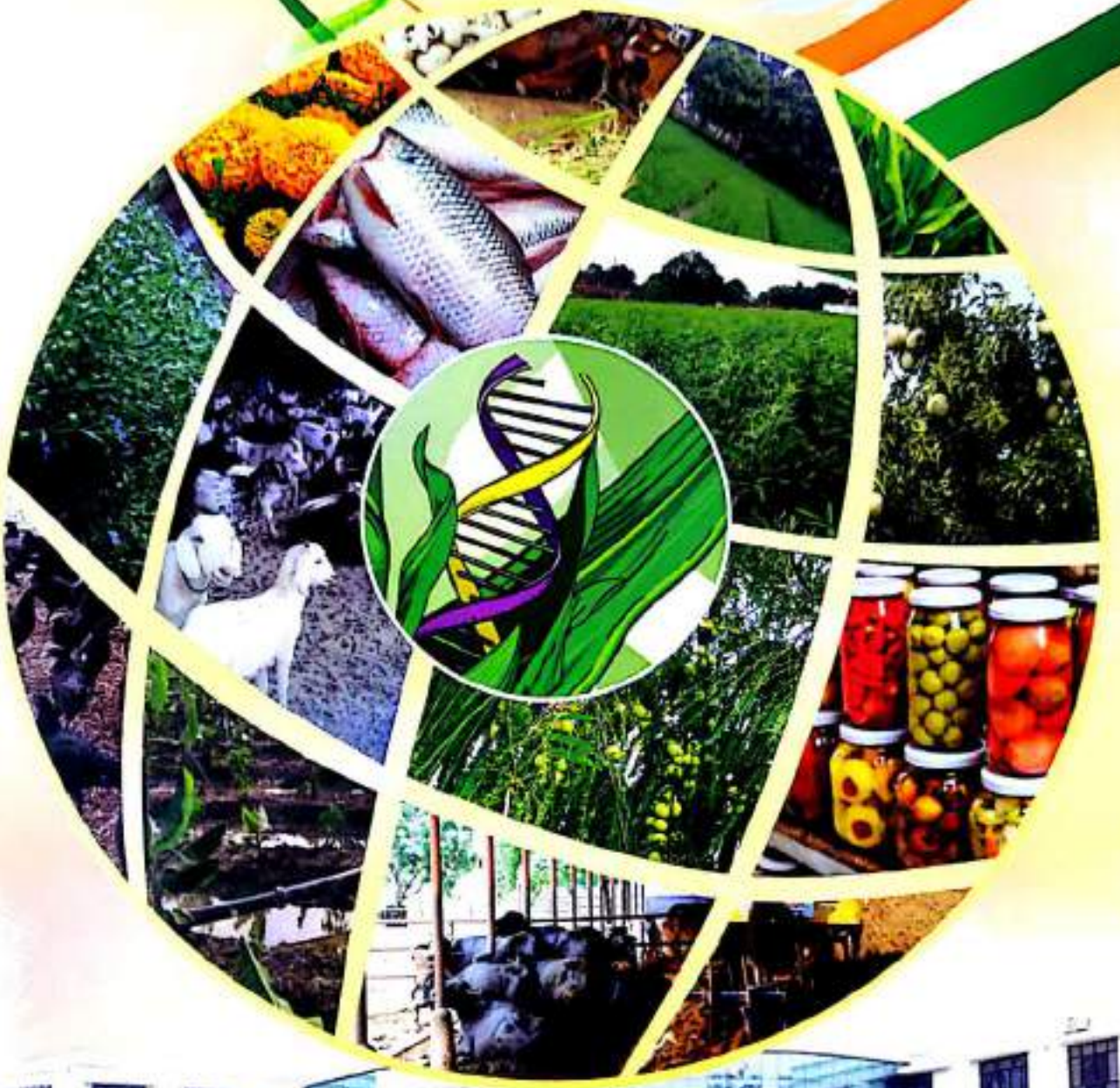
VISION 2030



नरेन्द्र देव कृषि एवं प्रौद्योगिक विश्वविद्यालय

कुमारगंज-224 229, फैजाबाद (उत्तर प्रदेश)

VISION-2030

Narendra Deva University of Agriculture & Technology

Kumarganj-224 229, Faizabad (U.P.)

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कुलपति
पूर्व कृषि आयुक्त, भारत सरकार
Professor J. S. Sandhu
Vice Chancellor
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नरेन्द्र देव कृषि एवं प्रौद्योगिक विश्वविद्यालय
कुमारगंज, फैजाबाद–224 229 (उ.प्र.), भारत
Narendra Deva University of Agriculture & Technology
Kumarganj, Faizabad-224 229 (U.P.) India

FOREWORD

Indian Agriculture is witnessing several arduous challenges like climate change, small and fragmented land holding, migration of labours, cost of quality seeds, high fluctuations in prices and production, undeveloped markets, lack of mechanization, deteriorating soil health, irrigation problems due to uncertain and unreliable rain and lack of agricultural marketing skill. In addition, the demand for agricultural commodities is steeply rising; food preferences of the next-generation consumers are changing; and agriculture sector is striving hard to meet out growing demand. The decelerating profitability of agriculture sector is further dragging behind its performance.

The diverse challenges and constraints as growing population, increasing food, feed and fodder needs, natural resource degradation, climate change, new disease and pests, slow growth in farm income and new global trade regulations demand a paradigm shift in formulating and implementing the agricultural research programmes. Today, there is need of innovation driven agricultural research system to connect inventions with all the stakeholders in the entire food supply chain.

Narendra Deva University of Agriculture and Technology, Kumarganj has privilege of having developed improved varieties of rice, aonla, bel and haldi. The emerging scenario necessitates SAUs to have perspective vision which could be translated through proactive, novel and innovative research approach based on cutting edge science. In this endeavour, Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad, has taken a systematic approach to prepare respective Vision-2030 document highlighting the issues and strategies relevant for the next ten years.

Although the challenges will be much grave in coming years due to poor soil health, shrinking landscape resource, decreasing ground water and overgrowing population but I hope that the analytical approach and forward looking concepts presented in the 'Vision 2030' document will prove a roadmap for the researchers, policymakers, and stakeholders to address the future challenges for growth and development of the agricultural sector of eastern Uttar Pradesh. I would like to express my gratitude to Hon'ble Union Minister for Agriculture Shri Radha Mohan Singh ji, Chief Minister of Uttar Pradesh Shri Yogi Aditya Nath ji and State Agriculture Minister, Shri Surya Pratap Sahi ji for their invaluable guidance in preparing Vision 2030.

I appreciate the efforts put by all the Deans, Directors and chairman and members of coordination cell for preparation of the **Vision 2030** document. I hope the vision will help us to work in the right path to obtain our goals and mission.

(J.S. Sandhu)
Vice Chancellor

PREAMBLE

Narendra Deva University of Agriculture and Technology is the only agriculture university in the eastern Uttar Pradesh spearheading education, research and extension activities in the field of Agriculture, Horticulture, Veterinary Science & Animal Husbandry, Fisheries, Home Science and Agricultural Engineering. The foundation stone of the university was laid down by the then Hon'ble Prime Minister of India late Smt Indira Gandhi on January 15, 1974, at Rice Research Station, Masodha near Faizabad city. Thereafter, the main campus of the university was shifted to Kumarganj, Faizabad and university started functioning by the appointment of first Vice-Chancellor Shri A. D. Pandey (retired IAS) on 10th October, 1975.

Since inception, university has progressed many folds in terms of diversification of agricultural education, human resource development, students' placement, creation of infrastructural facilities required to carry out research in new areas and development of agro-technologies for improving agricultural productivity. University has done tremendous research work in cereals, pulses, oil-seeds, vegetables, medicinal and horticultural crops and veterinary and animal science. It has released a total 180 varieties of cereals, pulses, oil seeds, vegetables, medicinal and horticultural crops and produces breeder as well as foundation seed of different crops every year. The demonstrations of viable technologies to the farmers are done through 22 KVKs and 04 KGKs in eastern part of Uttar Pradesh. The dissemination of technologies is accomplished through FLDs, Training Programmes, Kisan Gosthies and Kisan Melas to solve location specific problems. The institute also undertakes research, teaching and extension activities towards dairy development in the state. It also conducts basic and applied research with the objective to enhance animal productivity, develop new products and practices for the benefit of millions of farmers and consumers.

India is an agrarian country and green revolution put India on global map as second largest country of agriculture product. Today, agriculture and allied sector accounts for 16.4% in Gross Value of Added (GVA) (1st AE, 2017-18) and 7.68 percent of total global agricultural output. It has also fulfilled nutritional requirement of 18% of world population. Uttar Pradesh contributes 17.44% of total food grain production of the country (2015-16). Thus, agriculture has played pivotal role in ensuring food and nutritional security, sustainable development and alleviation of poverty from India. It is the key sector for generating employment opportunities for the vast majority of the population. About 61.5% of Indian population is rural based and dependent on agriculture, however in UP, nearly 85% population lives in rural areas and depends on agriculture for their livelihood. Majority of farmers in Uttar Pradesh have small and fragmented land holding. About 40% of net cultivated area is wholly rain dependent and remaining (60%) is irrigated. The major area of the region is occupied by rice-wheat cropping system having the cropping intensity of 150%. The eastern U.P. contributes about 30% of total food grain production of the state. Rice and wheat are the major crops of this area and are considered as major constituent of National Food Security by contributing about 76% of total food grains production to the national basket. Continuous cropping of rice-wheat system during last 3 decades, however, created many fold problems such as deteriorated soil structure and health; build up of pests and weeds, declining productivity and decrease in profitability etc. So, the need of hour is to give

on emphasis of fertility management, weed management, water management, marketing skills and mechanization of agriculture.

The focus on producing more during the green revolution ensured food security to the millions but it also led to degradation of natural resources. Today, agriculture is facing an unprecedented crisis mainly due to deteriorating soil health, natural calamities, depletion of water levels, and high pesticide and insecticide residues in foods of plant and animal origin. Changing climate condition and global warming have further led to the emergence of new pathogens and pests. Although, science-led and technology driven agriculture has played vital role in the economic transformation of farmers. The emerging challenges and opportunities call for a paradigm shift in the innovation- driven agricultural research system to connect inventions with all the stakeholders in the entire food supply chain.

It is now realized that agriculture sector would have to face several challenges and threats, along with the opportunities that are emanating from both supply and demand perspectives. The preconditions for making agriculture sector more remunerative and sustainable would be to evolve effective mechanisms for technology delivery and to enhance capacity of all stakeholders in the invention-innovation continuum. In order to address challenges and exploit opportunities of agriculture, livestock and fisheries sector, appropriate strategies supported with programs have been suggested. The document reflects the mission of the university committed to accomplish goals in the mandated areas of teaching, research, extension education and technology transfer to meet the expectations of farmers.

