

Inventory of Agricultural Technologies for Uttar Pradesh



ZONAL COORDINATION UNIT, ZONE-IV
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
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Foreword

Indian Council of Agricultural Research has established a network of Krishi Vigyan Kendras (KVKs) in the country aiming at assessment, refinement and demonstration of technology/products. There are 558 KVKs at present including 62 KVKs of Uttar Pradesh. The Directorate of Extension of the State Agricultural Universities have been given the major responsibilities of providing Human Resource Development support and technological backstopping to all the KVKs under their jurisdiction irrespective of the host institution under which a KVK is functioning. It is, therefore, very important that the technologies available with the technology generating institutions are documented for its availability to the KVKs for its further assessment, refinement and demonstration to the farmers on location specific basis.

There are 9 Agro-Climatic Zones in Uttar Pradesh ranging from 650 mm rainfall in dry land of Bundelkhand to 1400 mm annual rainfall in Bhabhar & Tarai region in eastern part of the state. An effective strategy for agricultural development often suffers from lack of adequate information base for different districts, both agricultural resources and relevant technological options.

I am delighted that the Zonal Coordination Unit, Zone-IV, Kanpur has made a sincere effort to analyze the district profile and identify major constraints, opportunities and technological options developed by various research organizations. The document entitled "**Inventory of Agricultural Technologies for Uttar Pradesh**" will be helpful in developing realistic action plans by the KVKs and other organizations engaged in the task of development of agriculture in the state. I congratulate Dr. A.K. Singh and Directors of Extension of the State Agricultural Universities for their painstaking effort in bringing out this publication.

25 January, 2008
New Delhi

(P. Das)



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Message

Chandra Shekhar Azad University of Agriculture & Technology, Kanpur is responsible for providing technological support to 28 districts falling under 3 agro-climatic zones viz Central Plain, South Western Semi Arid and Bundelkhand zones of Uttar Pradesh. The university has a network of Zonal Research Stations, Krishi Vigyan Kendras and Krishi Gyan Kendras to analyze, assess and develop suitable location specific technologies and disseminate the same to farmers for large scale adoption. The strength of the university has been developing large number of varieties, technologies and quality seeds and making them available to the farmers. The Agricultural University is a multi faculty institution to be able to serve most of the requirements of the farmers but there has been a strong need to establish strong linkages with specialized commodity based institutions of ICAR and CSIR for building the capability to serve the farmers in a more comprehensive and effective manner.

I am extremely pleased to learn that the Zonal Coordination Unit, Zone IV of Indian Council of Agricultural Research in collaboration with the Directorate of Extension of three State Agricultural Universities (SAUs), is poised to bring out a publication entitled "*Inventory of Agricultural Technologies for Uttar Pradesh*", containing the latest technologies of SAUs and ICAR institutions. I am sure that this kind of document will provide a great opportunity to extension scientists to select out the most appropriate technologies for different farming situations.

My best wishes to all concerned.

(V.K. Suri)

03 February, 2008
Kanpur



Prof. M.P. Yadav
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Message

Looking at the changing global environment, it is imperative that an efficient, effective and relevant technology assessment, refinement and demonstration model is established for facilitating effective technology transfer in the country. In order to achieve utmost success, meticulous planning and co-ordination with Zonal Research Stations, Krishi Vigyan Kendras and seed production centres are required for production of appropriate technologies and its transfer to the farmers.

SVBPUAT, Meerut has been producing seed of cereals, pulses, vegetable crops, spices and planting materials of fruits, medicinal, sugarcane and aromatic plants for the farmers, in addition to number of technologies and varieties.

On behalf of Sardar Vallabh Bhai Patel University of Agriculture & Technology, Meerut, I would like to congratulate all those who have been involved in bringing out this useful document namely '*Inventory of Agricultural Technologies for Uttar Pradesh*' for KVKs and other such institutions.

10 March, 2008
Meerut



(Prof. M.P. Yadav)



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Message

An effective strategy for agricultural and rural development often suffers from lack of adequate ground data relating to district specific information including technological options. Narendra Deva University of Agriculture & Technology (NDUAT), Faizabad is mandated to serve the districts of eastern Uttar Pradesh. The eastern part of the state has been receiving good amount of rainfall but there are other important issues which require technological interventions for raising production and productivity of various commodities.

I am extremely happy to learn that the Zonal Coordination Unit, Zone IV (ICAR), Kanpur in collaboration with Directorate of Extension of SAUs is bringing out a publication '*Inventory of Agricultural Technologies for Uttar Pradesh*' for different districts of Uttar Pradesh. The technologies in context of location specificity will be helpful in developing action plans by KVKs.

17 March, 2008
Faizabad

(Basant Ram)

Preface

KVK aims at assessment, refinement and dissemination of technologies/products. For continuously organizing technology oriented programmes at farmers' fields, KVKs are always searching for the new technological options whose potential could be shown to the farmers. Analyzing agro-ecological situations and identifying thrust areas are also important time bound functions of KVK.

In this context, we are indebted to Dr. P. Das, Deputy Director General (Agril Extension), ICAR, New Delhi for inspiring and guiding us to bring out a publication consisting of district specific analysis and technologies, which may be used as a technology basket by KVKs and other such organizations.

I appreciate the efforts of the Directors of Extension of three SAUs and Directors of ICAR Institutes of Uttar Pradesh for identifying and providing potential technologies. I sincerely thank my colleagues Dr. Lakhan Singh, Dr. Atar Singh, Dr. Rajiv Kumar Singh and Dr. R. Prasad for putting hard work in preparing the document.

27 March, 2008
Kanpur



(A.K. Singh)
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Contents

Foreword	
Messages	
Preface	
Chapter 1 - Agro-Ecological Scenario	1-9
Agro-climatic Zones	1
Features of Agro-climatic Zones	1
Acreage and Crop Productivity Status	1
Research and Extension Centres	3
Chapter 2 - District Specific Technological Interventions for Central & Southern Region	10-88
I. Central Plain Zone	10
A. Agroclimatic Features	10
B. Geomorphology of Districts	10
C. Problems and Priorities	16
II. South Western Semi Arid Zone	18
A. Agroclimatic Features	18
B. Geomorphology of Districts	18
C. Problems and Priorities	21
III. Bundelkhand Zone	22
A. Agroclimatic Features	22
B. Geomorphology of Districts	22
C. Problems and Priorities	25
IV. Technological Options	26
Chapter 3 - District Specific Technological Interventions for Eastern Region	89-127
I. Eastern Plain Zone	89
A. Agroclimatic Features	89
B. Geomorphology of Districts	89
C. Problems and Priorities	94
II. North Eastern Plain Zone	95
A. Agroclimatic Features	95
B. Geomorphology of Districts	95
C. Problems and Priorities	100

III.	Vindhyan Zone	101
A.	Agroclimatic Features	101
B.	Geomorphology of Districts	101
C.	Problems and Priorities	102
IV.	Technological Options	103
Chapter 4 -	District Specific Technological Interventions for Western Region	128-169
I.	Bhabhar & Tarai Zone	128
A.	Agroclimatic Features	128
B.	Geomorphology of Districts	128
C.	Problems and Priorities	130
II.	Western Plain Zone	131
A.	Agroclimatic Features	131
B.	Geomorphology of Districts	131
C.	Problems and Priorities	134
III.	Mid Western Plain Zone	135
A.	Agroclimatic Features	135
B.	Geomorphology of Districts	135
C.	Problems and Priorities	137
IV.	Technological Options	138
Chapter 5-	Livestock Related Technologies	170-183
	Agro-climatic Zone-wise Constraints	171
	Technological Options	175
	Abbreviations	184
	Source	186

Agro-Ecological Scenario

Uttar Pradesh is India's fourth largest and most populous state. It is a land of unending histories and never ending charms. The major part of Indo-Gangetic plain or north fertile plain forms Uttar Pradesh. The important rivers that flow through this state are the Ganga and Yamuna. On the east, Uttar Pradesh is surrounded by Bihar, on the south by Madhya Pradesh, on the west by Rajasthan, Delhi, Himachal Pradesh, Haryana and on the north by Uttarakhand. The northern borders of Uttar Pradesh are touched by Nepal. The area of the state is 2,36,286 sq km. The state is situated at latitude of 24° to 31° north and longitude of 77° to 84° east. Majority of people in the state depend on farming. Wheat, rice, sugarcane, pulses, oilseeds and potato are the main crops grown here. Sugarcane is also an important cash crop. The common livestock found here are cattle, buffaloes, goats and other animals. About 12.8% of the geographical area of Uttar Pradesh is under forest.

The population of the state, according to 2001 census, was recorded as 166 million accounting for 16.17% of the total population of the country. It has a population density of 690 persons/sq m². The sex ratio in the state is 898 females per 1000 males as compared to 933 females per 1000 males of the national average. The literacy percentage is 68.8 in case of male and it is 42.2 in case of female as per 2001 census. Uttar Pradesh is endowed with natural wealth in abundance. The diversity of flora and fauna are due to vast area, big and small rivers, varieties of climatic conditions and different kinds of soil. In Uttar Pradesh, there are the presence of different types of minerals as dolomite, gypsum, andalusite, magnetite, pyrophyllite, phosphorite, sibnite and bauxite. Several industries have come up in the region based on the presence of different types of minerals present in the region. The industries are engaged in the manufacturing of scales, locks, letter boxes, furniture, badges and belts, leather goods, scissor, handloom, carpet, glass, electrical goods, etc.

Agro-climatic Zones

Uttar Pradesh, on the basis of rainfall, terrain and soils (Ghosh, 1991) has been divided into nine agro-climatic zones viz., Central Plain, South Western Semi Arid, Bundelkhand, Eastern Plain, North Eastern Plain, Vindhyan, Bhabhar & Tarai, Western Plain and Mid Western Plain zones (Fig. 1).

