipur Veterinary Hospital, Ayodhya) | 07.05.19 to 05.06.19 (Badshahbagh, Lucknow) | 07.05.19 to 05.06.19 (TVC, Kumarganj) |
| Cattle and Buffalo production and management (Kumarganj) | | 17.06.19 to 26.06.19 | 02.07.19 to 11.07.19 | 06.06.19 to 15.06.19 |
| Poultry production and management (Kumarganj) | | 06.06.19 to 15.06.19 | 27.04.19 to 06.05.19 | 17.06.19 to 26.06.19 |
| Deep frozen semen production (Kumarganj) | | 08.07.19 to 17.07.19 | 17.04.19 to 26.04.19 | 27.06.19 to 06.07.19 |
| Fish and duck production and management (Kumarganj) | | 02.07.19 to 06.07.19 | 27.06.19 to 01.07.19 | 12.07.19 to 17.07.19 |
| Equine management and horse riding (Kumarganj) | | 27.06.19 to 01.07.19 | 12.07.19 to 17.07.19 | 07.07.19 to 11.07.19 |
| Clinical training phase-III | | 18.07.19 to 17.08.19 (Khandasa Veterinary Hospital, Ayodhya) | 18.07.19 to 17.08.19 (Milkipur Veterinary Hospital, Ayodhya) | 18.07.19 to 17.08.19 (Barun Veterinary Hospital Ayodhya) |
| Comprehensive examination - Written and Viva-voce | | 19.08.19 to on ward | | |

26/2/19
(J.P. Singh)

INTERNSHIP SCHEDULE -2020
Date of registration: 7-8/01/2020

| Place | Batch | Date of registration: 7-8/01/2020 | | |
|---|-------|---|---|--|
| | | A | B | C |
| Pig production and management (Kumarganj) | | 10.01.2020 to 14.01.2020 | 15.01.2020 to 19.01.2020 | 20.01.2020 to 24.01.2020 |
| Disease control campaign (Kumarganj) | | 15.01.2020 to 19.01.2020 | 20.01.2020 to 24.01.2020 | 10.01.2020 to 14.01.2020 |
| Sheep and goat production and management (Kumarganj) | | 20.01.2020 to 24.01.2020 | 10.01.2020 to 14.01.2020 | 15.01.2020 to 19.01.2020 |
| Clinical Phase-I | | 25.01.2020 to 23.02.2020 (Badshahbagh, Lucknow) | 25.01.2020 to 23.02.2020 (VCC Kumarganj) | 25.01.2020 to 23.02.2020 (Havlac road Lucknow) |
| Equine management and horse riding (Kumarganj) | | 24.02.2020 to 29.02.2020 | 24.02.2020 to 29.02.2020 | 24.02.2020 to 29.02.2020 |
| Zoo and Wild life management (Lucknow) | | 02.03.2020 to 11.03.2020 | 22.04.2020 to 02.05.2020 | 12.03.2020 to 21.03.2020 |
| Vaccine production (B.P. section Lucknow) | | 12.03.2020 to 21.03.2020 | 04.05.2020 to 15.05.2020 | 02.03.2020 to 11.03.2020 |
| Clinical training phase-II | | 23.03.2020 to 21.04.2020 (Milkipur Veterinary Hospital, Ayodhya) | 23.03.2020 to 21.04.2020 (Badshahbagh, Lucknow) | 23.03.2020 to 21.04.2020 (VCC, Kumarganj) |
| Cattle and Buffalo production and management (Kumarganj) | | 22.04.2020 to 29.04.2020 | 02.03.2020 to 08.03.2020 | 30.04.2020 to 07.05.2020 |
| Poultry production and management (Kumarganj) | | 30.04.2020 to 07.05.2020 | 09.03.2020 to 15.03.2020 | 08.05.2020 to 15.05.2020 |
| Deep frozen semen production (Kumarganj) | | 08.05.2020 to 18.05.2020 | 16.05.2020 to 26.05.2020 | 16.05.2020 to 26.05.2020 |
| Fish and duck production and management (Kumarganj) | | 19.05.2020 to 26.05.2020 | 16.03.2020 to 22.03.2020 | 22.04.2020 to 29.04.2020 |
| Clinical training phase-III | | 27.05.2020 to 30.06.2020 (VCC, Kumarganj) | 27.05.2020 to 30.06.2020 (Khandasa Veterinary Hospital, Ayodhya) | 27.05.2020 to 30.06.2020 (Anand Nagar Bhitari Veterinary Hospital Ayodhya) |
| Comprehensive examination – Written and Viva-voce | | 01.07.2020 to on ward | | |

Signature
15.01.20

College of Horticulture & Forestry

Acharya Narendra Deva University of Agriculture & Technology, Kumarganj, Ayodhya (UP)
Details of Students passed out since last five years (2017-18, 2018-19, 2019-20, 2020-21 and 2021-22)

Experiential Learning - (1) Commercial Horticulture
 (2) Processing & Value Addition of fruit & Vegetables

Place of Activity:- (i) MES Horticulture & Vegetable Science
 (ii) Post Harvest laboratory

Experimental Learning Programme (ELP):

Under experiential learning programme students are selected for two areas for specialized training namely processing of fruits and vegetables for value addition and nursery production and management under ELP. Under processing of fruits and vegetables, students send to learn practical processing technology of various seasonal fruits and vegetables regarding their processing of various products like jam, jelly, murabba, candies, pickles, squash, syrup and RTS for marketing and demonstration purposes. The programme was conducted under nursery management by students who raised the nursery of fruits, vegetables and flowers and marketed them. At the end of semester, students submitted work report and their performance were evaluated by a committee constituted by the Dean, college of Horticulture and Forestry.