The university is grateful to Hon'ble Chief Minister and Agriculture Minister of Uttar Pradesh for their kind cooperation and keen interest in the progress of the university. We are thankful to all the Members of the Governing Body of the University for their Valuable Suggestions in finalizing this Document. I am sure that Vision 2030 would provide a direction to leverage the power of science for achieving higher, sustainable and inclusive agricultural growth.

6th September, 2018

Chapter 1

STATE PROFILE

Uttar Pradesh is the rainbow land where the multi-hued Indian culture has blossomed from times immemorial. This state is blessed with a varsity of geographical land and much cultural diversity, rich and tranquil expanses of meadows, perennial rivers, and dense forests. Fertile soil of Uttar Pradesh has contributed numerous golden chapters to the annals of Indian History. It plays an important role in the education and agriculture of India. The state is garlanded by the Ganga and Yamuna, two pious rivers of Indian mythology. Uttar Pradesh is surrounded by Bihar in the East, Madhya Pradesh in the South, Rajasthan, Delhi, Himachal Pradesh and Haryana in the west, Uttaranchal in the north and Nepal touch the northern borders of Uttar Pradesh. Seven major rivers used to run through it are Ganga, Yamuna, Gomti, Ram Ganga, Ghagra, Betwa and Ken. The total geographical area of Uttar Pradesh is 29.44 million hectare between latitude 24^0 to 31^0 and longitude 77^0 to 84^0 east. Area wise, it is the fourth largest State of India. It accounts for 6.88 percent of total area of the country. The area under forest is 1657023 hectare and the cultivable area is 24170403 hectare (82.1% of total geographical area) and the net area under cultivation is 16573478 hectare (68.5% of cultivable area).

Demography

The state's human population was 199581 thousand in 2011, of which 77.72 percent lived in rural areas followed by 22.28 percent in urban areas. The percentage of rural population of U.P. was higher than national figure of 68.84 percent. Of the total rural population of 155111 thousand, male population accounted for 52.25 percent while female population was 47.75 percent in 2011 in U.P. The male population of total urban population was 52.96 percent against 47.04 percent of female population in 2011. As per census 2001, the total population of workers was 39338 thousand in U.P. of which cultivators accounted for 46.98 percent followed by 15.14 percent, 5.32 percent, and 32.56 percent of agricultural labours, workers of industries and workers engaged in other services respectively. The density of population was 828 people per square kilometer. The sex ratio was 908 women per 1000 men in 2011. About 59 million people of the state were found below poverty line in 2004-05. The literacy rate of the state according to 2011 census was 70 percent which was below the national average of 74 percent. The literacy rate for men was 79 percent against 59 percent for women.

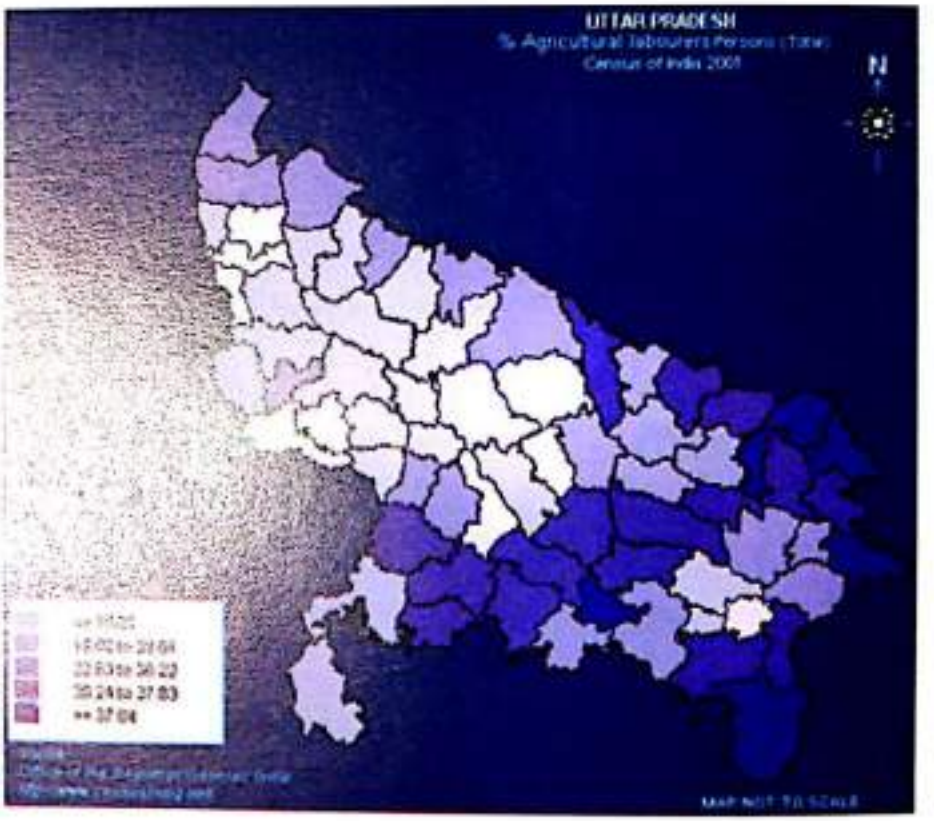
Population: Urban, Rural – Cultivators, Agricultural Labours and Others

S. No.	Particular	Numbers
1	Total Population	199581477
2	Total Male Population	104596415
3	Total Female Population	94985062
4	Total Rural Population Rural Male Population Rural Female Population	155111022 81044655 74066367

5	Total Urban Population	44470455
	Urban Male Population	23551760
	Urban Female Population	20918695
6	Cultivators (Main & marginal)	22167562
	Cultivators (Rural)	21754799
	Cultivator (Urban)	412763
7	Agriculture Labour (Main & Marginal)	13400911
	Rural Agriculture Labour	12951317
	Urban Agriculture Labour	469594

Source: Statistical Diary 2012, Govt. of U.P. Agricultural Statistics at a glance 2012 Govt. of India.

Districts wise percentage of agricultural labourers (main and marginal) in Uttar Pradesh



Agro-Climate

The climate of Uttar Pradesh is predominantly subtropical; however, weather conditions change significantly with location and season. The average temperatures vary from between 12.5– 17.5°C (55–64°F) in January to 27.5–32.5°C (82–91°F) in May and June. The highest temperature recorded in the state was 49.9°C (121.8°F) at Gonda on 8 May 1958. Rainfall in the state ranges from between 1,000–2,000 mm (39–79 in) in the east to 600–1,000 mm (24–39 in) in the west. About 90 percent of the rainfall occurs during the southwest monsoon, lasting from approximately June to September. With most of the rainfall concentrated during this four-month period, floods are a recurring problem and cause heavy damage to crops, life and property, particularly in the eastern part of the state,

where the Himalayan-origin rivers flow with a very low north-south gradient. Periodic failure of monsoons results in drought conditions and crop failure.

Agro and Sub Agro-Climatic Zones

The state is divided into 4 divisions, namely Western (30 districts), Eastern (28 districts), Central (10 districts) and Bundelkhand (7 districts). At present, state has 75 districts, 313 tehsils, 822 blocks and 107452 revenue villages. The State of Uttar Pradesh falls under three agro-climatic zones of the country viz. **Agro Climatic Zone–IV**: Middle Gangetic Plains region, **Agro Climatic Zone–V**: Upper Gangetic Plains region and **Agro Climatic Zone–VIII**: Central Plateau and Hills region.

Eastern Uttar Pradesh falls under the Agro-climatic zone IV which is further divided into three sub-zone

(i) **North Eastern Plains Zone of Uttar Pradesh-**

This sub-zone covers the districts of Baharaich, Gonda, Balrampur, Basti, Gorakhpur, Sidharth Nagar, Maharajgunj, Kushinagar and Deoria. Rainfall is quite high at about 1,210 mm, the climate is moist sub-humid to dry sub-humid. About 73% of the land area is cultivated and about half of the cultivated land is irrigated. Tube wells are the major source of irrigation.

Eastern Plain Zone of Uttar Pradesh-

Azamgarh, Mau, Balia, Faizabad, Ghazipur, Jaunpur, Sant Ravidas Nagar and Varanasi districts fall under this sub zone. Rainfall is adequate with a normal of 1,025mm. The climate is dry sub-humid to moist sub-humid. Over 70% of the land is cultivated and more than 80% of the cultivated area is irrigated.

(iii) **Vindhyan Zone of Uttar Pradesh –**

Mirzapur and Sonbhadra districts of Uttar Pradesh are the Vindhyan sub-zone of the Middle Gangetic Plain zone. Rainfall is adequate at about 1,134 mm; the climate is similar to the other parts of the eastern plains of Uttar Pradesh. However, the region has a very high forest cover of about 40% of the land. Less than a third of this land is cultivated and only a third of this is irrigated.

Cropping Pattern

Eastern Uttar Pradesh fall under Agro-climatic zone IV and soils in this area is alluvium-derived soils mostly khaddar (recent alluvium) and hangar (old alluvium). In some area, the soil is highly calcareous. The soils are loamy and high in organic matter content. Rice, maize, pigeon pea, moong bean crops are common in *kharif* season. In post-rainy (*rabi*) season, wheat, lentil, gram, pea, and sesame and at some places groundnut is grown on residual soil moisture with one or two supplemental irrigation. The important cash crops of the region are sugarcane, potato, tobacco, chillies, turmeric and coriander with supplemental irrigation. Rice–wheat cropping system is more predominant. The dominant soil landscapes, representing the northern plains, constitute gently to very gently sloping lands. Traditionally rain fed and irrigated agriculture is common.

Scope of Farm Mechanization

The farm power availability in the State during the year 2001 was 1.75 kW/ha. The State although highly populated, should progressively adopt power farming for timely and

precise field operation at reduced costs and to maximize utilization of costly inputs and for conservation of natural resources. Precision land levelling and use of efficient irrigation equipment for economizing in water requirements of crops including diversification of crops suiting to water availability are important issues in the region. Mechanization of most of the agricultural operations through custom hiring of high capacity equipment is required so that marginal, small and medium categories of farmers can also take the advantage of mechanization. Crop residue management for feed, fodder and energy is also important. It is presumed that by 2030, about 70% of the tillage, land levelling, sowing/planting, irrigation and threshing of all the important crops will be fully mechanized and other operations for different types of crops will be mechanized upto about 25–30%. In U.P. sale of tractors is maximum. Last year maximum number of tractors about 73,000 tractors was sold in U.P. About more than 50 laser land leveller are being used on custom hire basis

Operational Land Holding

The total geographical area of Uttar Pradesh is 29.44 million hectare and the area under forest is 1657023 hectare. The cultivable area is 24170403 hectare (82.1% of total geographical area) and the net area sown is 16573478 hectare (68.5% of cultivable area). The gross cropped area is 25.415 million hectare and the area sown more than once is 8.841 million hectare with the cropping intensity of 153.54 %. The net irrigated area is 13.313 million hectare (By canals- 25.18 %, by tube wells- 66.94% and by others – 7.88%). The gross irrigated area is 19.218 million hectare and the percentage of net irrigated sown area is 80.3%. The total number of land holdings are 224.57 lakhs out of which 175.07 lakh (78.0%) are marginal farmers, 31.03 lakh (13.8%) small farmers and 18.47 lakh (8.22%) farmers hold land above 2 hectare

The distribution of size of holdings is very much uneven in the state. Out of total operational holdings of 229393 thousand, the marginal holding accounted for 79.20 percent followed by 13.14 percent, 5.78 percent, 1.73 percent and 0.15 percent of small, semi medium, medium and large holdings, respectively during 2010-11.