Features of Agro-climatic Zones

Uttar Pradesh has huge diversity with 9 agro-climatic zones characterized by drylands of Bundelkhand with annual rainfall of about 650 mm to North Eastern parts of the state which receives 1400 mm annual rainfall. Temperature varies from 1.5 °C recorded in Western Plain zone to 47.8 °C in Bundelkhand zone. The cropping intensity varies from 111% (Bundelkhand region) to 157% (Western region). Major limitations of different agro-climatic zones are sodic soils in Central Plain; brackish water, alkalinity & undulating ravines in South Western Semi Arid; rainfed situation in Bundelkhand; flood prone area in North Eastern Plain; saline & alkaline soils and *diara* lands in Eastern Plain; undulating and rocky area in Vindhyan zone; salinity & alkalinity, waterlogging in Western Region; and problem of drainage in Bhabhar & Tarai zone, which create hindrance in agricultural development. The characteristic features of different agro climatic zones and soils of Uttar Pradesh are depicted in Fig. 2.

Acreage and Crop Productivity Status

A variety of crops viz. cereals, pulses, oilseeds, sugarcane, fruits, vegetables and spices are grown in different agro-climatic zones of Uttar Pradesh. Among food grains, oilseeds, sugarcane, fruits, vegetables and fodder crops, the major share of area goes to food grains i.e. around 80 per cent and other commodities account for 20 per cent. The zone-wise analysis reveals that each zone possesses strength for one or another crop in relation to agro-eco situation of the zone. Six out of nine zones possess

better irrigation facilities and soil fertility status where rice-wheat, rice-sugarcane cropping systems are most popular and these zones mainly contribute to rice, wheat and sugarcane production. Three zones viz, South Western Semi Arid zone, Bundelkhand and Vindhyan zones possess relatively low irrigation facilities and soils are also average to medium in fertility and contribute major share of pulses and oilseeds production in the state.

Among kharif food grain crops, rice is a major crop and alone it shares 69.0 per cent of area under food grains and contributes around 78.0 per cent to the food grains production. In case of pulses, urdbean and mungbean together share 5.10 per cent area but contribute only 1.26 per cent to the food grains production. Groundnut and linseed are major oilseed crops and share of these two crops in total cropped area is 2.62 per cent. Further analysis reveals that in case of rice, out of 9 zones, only 3 zones i.e. Central Plain, North Eastern Plain and Eastern Plain zones share around 66.0 per cent of the total acreage. Three zones, Bhabhar & Tarai, Western Plain and Mid Western Plain possess average yield over 22.0 q/ha and other zones have yield below 20.0 q/ha. The Central Plain zone with a yield of 17.75 q/ha possesses even lower than the state average of 19.76 q/ha. In case of the next important cereal crops and maize, the Central Plain zone shares the maximum acreage (30.0%) followed by the South Western Semi Arid and the North Eastern Plain zone with 17.0 and 16.0%, respectively. With 20.18 q/ha of average yield, the South Western Semi Arid zone possesses maximum productivity and with 8.96 q/ha the North Eastern Plain zone possesses minimum productivity among the zones. The zones I, III, VIII and IX also possess lower productivity than that of the state (16.32 q/ha). The Central Plain and the Bundelkhand zones together share more than 80 per cent acreage under sorghum in the state. However, these both the zones have lower average yield in comparison to Eastern Plain zone. The Bundelkhand zone even possesses lower productivity than that of the state (9.49 q/ha). In case of the next important crop of arid region is pearl millet and the South Western Semi Arid zone alone shares more than 50.0 per cent acreage followed by the Mid Western Plain (19.0%) and the Central Plain zone (17.5%). The maximum

productivity was recorded in North Eastern Plain zone (17.48 q/ha) though its share is very small. The productivity of Central Plain zone is significantly low (8.96 q/ha) in comparison to the state average yield of 14.88 q/ha.

Among rabi food grain crops, wheat is a major crop and alone it shares 78.0 per cent of area under food grains and contributes around 90.0 per cent of the production. The agro climatic zone-wise analysis reveals that in case of wheat, out of 9 zones only 4 zones, Mid Western Plain, South Western Semi Arid, Central Plain and Eastern Plain share 62.0 per cent of the total acreage. With an average yield of 33.5 q/ha, the Western Plain zone possesses the maximum productivity among the zones. The three other zones, Bhabhar & Tarai, Mid Western Plain and South Western Semi Arid possess higher productivity than that of the state's productivity of 27.20 q/ha, however, rest of the five zones have lower productivity and Vindhyan zone being at the bottom with an average yield of 18.2 q/ha.

In case of pulses, urdbean and mungbean are major crops of kharif season and chickpea, lentil, pigeonpea and fieldpea are the major crops of rabi season. Among pulses, chickpea is the most important crop with its share of 31.4 per cent in the total area under pulses in the state followed by lentil (24.2%), urdbean/mungbean (16.4%) and pigeonpea and fieldpea each with a share of 14.0 per cent. The agro-climatic zone-wise analysis reveals that Bundelkhand zone alone shares maximum acreage under major pulses (44.5%) followed by Central Plain zone (20.5%). These two zones together share 65.0 per cent acreage under pulses in the state. The North Eastern Plain and Eastern Plain zones also share considerable acreage under pigeonpea. Looking to the productivity of individual pulse crops, it reveals that in case of urdbean and mungbean, the Mid Western Plain and Eastern Plain zones have the highest productivity of 6.28 and 6.02 q/ha, respectively. However, the Bundelkhand zone with considerable area possesses lower average yield (3.79 q/ha) than that of the state's yield (4.35 q/ha).

In case of chickpea, the three zones, South Western Semi Arid, Central Plain and Eastern Plain possess an average yield above 10.0 q/ha. However,

Bhabhar & Tarai and Vindhyan zones have lower average yields than that of the state yield of 8.41 q/ha. In case of lentil, though Bundelkhand zone possesses the highest acreage, yet its average yield of 4.07 q/ha is the lowest among all the zones. The Mid Western Plain zone possesses one of the highest average yield of 9.09 q/ha. In case of pigeonpea, the Central Plain zone along with sharing the maximum acreage also possesses the highest yields of 18.19 q/ha. Among important pigeonpea growing zones, the North Eastern Plain zone has considerably lower yield (6.18 q/ha) than that of the state's average yield of 12.56 q/ha. In case of fieldpea, South Western Semi Arid zone possesses the highest yield of 18.12 q/ha. The average yield of other zones are either above or at par with the state's yield except the Bundelkhand zone (7.66 q/ha).

In case of oilseeds, groundnut and sesame are major crops grown in kharif and rapeseed & mustard are the major crops of rabi, linseed is also grown in small area. The rapeseed and mustard have major share (66.0%) in acreage under oilseeds grown in the state.

Looking to the share of different agro-climatic zones in acreage under different oilseed crops, it was observed that Central Plain and Bundelkhand zones share major area under the groundnut and sesame. Similarly, South Western Semi Arid and Central Plain zones together share major area under rapeseed and mustard (62.0%). Regarding average yield of oilseeds in different zones, it was observed that the Central Plain and Bundelkhand zones possess the highest acreage, yet their average yields in case of groundnut are one of the lowest. In case of rapeseed and mustard, with 12.53 q/ha, the South Western Semi Arid zone possesses the highest average yield among the zones. However, the other important zone, Central Plain possesses comparatively lower average yield (9.15 q/ha) and which is even lower than that of state yield of 9.87 q/ha. Except in two zones, South Western Semi Arid and Western Plain, the productivity of rapeseed and mustard is lower than that of state's productivity.

The Bhabhar & Tarai and Western Plain zones together share more than 50.0 per cent of the acreage under sugarcane in the state. The other important

sugarcane growing zones are Mid Western Plain and Central Plain with a share of 28.50 and 14.00 per cent, respectively. There is considerable acreage under sugarcane in North Eastern Plain and Eastern Plain zones and these two zones together also share 17.6 per cent acreage. The rest of the zones have considerably small area under sugarcane. Regarding productivity, Central Plain zone has recorded an average maximum yield of 640 q/ha and with 411 q/ha, the Eastern Plain zone possesses the lowest average yield among the zones. The zones VI, VII, VIII and IX possess lower productivity than that of the state's productivity (573.0 q/ha).

The Central Plain zone alone shares 35.0 per cent area under potato in the state followed by the South Western Semi Arid (21.0%) and Eastern Plain zone (18.0%). Regarding productivity with 273.0 q/ha of average yield, the South Western Semi Arid zone possesses the highest productivity among the zones, and with 184.5 q/ha of average yield, North Eastern Plain zone has the lowest yield.

Research and Extension Centres

Three SAUs, Kanpur, Faizabad, Meerut and one Deemed Agriculture University, Allahabad shoulder the responsibility of all round development of agricultural research and cater to the technological requirements of different agro-climatic zones of the state (Fig. 3-5). Besides these Universities, the Veterinary University at Mathura is mandated to support animal husbandry research exclusively. The state is fortunate to have 20 ICAR and 5 CSIR institutes working in different sectors of agriculture. Institute of Agriculture Sciences, BHU, Varanasi is also engaged in agricultural research and eastern Uttar Pradesh is main beneficiary of its output. These institutes generate appropriate technologies in their respective areas. The line departments of the state viz agriculture, horticulture, animal husbandry, fisheries, sericulture and other allied departments of the State Government bear major responsibility of extension of proven technologies to the farmers.