Year-2017-18

| Sl. No. | Name of Students | I.D. No. | Activity | | | |
|---------|-----------------------|------------|------------------|---|-----------------|---|
| | | | Date | Work | Date | Work |
| 1 | Abhisek Shukla | HF-7830/14 | 24, 25, 26 July | Nursery raising of fruit, vegetable and flowers | 27, 28, 29 July | Aonla Murabba, Mango juice, Karonda pickles |
| 2 | Adarsh Tiwari | HF-7831/14 | 31 July & 1 Aug. | | | |
| 3 | Amit Kumar Singh | HF-7833/14 | 5, 7, 8 Aug | | | |
| 4 | Anil Kumar Verma | HF-7835/14 | 14, 16, 17 Aug | | | |
| 5 | Ankit Singh | HF-7836/14 | 21, 22 23 Aug | | | |
| 6 | Arvind Kumar | HF-7837/14 | 28, 29, 30 Aug | | | |
| 7 | Atul Kumar | HF-7838/14 | 4, 5, 6 Sep | | | |
| 8 | Azad Ahmad | HF-7839/14 | 11, 12, 13 Sept. | | | |
| 9 | Bhupendra Mishra | HF-7840/14 | 18, 19, 20 Sept. | | | |
| 10 | Braj Kiashor | HF-7841/14 | 25, 26, 27 Sept. | | | |
| 11 | Dharam Veer | HF-7842/14 | 3, 4, 5 Oct. | | | |
| 12 | Dharmendra Kumar | HF-7843/14 | 9, 10, 11 Oct. | | | |
| 13 | Gautam Pratap Singh | HF-7844/14 | 16, 17, 18 Oct. | | | |
| 14 | Gyanendra Kumar Verma | HF-7845/14 | 25, 26, 27 Oct. | | | |
| 15 | Indra Jeet | HF-7846/14 | 1, 2, 3 Oct. | | | |
| 16 | Jitendra Kumar Shukla | HF-7847/14 | 8, 9, 10 Nov. | | | |
| 17 | Jitendra Singh | HF-7848/14 | 16, 17, 18 Nov. | | | |
| | | | 23, 24, 25 Nov. | | | |

| | | | | | | |
|----|----------------------------|------------|--|--|--|--|
| 18 | Kehar Raj | HF-7849/14 | | | | |
| 19 | Usha Shukla | HF-7851/14 | | | | |
| 20 | Kripa Shankar Yadav | HF-7852/14 | | | | |
| 21 | Krashna Pratap Singh Yadav | HF-7853/14 | | | | |
| 22 | Kuldeep Kumar Shukla | HF-7854/14 | | | | |
| 23 | Lav Kush Kumar | HF-7855/14 | | | | |
| 24 | Lavkush Pandey | HF-7856/14 | | | | |
| 25 | Manvendra Verma | HF-7857/14 | | | | |
| 26 | Mohammad Salman | HF-7858/14 | | | | |
| 27 | Mo. Jahid | HF-7859/14 | | | | |
| 28 | Mritunjay Rai | HF-7860/14 | | | | |
| 29 | Mukesh Kumar | HF-7861/14 | | | | |
| 30 | Mukesh Kumar | HF-7862/14 | | | | |
| 31 | Nitin Singh | HF-7863/14 | | | | |
| 32 | Nivesh Kumar | HF-7864/14 | | | | |
| 33 | Pawan Kumar | HF-7865/14 | | | | |
| 34 | Pradeep Kumar | HF-7866/14 | | | | |
| 35 | Praveen Kumar | HF-7868/14 | | | | |
| 36 | Pravin Kumar | HF-7869/14 | | | | |
| 37 | Pushpendra Singh Rana | HF-7870/14 | | | | |
| 38 | Rahul Singh | HF-7871/14 | | | | |
| 39 | Rajesh Kumar Pal | HF-7872/14 | | | | |
| 40 | Rakesh Kumar Yadav | HF-7873/14 | | | | |
| 41 | Ram Babu | HF-7874/14 | | | | |
| 42 | Rajneet Singh | HF-7875/14 | | | | |
| 43 | Ravindra Kumar | HF-7876/14 | | | | |
| 44 | Rishabh Kumar | HF-7877/14 | | | | |
| 45 | Rohit Kumar Bharti | HF-7878/14 | | | | |
| 46 | Sachchida Nand | HF-7879/14 | | | | |
| 47 | Sampurna Nand Singh | HF-7880/14 | | | | |
| 48 | Saurabh Singh | HF-7881/14 | | | | |
| 49 | Saurav Kumar | HF-7882/14 | | | | |
| 50 | Shivam Dixit | HF-7883/14 | | | | |
| 51 | Subham Gangawar | HF-7884/14 | | | | |
| 52 | Shubham Gupta | HF-7885/14 | | | | |
| 53 | Shubham Mishra | HF-7886/14 | | | | |
| 54 | Subheer Kumar Yadav | HF-7887/14 | | | | |
| 55 | Tej Prakash | HF-7888/14 | | | | |
| 56 | Vinay Kumar | HF-7890/14 | | | | |



Fig: Marketing and demonstration of processed fruit products by students in Kisan Mela