Operational Land holding (2010-11) in Uttar Pradesh

Sl.No.	Size Group	Area Hectare	Nos.	Size of holding (Hectare)
1	Less than (1.00 ha)	6710629	18167072	0.40
2	Small (1-2 ha)	4200335	3013634	1.40
3	Semi Medium (2-4 ha)	3604951	1326531	2.73
4	Medium (4-10 ha)	2191233	396681	5.55
5	Large (10 and above)	381810	35430	15.20
6	Total	17088960 (100.00)	22939348 (100.00)	0.80

Source: Agricultural Statistics at a glance 2012 Govt. of India.

Agriculture Sector

Uttar Pradesh is the largest producer of food grains in India and accounted for about 17.83 per cent share in the country's total food grain output in 2016-17. Food grain

production in the state in 2016-17 stood at 49,144.6 thousand tonnes. This is partly due to fertile region of the Indo-Gangetic plain and partly due to irrigation facilities. The majority of state's population depends upon farming activities. Major food grains of the state are rice, wheat, maize, millet (bajra), gram, pea and lentils. Pulses production in the state stood at 1,985.0 thousand tonnes in 2017-18. Sugarcane is the most important cash crop throughout the state and Uttar Pradesh is the leading sugarcane producing state in the country.

Horticulture has emerged as one of the major agricultural activities as there has been a substantial increase both in area and production of horticulture crops. Horticulture crops cover a wide variety of fruits, vegetables, tuber crops, mushrooms, floriculture, medicinal and aromatic plants, spices, food processing and bee keeping. Varied agro-climatic condition of Uttar Pradesh permits growing of a large number of these crops throughout the year enabling their availability on a regular basis. U.P. holds vast potential for the development of horticulture. Production of vegetables in 2017-18 is 28,226.19 thousand tonnes and state remains largest producer of vegetables in India. Mango is the major fruit crop of the state. Mango output in Uttar Pradesh is pegged higher at 4.54 million tonnes in 2017-18 as against 4.34 million tonnes in the preceding year.

Livestock Sector

Livestock sector is an important sub-sector of Indian agriculture. It is one of the largest in the world and has been playing an important role in the Indian economy. Their utility has been undergoing a steady transformation driven by the changed agriculture and food consumption patterns. Their importance as a source of quality food has increased due to sustained income and economic growth, a fast growing urban population, burgeoning middle class, changing lifestyles, increasing proportion of women in workforce, improvements in transportation and storage practices and upcoming supermarkets, especially in urban areas. Livestock sector in addition to regular income provides house hold nutritional security and employment to small and marginal rural households.

Uttar Pradesh has the highest buffalo population in the country and the second highest cattle population. The majority of rural population in the state is engaged in livestock and dairying. The proportion of animal products in the total food expenditure is 25.67% in urban areas and 22.62% in rural areas in the country. Uttar Pradesh is recognised as a major milk-producing state in the country, accounting for around 16.83 per cent share in the total milk produced in the country in 2016-17. The state's milk production was around 27.77 million tonnes in 2016-17, growing at a CAGR of 4.21 per cent from 2011-12 to 2016-17. The state has been constantly trying to increase milk production, processing and marketing of milk/milk products and developing infrastructure to promote the dairy industry within the state.

As per Investor Summit 2018, Uttar Pradesh government will focus on Agro & Food Processing. In state budget 2018-19, Rs 15 crore (US$ 2.33 million) has been allocated for National Programme for Dairy Development (NPDD) schemes which will help to boost production of dairy products.

Livestock and poultry population during 19th livestock census – 2012

Species	India (Million Nos.)	Uttar Pradesh (Figures in thousands)
Cattle	190.90	19557
Buffalo	108.70	30625
Sheep	65.07	1354
Goats	135.17	15586
Horses & Ponies	0.63	152
Camels	0.40	8
Pigs	10.29	1334
Mules	0.20	43
Donkeys	0.32	57
Total Livestock	512.06	68715
Poultry	729.21	18668

Fish Production in India ('000 Tonnes)

Year	Marine	Inland	Total
1950-51	534	218	752
1980-81	1555	887	2442
1990-91	2300	1536	3836
2000-01	2811	2845	5656
2009-10	3104	4894	7998
2010-11	3250	4981	8231
2011-12	3372	5294	8666
2012-13	3321	5720	9040
2013-14	3440	6132	9572
2014-15(P)	3655	6509	10164
2015-16(P)	3583	7213	10795

Source : Department of Animal Husbandry, Dairying & Fisheries, Min. of Agriculture, Govt. of India