First Krishi Vigyan Kendra (KVK) was established by Indian Council of Agricultural Research in 1974 in Pondicherry. As of now 558 districts are covered with KVKs. Out of 70 districts

Inventory of Agricultural Technologies for Uttar Pradesh

in Uttar Pradesh, 62 rural districts have been covered by KVKs. These KVKs have been established in the state under the administrative control of SAUs (44), Central University (1), Veterinary University (1), ICAR institutes (3), educational institutions (4) and NGOs (9). KVK aims at assessment, refinement and demonstration of technologies/products. The major activities of KVK include i) on-farm testing to identify the location specificity of agricultural technologies under various farming systems; ii) frontline demonstrations to establish its production potentials on the farmers' fields; iii) training of farmers to update their knowledge and skills in modern agricultural technologies; iv) training of extension personnel to orient them in the frontier areas of technology development. As recommended by the Committee on Independent Evaluation and Impact Assessment of KVKs and QRT (2000-01 to 2004-05), the fourth activity of the KVKs will be to work as resource and knowledge centre of agricultural technology for

supporting initiatives of public, private and voluntary sectors for improving the agricultural economy of the district. In addition, in order to speed up the process of demonstration of technology, a large number of various extension activities and production of seeds and planting materials are taken up by the KVKs. The responsibility of technological backstopping of KVKs has been given to three State Agricultural Universities of the state. Eight Zonal Coordination Units have been established by ICAR in the country to effectively monitor Krishi Vigyan Kendras. Zonal Coordination Unit, Kanpur is actively engaged in planning, reviewing, monitoring and evaluating all the ICAR sponsored transfer of technology programmes implemented through KVKs of Uttar Pradesh and Uttarakhand. Facilitating financial and infrastructural support to KVKs is another major activity of the zone. The zone is also strengthening linkages with other research, extension and development organizations.

Fig. 1 : Agro-Climatic Zones of Uttar Pradesh

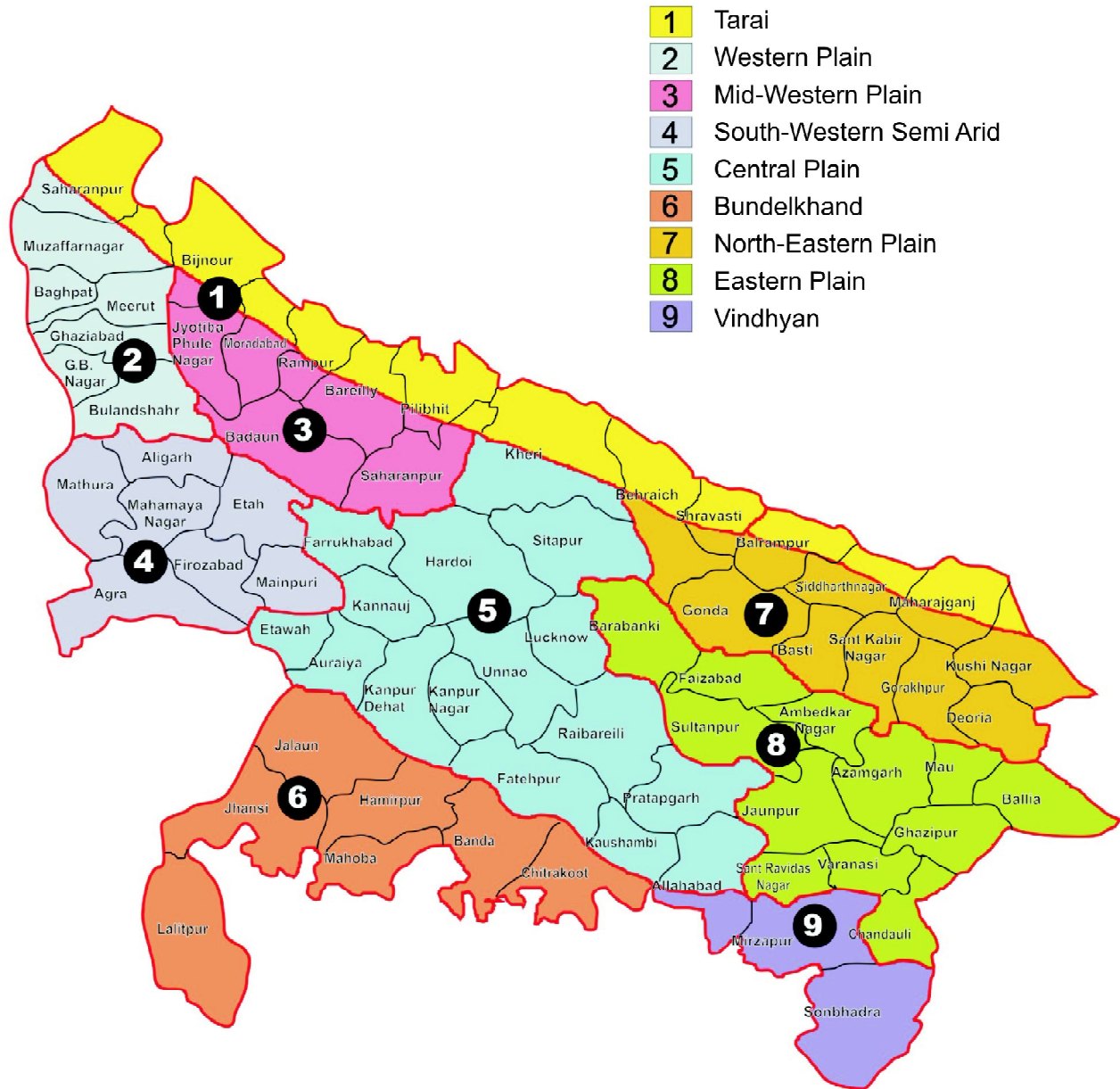


Fig. 2 : Soils of Uttar Pradesh

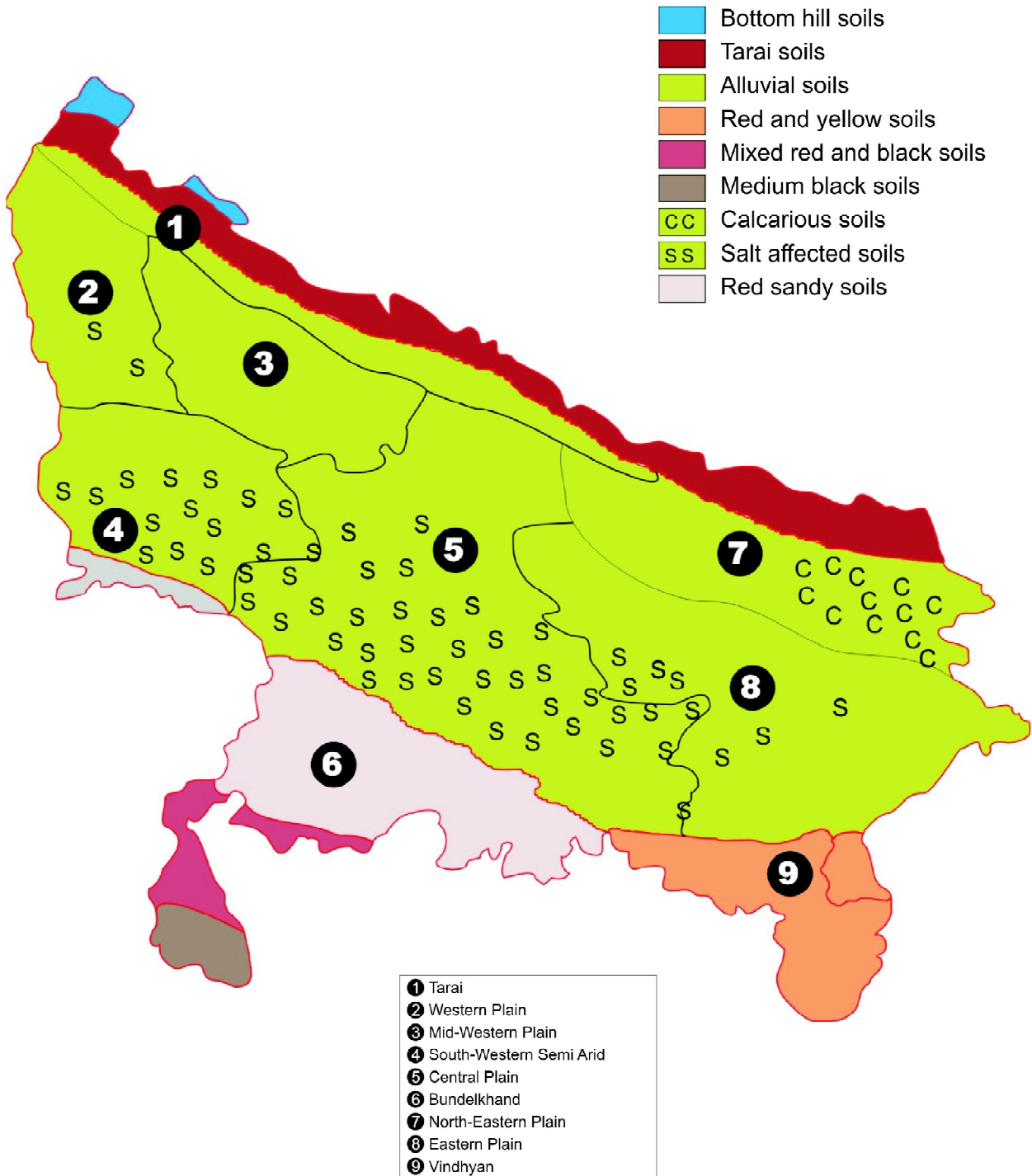


Fig. 3 : KVKs and Research/Extension Centres in Central and Southern Region of Uttar Pradesh