Fig: Field view of raising nursery at MES Horticulture

Year-2018-19

| Sl. No. | Name of Students | I.D. No. | Activity | | | |
|---------|---------------------|------------|------------------|---|---------------------|---|
| | | | Date | Work | Date | Work |
| 1 | Abhishek Kumar | HF-8613/15 | 23, 24, 25 July | Nursery raising of fruit, vegetable and flowers | 26, 27, 28 July | Aonla Murabba, Mango juice, Karonda pickles |
| 2 | Abhishek Pandey | HF-8614/15 | 30, 31 July | | 1, 2, 3 Aug. | |
| 3 | Ajeet Gupta | HF-8615/15 | 4, 6, 7 Aug | | 8, 9, 10 Aug. | |
| 4 | Amarish Kumar | HF-8616/15 | 13, 14 Aug | | 16, 17, 18 Aug | |
| 5 | Ankit Kumar | HF-8617/15 | 20, 21, 22 Aug | | 23, 24, 25 Aug | |
| 6 | Ankur Tyagi | HF-8618/15 | 28, 29, 30 Aug | | 31 Aug & 1, 3 Sept. | |
| 7 | Arjun Singh | HF-8619/15 | 4, 5, 6 Sep | | 7 & 10, 11 Sept. | |
| 8 | Arvind Kumar | HF-8620/15 | 12, 13, 14 Sept. | | 15, 17, 18 Sept. | |
| 9 | Ashish Dubey | HF-8622/15 | 19, 20, 21 Sept. | | 22, 24, 25 Sept | |
| 10 | Bharat Mishra | HF-8623/15 | 26, 27, 28 Sept. | | 29 Sept. & 1 Oct. | |
| 11 | Bipin Kumar | HF-8624/15 | 3, 4, 5 Oct. | | 6, 8, 9 Oct. | |
| 12 | Brijmohan | HF-8625/15 | 10, 11, 12 Oct. | | 15, 16, 17 Oct. | |
| 13 | Brijesh Kumar Yadav | HF-8626/15 | 18, 20, 22 Oct. | | 23, 24, 25 Oct. | |
| 14 | Devesh Kumar | HF-8627/15 | 26, 27, 29 Oct. | | 30, 31 Oct. | |
| 15 | Dhananjay | HF-8628/15 | 1, 2, 3 Nov. | | 5, 6 Nov. | |
| 16 | Dheeraj Kumar | HF-8629/15 | 12, 13, 14 Nov. | | 15, 16, 17 Nov. | |
| 17 | Dhirendre Kumar | HF-8631/15 | 19, 20, 21 Nov. | | 22, 23, 24 Nov. | |
| 18 | Harishankar Verma | HF-8632/15 | 26, 27, 28 Nov. | | 29, 30 Nov. | |
| 19 | Rajneesh Verma | HF-8649/15 | | | | |
| 20 | Jitendra Singh | HF-8633/15 | | | | |
| 21 | Kaushal Kishor | HF-8635/15 | | | | |
| 22 | Kuldeep | HF-8636/15 | | | | |
| 23 | Lakhvindra Singh | HF-8637/15 | | | | |
| 24 | Neelu Kumari | HF-8638/15 | | | | |
| 25 | Neeraj Kumar | HF-8639/15 | | | | |
| 26 | Nirankar | HF-8640/15 | | | | |
| 27 | Pawan Kumar Verma | HF-8641/15 | | | | |
| 28 | Pradeep Kumar | HF-8642/15 | | | | |
| 29 | Pradeep Kumar verma | HF-8643/15 | | | | |
| 30 | Prakhar Agnihottri | HF-8644/15 | | | | |
| 31 | Puneet Mishra | HF-8645/15 | | | | |
| 32 | Putan Yadav | HF-8646/15 | | | | |
| 33 | Rahul Sachan | HF-8647/15 | | | | |
| 34 | Rahj banshi Yadav | HF-8648/15 | | | | |
| 35 | Ram kishor | HF-8650/15 | | | | |
| 36 | Ram Kumar | HF-8651/15 | | | | |

| | | | | | | |
|----|--------------------|------------|--|--|--|--|
| 37 | Ritika Mehta | HF-8655/15 | | | | |
| 38 | Ramnivas | HF-8652/15 | | | | |
| 39 | Rameshwar Dayal | HF-8653/15 | | | | |
| 40 | Rang Nath Pandey | HF-8654/15 | | | | |
| 41 | Roopendra Kumar | HF-8656/15 | | | | |
| 42 | Roshan Verma | HF-8657/15 | | | | |
| 43 | Sandeep Kumar | HF-8658/15 | | | | |
| 44 | Sandeep Kumar | HF-8659/15 | | | | |
| 45 | Shivam | HF-8661/15 | | | | |
| 46 | Shivam Mishra | HF-8662/15 | | | | |
| 47 | Shivam | HF-8663/15 | | | | |
| 48 | Shubham Singh | HF-8664/15 | | | | |
| 49 | Shyam Kumar | HF-8665/15 | | | | |
| 50 | Sujeet Kumar Patel | HF-8666/15 | | | | |
| 51 | Sunil Kumar | HF-8667/15 | | | | |
| 52 | Vimal Singh | HF-8668/15 | | | | |
| 53 | Vinay Kumar | HF-8669/15 | | | | |
| 54 | vinod Kumar Maurya | HF-8670/15 | | | | |
| 55 | Vipin Kumar | HF-8671/15 | | | | |



Fig: Marketing and demonstration of processed fruit product by students in Kisan Mela

Year- 2019-20

| Sl. No. | Name of Students | I.D. No. | Activity | | | |
|---------|-----------------------------|------------|-------------------|---|------------------|---|
| | | | Date | Work | Date | Work |
| 1 | Adarsh Dubey | HF-9286/16 | 22, 23, 24 July | Nursery raising of fruit, vegetable and flowers | 25, 26, 27 July | Aonla Murabba, Mango juice, Karonda pickles |
| 2 | Ajeet Verma | HF-9288/16 | 29, 30, 31 July | | 1, 2, 3 Aug. | |
| 3 | Alok Singh | HF-9289/16 | 5, 6, 7, Aug | | 8, 9 Aug. | |
| 4 | Anil Kumar Singh | HF-9290/16 | 12, 13, 14, Aug | | 16, 17 Aug | |
| 5 | Ankit Singh | HF-9291/16 | 19, 20, 21 Aug | | 22, 23, 24 Aug | |
| 6 | Anurag Singh | HF-9292/16 | 26, 27, 28 Aug | | 29, 30, 31 Aug | |
| 7 | Arbaz Ali | HF-9293/16 | 2, 3, 4 Sep | | 5, 6, 7 Sep | |
| 8 | Atul Kumar Verma | HF-9294/16 | 9, 10, 11 Sept. | | 12, 13 Sept. | |
| 9 | Atul Pal | HF-9295/16 | 16, 17, 18 Sept. | | 19, 20, 21 Sept | |
| 10 | Bipin Kumar | HF-9296/16 | 23, 24, 25 Sept. | | 26, 27, 28 Sept. | |
| 11 | Deepak Kumar | HF-9298/16 | 30 Sept. & 1 Oct. | | 3, 4, 5 Oct. | |
| 12 | Diksha Sangh Mitra | HF-9299/16 | 7 & 9 Oct. | | 10, 11 Oct. | |
| 13 | Divakar Singh | HF-9300/16 | 14, 15, 16 Oct. | | 17, 18, 19 Oct. | |
| 14 | Gabbu Kumar | HF-9301/16 | 21, 22, 23 Oct. | | 24, 25, 26 Oct. | |
| 15 | Ganga Ram Yadav | HF-9302/16 | 29, 30, 31 Oct. | | 1, 2 Nov. | |
| 16 | Gaurav Mishra | HF-9303/16 | 4, 5, 6 Nov. | | 7 & 8 Nov. | |
| 17 | Gaurav Tiwari | HF-9304/16 | 11, 12, 13 Nov. | | 14, 15, 16 Nov. | |
| 18 | Hemant Kumar | HF-9305/16 | 18, 19, 20 Nov. | | 21, 22, 23 Nov. | |
| 19 | Indra Bahadur Verma | HF-9306/16 | 25, 26, 27 Nov. | | 28, 29, 30 Nov. | |
| 20 | Jeetendra Kumar | HF-9307/16 | | | | |
| 21 | Krishna Singh | HF-9308/16 | | | | |
| 22 | Kumar Ambuj Sahu | HF-9309/16 | | | | |
| 23 | Lokesh Yadav | HF-9310/16 | | | | |
| 24 | Maneesh Kumar Bharti | HF-9311/16 | | | | |
| 25 | Mukesh Pal | HF-9312/16 | | | | |
| 26 | Neetu Saroj | HF-9313/16 | | | | |
| 27 | Raghvendra Prasad Niranjana | HF-9314/16 | | | | |
| 28 | Raksha Ram | HF-9315/16 | | | | |
| 29 | Rohit Kumar Veram | HF-9316/16 | | | | |
| 30 | Shivam Bharati | HF-9317/16 | | | | |
| 31 | Shivam Patel | HF-9318/16 | | | | |
| 32 | Sooraj | HF-9319/16 | | | | |
| 33 | Sunil Kumar | HF-9320/16 | | | | |
| 34 | Umesh Kumar | HF-9322/16 | | | | |
| 35 | Vipin Kumar | HF-9323/16 | | | | |
| 36 | Vipin Kumar | HF-9324/16 | | | | |
| 37 | Virendra Kumar | HF-9325/16 | | | | |