Chapter 2

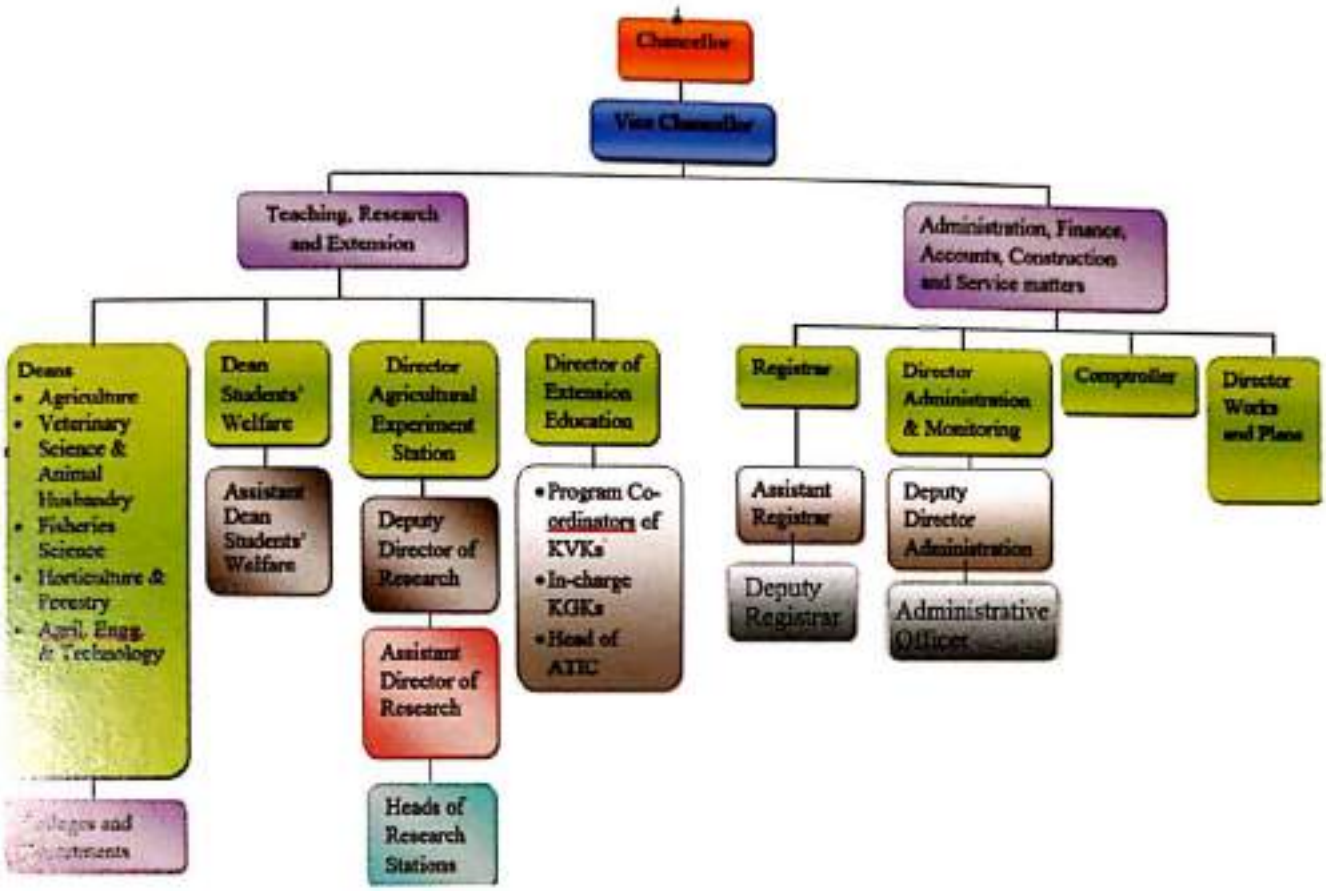
UNIVERSITY PROFILE

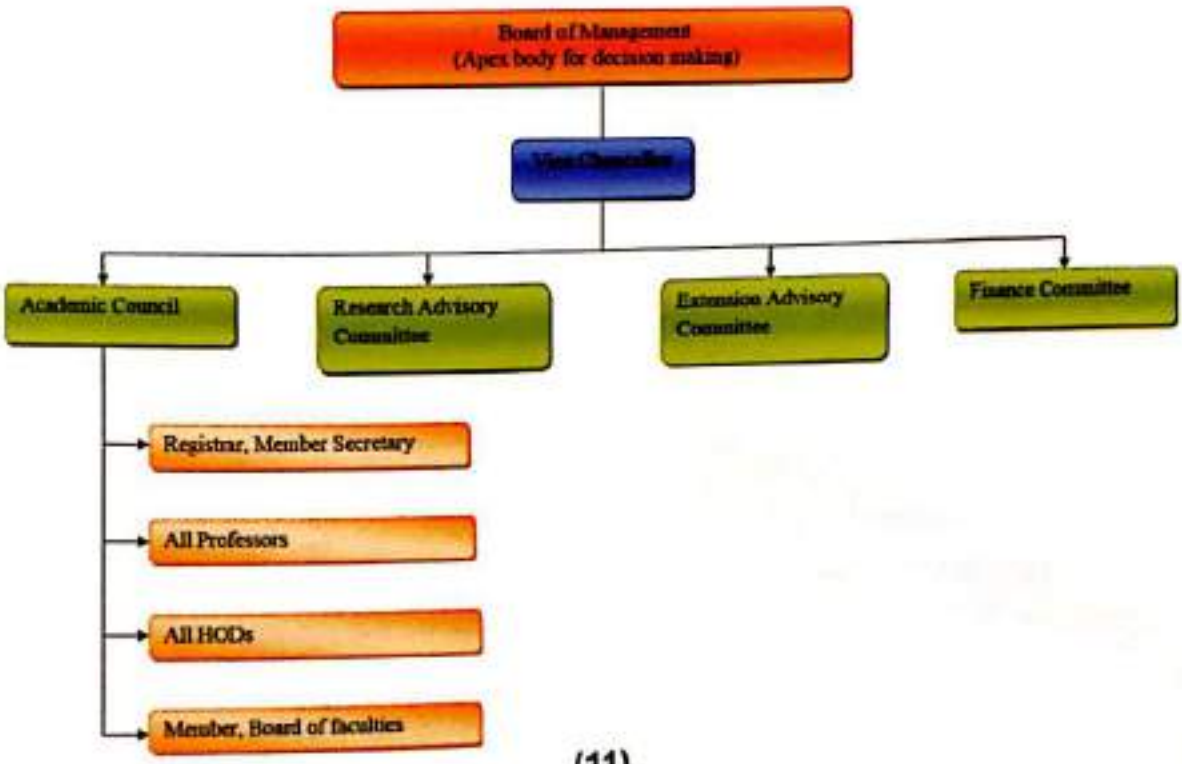
Narendra Deva University of Agriculture and Technology is the only agriculture university in the eastern Uttar Pradesh spearheading education, research and extension activities in the field of Agriculture, Horticulture, Veterinary Science & Animal Husbandry, Fisheries, Home Science and Agricultural Engineering for productivity enhancement and diversification of agriculture and related activities of these areas. Since inception in the year 1975, the university is indulging in development of new varieties of rice, aonla, bael, haldi etc. The university has grown remarkably by addition of several colleges, research stations, Krishi Vigyan Kendras (KVKs) and Centre for Advanced Studies. Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad has been identified as Centre of Excellence in Rice for improving the productivity in rainfed lowland, upland and irrigated rice ecosystems. During last four decades, the university has played a pivotal role in steering up the agricultural growth in the state. At present, the university has seven colleges viz. College of Agriculture, College of Veterinary Science and Animal Husbandry, College of Horticulture and Forestry, College of Fisheries, College of Home sciences (situated in the main campus, Kumarganj), Mahamaya College of Agricultural Engineering and Technology (Ambedkarnagar) and a constituent College of Agriculture at Kotwa, Azamgarh. There are 07 Zonal Agricultural Research Stations (ZARS) in different agro climatic zones, 22 Krishi Vigyan Kendras (KVKs), 4 Krishi Gyan Kendras (KGKs), Agricultural Technology Information Centre (ATIC), Meterological Services and Clinical Services for animals to cater the needs of farmer based research and extension activities in the Purvanchal region of Uttar Pradesh. Recently, 3 more KVKs although sanctioned, are yet to be established to cover rural mass of eastern Uttar Pradesh. A Fisheries Entrepreneurship Training Centre (FETC) has been established at Kemailganj, Gonda in the year 2014 for providing farm advisory services and training to fish farmers. The mandate of this centre includes quality fish seed production, training and demonstration of new technologies of fish production. Collectively, all the colleges, KVKs, KGKs, training centre and research stations of the university are playing a vital role in teaching, research and extension for crop improvement and development of technologies according to the needs of the farmers to improve their livelihood. Board of Management and Academic Council oversee the educational programmes of the university.

Teaching:

`The University awards Bachelors' degree in five disciplines viz. Agriculture, Veterinary Science & Animal Husbandry, Agri. Engineering & Technology, Fisheries Science and Home Science. Masters' degree is awarded in 16 disciplines of Agriculture (Genetics and Plant Breeding, Soil Science and Agricultural Chemistry, Agricultural Entomology, Plant Pathology, Crop Physiology, Agricultural Economics, Extension Education, Nematology, Agricultural Meterology, Agricultural Biochemistry, Agricultural Statistics, Agricultural Biotechnology, Agronomy, Seed Science & Technology, Fruit Science and Vegetable Science), 16 disciplines of Veterinary Science & Animal Husbandry (Veterinary Physiology, Veterinary Biochemistry, Veterinary Anatomy and Histology, Veterinary Public Health and Epidemiology, Livestock Products Technology, Livestock

Production & Management, Animal Genetics & Breeding, Animal Nutrition, Veterinary Microbiology, Veterinary Pathology, Veterinary Pharmacology & Toxicology, Veterinary Medicine, Veterinary Parasitology, Veterinary and Animal Husbandry Extension Education, Veterinary Gynaecology and Obstetrics and Veterinary Surgery & Radiology) and 03 disciplines of Home Science (Food Science & Nutrition, Human Development & Family Studies and Family Resource Management).





Doctorate degree is awarded in 16 disciplines of Agriculture (Genetics and Plant Breeding, Soil Science and Agricultural Chemistry, Agricultural Entomology, Plant Pathology, Crop Physiology, Agricultural Economics, Extension Education, Nematology, Agricultural Metrology, Agricultural Biochemistry, Agricultural Statistics, Agricultural Biotechnology, Agronomy, Seed Science & Technology, Horticulture and Vegetable Science) and 14 disciplines of Veterinary Science & Animal Husbandry (Veterinary Physiology, Veterinary Biochemistry, Veterinary Public Health and Epidemiology, Livestock Production & Management, Animal Genetics & Breeding, Animal Nutrition, Veterinary Microbiology, Veterinary Pathology, Veterinary Pharmacology & Toxicology, Veterinary Medicine, Veterinary Parasitology, Veterinary and Animal Husbandry Extension Education, Veterinary Gynaecology and Obstetrics and Veterinary Surgery & Radiology).

List of the students awarded degree by the university from 1981-2018

College	Undergraduate	Postgraduate	Ph.D.
Agriculture	1930	2433	655
Veterinary Science &A. H.	426	111	1
Horticulture & Forestry	283	83	-
Fisheries	199	-	-
Agriculture Engineering	916	3	-
Home Science	713	54	-

The University has a well established library with a collection of 5700 text books, 2500 thesis, 4800 bound volumes, 3 journals, 12 magazines and 8 news papers. Beside this, University has got office of Dean Student's Welfare (DSW) which sort out all the matters pertaining to student's welfare, conduct and discipline. It acts like a bridge between university administration and students. The office helps the students in getting fee concession, fee reimbursement, scholarships/fellowships; stipend etc. DSW with his team of ADSW, Wardens, Assistant Wardens and other hostel staff proficiently looks after the day to day activities of the hostel. Being a residential university, it has a total of 21 hostels providing comfortable and safe accommodation for 2100 students. The functioning of the hostels is governed by the hostel regulations. Recreational facilities are also available with a common room equipped with a coloured T.V., cable facility and news paper etc. The hostel mess is equipped with refrigerator, water cooler and utensils in adequate quantity. Out of 21 hostels, three hostels are for girls and one for International students. There are separate arrangements for post-graduate and undergraduate students and most of the hostels are either double or triple seated. In each hostel, mess is run and managed by the students on cooperative basis. Generator facility is provided in most of the hostels. In seven hostels Volley ball, Badminton and Table tennis facilities are provided.

The financial assistance is also provided to more than 60% students. There are about 20 types of scholarships such as University, I.C.A.R., U.G.C., Samaj Kalyan Vibhag Scholarship and Mandi Parishad scholarships. The university has a well equipped sports complex having Gymnasium and facilities for indoor as well as outdoor games. A central play ground adequately equipped with gymnasium, physical fitness equipments and a swimming pool (under construction) exists for athletics as well as other game events. As per

the directive of Supreme court and UGC Regulations on "Curbing the Menace of Ragging in Higher Educational Institutions-2009", anti ragging committees and squads are constituted every year.

Research:

The Directorate of Research with its headquarter at Kumarganj campus, governs the research activities in 26 districts belonging to seven revenue divisions viz; Faizabad, Basti, Devipatan, Gorakhpur, Varanasi, Azamgarh and Vindhyachal Region of eastern U.P. under three agro-climatic zones i.e., North Eastern Plain Zone (NEPZ), Eastern Plain Zone (EPZ) and Vindhyan Zone (VZ). The university has seven research stations in different agro-climatic zones as given below:-

Eastern Plain Zone:

- **Main Campus, Kumarganj (Faizabad)-** This centre was established to impart basic education in various disciplines of Agriculture, Horticulture and Forestry, Veterinary Science and Animal Husbandry, Fisheries, Home Science and Biotechnology. However, College of Agriculture Engineering & Technology was later on shifted to Ambedkarnagar. All the colleges have instructional farms and other farms where they provide on farm training and carry out research activities.
- **Crop Research Station (CRS), Masodha (Faizabad)-** It was established in 1951 as rice research station by U.P. Government. After establishment of the university in the year 1975, it was transferred to the university and named as Crop Research Station. The centre has developed 30 rice varieties covering all the ecosystems viz, upland, lowland, irrigated & inland salinity and hybrid rice. At present, 04 research projects financed by different state, national & international agencies are running at this centre.
- **Zonal Agricultural Research Sub-Station (Baribagh, Ankushpur, Ghazipur)** - Centre is established for research on crops and seed production.

North Eastern Plain Zone:

- **Crop Research Station (CRS), Bahraich-** The centre has developed 05 varieties of Jute and 03 varieties of Maize. At present 03 research projects financed by State Government and national agencies are running at the centre.
- **Crop Research Station (CRS), Ghaghraghat (Bahraich)-** It is only deep water research station in the state. At present 03 research projects financed by State Govternment & ICAR are running at the centre. The centre has developed 05 rice varieties in which 03 have been released by State Variety Release Committee (SVRC).
- **Zonal Agriculture Research Station (ZARS), Basuli (Mahrajganj)** – Centre is established for crop research and seed production.

Vindhyan zone

- **Zonal Agricultural Research Station (ZARS), Tissuhi (Mirzapur)-** Centre is established for research on pulse and oil seed crops as well seed production.

The university got world wide recognition during 1980s with the release and popularization of rice variety ***Sarjoo-52*** among the millions of farmers due to its high productivity and suitability in most of the agro climatic zones of India. *Sarjoo 52* replaced most of rice varieties popular in the area at that time. The university is credited with development of total 180 varieties of various important agricultural crops viz. rice, wheat, barley, oilseed crops, pulses, aonla, bael, vegetables and spices over the years.

Recently, nine crop varieties namely – Narendra Dhan-9930111, Narendra Dhan-8015, Narendra Kabuli Gram -1, Narendra Gram-1, Narendra Gram-2, Narendra Alsi-4, Narendra Wheat-5013, Narendra Oat-1101 and Narendra Jute-2013 developed by the university have been identified for release by SVRC. One more linseed variety namely Narendra Alsi -5 has also been identified for release by Central Varietal Identification Committee for cultivation under moisture stress (UTERA) condition.