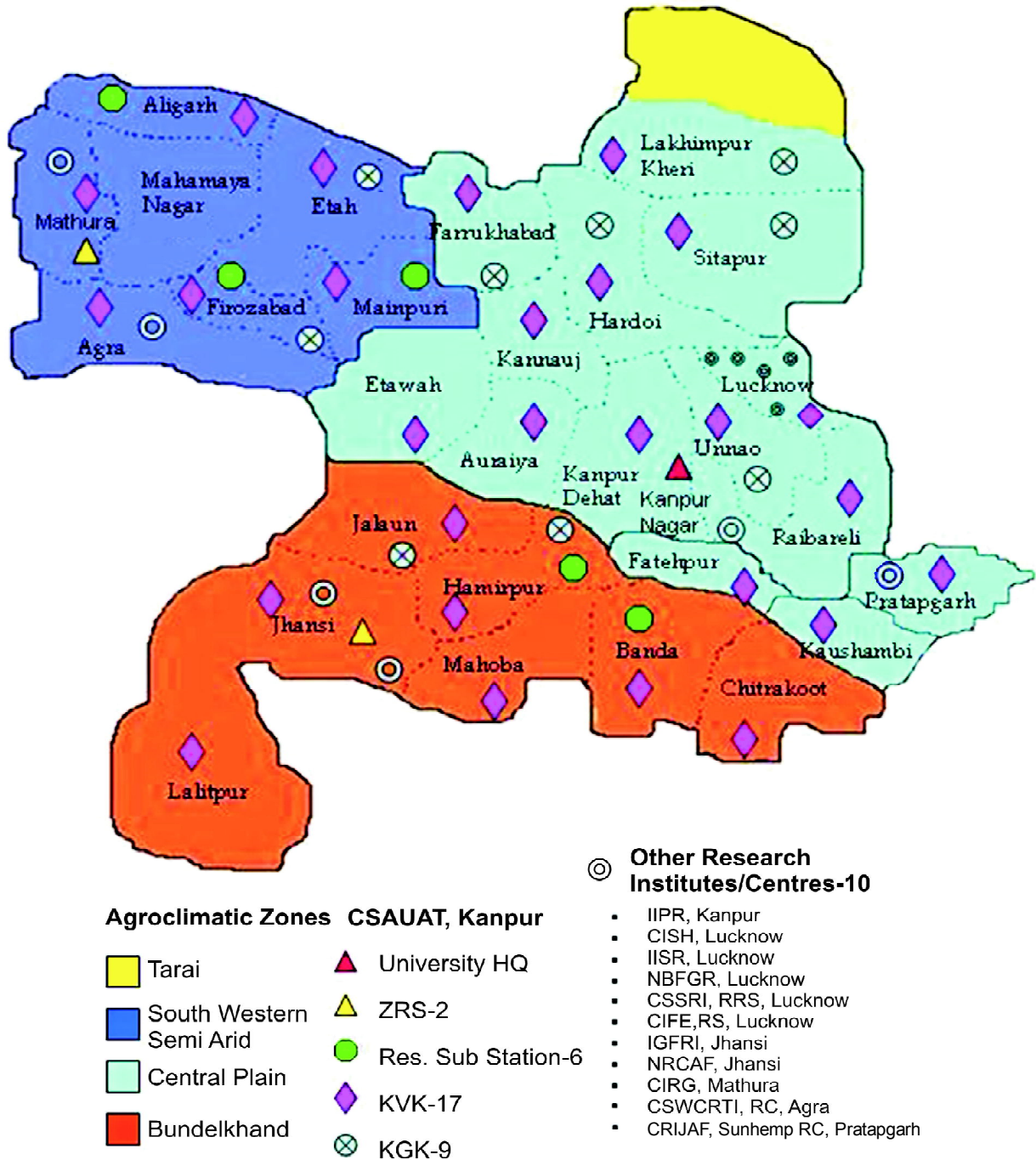
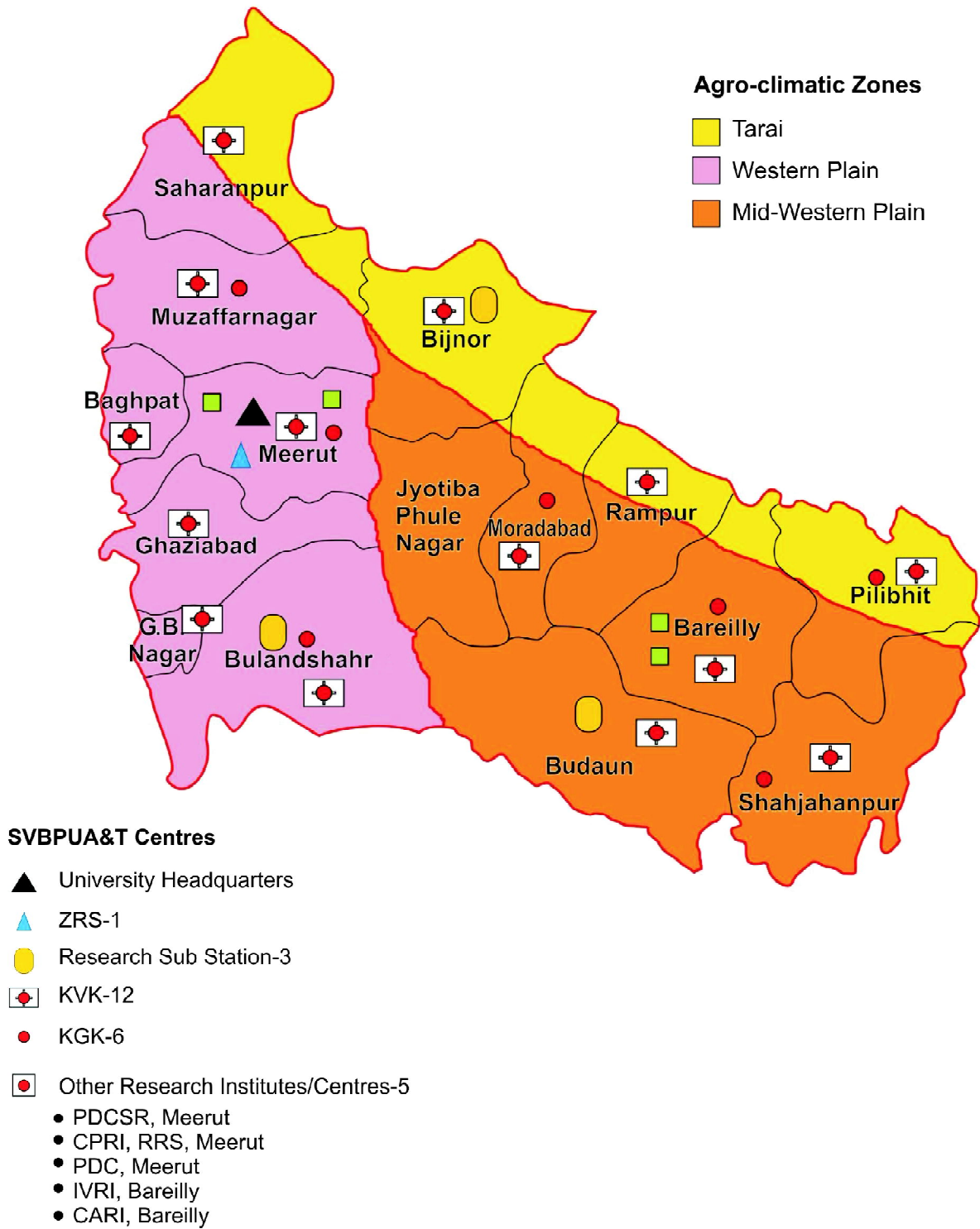


Fig. 4 : KVKs and Research/Extension Centres in Eastern Region of Uttar Pradesh



Fig. 5 : KVKs and Research/Extension Centres in Western Region of Uttar Pradesh



District Specific Technological Interventions for Central & Southern Region

I. Central Plain Zone

This zone consists of 16 districts. The geomorphology of these districts is given below.

A. Agroclimatic Features

This zone constitutes the districts of Hardoi, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Unnao, Lucknow, Sitapur, Raebareli, Fatehpur, Pratapgarh, Kaushambi and parts of district Lakhimpur Kheri and Allahabad. It is the largest zone of highly productive alluvial soils, high fertility with intensive irrigation and increased cropping intensity (155 %). The soils of this region vary widely from sandy loam to clay loam. The average annual rainfall of the zone is 863 mm and the temperature ranges from 5.5 °C to 45 °C. Monthly mean relative humidity ranges from 33% to 86% (annual mean 67%). The crops of the zone are rice, wheat, maize, pearl millet, sorghum, barley, chickpea, pigeonpea, mungbean, urdbean, lentil, groundnut, rapeseed & mustard and sugarcane. Potato, tomato, vegetable pea and cucurbits are the major vegetables and mango, guava, aonla, banana and citrus are the major fruits grown in the zone. Flower cultivation is also popular in some areas. Usar soils in the zone is a major limitation.

B. Geomorphology of Districts

Lucknow district is situated on 80.92° east longitude and 26.85° north latitude. It is comprised of 4 tehsils, 8 blocks and 824 villages. Total population of the district is 3.64 million and the literacy is 68.70%. The density of population is 1443 km². The average size of holding of the district is 0.82 ha. The cropping intensity of the district is 149.48%. The district has reported area of 251853 ha, net sown area of 141376 ha and irrigated area of 120207 ha. The average annual rainfall is 953 mm and temperature ranges

between 2.3 °C to 45.0 °C. The soils of the district are sandy loam, loam and silty clay loam in nature. The major crops grown in kharif are rice (48707 ha) with the productivity of 19.44 q ha⁻¹, maize (2529 ha) with the productivity of 10.99 q ha⁻¹, pearl millet (939 ha) with the productivity of 14.69 q ha⁻¹, urdbean (7858 ha) with the productivity of 3.92 q ha⁻¹, sorghum (1451 ha) with the productivity of 9.81 q ha⁻¹ and pigeonpea (1055 ha) with the productivity of 8.00 q ha⁻¹. In rabi major crops grown are wheat (84067 ha) with the productivity of 26.70 q ha⁻¹, barley (414 ha) with the productivity of 16.61 q ha⁻¹, chick pea (1627 ha) with the productivity of 7.83 q ha⁻¹, field pea (1957 ha) with the productivity of 9.67 q ha⁻¹, lentil (2299 ha) with the productivity of 8.81 q ha⁻¹, mustard (3399 ha) with the productivity of 7.92 q ha⁻¹ and potato (4570 ha) with the productivity of 171.64 q ha⁻¹. Sugarcane (428 ha) is also grown with the productivity of 565.92 q ha⁻¹. The horticultural crops grown are mango (21000 ha) with the productivity of 80.50 q ha⁻¹ and mentha (768 ha) with the productivity of 80 litre ha⁻¹. Total consumption of NPK (96.63, 34.44 and 3.29 kg/ha) was reported 134.36 kg/ha.