Year-2020-21

| Sl. No. | Name of Students | I.D. No. | Activity | | | |
|---------|------------------------|------------|------------------|---|---------------------|---|
| | | | Date | Work | Date | Work |
| 1 | Abhishek Mishra | HF-9857/17 | 22, 23, 24 July | Nursery raising of fruit, vegetable and flowers | 25 & 27 July | Aonla Murabba, Mango juice, Karonda pickles |
| 2 | Aditya Kumar | HF-9858/17 | 28, 29, 30 July | | 31 July & 1 Aug. | |
| 3 | Ajay Kumar | HF-9859/17 | 3, 4, 5 Aug | | 6 & 7 Aug | |
| 4 | Ajeet Kumar Yadav | HF-9860/17 | 10, 11, 12 Aug. | | 13 & 14 Aug | |
| 5 | Amrit Pal Singh | HF-9861/17 | 17 & 18 Aug | | 19, 20, 21 Aug | |
| 6 | Anil Kumar | HF-9862/17 | 22, 24, 25 Aug | | 26, 27, 28 Aug | |
| 7 | Ankit Kumar Dubey | HF-9863/17 | 29 & 31 Aug | | 1, 2, 3 Sept. | |
| 8 | Arbind Kumar | HF-9864/17 | 4 & 5 Sept. | | 7, 8, 9 Sept. | |
| 9 | Arpit Verma | HF-9865/17 | 10 & 11 Sept. | | 14, 15, 16 Sept | |
| 10 | Ashish Kumar Upadhya | HF-9866/17 | 17, 18, 19 Sept. | | 21, 22, 23 Sept. | |
| 11 | Avnish Kumar | HF-9867/17 | 24, 25, 26 Sept | | 28, 29, 30 Sept. | |
| 12 | Divyansh Patel | HF-9868/17 | 1, 3 Oct. | | 5, 6, 7 Oct. | |
| 13 | Govind Verma | HF-9869/17 | 8 & 9, Oct. | | 12, 13, 14 Oct. | |
| 14 | Himanshu Yadav | HF-9870/17 | 15, 16, 17 Oct. | | 19, 20, 21 Oct. | |
| 15 | Kamlesh Sharma | HF-9871/17 | 22, 23, 24 Oct. | | 26, 27, 28 Oct. | |
| 16 | Kirti Singh | HF-9872/17 | 29, 30, 31 Oct. | | 2, 3, 4 Nov. | |
| 17 | Meraj | HF-9873/17 | 5, 6, 7 Nov. | | 9, 10, 11 Nov. | |
| 18 | Mohit Yadav | HF-9874/17 | 12 & 13 Nov. | | 16, 17, 18 Nov. | |
| 19 | Naveen Kumar | HF-9875/17 | 19, 20, 21 Nov. | | 23, 24, 25 Nov. | |
| 20 | Pankaj Kumar | HF-9878/17 | 26, 27, 28 Nov. | | 30 Nov. & 1, 2 Dec. | |
| 21 | Pankaj Kumar | HF-9879/17 | | | | |
| 22 | Pranshu Gupta | HF-9880/17 | | | | |
| 23 | Raghvendra Pandey | HF-9881/17 | | | | |
| 24 | Rahul Kumar | HF-9882/17 | | | | |
| 25 | Ranjit Singh | HF-9884/17 | | | | |
| 26 | Sachin Gupta | HF-9885/17 | | | | |
| 27 | Sandeep Chaudhary | HF-9886/17 | | | | |
| 28 | Sanjay Kumar | HF-9887/17 | | | | |
| 29 | Satyendra Kumar | HF-9888/17 | | | | |
| 30 | Shailesh Kumar Yadav | HF-9889/17 | | | | |
| 31 | Siddharth Kumar Maurya | HF-9890/17 | | | | |
| 32 | Sudeep Singh | HF-9891/17 | | | | |
| 33 | Tajuddin | HF-9892/17 | | | | |
| 34 | Veer Bhan Keshari | HF-9894/17 | | | | |
| 35 | Vivek Kumar Gaurav | HF-9895/17 | | | | |
| 36 | Vipin Kumar | HF-9896/17 | | | | |