List of Crop Varieties Developed by NDUAT

Crop	Name of varieties released/Identified	Total Number
Rice	Sarjoo-52, Narendra-1, Narendra-2, Narendra-80, Narendra-118 Narendra-97, Narendra-359, Jal Lahari, Jal Priya, Jal Nidhi, Barh Avrodhi, Narendra Usar Dhan-2, Narendra Usar Dhan-3, Narendra Sankar Dhan-2, Barani Deep, Narendra Sankar Usar Dhan-3, Narendra Dhan-8002, Narendra Dhan-2026 (Richa), Narendra Shushka Samrat (NDR-1045-2),Narendra Lalmati, NDR-2064, Narendra Narayani, Narandra Mayank, Narendra Jalpusp, Swarna Sub-1, Narendra Dhan- 3112-1, Narendra Usar Dhan 2008, NDR- 9930111, NDR- 9930077*, NDR – 9930017*, NDR&2065] NDR &6093, Narendra Usar Dhan 2009, NDGR-201, NDR-1055-6*, NDR-2101, NDR-370133, NDR-370134*, NDR-6244, NDR-4058-7*, Sambha Sub-1, NDR-370135, NDR-6330, IR-64 Sub-1	44
Maize	Shaktiman-1, UMH-8, UMC-10	3
Wheat	Narendra Wheat-1012, Narendra Wheat-1014, Narendra Wheat-1076, Narendra Wheat-2036, Narendra Wheat-1067, Narendra Wheat-4018, NW-5054	7
Barley	Narendra Barley-1, Narendra Barley-2, Narendra Barley-3, Narendra Barley-4, Narendra Barley-1173, NDB-943, NDB-1445, NDB-1465, NDB-1464*	9
Mung	Narendra Mung-1, Narendra Mung-2*	2
Urd	Narendra Urd-1, Narendra Urd-2*	2
Pigeon Pea	Narendra Arhar-1, Narendra Arhar-2, Narendra Arhar-3*	3
Lentil	Narendra Masoor-1, Narendra Masoor-2*	2
Mustard	Narendra Rai-1, Narendra Sarson-2, Narendra Ageti Rai-4, Narendra Rai-8 (NDYR-8), NDYS-2018 (Jagrati), NDRE-07	6
Linseed	NDL- 2004-05, NDL-2002, Narendra Alsi-5*, Narendra Alsi-4	4

Cauliflower	Narendra Gobhi-1	1
Brinjal	Narendra Brinjal-1, Narendra Hybrid Brinjal-1, Narendra Hybrid Brinjal-2, Narendra Hybrid Brinjal-3, Narendra Brinjal-2, Narendra Brinjal-3	6
Tomato	Narendra Tomato-1, Narendra Tomato-2, Narendra Tomato-3, Narendra Tomato-4, Narendra Tomato-5, Narendra Tomato-6, Narendra Tomato-7, Narendra Tomato-8	8
Vegetable Pea	Narendra Sabji Matar-1, Narendra Sabji Matar-2, Narendra Sabji Matar-3, Narendra Sabji Matar-4, Narendra Sabji Matar-5, Narendra Sabji Matar-6	6
Muskmelon	Narendra Kharbuja-1, Narendra Kharbuja-2	2
Colocasia	Narendra Arvi-1, Narendra Arvi-2, PKS-1*	3
Pointed gourd	Narendra Parwal-260, Narendra Parwal-307, Narendra Parwal-604	3
Banda	Narendra Banda-1, Narendra Banda-3*	2
Pumpkin	Narendra Agrim, Narendra Amrit, Narendra Abhooshan (NPH-1), Narendra Upcar	4
Bottle gourd	Narendra Sankar Lauki-4, Narendra Rashmi, Narendra Shishir, Narendra Dharidar, NDBG-104, NDBG-132*, Narendra Madhuri, Narendra Shivani, NDBG-619, NDBG-10	10
Okra	NDO-10*	1
Bitter gourd	Narendra Barahmasi-1, Narendra Barahmasi-2*	2
Cowpea	Narendra Lobia-1, Narendra Lobia-2	2
Sweet Potato	Narendra Shakarkand-9, NDSP-10*	2
Elephant Foot	Narendra Zimikand-5, Narendra Zimikand-9	2
Turmeric	Narendra Turmeric-1, Narendra Turmeric-2, Narendra Turmeric-3, NDH-98*, NDH-8	5
Coriander	Narendra Corinader-1, Narendra Corinader-2*	2
Fenugreek	Narendra Methi-1, Narendra Methi-2*	2
Sauf	Narendra Sauf-1	1
Aonla	Narendra Aonla-4, Narendra Aonla-5, Narendra Aonla-6, Narendra Aonla-7, Narendra Aonla-10, Narendra Aonla-20	6
Bael	Narendra Bael-4, Narendra Bael-5, Narendra Bael-7, Narendra Bael-9, Narendra Bael-17*, Narendra Bael-16	6
Ber	Narendra Ber Selection-1, Narendra Ber Selection-2	2
Opium Poppy	Narendra Posta-1 (Kirtiman)	1
Mandookparni	Vallabh Medha	1
Babchi	IC-111226*	1
Lemongrass	NLG-84*	1

Jute	Reshma, NDC-9102, NDC-2008, NDC-2028,NDJC-2011, NDJC-2013	6
Crotolaria	Narendra Sanai-1	1
Bajra (Forage)	NDFB-2, NDFB-3, NDFB-5, NDFB-11	4
Oat	NDO-1, NDO-2, NDO-10, NDO-711, NDO-1101	5
	Total	**180**

*** Varieties identified in National Workshops/Group Meetings of AICRP's.**

Seed production Farms and land holding:

The university has 16 seed production farms spread over total 599.64 ha geographical area out of which 322.80 ha land is cultivated and rest is uncultivated.

Keeping in view the demand of the farmers, Indian Council of Agricultural Research has sanctioned a project worth Rs. 1.5 crore entitled "**Creation of Seed Hubs Through Indian Institute of Pulse Research**" for production of newly released and farmers' preferred varieties of pulses for seed production.

Research Projects at a Glance:

Based on area specific problems affecting productivity and need of the farmers, the research programmes are formulated by the scientists concerned. At present, 53 research projects are being operated in the university. The lists of on-going research projects financed by different agencies are given below:

Ongoing Research Projects 2018-19,

Sl. No.	Name of Projects	No. of Projects
1.	All India Co-ordinated Research Projects (75% ICAR share and 25% State share)	19
2.	National Initiative on Climate Resilient Agriculture (NICRA) (Network projects 100% financed by ICAR	03
3.	Research Project Financed by International Agency	01
4.	Research Projects Financed by other National/State Agencies	12
5.	Non - Plan Projects 100% Financed by State Govt.	18
Total		**53**

A. List of All India Coordinated Research Projects

S.N.	AICRP (75%ICAR+25%STATE GOVT.)	Year of start
1.	AICRP on Integrated Farming System	1976
2.	AICRP on Irrigation Water management	1980
3.	AICRP for Dry Land Agriculture	1987
4.	AICRP on Rice Improvement	1976
5.	AICRP on Deep Water Rice	1976
6.	AICRP on Wheat & Barley Improvement	1987
7.	AICRP on Chickpea	2001
8.	AICRP on MULLaRP	2001
9.	AICRP on Potential Crops	1995
10.	AICRP on Forage Crops Improvement	2001
11.	AICRP on Agro-Meteorology	1990
13.	AICRP on Agro-Forestry	1987
14.	AICRP on Medicinal & Aromatic Plants	1980
15.	AICRP on Potato Improvement	1987
16.	AICRP on Vegetable Improvement	1980
17.	AICRP on Spices	1995
18.	AICRP on Arid Fruits	1987
19.	AICRP on Maize Improvement	

B. Research Projects Financed by Other National/ State Agencies:

1.	National Seed Project (Crops)- 1- Seed Technology Research 2- Breeder Seed production	1978
2.	Gramin Krishi Mausam Seva (i) Head Quarter, Kumarganj (ii) Bahraich **Ministry of Earth Science (IAAS) Govt. of India**	1993
3.	Mission Integrated Development of Horticulture**(MIDH, Govt. of India)**	2005
4.	Forecasting Agricultural output using space, agro-meteorology and land based observations (FASAL) **Ministry of Earth Science (Govt. of India**)	2010
5.	Development of High Yielding salt tolerant rice varieties through marker assisted back cross breeding and identification of SALTOL QTL for reproductive stage salinity tolerance **(DBT) Govt. of India**	2015
6.	Creation of Seed Hubs for increasing indigenous production of pulses in India **(NFSM)**	2016-17 to 2017-18
7.	Establishment of Molecular Laboratory for identification of physio molecular traits in the way of submergence & drought dual tolerance rice varieties for rain-fed low land areas of Eastern U.P. **(RKVY)**	2016-17
8.	Collection, characterization, evaluation, maintenance and registration of minor seed spices grown in farmers' field **PPV & FRA (GOI)**	2017-18

9.	Conservation, Propagation & Genetic Improvement of Sahiwal Cattle in eastern U.P. **(RKVY)**	2017-18
10.	Capacity Building and Technology Demonstration on Processing of local fruits and vegetables for alternate livelihood of Tharu Tribe Women. - **(DST, GOI)**	2017-18
11.	Centre of Excellence in Rice **(State Govt.)**	2018-19
12.	Frozen Cemen Bank for Indigenous Livestock **(RKVY)**	2018-19
13.	Strengthening of Veterinary Clinical Complex (**RKVY)**	2018-19

C. Schemes 100% Financed by ICAR:

Network projects of NICRA are running on Agro-Meterology (2010 to contd.), Dry Land Agriculture (2010 to contd.), Mega seed Project (2016-17).

D. Research Project Financed by International Agencies:

Stress tolerant rice for poor farmers of Africa and South Asia **(STRASA) submergence & Salinity** is at Head Quarter and CRS, Masodha.

E. Non - Plan Projects 100% Financed by State Govt.

Non - Plan Projects financed by State Govt. include Shodh scheme on Rice (Masodha), Oil Seed Project, Pulses Project, Vegetable Crops, Crop Physiology, Foundation and breeder seed production unit and strengthening of seed testing lab, Flood Rice Research Scheme, (Ghaghragaht), Jute Establishment Scheme (Bahraich), Production and processing of fruits in usar wasteland. Besides this, 07 NARP projects run by university have been adjusted.

Extension:

The university has adopted integrated system of teaching, research and extension, which emphasizes a balanced approach to the development, assessment and refinement of the new knowledge and skills, dissemination of knowledge among the farmers of the eastern Uttar Pradesh and its application by the farmers who form the backbone of India's economy. The university is committed to all round development in the country in general and eastern Uttar Pradesh in particular through its concerted efforts and innovative education, research and extension programmes. During last 40 years of its legendary journey, the university's extension work in front line areas has been recognized nationally and internationally.

The extension education activities of the university started in June 1977 with only a few Subject Matter Specialists at the university headquarter. The Directorate of Extension is actively involved in transfer of technologies emerging out of research laboratories to the farmers' field and getting feedback from farmers for further refinement. Presently, the extension activities are being carried out through 22 Krishi Vigyan Kendras (KVKs) and 4 KGKs located in different districts of eastern Uttar Pradesh with the vision of Self-reliant, healthy rural populous with rich agricultural knowledge and good marketing intelligence.