Cattles (238760), buffaloes (220328), sheeps (6751), goats (141937) pigs (42109) and poultry birds (168721) are the major livestock.

Unnao district is situated on 80.49° east longitude and 26.55° north latitude. It is comprised of 5 tehsils, 16 blocks and 1693 villages. Total population of the district is 2.70 million with the population density of 592 km² and literacy of 54.60%. Average size of holding is 0.77 ha. The reported area of the district is 454676 ha with net sown area of 291298 ha, irrigated area of 257353 ha and cropping intensity of 139.32%. The annual rainfall of the district is 853 mm and temperature ranges between 4.6 °C to 42.8 °C with relative humidity varies from 45-85%. The soil type of the district is alluvial, calcareous and salt affected.

The major crops grown in the district are rice (89698 ha), maize (41565 ha), pearl millet (2048 ha), sorghum (5940 ha), urdbean (17401 ha), pigeonpea (4995 ha) and groundnut (887 ha), sesame (3685 ha) with the productivity of 14.48, 9.41, 14.69, 11.73, 4.98, 8.53, 8.91 and 3.84 q ha⁻¹, respectively. In rabi, wheat (222960 ha), barley (2006 ha), chickpea (4822 ha), field pea (1556 ha), lentil (1096 ha), mustard (12779 ha) and potato (7053 ha) with the productivity of 28.63, 16.61, 7.83, 9.67, 7.32, 6.98 and 215.09 q ha⁻¹, respectively are the major field crops. Another major crop grown is sugarcane (4606 ha) with the productivity of 570.48 q ha⁻¹. Total consumption of NPK (88.89, 33.04 and 2.02 kg/ha) was 123.95 kg/ha.

Cattles (406213), buffaloes (418463), sheeps (38855), goats (314625), pigs (73429) and poultry birds (191633) are the major livestock.

Raebareli district is situated on 100°41' & 81° 34' east longitude and 25° 49' & 26° 36' north latitude. Southern boundary of the district is naturally demarcated by river Ganga while, Sai river bisects this district in two halves. The soils of the district are sandy, sandy loam, clay loam and saline-alkaline. Administratively the district is divided into 7 tehsils, 21 blocks and 1737 villages. The total population of the district is 3.62 million and density of 623 km². The literacy is 53.80% and the average size of holding is 0.64 ha. The reported area of 456695 ha, net sown area of 263430 ha and irrigated area of 228499 ha with the cropping intensity 147.45% characterize the district. The major crops of the district are rice (136669 ha) with the productivity of 18.20 q ha⁻¹, pearl millet (1530 ha) with the productivity of 14.69 q ha⁻¹, sorghum (11172 ha) with the productivity of 14.69 q ha⁻¹, urdbean (15293 ha) with the productivity of 5.33 q ha⁻¹, pigeonpea (14555 ha) with the productivity of 6.33 q ha⁻¹, groundnut (2648 ha) with the productivity of 7.17 q ha⁻¹ and sesame (1917 ha) with the productivity of 2.14 q ha⁻¹ in kharif and wheat (184220 ha) with the productivity of 23.42 q ha⁻¹, barley (3322 ha) with the productivity of 16.61 q ha⁻¹, chickpea (6834 ha) with the productivity of 8.14 q ha⁻¹, field pea (4326 ha) with the productivity of 9.67 q ha⁻¹, mustard (10176 ha) with the productivity of 7.27 q ha⁻¹ and potato (5474 ha) with the productivity of

149.59 q ha⁻¹ are the major crops in rabi. Sugarcane (6532 ha) is also cultivated with the productivity of 363.96 q ha⁻¹. Total consumption of NPK (66.34, 24.19 and 2.59 kg/ha) was reported 93.12 kg/ha.

As per livestock census 2003, the cattles (525815), buffaloes (312157), sheeps (38804), goats (288458), pigs (137495) and poultry birds (157333) are the major livestock.

Sitapur district is situated on 80.69° east longitude and 27.57° north latitude. It is comprised of 6 tehsils, 19 blocks and 2314 villages. Total population of the district is 3.61 million with the population density of 630 km² and literacy of 48.30%. The reported area is 572700 ha, net sown area is 429516 ha and cropping intensity is 139.43%. The total irrigated area is 207867 ha. The annual rainfall of the district is 850 mm and temperature ranges between 4.6 °C to 42.8 °C with relative humidity from 50-85%. The soil type of the district is alluvial, calcareous and salt affected. The major kharif crops grown in the district are rice (158642 ha), sorghum (7530 ha), pearl millet (2154 ha), maize (13169 ha), urdbean (9246 ha), groundnut (2271 ha), sesame (11046 ha) and pigeonpea (8345 ha) with the productivity of 16.22, 9.86, 7.59, 9.58, 5.29, 6.96, 1.22 and 6.87 q ha⁻¹, respectively. In rabi, wheat (190985 ha), barley (1784 ha), chickpea (1349 ha), field pea (1706 ha), lentil (39459 ha), mustard (14662 ha) and potato (21050 ha) with the productivity of 27.36, 16.61, 7.83, 9.67, 6.87, 8.93 and 173.24 q ha⁻¹, respectively are the major field crops. Another important crop grown is sugarcane (137821 ha) with the productivity of 554.76 q ha⁻¹. Total consumption of NPK (91.44, 35.52 and 5.38 kg/ha) was 132.34 kg/ha.

Cattles (605194), buffaloes (429218), sheeps (8586), goats (455688), pigs (64201) and poultry birds (205710) are the major livestock.

Hardoi district is located on 79° 41' to 80° 46' east longitude and 26° 53' to 27° 53' to 27° 46' north latitude. The district is characterized by temperature ranging between 5.5 °C to 45.0 °C and annual rainfall of 1020 mm. It is comprised of 5 tehsils, 19 blocks and 1883 villages. The total population of the district is 3.39 million with the density of 568 km² and literacy of 51.90%. The average size of land holding is 0.90

ha and cropping intensity is 140.06%. The total reported area is 598977 ha, out of which 409372 ha is net sown. The total irrigated area is 362482 ha. The major soils vary from loamy to silty clay loam with fair water holding capacity and fertilizer responsive. The major crops of kharif are rice (147130 ha), maize (46602 ha), pearl millet (336 ha), sorghum (3862 ha), urdbean (18815 ha), groundnut (5244 ha) and sesame (10673 ha) with productivity of 20.30, 13.24, 14.67, 11.06, 5.27, 7.36 and 1.22 q ha⁻¹, respectively. In rabi, the major crops are wheat (307716 ha) with the productivity of 30.00 q ha⁻¹, barley (2711 ha) with the productivity of 16.61 q ha⁻¹, chickpea (1470 ha) with the productivity of 7.83 q ha⁻¹, field pea (436 ha) with the productivity of 9.67 q ha⁻¹, pigeonpea (3925 ha) with the productivity of 8.00 q ha⁻¹, lentil (12936 ha) with the productivity of 7.08 q ha⁻¹, mustard (12353 ha) with the productivity of 7.80 q ha⁻¹ and potato (10504 ha) with the productivity of 158.22 q ha⁻¹. Sugarcane (25856 ha) is also grown with the productivity of 528.88 q ha⁻¹. Total consumption of NPK (52.11, 25.43 and 2.62 kg/ha) was reported 80.16 kg/ha.

Cattles (571519), buffaloes (391740), sheep (30615), goats (327230), pigs (48325) and poultry birds (131092) are the major livestock.

Lakhimpur Kheri district is situated on 80.34° to 81.30° east longitude and 27.6° to 28.6° north latitude. The temperature in the district ranges between 6.5 °C to 43.5 °C and annual rainfall of 1093 mm is reported. It is comprised of 5 tehsils, 15 blocks and 1712 villages. The population of the district is 3.20 million with density of 418 per km² and literacy rate of 48.4%. The cropping intensity of the district is 146.40%. Total reported area is 776051 ha out of which total net sown area is 483370 ha. Total irrigated area of the district is 381193 ha. Soils are loam to clay loam. The major crops grown in kharif are rice (183844 ha) with the productivity of 20.50 q ha⁻¹, maize (8376 ha) with the productivity of 10.50 q ha⁻¹, pearl millet (336 ha) with the productivity of 14.69 q ha⁻¹, sorghum (187 ha) with the productivity of 7.27 q ha⁻¹, urdbean (2714 ha) with the productivity of 4.20 q ha⁻¹, sesame (3389 ha) with the productivity of 0.87 q ha⁻¹, groundnut (7670 ha) with the productivity of 7.67 q ha⁻¹ and pigeonpea (1260 ha) with the productivity of 8.00 q

ha⁻¹. In rabi, major crops grown are wheat (190523 ha) with the productivity of 30.20 q ha⁻¹, barley (383 ha) with the productivity of 16.61 q ha⁻¹, field pea (663 ha) with the productivity of 9.67 q ha⁻¹, lentil (22397 ha) with the productivity of 8.87 q ha⁻¹, mustard (29700 ha) with the productivity of 8.20 q ha⁻¹ and potato (1143 ha) with the productivity of 173.24 q ha⁻¹. Another major crop raised is sugarcane (227118 ha) with the productivity of 591.04 q ha⁻¹. Total consumption of NPK (128.71, 30.66 and 9.68 kg/ha) was 169.05 kg/ha.