Year-2021-22

| Sl. No. | Name of Students | I.D. No. | Activity | | | |
|---------|-----------------------|------------|-------------------|---|------------------|---|
| | | | Date | Work | Date | Work |
| 1 | Akhilesh Kumar | H-10292/18 | 22, 23, 24 July | Nursery raising of fruit, vegetable and flowers | 26, 27, 28 July | Aonla Murabba, Mango juice, Karonda pickles |
| 2 | Alok | H-10293/18 | 29, 30, 31 July | | 2,3,4 Aug. | |
| 3 | Alok Kumar Rawat | H-10294/18 | 5, 6, 7, Aug | | 9, 10, 11 Aug. | |
| 4 | Ankesh Kumar | H-10296/18 | 12 & 13 Aug | | 16, 17, 18 Aug | |
| 5 | Ankit Kumar Verma | H-10297/18 | 19, 20, 21 Aug | | 23, 24, 25 Aug | |
| 6 | Anshika | H-10298/18 | 26, 27, 28 Aug | | 30, 31 Aug | |
| 7 | Anuj Kumar | H-10300/18 | 1, 2, 3 Sept. | | 4, 6, 7 sept. | |
| 8 | Anurag Sharma | H-10301/18 | 8, 9, 10 Sept. | | 13, 14, 15 Sept. | |
| 9 | Ashish Kumar Singh | H-10302/18 | 16, 17, 18 Sept. | | 20, 21, 22 Sept. | |
| 10 | Ashutosh Pandey | H-10303/18 | 23, 24, 25 Sept. | | 27, 28, 29 sept. | |
| 11 | Balram Rawat | H-10304/18 | 30 Sept. & 1 Oct. | | 4, 5, 6 Oct. | |
| 12 | Dev Prakash | H-10305/18 | 7 & 8 Oct. | | 11, 12, 13 Oct. | |
| 13 | Devendra Mishra | H-10306/18 | 14 & 16 Oct. | | 18, 19, 20 Oct. | |
| 14 | Dhananjay Nidhi Yadav | H-10307/18 | 21, 22, 23 Oct. | | 25, 26, 27 Oct. | |
| 15 | Manish Kumar | H-10308/18 | 28, 29, 30 Oct. | | 1, 2, 3 Nov. | |
| 16 | Mohammad Saheem | H-10309/18 | 8, 9, 10 Nov. | | 11, 12, 13 Nov. | |
| 17 | Mohit Kumar | H-10310/18 | 15, 16, 17 Nov. | | 18, 19, 20 Nov. | |
| 18 | MukeshKumar | H-10311/18 | 22, 23, 24 Nov. | | 25, 26, 27 Nov. | |
| 19 | Nirdesh Chandra Singh | H-10312/18 | | | | |
| 20 | Nitin Singh | H-10313/18 | | | | |
| 21 | Prabhujeet Shukla | H-10314/18 | | | | |
| 22 | Pradeep Kumar | H-10315/18 | | | | |
| 23 | Rajesh Kumar Bhartiya | H-10316/18 | | | | |
| 24 | Rajneesh Kumar | H-10317/18 | | | | |
| 25 | Ratish Kumar | H-10318/18 | | | | |
| 26 | Rohit Singh | H-10319/19 | | | | |
| 27 | SandeepMaurya | H-10320/20 | | | | |
| 28 | ShashankMishra | H-10322/18 | | | | |
| 29 | Shivam Kumar Rajpoot | H-10323/18 | | | | |
| 30 | Shivam Mishra | H-10324/18 | | | | |
| 31 | Shubham Patel | H-10325/18 | | | | |
| 32 | Sumit Chaudhary | H-10326/18 | | | | |
| 33 | Suraj Dwivedi | H-10327/18 | | | | |
| 34 | Suraj Yadav | H-10328/18 | | | | |

| | | | | | | |
|----|-----------------|------------|--|--|--|--|
| 35 | Tanishq Kalyani | H-10329/18 | | | | |
| 36 | Tilak Singh | H-10330/18 | | | | |
| 37 | Vivek Kumar | H-10331/18 | | | | |



Fig: Processed fruit product prepared by students under ELP



Fig: Marketing of fruit products prepared by students under ELP

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

AMAN AWASTHI

ID. No. E-10426/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021



NAHEP



National Agricultural Higher Education Project
CENTRE OF EXCELLENCE FOR DIGITAL FARMING SOLUTIONS FOR ENHANCING PRODUCTIVITY BY
ROBOTS, DRONES AND AGVS

VASANTRAO NAIK MARATHWADA KRISHI VIDYAPEETH
PARBHANI 431 402 (M.S.) INDIA



Certificate

This is to certify that, Mr. AMAN AWASTHI, MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY has successfully completed Four-Week Hands on Training on "Applications of Computer Aided Engineering (CAE) in Agriculture" during 07th June-03rd July, 2021, organized by Center for Advanced Agricultural Science and Technology (CAAST), Centre of Excellence for Digital Farming Solutions for Enhancing Productivity by Robots, Drones and AGVs, VNMKV, Parbhani (MS), under National Agricultural Higher Education Project (NAHEP) Sponsored by Indian Council of Agricultural Research (ICAR), New Delhi and World Bank. The topics covered in the training are introduction of ANSYS MECHANICAL, ANSYS CFD, ANSYS EM and ANSYS LF & HFSS



NAHEP/CAAST/DFSRDA/CAE/061

Nkamthe
(Er. Nilesh Kamthe)
ARK Info solutions
Manager -Sales HE division

(Dr. G. U. SHINDE)
PI, NAHEP & Convenor
VNMKV, Parbhani

(Dr. D.N GOKHALE)
DI & Dean (F/A)
VNMKV, Parbhani

Scanned by PDF Scanner

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

AMIT SHARMA

ID. No. E-10428/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

क्रम संख्या
Sl No.

UV-368

कोर्स कोड
Course Code

A-1

केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 -2015 CERTIFIED INSTITUTE



भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रेक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री अमित शर्मा आत्मज श्री कन्हैया लाल शर्मा को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 31-05-2021 से 25-06-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषयों पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Shri AMIT SHARMA S/o Shri KANHAIYA LAL SHARMA who attended Academic Level training course by this Institute from 31-05-2021 to 25-06-2021 on the following subjects.

- ट्रेक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रेक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिण्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रेक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course conducted through online mode. He/She completed the course successfully.