The Director Extension is the Chief Executive of the Directorate. He is assisted by one Additional Director, One Senior Extension officer, One Associate Director, three Extension Specialists, nine SMSs and supporting staffs. The Directorate is disseminating the technically feasible, economically viable and socially acceptable agricultural technologies among the rural people and stakeholders in the best possible manner. It is serving through

Farm Advisory, Information and Communication Services, Training and Agricultural Technology Information Centre (ATIC) as given below;

Agriculture Technology Information Centre (ATIC)

Agricultural Technology Information Centre is a single window delivery system of the university from where the farmers can purchase the required inputs and get latest technology related to different aspects of agriculture. Various scientists of different constituent colleges /Subject Matter Specialists also provide solution of farmers' problem at ATIC with the objectives:

- Providing single window delivery system of all agricultural inputs and technology to the farmers.
- Diagnostic services related to agriculture and allied fields.
- Seeking feedback from farmers.
- Help Line Service to the farmers.

Krishi Vigyan Kendra

There were initially six Farm Science Centres (KVKs) under Directorate of Extension. These old centres were established in Bahraich (1985), Basti (1985), Ballia, (1989) Mau (1989), Varanasi (1990) and Siddharthnagar (2002) districts with the financial assistance of ICAR, New Delhi. With the growth of university, Directorate of Extension also expanded its domain with the establishment of KVKs at Gorakhpur, Maharajganj, Sonbhadra, Masodha, Haidergarh, Azamgarh, Jaunpur, Chandauli, Balrampur, St. Kabirnagar and Ambedkarnagar. Presently, a total of 22 KVKs are affiliated with the university and three more KVKs are in the process. The main objectives of these Kendras are as under.

- Organizing long-term vocational training courses in agricultural and allied vocation for the farmers and farm - women with emphasis on "Learning by doing" for generating self-employment opportunities.
- Implementation of Front Line Demonstrations on various crops to generate production data and feedback information.
- On farm testing trial on major crops and other related enterprises with the consideration to existing farming situations.
- Imparting in-service training to update the knowledge of extension personnel and skill within the area of operation with emerging advances in agricultural research on regular basis.

Scenario of crops grown in eastern Uttar Pradesh

The main cereal crops grown under eastern Uttar Pradesh are paddy, maize, jowar, bajra, wheat and barley; among pulses pigeon pea, chick pea, lentil, field pea, urdbean and mungbean; and among oilseeds, rapeseed, mustard, sesame and linseed are grown in a considerable area. Rice and wheat are the major food grain crops of eastern Uttar Pradesh. Rice (*Oryza sativa* L.) and wheat (*Triticum aestivum* L.) is the most important crop sequence in India, occupying 60-70% of the total cultivated area in eastern Uttar Pradesh.

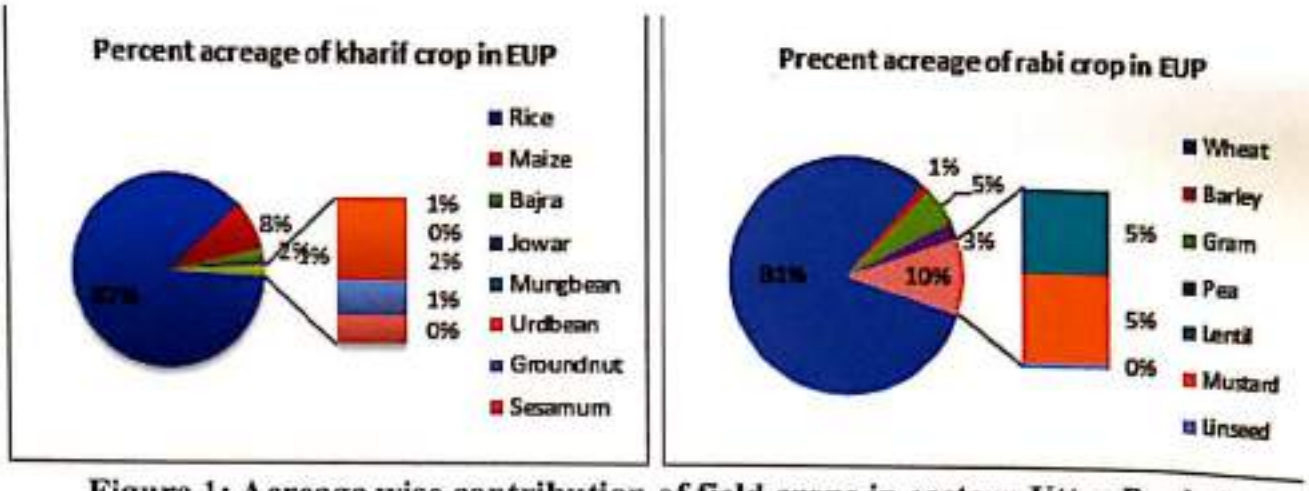


Figure 1: Acreage wise contribution of field crops in eastern Uttar Pradesh

Crop yield gaps in eastern Uttar Pradesh

Table 1: Yield gaps in *kharif* crops at different agro climatic zone in eastern Uttar Pradesh

Crop	Agro climatic zone	Yield (q/ha)			Yield gap (%)
		Average actual farm yield	Average demo yield	Yield gap or Extension gap	
Cereals					
Rice	NEPZ	21.45	43.25	21.80	50.40
	EPZ	21.99	45.02	23.03	51.16
	VZ	19.32	32.22	12.90	40.04
Maize	NEPZ	11.13	28.13	17.00	60.43
	EPZ	13.07	29.42	16.35	55.57
	VZ	08.81	18.94	10.13	53.48
Bajra	NEPZ	17.62	21.75	04.13	18.99
	EPZ	11.23	19.89	08.66	43.54
	VZ	12.52	15.28	02.76	18.06
Jowar	NEPZ	07.30	18.20	10.90	59.89
	EPZ	10.60	19.75	09.15	46.33
	VZ	08.27	13.20	04.93	37.35

Pulses					
Pigeon pea	NEPZ	07.09	15.00	07.91	52.73
	EPZ	09.47	15.45	05.98	38.71
	VZ	07.11	14.25	07.14	50.11
Urdbean	NEPZ	06.75	10.80	04.05	37.50
	EPZ	06.35	10.50	04.15	39.52
	VZ	05.80	08.50	02.70	31.76
Oilseed					
Groundnut	NEPZ	10.67	15.80	05.13	32.47
	EPZ	08.20	14.85	06.65	44.78
	VZ	17.31	20.50	03.19	15.56

Note:- NEPZ – North Eastern Plain Zone, EPZ – Eastern Plain Zone, VZ – Vindhyan Zone

Higher yield gaps in all the *kharif* crops grown in all zones of eastern UP suggest much scope for yield enhancement in these crops of the region.

Table 2: Yield gaps in *rabi* crops at different agro climatic zone in eastern Uttar Pradesh

Crop	Agro climatic zone	Yield (q/ha)			Yield gap (%)
		Average actual farm yield	Average demo yield	Yield gap or Extension gap	
Cereals					
Wheat	NEPZ	29.34	42.00	12.66	30.14
	EPZ	28.81	41.36	12.55	30.34
	VZ	22.76	30.45	07.69	25.25
Barley	NEPZ	25.98	40.28	14.30	35.50
	EPZ	22.32	38.50	16.18	42.03
	VZ	10.36	28.75	18.39	63.97

Pulses					
Chick pea	NEPZ	09.11	14.50	05.39	37.17
	EPZ	10.82	15.68	04.86	30.99
	VZ	10.55	13.00	02.45	18.85
Field pea	NEPZ	11.65	16.28	04.63	28.44
	EPZ	13.71	18.15	04.44	24.46
	VZ	12.21	15.85	03.64	22.97
Lentil	NEPZ	07.66	15.20	07.54	49.61
	EPZ	08.98	15.90	06.92	43.52
	VZ	05.48	12.80	07.32	57.19
Oilseed					
Mustard	NEPZ	09.26	15.20	05.94	39.08
	EPZ	11.41	16.45	05.04	30.64
	VZ	05.67	11.65	05.98	51.33
Linseed	NEPZ	04.58	10.20	05.62	55.10
	EPZ	03.45	10.50	07.05	67.14
	VZ	03.79	07.25	03.46	47.72

Note: NEPZ – North Eastern Plain Zone, EPZ – Eastern Plain Zone, VZ – Vindhyan Zone

The gap in the yields indicates that there is big scope to increase the yield of crops in the region at farmers' fields by adopting the recommended package of practices. Therefore, to bridge the gaps, there is a need to give due emphasis on transfer of improved technologies and management practices through strengthening of extension network. More and more use of latest production technologies in forthcoming years with high yielding varieties will subsequently change this alarming trend of galloping yield gaps.

Factors causing yield gaps in crops

The major constraints, which cause yield gaps in eastern Uttar Pradesh, are small and fragmented land holdings, injudicious use of fertilizers, poor weed management, lack of irrigation at proper time, faulty crop rotation, non-availability of improved seeds, poor management of problematic soils, lack of marketing facilities and lack of mechanization.

Strategies for minimizing yield gaps

Concerted efforts are needed to bridge the yield gap through translation of prioritized production constraints into research objectives and allocating resources to research and development. At the same time, development of infrastructure and rural institutions are essential to further accelerate and sustain the productivity growth in the region. It is also essential to promote collaboration among research, extension, NGOs, and private sector to develop appropriate technologies with a view to narrowing yield gaps.

Chapter 3

VISION AND STRATEGIES

Although India attained self-sufficiency in food grains quite some time back but growing population and rising per capita income have generated increased demand for food. While the population is likely to increase to more than 1.6 billion by 2030, the food demand is expected to rise up to ~300 million tonnes (MT). Ensuring sustained food, nutrition and livelihood security along with environmental security for all, will remain the major goals of the university. The university will strive to achieve these goals through development of improved agricultural technologies, evolving new high yielding environment-friendly varieties, propagation of high yielding cattle and buffalo breeds in the eastern Uttar Pradesh to contribute in Indian agriculture and livestock sector and to ensure food for all.

In order to achieve the goals to strengthen the education, research and extension services, the university will adopt various approaches along with performance measures as presented in the following Table:

S.N.	Goal	Approach	Performance measure
Education			
1.	Faculty up gradation	➢ Capacity building through national/International training of faculty members on modern technologies and post doctorate fellowship. ➢ Participation and organization of National and International Symposium, Workshops and Conference to provide versatile exposure.	➢ Creation of globally competent manpower in agriculture and allied fields. ➢ Up-gradation of faculty resulting in quality education and research.
2.	Strengthening institutional capacities and facilities for UG teaching	➢ Modernization of infrastructure, laboratories, creation of facilities, generation of new aids and modules in teaching. ➢ Internalized problem solving approach in curricula (increase analytical skills, experiential learning and greater focus on science and processes). ➢ Effective co-ordination of multi-disciplinary education. ➢ Strengthening of UG and starting of diploma program in agro processing and rural industries. ➢ Establishment of Basic Engineering Departments. ➢ Introduction of specialized courses in important areas of fisheries science.	➢ Creation of competent agriculturist, veterinarian, engineers and scientists in other fields. ➢ Enhanced human resources befitting the global competition.