In case of livestock, cattles (494903), buffaloes (349632), sheep (16209), goats (319664), pigs (31376) and poultry birds (175885) form the major strength.

Farrukhabad district is located on 79° 7' to 80° 2' east longitude and 26° 46' to 27° 43' north latitude. The district gets temperature ranging between 5.5 °C to 45.0 °C and annual rainfall of 1020 mm. It is comprised of 3 tehsils, 7 blocks and 1570 villages. The total population of the district is 1.58 million with the density of 720 km² and literacy rate of 60.90%. The average size of land holding is 0.87 ha and cropping intensity 134.92 %. Majority of the farmers have less than 0.50 ha land. The total reported area is 219911 ha, out of which 151914 ha is net sown and 131278 ha is irrigated. The major soils vary from loamy to silty clay loam with fair water holding capacity and fertilizer responsive. The major crops in kharif are rice (14986 ha), maize (38723 ha), pearl millet (3324 ha), sorghum (2075 ha) and sesame (981 ha) with productivity of 22.76, 14.21, 12.41, 10.39 and 1.68 q ha⁻¹, respectively. In rabi, the major crops grown are wheat (70779 ha) with the productivity of 32.59 q ha⁻¹, barley (2771 ha) with the productivity of 24.75 q ha⁻¹, chickpea (1167 ha) with the productivity of 11.62 q ha⁻¹, field pea (648 ha) with the productivity of 17.38 q ha⁻¹, pigeonpea (1356 ha) with the productivity of 6.86 q ha⁻¹, lentil (797 ha) with the productivity of 12.15 q ha⁻¹, mustard (8171 ha) with the productivity of 13.13 q ha⁻¹ and potato (31875 ha) with the productivity of 260.66 q ha⁻¹. Another major crop cultivated is sugarcane (12774 ha) with the productivity of 619.40 q ha⁻¹. Total consumption of NPK (162.56, 74.36 and 13.64 kg/ha) was reported 250.56 kg/ha.

Cattles (128372), buffaloes (229652), sheep (13246), goats (152135), pigs (18391) and poultry birds (58091) are the major livestock.

Kannauj district is located on 79.91° east longitude and 27.06° north latitude. Geographical area of the district is 209839 ha. It is comprised of 3 tehsils and 7 blocks. The population of the district is 1.38 million with the density of 664 km² and literacy of 61.90%. The average size of holding is 0.71 ha. The total reported area is 208973 ha, out of which 139271 ha is net sown and 128979 ha irrigated with cropping intensity of 156.54%. The average annual rainfall of 783.40 mm, temperature between 6 °C to 42 °C and sandy loam to silty loam and sodic nature of soils determine the agro-ecological situation of the district. The major kharif crops are rice (17211 ha) with the productivity of 23.99 q ha⁻¹, maize (49512 ha) with the productivity of 15.74 q ha⁻¹, pearl millet (2474 ha) with the productivity of 16.51 q ha⁻¹, sorghum (2008 ha) with the productivity of 10.39 q ha⁻¹, groundnut (1129 ha) with the productivity of 7.23 q ha⁻¹, sesame (1488 ha) with the productivity of 1.68 q ha⁻¹, urdbean (367 ha) with the productivity of 5.23 q ha⁻¹ and pigeonpea (2296 ha) with the productivity of 6.86 q ha⁻¹. In rabi, the major crops grown are wheat (74147 ha) with the productivity of 34.89 q ha⁻¹, barley (1498 ha) with the productivity of 24.75 q ha⁻¹, chickpea (2005 ha) with the productivity of 11.62 q ha⁻¹, field pea (1572 ha) with the productivity of 17.38 q ha⁻¹, mustard (9780 ha) with the productivity of 12.28 q ha⁻¹, potato (37857 ha) with the productivity of 252.94 q ha⁻¹. Total consumption of NPK (93.96, 39.04 and 10.03 kg/ha) was reported 143.03 kg/ha.

The major animals reared are cattles (125752), buffaloes (234479), sheep (13715), goats (269687), pigs (21963) and poultry birds (82822).

Etawah district is located on 72° 20'' east longitude and 26° 47'' north latitude. The district is the part of upper Gangetic Plain region with a geographical area of 2434 km², population of 1.34 million and population density of 579 km². It is comprised of 5 tehsils, 8 blocks and 1461 villages. The literacy rate is 69.60% and average size of land holding is 0.87 ha. The cropping intensity of the district is 156.54%. The total reported area is 246152 ha, out of which

145200 ha is net sown and 117553 ha is irrigated. The average annual rainfall of 792 mm is received. The maximum temperature goes up to 44.40 °C during summer season and lowers down up to 2.2°C in winter season. The soils of the district are sandy loam to silty loam. The major crops of kharif are rice (31781 ha) with the productivity of 26.76 q ha⁻¹, pearl millet (42587 ha) with the productivity of 17.19 q ha⁻¹, maize (6588 ha) with the productivity of 16.98 q ha⁻¹, urdbean (2912 ha) with the productivity of 6.99 q ha⁻¹ and pigeonpea (4373 ha) with the productivity of 6.99 q ha⁻¹. In rabi, the major crops grown are wheat (88342 ha) with the productivity of 32.27 q ha⁻¹, barley (2276 ha) with the productivity of 24.75 q ha⁻¹, chickpea (1750 ha) with the productivity of 17.38 q ha⁻¹, field pea (1432 ha) with the productivity of 17.38 q ha⁻¹, mustard (16219 ha) with the productivity of 12.74 q ha⁻¹ and potato (8407 ha) with the productivity of 237.13 q ha⁻¹. Sugarcane is also raised (749 ha) with the productivity of 567.65 q ha⁻¹. Total consumption of NPK (72.74, 22.29 and 1.32 kg/ha) was reported 96.35 kg/ha.

In case of livestock, cattles (110825), buffaloes (208608), sheep (4526), goats (241361), pig (15488) and poultry birds (34768) are major wealth.

Auraiya district is the part of Kanpur division. The district is located on 78.50° 45 east longitude and 26.47° north latitude. It is comprised of 2 tehsils and 7 blocks. The total population is 1.18 million with density of 586 km² and literacy of 70.50%. Average size of holding is 0.84 ha. The total reported area is 200239 ha, out of which 140528 ha is net sown and 109822 ha irrigated with cropping intensity of 152.65%. The annual rainfall is 792.00 mm and temperature ranges between 2.2 °C to 44.40 °C. The soils of the district are sandy loam to silty loam. Major crops cultivated in kharif are rice (48919 ha) with the productivity of 27.69 q ha⁻¹, maize (10432 ha) with the productivity of 19.48 q ha⁻¹, pearl millet (28309 ha) with the productivity of 17.31 q ha⁻¹, sorghum (1486 ha) with the productivity of 11.28 q ha⁻¹, urdbean (2325 ha) with the productivity of 9.08 q ha⁻¹ and pigeonpea (3982 ha) with the productivity of 8.78 q ha⁻¹. In rabi, the major crops grown are wheat (94498 ha) with the productivity of 31.38 q ha⁻¹, barley (4306 ha) with the productivity of 24.75 q ha⁻¹,

chickpea (8827 ha) with the productivity of 9.88 q ha⁻¹, field pea (829 ha) with the productivity of 17.38 q ha⁻¹, lentil (314 ha) with the productivity of 12.15 q ha⁻¹, mustard (16742 ha) with the productivity of 10.39 q ha⁻¹ and potato (4054 ha) with the productivity of 306.29 q ha⁻¹. Sugarcane (1000 ha) is also grown with the productivity of 567.65 q ha⁻¹. Total consumption of NPK (61.40, 11.74 and 0.96 kg/ha) was 74.10 kg/ha.

The cattles (97183), buffaloes (199509), sheeps (7958), goats (189928), pigs (16339) and poultry birds (72184) form the livestock wealth.

Kanpur Nagar district situated on 80.33° east longitude and 26.47° north latitude, is the constituent of Kanpur division. It is comprised of 4 tehsils and 14 blocks. The total population of the district is 4.17 million with the density of 1321 km². The literacy rate is 74.40%. The average size of holding is 0.92 ha. Annual rainfall ranges around 783 mm and temperature between 6.0 °C to 45.6 °C. The soils of the district are alluvial to sandy loam. The cropping intensity is 135.93%. The total reported area is 299435 ha, out of which 194263 ha is net sown and 132174 ha is irrigated. The saline-alkaline soils also constitute a major area. The major crops in kharif are rice (30487 ha), maize (19540 ha), sorghum (9587 ha), urdbean (9712 ha), sesame (1711 ha) and pigeonpea (7105 ha) with the productivity of 16.23, 11.18, 11.05, 4.20, 1.68 and 12.16 q ha⁻¹, respectively. In rabi, the major crops are wheat (89726 ha), barley (4013 ha), chickpea (13674 ha), field pea (2224 ha), lentil (1047 ha), mustard (13463 ha) and potato (9781 ha) with the productivity of 30.11, 22.26, 10.25, 14.62, 12.15, 8.94 and 236.61 q ha⁻¹, respectively. Sugarcane (4492 ha) is grown with the productivity of 483.02 q ha⁻¹. Total consumption of NPK (90.50, 40.75 and 5.19 kg/ha) was 136.44 kg/ha.