(Handwritten Signature)

(P.K. PANDEY)
निदेशक
DIRECTOR

दिनांक 25-06-2021
Date :

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ANKIT MAURYA

ID. No. E-10429/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

क्रम संख्या
Sl.No.

UV-1276



कोर्स कोड
Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 -2015 CERTIFIED INSTITUTE

भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रैक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री अंकित मौर्य आत्मज श्री राम भवन मौर्य को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. ANKIT MAURYA S/o Shri RAM BHAWAN MAURYA who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिण्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



Y. K. - J. M. 36

पी. के. पाण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ANURAG

ID. No. E-10434/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

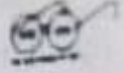
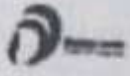
DECEMBER 2021

कम संख्या
Sl No

कॉर्स कोड
Course Code

UV-1277

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 : 2015 CERTIFIED INSTITUTE

भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रेक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री अनुराग आत्मज श्री प्रमोद कुमार को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमिक स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. ANURAG S/o Shri PRAMOD KUMAR who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रेक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रेक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अक्षरशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रेक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



P.K. Pandey

पी. के. पाण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ASHU SINGH

ID. No. E-10435/18

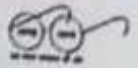
**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021



केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 -2015 CERTIFIED INSTITUTE

भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रैक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री आशु सिंह आत्मज श्री कृष्णानन्द सिंह को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनोंक 31-05-2021 से 25-06-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषयों पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Shri ASHU SINGH S/o Shri KRISHNA NAND SINGH who attended Academic Level training course by this Institute from 31-05-2021 to 25-06-2021 on the following subjects.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिण्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course conducted through online mode. He/She completed the course successfully.



(Handwritten Signature)

(P.K. PANDEY)
निदेशक
DIRECTOR

दिनोंक : 25-06-2021

Date :

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

ASHWANI TIWARI

ID. No. E-10436/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

उप संख्या

Sl.No

UV-1280

कोर्स कोड

Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 : 2015 CERTIFIED INSTITUTE



संघ सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रेक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री अश्वनी तिवारी अल्पज श्री शिवनाथ तिवारी को प्रदान किया गया है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. ASHWANI TIWARI S/o Shri SHIVNATH TIWARI who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रेक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रेक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रेक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन मोड में सफलतापूर्वक पूर्ण किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



P.K. Pandey

श्री. डी. पण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

Md. Afsar Warsi

ID. No. E-10439/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

क्रमा संख्या
Sl No

कोर्स कोड
Course Code

UV-1283

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 -2015 CERTIFIED INSTITUTE

भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रेक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री मो अफसर वारसी आत्मज श्री मो. मुख्तार को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. MOHD. AFSAR WARSII S/o Shri MOHD. MUKHTAR who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रेक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रेक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिण्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रेक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचित।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



पी. के. पाण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

PADAM KANT DUBEY

ID. No. E-10442/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

A Training Report

On

One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

**BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING**

Submitted by

MD. HASNAIN

ID. No. E-10438/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE & TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

कम संख्या
S.No.

UV-1278



कोर्स कोड
Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 -2015 CERTIFIED INSTITUTE



भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रेक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री पदम कान्त दुबे आलमज श्री नीराज कुमार दुबे को प्रदान किया जाता है।
उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत
निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. PADAM KANT DUBEY S/o Shri NIRAJ KUMAR
DUBEY who has attended Academic Level training course by this Institute from 05-07-
2021 to 30-07-2021 on the following subject.

- ट्रेक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रेक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रेक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन वलास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम
सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the
training course successfully.

दिनांक / Date : 30-07-2021



P.K. Pandey

पी.के. पण्डेय / P.K. PANDEY
निदेशक / DIRECTOR



Agricultural Training Institute, Ahmednagar (M.S.)

Reg. No. - MH01D0049023

CERTIFICATE

Sl.No.ATI/ST2021/198

This is to certify that Mr./Miss/Mrs. Md Hasnain from Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya, UP has successfully completed one month online training programme on "Advance Irrigation Technologies and Watershed Development" organized by the Agricultural Training Institute, Ahmednagar during July 01st to July 30th, 2021.



Training Coordinator
Agricultural Training Institute,
Ahmednagar

Director
Agricultural Training Institute,
Ahmednagar

Website: <https://agritrainings.org>

A Training Report

on

One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

**BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING**

Submitted by

RAKESH KUMAR PAL

ID. No. E-10447/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

UV-370

सर्वोच्च
A-1

केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
 AN ISO: 9001:2015 CERTIFIED INSTITUTE



भारत सरकार
 GOVERNMENT OF INDIA,
 कृषि एवं किसान कल्याण मंत्रालय
 MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
 कृषि, सहकारिता एवं किसान कल्याण विभाग
 DEPARTMENT OF AGRICULTURE, CO-OPERATION
 AND FARMERS WELFARE
 ट्रैक्टर नगर, बुंदेली (म.प्र.) TRACTOR NAGAR, BUDN (M.P.)

यह प्रमाण पत्र श्री रकेश कुमार पाल आश्विन श्री आश्विन पाल को प्रदान किया गया है, उन्होंने सफलतापूर्वक दिनांक 31-05-2021 से 25-06-2021 तक अकादमिक स्तर पर अध्ययन के अंतर्गत निम्नलिखित विषयों पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Shri RAKESH KUMAR PAL S/o Shri ABHAYRAJ PAL who attended Academic Level training course by this Institute from 31-05-2021 to 25-06-2021 on the following subjects.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन कक्षा के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण सफलतापूर्वक पूर्ण किया।

The above course conducted through online mode. He/she completed the course successfully.



(Signature)
 (P.K. PANDEY)
 निदेशक
 DIRECTOR

दिनांक: 28-06-2021
 Date

A Training Report

on

One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

**BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING**

Submitted by

PAWAN KUMAR YADAV

ID. No. E-10443/18

**MAHAMAAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

उप विद्या
U.No.