3.	Improvement in quality of higher agricultural education	➢ Strengthening facilities for higher education in agriculture and allied field. ➢ To provide the education regarding day to day developments to young people in different areas of agriculture and allied sector. ➢ Foster linkages and collaborations with national and international organizations. ➢ National/ International faculty/ student exchange. ➢ Strengthening of instructional farm facilities to provide better teaching, research environment to the students.	➢ Enhanced capacity of human resource in research through talent management for overcoming new and complex challenges.
4.	Amendment in examination system	➢Creation of Computer aided Teaching and Examination system. ➢Installation of CCTV camera in examination hall for free and fair examination. ➢Implementation of quiz system in PG program. ➢Design and development of suitable answer sheets including OMR sheet in UG program. ➢ Use of information technology in evaluating students (web cams).	➢ To meet out future challenges in education. ➢ Speed and accuracy in examination results. ➢ Enhanced competence of students for examination of national and international repute.
5.	Establishment of College of Agricultural Biotechnology	➢UG, PG and Ph.D. program in Agricultural Biotechnology. ➢Conduct training in the field of biotechnology and Bioinformatics ➢ To conduct research in the advanced area of biotechnology and communicate knowledge to beneficiaries.	➢ Competent human resource in Agricultural Biotechnology
6.	Establishment of College of Agribusiness Management	➢UG, PG and Ph.D. program in Agribusiness Management and development of course curriculum. ➢ To foster technically- sound youngsters who can apply their acquired knowledge and skills to diversify and industrialize agriculture for socio-economic transformation of the rural society.	➢ Graduates and postgraduates with entrepreneurial skills who can provide employment to unemployed destitute rural and urban youths. ➢ Solution for the managerial problems of stakeholders. ➢ Enhanced marketing skill of farmers.

		➢ MOUs with agro -based industries. ➢ Innovation of new management tools and techniques. ➢ Creation of need based learning modules. ➢ Business models to link farmers directly with markets.	
Research			
College of Agriculture			
1.	Designing climate resilient crop varieties through phenomics and genetic up-gradation through hybridization	➢ Development of genotypes for early, late heat tolerance and short duration rice and wheat varieties for climate change and input responsive hybrids ➢ Development of high yielding, medium, late maturing and cytoplasmic genic male sterility (CGMS) system and hybrid development in pigeon pea ➢ Exploitation of genetic variability for resistance to biotic and abiotic stress through use of wild relative's rice, wheat, vegetables etc. ➢ Use of synthetic germplasm for the development of new plant type in wheat. ➢ Gene pyramiding for the development of disease resistant varieties in mandate crops. ➢ Development of physiologically efficient plant types in mandate crops. ➢ Bio-fortification of staple crops with macro and micro-nutrients to improve dietary values.	➢ Evolvement of basic potential genetic materials for further research work. ➢ Development of crop varieties/hybrids suitable for changed climatic conditions to meet out the food security for all. ➢ Enhancement of total production and productivity in mandate crop plants.
2.	Germplasm maintenance and utilization	➢ Collection, conservation and evaluation of germplasm of crop plants. ➢ Identification of potential donor parents and utilization of resistance sources against major biotic and abiotic stresses in mandate crops. ➢ Cataloguing of accessions based on morphological, phenotypic and genetic characteristics in crop plants.	➢ Utilization of economic traits in crop improvement program. ➢ Enhanced biodiversity of mandate crop plants. ➢ Documentation of available germplasm in crop plants for further utilization in breeding program.

3.	Breeding for yield and quality improvement	➢ Development of high yielding cultivars with early and synchronize maturity amenable to machine harvesting in the mandate crops. ➢ Exploitation of genetic variability for milking characteristics and resistance to stored grain pests. ➢ Development of efficient criteria for selection and breeding methodologies for simultaneous improvement of yield and quality parameters. ➢ Application of biotechnology and tissue culture for development of inbred and transgenic varieties for various purposes selection for disease and drought resistance.	➢ Improved varieties/hybrids of crop plants with better yield and quality attributes. ➢ Development of efficient criteria for selection, breeding methodologies for simultaneous improvement of yield and quality parameters.
4.	Bio-control of insects, pests and diseases	➢ Screening and research on beneficial microbes and insects for control of pests and diseases. ➢ Testing of field performance of bio-control agents, for acclimatization and sustainability in ecosystem. ➢ Standardization and quality production of bio-control agents.	➢ Production of effective bio - agents for control of pests/diseases. ➢ Improvement in quality of agricultural produce, *i.e.* free from pesticides residue. ➢ Reduction in soil, water and environment contamination / pollution.
5.	Integrated pest management	➢ Development of guideline for eco-friendly, non-chemical methods, and integrated pest and disease management. ➢ Quantification of pesticide residues in agricultural produce.	➢ Efficient Integrated Pest Management (IPM) & Integrated Disease Management (IDM) practices.
6.	Technology for organic farming including bio-fertilizer & integrated plant nutrient management	➢ Development of enriched organic manure and research on farm residue recycling. ➢ Testing of efficient strains of N-fixing and P-solubilizing microbes. ➢ Quality standards of organically raised farm produce. ➢ Carbon sequestration.	➢ Improved soil health and productivity.

7.	Development of dry farming and water management technologies	➢ Assessment of different cropping systems based on water availability. ➢ Increasing water use efficiency through adoption of micro-irrigation system. ➢ Development of low cost technologies for *in situ* moisture conservation. ➢ Contingent crop planning. ➢ Integrated farming systems for small and marginal farmers.	➢ Improved water use efficiency and production of crops. ➢ Availability of food grains in adverse situation.
8.	Integrated weed management	➢ Development of guidelines for incorporating the non-chemical methods (cultural/mechanical and agronomic manipulation) with chemical methods. ➢ Assessment of latest herbicides and optimizing their dose and time of application and clarify the factors affecting their efficiency. ➢ Quantification of herbicide residues in soil, water and plant parts and their consequent entry in the food chain. ➢ Development of management techniques to mitigate the negative impact of herbicide residues.	➢ Efficient integrated weed management practices. ➢ Minimize the ill effects of herbicide residues in plant and soil.
9.	Technologies for improvement/restoration of soil health	➢ Development of sustainable, low cost technologies for the reclamation of salt affected soils and stable cropping systems for various ecosystems. ➢ Diversification and intensification of agriculture. ➢ Evolving alternat e land use planning based on land capability classification. ➢ Working out techniques of conservation agriculture, carbon sequestration and watershed management for rejuvenation of waste lands. ➢ Real-time N application.	➢ Improved soil health and productivity.

10.	Stability in production system under the changing climate	➢ Weather characterization. ➢ Evolution of medium range weather forecasting models. ➢ Development of crop contingency plans for mitigating climate change. ➢ Risk management in agriculture and crop assessment. ➢ Adaptation of weather based agro-advisory to minimize the crop losses. ➢ Region specific research on crop weather relationship for all the major rain fed & irrigated crops in different agro climatic regions of Eastern U.P.	➢ Developed contingency plan for mitigating risk in agriculture under climate change.
College of Horticulture			
1.	High technology research in Bael, Ber, Aonla and Spices	➢ Production of quality planting materials for commercial Use. ➢ Integrated nutrient management of different cultivars. ➢ Use of PGRs for higher yield and export quality. ➢ Research in different varieties for higher production and introduction in new area. ➢ Standardization of different post harvest techniques and value addition in Aonla. ➢ Exploration of germplasm of spices.	➢ Improvement in livelihood of farmers due to higher productivity of fruit crops and value added products.
2.	Efficient technologies for protected cultivation	➢ Development of production technologies for flowers and vegetables under protected condition.	➢ Increase in the productivity and quality for round the year cultivation of flowers and vegetables.
3.	Strengthening of post harvest technology and value addition	➢ Post harvest handling, processing and storage studies for different horticultural produces. ➢ Market studies with respect to fruits, vegetables and flower crops. ➢ Biochemical studies of shelf life and exploitation of underutilized perishable fruit crop.	➢ Reduction in post-harvest losses, increase in shelf life and value addition in product.

4.	Improvement of yield and quality by breeding program.	➢ Development of vegetable varieties/hybrids suitable for off season and greenhouse cultivation of important vegetables for processing, export and dehydration purposes.	➢ Improved yield and quality of vegetable crops,
5.	Establishment of new fruit crops	➢ New fruit crop like Kinnow (Mandrain) will be established.	➢ For better livelihood of the farmers of eastern U.P.
6.	Development of area specific agri-horti-silvi pastoral system	➢ Alternative horticulture production system for resource poor and marginal farmers.	➢ Better utilization of land.
7.	Establishment of "Centre of Excellence on Potato"	➢ To undertake basic and strategic research for developing technologies to enhance productivity and utilization of potato. ➢ To produce disease free seed of different varieties of potato.	➢ Enhanced productivity of potato.
Mahamaya College of Agricultural Engineering and Technology			
1.	Reduction in cost of cultivation and drudgery through farm mechanization	➢ Development and modification of improved farm equipments for timely operation, higher input use efficiency & comfort to operators. ➢ Performance evaluation of developed technology. ➢ Establishment of centers like farm Mechanization, precision farming and ergonomics. ➢ Establishment of custom hiring service centre for improved machines.	➢ Development/adoption of commodity specific farm machinery. ➢ Mechanization of different farm operation. ➢ Precision farming approach for better production and productivity.
2.	Centre for Remote Sensing and Geo-informatics in Agriculture	➢ Development of the laboratory for the Remote Sensing and GIS with advanced software to conduct research. ➢ Practical training to UG and PG students in the field of Remote Sensing and GIS application. ➢ Assessment of the land, water and vegetation resources of the region.	➢ The thematic maps of land, water and vegetation resources of the region.
3.	Watershed management	➢ Reclamation of water logged and saline lands with physical as well as biological drainage measures. ➢ Rain water harvesting.	➢ Reclamation of soil. ➢ Increase in cultivable area and its productivity will uplift the socio-economic status of the farmers.

		➢ Multiple use of village ponds through integration of pisciculture, duckery and cultivation of aquatic crops viz., makhana (*Euryale ferox*) water chestnut (*Trapa bispinosa*)etc.	
4.	Development of post harvest technology for cereals, oil seeds pulses, vegetable, fruits products	➢ Development of post harvest practices/ equipments for cereals, pulses and oil seeds etc. ➢ Development of technology and gadgets for wheat, rice, pigeon pea processing suitable for adoption at village level. ➢ Technology for utilization of by- products.	➢ Development of value added products from cereals, oil seeds and pulses
5.	Development and efficient utilization of renewable energy technologies	➢ Research on solar drying, solar distillations, green house technology, solar water heating, cooking advance solar collector, the pumping LED based PV lighting. ➢ Establishment of Bio energy research centre. ➢ Designing of solar thermal and PV power projects. ➢ Development of new technologies on bio-mass gasification and bio gas production. ➢ Solar-wind hybrid system, turbine and high performance wind pumping system.	➢ Technology for harnessing solar wind and bio energy. ➢ Sustainable development of village through self sufficiency in energy.
6.	Development of models of sustainable agriculture and disaster management	➢ To eliminate ill effects of chemicals and pesticides, integrated system of cultivation would be developed. ➢ Eco-friendly activities in all spheres of life, agriculture & industries would be promoted to eliminate the green house effect. ➢ Social and financial insecurity is growing at large due to manmade and natural disasters in form of population explosion, reduction in productivity, deforestation and so on. Courses would be developed to make the people aware with such calamities and how to manage such disasters.	➢ Pollution free environment ➢ Save the lives & property of the people. ➢ Creation of balance among earth, plants, animals and human being. ➢ Preservation of some of our trusted culture & technologies.