Cattles (186437), buffaloes (278949), sheeps (9506), goats (208210), pigs (166253) and poultry birds (140033) are the major livestock in the district.

Kanpur Dehat district is located on 79° 30' to 80° east longitude and 26° to 25° 55' north latitude. It is comprised of 5 tehsils, 11 blocks and 1622 villages. The total population of the district is 1.56 million with the population density of 517 km² and literacy rate of 66.40%. The average size of holding is 0.97 ha

with the cropping intensity of 135.99%. The total reported area is 314984 ha, out of which 221592 ha is net sown and 156895 ha irrigated. The annual rainfall ranges between 780 to 825 mm with relative humidity of 76% and temperature between 6.0 °C to 45.6 °C. The major soils in the district are sandy loam, silty loam and sandy loam to loam texture, brown to yellowish brown in colour. Major crops cultivated in the district are rice (56707 ha) with the productivity of 18.92 q ha⁻¹, maize (10583 ha) with the productivity of 10.00 q ha⁻¹, pearl millet (11999 ha) with the productivity of 15.27 q ha⁻¹, sorghum (15783 ha) with the productivity of 13.94 q ha⁻¹, urdbean (7871 ha) with the productivity of 5.43 q ha⁻¹, pigeonpea (9523 ha) with the productivity of 14.17 q ha⁻¹ and sesame (1352 ha) with the productivity of 1.68 q ha⁻¹. In rabi, the major crops are wheat (112329 ha) with the productivity of 34.40 q ha⁻¹, barley (5142 ha) with the productivity of 24.75 q ha⁻¹, chickpea (20694 ha) with the productivity of 13.24 q ha⁻¹, field pea (2664 ha) with the productivity of 19.69 q ha⁻¹, lentil (489 ha) with the productivity of 12.15 q ha⁻¹, mustard (27482 ha) with the productivity of 9.73 q ha⁻¹ and potato (3377 ha) with the productivity of 254.82 q ha⁻¹. Sugarcane (2408 ha) is also raised with the productivity of 451.08 q ha⁻¹. Total consumption of NPK (77.71, 22.15 and 1.42 kg/ha) was 101.29 kg/ha.

Cattles (170806), buffaloes (200641), goats (323615), sheeps (17664), pigs (22661) and poultry birds (76410) form major livestock wealth.

Fatehpur district lies between the parallels of 25.93° north latitude and 80.81° east longitude. It is comprised of 3 tehsils, 13 blocks and 1352 villages. The total population of the district is 2.30 million with the density of 556 km² and literacy of 56.30%. The average size of holding is 0.84 ha and 54.46% farmers have less than 0.50 ha of land. The cropping intensity of the district is 132.51%. The reported area of the district is 421642 ha, net sown area is 288064 ha and irrigated area is 184161 ha. The rainfall of 1020 mm annually is received and temperature ranges between 5.5 °C to 45.0 °C. The soils of the district are sandy, sandy loam, clay loam and sodic in nature. The major crops of the district are rice (80582 ha), pearl millet (4631 ha), sorghum (11459 ha), urdbean (10111 ha), mungbean (1035 ha), pigeonpea (22226

ha), groundnut (584 ha) and sesame (6054 ha) with the productivity of 16.93, 11.66, 14.08, 4.76, 5.22, 7.22, 7.23 and 1.62 q ha⁻¹, respectively. In rabi, wheat (147236 ha), barley (6998 ha), chickpea (48880 ha), field pea (1416 ha), lentil (1687 ha), mustard (13586 ha) and potato (5968 ha) are grown with the productivity of 24.72, 9.29, 10.88, 8.41, 6.74, 6.31 and 145.86 q ha⁻¹. Sugarcane (9440 ha) is also cultivated with the productivity of 475.49 q ha⁻¹. Total consumption of NPK (105.75, 38.33 and 3.84 kg/ha) was 147.92 kg/ha.

The livestock population is mainly strengthened by cattles (331859), buffaloes (370964), sheep (113074), goats (312887), pigs (78184) and poultry birds (156387).

Pratapgarh district is situated on 25° 24' and 26° 11' north latitude and 18° 19' and 82° 27' longitude. It is comprised of 4 tehsils, 16 blocks and 2181 villages with the population of 2.73 million, population density of 735 km² and literacy of 57.60 %. Average size of land holding is 0.54 ha and more than 66% farmers have less than 0.50 ha land. The cropping intensity of the district is 150.77%. The reported area of the district is 361507 ha, net sown area is 208079 ha and total irrigated area is 179286 ha. The soils of the district are sandy, sandy loam, clay loam and considerable part as saline-alkaline. The average size of holding is 0.74 ha. The rainfall of 977 mm annually is received and temperature ranges between 5.5°C to 45.0°C. The major crops of the district are rice (98612 ha), pearl millet (11298 ha), sorghum (3475 ha), maize (965 ha), urdbean (5636 ha), mungbean (444 ha) and pigeonpea (6816 ha) with the productivity of 18.71, 8.82, 14.83, 13.26, 3.51, 5.22 and 7.92 q ha⁻¹, respectively. In rabi, wheat (147300 ha), barley (1881 ha), chickpea (4744 ha), field pea (4648 ha), mustard (1675 ha) and potato (6479 ha) with the productivity of 24.44, 14.86, 9.47, 8.41, 6.27 and 181.23 q ha⁻¹ are grown. Sugarcane (1221 ha) is also cultivated with the productivity of 451.62 q ha⁻¹. Total consumption of NPK (96.30, 21.15 and 4.31 kg/ha) was 121.76 kg/ha.

The livestock population is mainly strengthened by cattles (356821), buffaloes (304667), sheep (33429), goats (235175), pigs (105955) and poultry birds (200441).

Allahabad district is situated in southern-eastern part of the Uttar Pradesh. It lies between the parallels of 24°47' north latitude and 81°19' east longitude. The total geographical area of the district is 5437.2 km². It is comprised of 7 tehsils, 20 blocks and 3539 villages. The total population of the district is 4.94 million with the density of 900 km² and literacy of 62.10%. The average size of holding is 0.74 ha. The reported area of the district is 555413 ha, net sown area is 343750 ha, 251576 ha is irrigated and cropping intensity is 147.76%. The rainfall of 960.0 mm annually is received and temperature ranges between 6.19 °C to 40.79 °C with relative humidity of 91.66%. The soils of the district are sandy, sandy loam and saline-alkaline in nature. The major crops of the district are rice (162136 ha), pearl millet (28913 ha), sorghum (4395 ha), pigeonpea (16788 ha), urdbean (816 ha) and groundnut (642 ha) with the productivity of 21.15, 9.16, 14.36, 8.43, 4.29 and 7.23 q ha⁻¹, respectively. In rabi, wheat (208249 ha), barley (5067 ha), chickpea (13137 ha), field pea (4647 ha), lentil (5288 ha), mustard (683 ha), linseed (2463 ha) and potato (14021 ha) with the productivity of 23.35, 14.86, 9.44, 8.41, 6.74, 6.27, 3.58 and 204.90 q ha⁻¹ are grown. Sugarcane (788 ha) is also raised with the productivity of 451.62 q ha⁻¹. Total consumption of NPK (130.92, 41.40 and 4.38 kg/ha) was 176.70 kg/ha.

The livestock population is mainly strengthened by cattles (678722), buffaloes (472671), sheep (116682), goats (246288), pigs (124798) and poultry birds (385412).

Kaushambi district is situated at 25.53° north latitude and 81.38° east longitude. It is comprised of 7 tehsils and 20 blocks. The district is having a population of 1.29 million with the density of 726 km² and literacy of 46.90%. The average size of holding is 0.77 ha. The reported area of the district is 185406 ha, net sown area is 132243 ha and 87043 ha irrigated area with cropping intensity of 120.02%. The annual rainfall received is 914 mm and temperature ranges between 3.0 °C to 46.0 °C. The soils of the district are sandy, sandy loam and saline-alkaline in nature. The major crops of the district are rice (44367 ha), sorghum (7102 ha), pearl millet (10204 ha), urdbean (1425 ha), pigeonpea (11925 ha) and

Inventory of Agricultural Technologies for Uttar Pradesh

sesame (3068 ha) with the productivity of 15.16, 16.17, 11.63, 4.29, 6.69 and 1.62, respectively. In rabi, wheat (68503 ha), chickpea (13292 ha), barley (2611 ha), field pea (1720 ha), mustard (1308 ha) and potato (3404 ha) with the productivity of 21.77, 10.30, 14.86, 8.41, 6.27 and 146.63 q ha⁻¹ are grown. Sugarcane (1832 ha) is also grown with the productivity of 328.82 q ha⁻¹. Total consumption of NPK (112.45, 33.96 and 3.60 kg/ha) was 150.01 kg/ha.

Cattles (151861), buffaloes (168915), sheeps (38225), goats (122227), pigs (49319), poultry birds (19790) are the major animals.

C. Problems and Priorities

Problems related to natural resources viz.

depletion in groundwater table, decline in soil fertility, problem of sodicity due to increasing water table, problem of waterlogging, poor crop management practices, inadequate and poor quality seed supply, inadequate and non-availability of suitable varieties and untimely and insufficient seed availability and problems of heavy infestation of weed, disease and insect pest in crops and issues related to post harvest, processing and marketing are important constraints of production and productivity in agriculture and horticultural sectors.