UV-1282

कोर्स कोड
Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 : 2015 CERTIFIED INSTITUTE

भारत सरकार

GOVERNMENT OF INDIA,

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE AND FARMERS WELFARE,

कृषि, सहकारिता एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE

ट्रैक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री पवन कुमार यादव आत्मज श्री रामराज यादव को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम को अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. PAWAN KUMAR YADAV S/o Shri RAMRAJ YADAV who has attended Academic Level training course by this institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



430-MSH

पी. कं. पण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SHUBHAM MISHRA

ID. No. E-10453/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AVODHYA (U.P.) 224229

DECEMBER 2021

उप संख्या
S.No

कोर्स कोड
Course Code

UV-369

A-1

केन्द्रीय

कृषि

मशीनरी

प्रशिक्षण

एवं

परीक्षण

संस्थान

CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 -2015 CERTIFIED INSTITUTE



भारत सरकार

GOVERNMENT OF INDIA,

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE AND FARMERS WELFARE,

कृषि, सहकारिता एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE

ट्रैक्टर नगर, बुदनी (M.P.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री शुभम मिश्रा आत्मज श्री मनोज कुमार को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 31-05-2021 से 25-06-2021 तक अकादमी स्तर पाठ्यक्रम को अंतर्गत निम्नलिखित विषयों पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Shri SHUBHAM MISHRA S/o Shri MANOJ KUMAR who attended Academic Level training course by this Institute from 31-05-2021 to 25-06-2021 on the following subjects.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिण्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course conducted through online mode. He/She completed the course successfully.

दिनांक : 25-06-2021

Date :



(P.K. PANDEY)

निदेशक

DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree
of
BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SAKSHAM JAISWAL

ID. No. E-10449/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

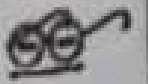
DECEMBER 2021

उप संख्या
Sl No.

UV-1272

उप संख्या
Course Code

A-1



कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
केंद्रीय CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 : 2015 CERTIFIED INSTITUTE

भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रैक्टर नगर, बुधनी (म.प्र.) TRACTOR NAGAR, BUDHNI (M.P.)

यह प्रमाण पत्र श्री सखम जायसवाल आल्मज श्री संदीप जायसवाल को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 06-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम को अंतिम निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. SAKSHAM JAISWAL S/o Shri SANDEEP JAISWAL who has attended Academic Level training course by this institute from 06-07-2021 to 30-07-2021 on the following subject.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- बीघ अंतर्गत एकल सिलिंडर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 8 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन माध्यम से सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



UV-1272

पी. के. पण्डेय / P.K. PANDEY
निर्देशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SHIVANSHU

ID. No. E-10452/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

कम संख्या
S.No.

UV-371

कोर्स कोड
Course Code

A-1

0-

केन्द्रीय
CENTRAL

कृषि
FARM

मशीनरी
MACHINERY

प्रशिक्षण
TRAINING

एवं
AND

परीक्षण
TESTING

संस्थान
INSTITUTE

AN ISO : 9001 : 2015 CERTIFIED INSTITUTE



भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रेक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री शिवानु ज्ञानम श्री सुरेश कुमार को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 31-05-2021 से 25-08-2021 तक अकादमिक स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषयों पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Shri SHIVANSHU S/o Shri SURESH KUMAR who attended Academic Level training course by this institute from 31-05-2021 to 25-08-2021 on the following subjects.

- ट्रेक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रेक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अल्पशक्ति एकाक्षर सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रेक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course conducted through online mode. He/She completed the course successfully.



(Handwritten Signature)

(P.K. PANDEY)
निदेशक
DIRECTOR

दिनांक : 25-08-2021
Date :

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

YASH VARDHAN SINGH

ID. No. E-10455/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

VIMLENDRA MANI PANDEY

ID. No. E-10454/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

उप विद्या
SLNo

UV-1273

कोर्स कोड
Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 : 2015 CERTIFIED INSTITUTE

भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रैक्टर नगर, बुधनी (म.प्र.) TRACTOR NAGAR, BUDHI (M.P.)

यह प्रमाण पत्र श्री यश वर्धन सिंह आलम श्री हर्ष वर्धन सिंह को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. YASH VARDHAN SINGH S/o Shri HARSH VARDHAN SINGH who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



PK PANDEY

श्री. के. पाण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

कम संख्या
S.No.

UV-1279



कोर्स कोड
Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 : 2015 CERTIFIED INSTITUTE

भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रैक्टर नगर, बुधनी (म.प्र.) TRACTOR NAGAR, BUDHNI (M.P.)

यह प्रमाण पत्र श्री विमलेन्द्र मणि पाण्डेय आत्मज श्री वेद प्रकाश पाण्डेय को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. VIMLENDRA MANI PANDEY S/o Shri VED PRAKASH PANDEY who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



PK PANDEY

पी. के. पाण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

NARENDRA KUMAR

ID. No. E-10440/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

UV-1274

सर्वे कोटि
A-1

केन्द्रीय

कृषि

मशीनरी

प्रशिक्षण

एवं

परीक्षण

संस्थान

CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE

AH 250 | 2021 - 2018 CERTIFIED INSTITUTE



भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रेक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री नरेन्द्र कुमार आत्मज श्री रामसावरी वर्मा को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम को अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. NARENDRA KUMAR S/o Shri RAMSAWANRE VARMA who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रेक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रेक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अक्षमक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रेक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लॉस के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date 30-07-2021



P. K. PANDEY

पी. के. पण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

PAWAN SINGH

ID. No. E-10444/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P.) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

इन संख्या
Sl.No

UV-1281

कोर्स कोड
Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 : 2015 CERTIFIED INSTITUTE



भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रैक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री पवन सिंह आत्मज श्री प्रमोद कुमार सिंह को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. PAWAN SINGH S/o Shri PRAMOD KUMAR SINGH who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पांच अश्वशक्ति एकल सिलिण्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन प्लेटफॉर्म के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



पी. के. पण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report
on
One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING

Submitted by

SACHIN SHARMA

ID. No. E-10448/18

**MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING &
TECHNOLOGY,**

AKBARPUR AMBEDEKAR NAGAR (U.P) 224122

**ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE &
TECHNOLOGY**

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021

कृषि संख्या
SI No.

UV-1276

कॉर्स कोड
Course Code

A-1



केंद्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
CENTRAL FARM MACHINERY TRAINING AND TESTING INSTITUTE
AN ISO : 9001 -2015 CERTIFIED INSTITUTE



भारत सरकार
GOVERNMENT OF INDIA,
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE,
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, CO-OPERATION
AND FARMERS WELFARE
ट्रैक्टर नगर, बुदनी (म.प्र.) TRACTOR NAGAR, BUDNI (M.P.)