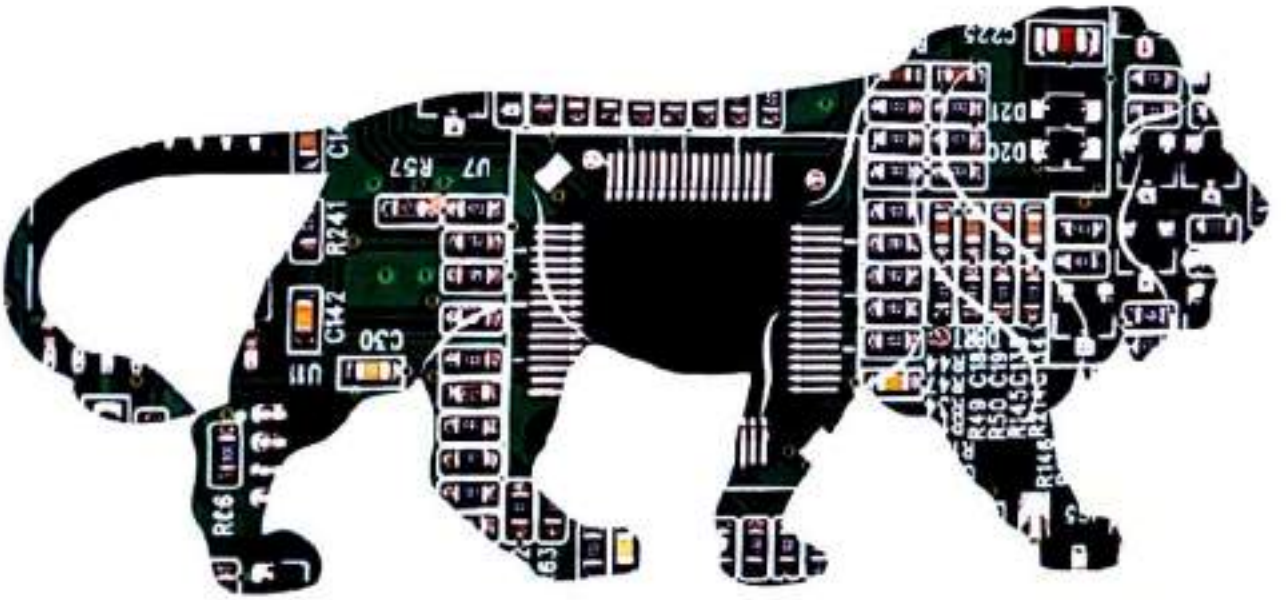
College of Fisheries			
1.	To develop College of Fisheries as a national centre of excellence in fisheries education	➢ The present laboratory will be upgraded with modernize equipments so that the students and researchers can have easy access and therefore can transform their ideas in to experiments.	➢ New technologies and their respective findings will be available for further refinement of technology.
2.	To develop efficient fish culture models	➢ Development of efficient , environmentally sustainable, economically viable and socially acceptable freshwater aquaculture technologies to combat changing climate. ➢ Enhancement of fish production and productivity in sodic/usar soil. ➢ Utilization of diverse range of bio-degradable agricultural wastes for integrated fish farming models. ➢ Utilization of low valued fishes for the development of value added fish products. ➢ To establish ornamental and larvivorous fish breeding unit. ➢ Establishment of aqua health clinics for disease diagnostics and to identify the causative agents of disease.	➢ Eco-friendly, sustainable and efficient technologies will enhance the income of small farmers. ➢ Increased productivity in sodic soil. ➢ Cost of fish production will be reduced. ➢ Source of income generation among rural unemployed peoples specially women. ➢ Employment will be generated through small scale industries. ➢ Necessary remedial measures to prevent the loss of fish.
3.	To excel in the field of conservation of aquatic resources and fish germplasm	➢ Our natural fishery resources and native species will be able to sustain in the changing mode of intensification and global warming.	➢ Natural biodiversity will be maintained in purity.
4.	To develop information and communication tools to disseminate the developed fish farming technology to the needy fish farmers	➢ Highly equipped audio visual laboratory will be developed to disseminate the fish culture methodology to the fish farmers.	➢ The location and species specific profitable available models will be easily adopted by the farmers.
5.	To develop and strengthen fisheries information centre	➢ Fish species, Indigenous Traditional Knowledge, Fishing gears, and methods of fish product and by product preparation will be documented and will be shown through suitable exhibits.	➢ Students, visitors, fish farmers will become aware about their indigenous native and exotic fish fauna and indigenous knowledge.

College of Veterinary Science & Animal Husbandry			
1.	Sexing of semen and embryo transfer technologies	➢ Establishment of sex sorted semen bank.	➢ Only female calves from superior germplasm will be borne. ➢ Decrease in male population.
2.	To foster conservation of superior germplasm	➢ To develop elite herd of cattle and buffalo. ➢ Superior germplasm (Quality semen, bulls and bull calves) would be disseminated to the end users.	➢ High yielding cattle and buffalo for increased milk production.
3.	Strengthening surveillance and monitoring system for important diseases of livestock	➢ Utilization of web-based epidemiological software and using Geographic Information System (GIS) and satellite images.	➢ Early predilection of disease outbreak. ➢ Better management of diseases and zoonoses,
4.	Studies on antibiotic resistant organisms	➢ Isolation and molecular characterization of Multi drug resistant (MDR) organisms.	➢ Enhanced therapeutic efficacy. ➢ Judicious use of antibiotics.
5.	Improvement in decellularization technique,	➢ Development of protocols for decellularization of grafts and utilization of stem cells.	➢ Use of technique for the regenerative therapy with minimum use of antibiotics.
6.	Processing, value addition and quality control of animal products	➢ Strengthening facilities for processing of livestock products. ➢ Standardization of techniques for value addition of milk, meat and egg. ➢ To impart trainings to farmers on product processing andvalue addition.	➢ Enhanced shelf life of perishable items. ➢ Doubling the income of farmers and livestock owners.
7.	Livestock improvement and establishment of modern dairy farm	➢ Development of Sahiwal cattle tract in eastern UP. ➢ Development of low-cost methods for storage and value addition in crop residues. ➢ Identification and nutrition enhancement of unconventional feed resources. ➢ Conservation and improvement of animal genetic resources. ➢ Generation of animal behavioral information for sustaining with environment/climate change and its effects on various performance traits. ➢ Identification and characterization of local animals for registration / patents.	➢ Increased milk production. ➢ Improvement in health of livestock in the field. ➢ Employment generation.

8.	Strengthening of Veterinary Clinical Complex	➢ Creation and strengthening of laboratory facilities with advanced equipments for full-fledged diagnosis and treatment of diseases of livestock and wild animals. ➢ Strengthening treatment facility for outdoor and indoor sick animals. ➢ Use of alternative medicine in prevention and control of diseases.	➢ Health care management in livestock and wild animals. ➢ Reduction in morbidity and mortality.
EXTENSION EDUCATION			
1.	On Farm Trials (OFTs), Front Line Demonstrations (FLDs) and Mobile Advisory Services	➢ Assessment, refinement & dissemination of technologies. ➢ Demonstrate the recommended technologies. ➢ Convincing farmers for adoption of new recommendation coming from laboratories. ➢ Effective feedback mechanism.	➢ Outcome will be reflected of developed technologies. ➢ Reduce the yield gaps. ➢ Increase in adoption of recommended technologies. ➢ Impact and constraint analysis studies.
2.	Imparting trainings to farmers, livestock owners and rural youth	➢ Organization of on-campus and off-campus training programs. ➢ Organization of workshops/ training programs for upgrading scientific knowledge and communication skills of extension functionaries. ➢ Vocational training program for self employment of rural youth.	➢ Adoption of the improved agricultural technologies. ➢ Adoption of better animal husbandry practices ➢ Capacity building of extension functionaries. ➢ Self employment of rural youth
3.	Entrepreneurship development	➢ Identification and documentation of entrepreneurs ➢ Mobilizing rural and school drop-out youths towards entrepreneurship ➢ Need based entrepreneur model develop at KVKs	➢ Successful enterprises and entrepreneurs ➢ Better utilization of resources ➢ Mobilize other youths ➢ Lower down the youth migration rate
4.	To popularize organic farming	➢ Demonstration and HRD programmes to promote organic farming ➢ Promotion through Kisan Melas, gosthies, field days ➢ Discourage the injudicious use of agrochemicals	➢ Increase in area under organic farming ➢ Better utilization of resources ➢ Self reliant farming ➢ Higher income and quality produce ➢ Representation of State as a organic hub

5.	Development of skilled manpower in the area of renewable energy	➢ Establishing Biogas development & Training Centre (BDTC), and Solar and Biomass Energy Training & Testing Centre. ➢ Training on Bio Gas Development, Repair & Maintenance, Biofuel Technology, Biomass Utilization and Solar Energy Technology ➢ Testing and Maintenance.	➢ Availability of skilled manpower. ➢ Awareness and use of renewable energy sources in rural areas. ➢ Quality improvement and competitiveness in global market
6.	Transfer of technologies	➢ Establishment of TOT centers for agriculture, livestock and fisheries. ➢ Establishment of demonstration- cum-training centre in freshwater aquaculture. ➢ Imparting trainings to personnel from different departments and organizations.	➢ Skill development in women and youth. ➢ Increase in the income of farmers. ➢ Availability of information and technologies to the stake holders.
7.	Agromet -Advisory services	➢ Development of interactive regional weather-based agro-advisory at KVKs. ➢ Network system linking to national agro-advisory network. ➢ Economic impact analysis of agro-advisories for further refinement. ➢ Expansion of agromet observatory network and linking up with national advisory network /agromet data bank.	➢ Minimum farm losses due to aberrant weather and pest diseases infestation ➢ Forecast of pest and disease epidemic
8.	Nutritional security	➢ Exploitation of indigenous unutilized food and fruit crops ➢ To improve the quality food and fruit access to consumer through cool chain system. ➢ Strict adherence to the food safety standards.	➢ Overcoming the problem of malnutrition ➢ Developed technologies with food safety standards

Vision 2030



नरेन्द्र देव कृषि एवं प्रौद्योगिक विश्वविद्यालय

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