यह प्रमाण पत्र श्री सचिन शर्मा आलमज श्री श्याम शर्मा को प्रदान किया जाता है, उन्होंने संस्थान द्वारा दिनांक 05-07-2021 से 30-07-2021 तक अकादमी स्तर पाठ्यक्रम के अंतर्गत निम्नलिखित विषय पर प्रशिक्षण प्राप्त किया।

This Certificate is awarded to Mr. SACHIN SHARMA S/o Shri SHYAM SHARMA who has attended Academic Level training course by this Institute from 05-07-2021 to 30-07-2021 on the following subject.

- ट्रैक्टर एवं कृषि मशीनरी का प्रचालन एवं रखरखाव का अध्ययन।
Study of operation and maintenance of tractor and agricultural machinery.
- ट्रैक्टर के विभिन्न कार्य प्रणालियों का अध्ययन।
Study of various working systems of tractor.
- पाँच अश्वशक्ति एकल सिलिन्डर डीजल इंजिन का अध्ययन, प्रचालन, मरम्मत एवं रखरखाव।
Study of operation, repair and maintenance of 5 hp single cylinder diesel engine.
- ट्रैक्टर परीक्षण गतिविधि एवं परीक्षण प्रक्रियाओं से परिचय।
- Introduction to tractor testing activities and testing procedure.

उक्त पाठ्यक्रम ऑनलाइन क्लास के माध्यम से किया गया। उन्होंने उक्त प्रशिक्षण पाठ्यक्रम सफलतापूर्वक पूर्ण किया।

The above course was conducted through online mode. He/She has completed the training course successfully.

दिनांक / Date : 30-07-2021



P.K. PANDEY

पी. के. पाण्डेय / P.K. PANDEY
निदेशक / DIRECTOR

A Training Report

On

One Month Summer Practical Training



In the partial fulfillment of award of the Degree

of

**BACHELOR OF TECHNOLOGY IN
AGRICULTURE ENGINEERING**

Submitted by

Prashant Maurya

ID, No. E-10445/18

MAHAMAYA COLLEGE OF AGRICULTURAL ENGINEERING & TECHNOLOGY,

AKHARPUR AMBEDEKAR NAGAR (U.P.) 224122

ACHARYA NARENDRA DEVA UNIVERSITY OF AGRICULTURE & TECHNOLOGY

KUMARGANJ, AYODHYA (U.P.) 224229

DECEMBER 2021



Agricultural Training Institute, Ahmednagar (M.S.)

Reg. No. :- MHD1D0049023

CERTIFICATE

Sl.No.ATI/ST2021/197

This is to certify that Mr./Miss/Mrs. Prashant Maurya from Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya, UP has successfully completed one month online training programme on "Advance Irrigation Technologies and Watershed Development" organized by the Agricultural Training Institute, Ahmednagar during July 01st to July 30th, 2021.



Training Coordinator
Agricultural Training Institute,
Ahmednagar

Director
Agricultural Training Institute,
Ahmednagar

Website: <https://agritrainings.org>

College of Community Science

In plant training:

Students were placed in different Institutes: institutes of Entrepreneurship Development Lucknow, U.P., Jagrani Hospital, Sitapur Road, Lucknow, Government Food Preservation Centre, Ayodhya, Rohit bakery, Ayodhya and S.D. Hosiery Centre, Ayodhya for In-Plant training in the last semester of their degree programme.



Students preparing bakery product at Rohit bakery Ayodhya during In-plant training



Students learning to use multi-layer fabric cutting machines at S.D. Hosiery centre, Ayodhya during In-plant training



Working with high-speed machine at S.D. Hosiery centre, Ayodhya during In-plant training



Organized games for children during attachment to educational institute during In-plant training.



Student Visited flour mill, Ayodhya during In-plant training

RAWE:

The RAWE programmes were organized in the year 2019-20 (31 Students)) near the campus at Jorium village, Ayodhya. 2020-21(14 students) at their respective village with coordination of KVKs established in their districts due to covid-19 and in the year 2021-22 (13 students) near the campus at Jorium village, Ayodhya.



Students creating Awareness on Health hygiene and sanitation among rural women during RAWE.



Demonstration on income generating skill to community during RAWE



Student's demonstrating weaning food preparation to villagers



Student's demonstrating useful items from waste materials

Programmes Organized by College of Community Science:



Organized Har Ghar Tiranga Champaign at adopted village Jorium



Organized Awareness programme on the occasion of child protection Day at Bawa village.



Children's day celebration at primary school, Jorium



A gosthi was organized for rural women in Jorium village on the occasion of National Justice Day.



Hunar Hatt was organized by college of community Science



Training programme for farm women on the occasion of women farmers day

Students are actively involved in various scientific and social programmes and participated in the following activities during the session 2017-18, 2018-19, 2019-20, 2020-21 and 2021-22.



Farewell party



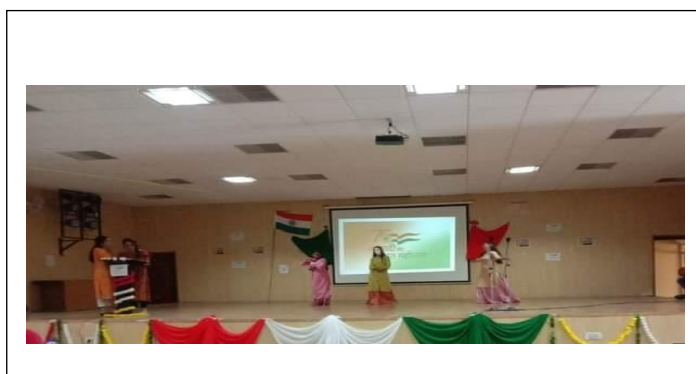
Rangoli competition



Swachhata Abhiyan was organized by College of Community Science on the occasion of Azadi ka Amrit Mahotsav



Tree plantation on the occasion of World Environment Day



Cultural programme organized on occasion of Azadi ka Amrit Mahotsav