Based on the Strategic Research and Extension Plan (SREP) & other documents, feedback from KVKs, the following constraints and resource & development priorities are listed below:

Agriculture	
Problems and Issues	Priorities
Problem of sodicity	<ul style="list-style-type: none"> • Need based use of canal water. • Maintenance of reclaimed sodic soils. • Promoting the cultivation of Sesbania. • Promotion of crops and varieties with tolerance to sodicity. • Use of organic manures.
Depletion in ground-water table	<ul style="list-style-type: none"> • Recharge of ground reservoir through rainwater and inter basin transfer of the water. • Judicious use of irrigation water. • Use of low water requiring crops, varieties and systems.
Poor seed replacement rate	<ul style="list-style-type: none"> • Awareness about improved varieties and hybrids. • Ensuring availability of seed of improved varieties through large-scale production. • Promotion of seed village production programme.
Problem of late sowing of wheat	<ul style="list-style-type: none"> • Promoting the varieties suitable for late sown namely PBW 373, UP-2338, Raj.3077, Raj-3765 and for very late sown conditions viz Halna (K-7903) and Unnat Halna (K-9423). • Promoting the use of Zero till ferti-seed drill in rice-wheat cropping system.
Low yield of maize grown in kharif season	<ul style="list-style-type: none"> • Popularization of early maturing hybrids, composites, quality protein maize (QPM) and creating awareness for replacement of local cultivars.
Low yield of indigenous scented cultivars of rice	<ul style="list-style-type: none"> • Promotion of high yielding varieties and hybrids of scented rice.
Problem of powdery mildew in fieldpea	<ul style="list-style-type: none"> • Promoting the powdery mildew resistant varieties.

District Specific Technological Interventions for Central & Southern Region

Low yield of pulse crops due to poor management	<ul style="list-style-type: none"> Promoting the adequate use of nutrient application viz use of 20-25 kg/ ha sulphur and spray of 2% urea/ DAP solution. Awareness campaign for weed control in initial growth stage either mechanically or with the use of herbicides.
Lack of early maturing and high yielding varieties and hybrids of sunflower	<ul style="list-style-type: none"> Popularization of suitable hybrids.
Problem of <i>Phalaris minor</i> in wheat	<ul style="list-style-type: none"> Promoting the crop rotation and use of control measures.
Low yield of ratoon crop of sugarcane	<ul style="list-style-type: none"> Promoting the effective ratoon management practices.
Problem of micro nutrient deficiency	<ul style="list-style-type: none"> Awareness about soil test based application of micro nutrients. Training and demonstration on application of micronutrients.
Problem of grain breakage during milling leading to poor rice recovery	<ul style="list-style-type: none"> Popularization of rubber roller shellers in rice milling for better quality rice recovery.

Horticulture

Problems and Issues	Priorities
Sodicity and deficiency of micro-nutrients	<ul style="list-style-type: none"> Encouraging cultivation of aonla, ber, bael and guava on sodic soils and inter-cropping.
Irrigation	<ul style="list-style-type: none"> Popularization of drip and sprinkler irrigation system. Rain water management using watershed approach especially for vegetables.
Severe incidence of insect pest, diseases and other complex problem	-
a) Malformation, alternate bearing, fruit drop and <i>Jhumka</i> in mango	<ul style="list-style-type: none"> Rejuvenation of old and unproductive orchards. Popularization of regular bearing Dashehari 51 clone.
b) Wilt in guava	<ul style="list-style-type: none"> Popularization of wilt resistant root stocks.
c) Phomopsis and fruit and shoot borer in brinjal	<ul style="list-style-type: none"> Promotion of resistant varieties.
d) Powdery mildew in vegetable pea	<ul style="list-style-type: none"> Promotion of resistant varieties.
Lack of improved varieties in cucurbits	<ul style="list-style-type: none"> Adoption of recommended package of practices.
Lack of maturity standards and improper post-harvest management of Hari Chhaal Banana	<ul style="list-style-type: none"> Awareness about carbide injury.
Off-season flowering and heavy fruit drop in aonla	<ul style="list-style-type: none"> Popularization of recommended varieties and agro-technology.
Alternate bearing and blind shoot. Problem in damask rose	<ul style="list-style-type: none"> Popularization of Noorjahan variety (developed by CIMAP) for commercial cultivation.
Early and late blight hollow heart of potato and lack of proper storage facilities	<ul style="list-style-type: none"> Promotion of early and late blight resistant varieties. Availability of quality seed. Indigenous cold storage facilities. Encouraging cultivation of processing potato varieties viz Kufri Chipsona-1, Kufri Chipsona-2 and Kufri Chipsona-3.

II. South Western Semi Arid Zone

This zone consists of 7 districts. The geomorphology of these districts is given below.

A. Agroclimatic Features

This zone comprises the districts of Aligarh, Etah, Mainpuri, Mathura, Agra, Mahamaya Nagar and Firozabad. The soils are alluvial in nature and affected by salts. Average annual rainfall is 662 mm and the temperature ranges from 4 °C to 47 °C. The average relative humidity ranges from 32 to 82%. The ground-water of Agra, Mathura and Aligarh districts is brackish. Cropping intensity of the zone is 146 %. Pearl millet, maize, rice, wheat, rapeseed and mustard are the major field crops of the zone. Potato, ash gourd, vegetable pea, garlic, onion, spices and flowers are also cultivated. The major limitations of the zone are underground *brakish* water, alkalinity and undulating ravines.

B. Geomorphology of Districts

Aligarh district is situated on 78.06⁰ east longitude and 27.89⁰ north latitude. The district receives annual rainfall around 702 mm and temperature ranges between 4 °C to 47 °C. It is comprised of 4 tehsils, 11 blocks and 1706 villages. The district is inhabited by 2.99 million people with the literacy of 58.5% and population density of 820 per km². Majority of farmers (42.33%) have land holdings below 0.50 ha. The cropping intensity of the district is 158.36%. The district has reported area of 369694 ha, net sown area of 301751 ha and irrigated area of 297605 ha. The major soils of the district are sandy & sandy loam with poor soil fertility. Canal and tube-well are the major sources of irrigation. Major crops grown in kharif are rice (79239 ha) with the productivity of 26.61 q ha⁻¹, maize (26381 ha) with the productivity of 15.91 q ha⁻¹, pearl millet (83772 ha) with the productivity of 17.17 q ha⁻¹, pigeonpea (17930 ha) with the productivity of 9.05 q ha⁻¹, urdbean (730 ha) with the productivity of 5.61 q ha⁻¹ and mungbean (593 ha) with the productivity of 5.22 q ha⁻¹. In rabi, the principal crops grown are wheat (222714 ha) with productivity of 28.56 q ha⁻¹, barley (14643 ha) with the productivity of 27.88 q ha⁻¹, chickpea (381

ha) with the productivity of 8.30 q ha⁻¹, field pea (411 ha) with the productivity of 9.67 q ha⁻¹, lentil (2191 ha) with the productivity of 9.05 q ha⁻¹, mustard (24760 ha) with the productivity of 11.08 q ha⁻¹ and potato (5313 ha) with the productivity of 238.32 q ha⁻¹. Sugarcane (12617 ha) is another important crop grown with the productivity of 596.96 q ha⁻¹. Total consumption of NPK (64.45, 38.37 and 2.93 kg/ha) was 105.75 kg/ha. Rose, okra and honey production are commercially done in different pockets of the district.

There are 143750 cattles, 716174 buffaloes, 9587 sheeps, 145471 goats, 23527 pigs and 72326 poultry birds, etc.

Mahamaya Nagar district is situated on 78.04⁰ east longitude and 27.60⁰ north latitude. The district is characterized by annual rainfall of 770 mm, temperature between 4.5 °C to 47.0 °C and semi-arid climate. It comprises of 4 tehsils and 8 blocks. The total population of the district is 1.33 million with the density of 726 km² and literacy of 62.50%. The cropping intensity is 151.71%. The total reported area is 178987 ha, out of which 147335 ha is net sown and irrigated area is 141926 ha. The major soils are sandy & sandy loam type with poor soil fertility. The major crops grown are rice (16952 ha), maize (5340 ha), pearl millet (46411 ha) and pigeonpea (7566 ha) in kharif with the productivity of 19.00, 18.03, 16.05 and 10.69 q ha⁻¹, respectively. In rabi, wheat (85405 ha), barley (3866 ha), chickpea (29 ha), field pea (56 ha), lentil (393 ha), mustard (13997 ha) and potato (22467 ha) are the major crops with the productivity of 27.90, 24.12, 8.30, 9.67, 9.05, 10.86 and 294.76 q ha⁻¹, respectively. Sugarcane (516 ha) is another crop cultivated with the productivity of 538.46 q ha⁻¹. Total consumption of NPK (117.41, 40.39 and 2.42 kg/ha) was 160.23 kg/ha.

Cattles (55176), buffaloes (353594), sheeps (8427), goats (83932), pigs (13398) and poultry birds (25420) are the major livestock.

Mathura district is located at 27.50⁰ north latitude and 77.68⁰ east longitude and characterized by semi-arid agroclimate with the temperature ranging between 2 °C to 48 °C and annual rainfall between 532 to 620 mm. The district is comprised of 3 tehsils,

10 blocks and 871 villages. Total population is reported 2.08 million with the density of per 621 km² and literacy of 61.50%. The cropping intensity of the district is 143.53%. Total reported area is 330165 ha, out of which 269875 ha is net sown and 264362 ha is irrigated. Major soils of the district are sandy loam to loamy in nature. Mostly alluvial soils are formed by the silt of Yamuna & Ganga, which are quite fertile. The district is also having large waterlogged area and patches of usar soils, which are mainly found in Chhata, Goverdhan & Nandgaon blocks. The major crops grown in kharif are rice (77442 ha) with the productivity of 20.88 q ha⁻¹, pearl millet (43620 ha) with the productivity of 9.28 q ha⁻¹, sorghum (916 ha) with the productivity of 7.75 q ha⁻¹, maize (204 ha) with the productivity of 18.16 q ha⁻¹, urdbean (215 ha) with the productivity of 5.61 q ha⁻¹, pigeonpea (3372 ha) with the productivity of 8.47 q ha⁻¹ and sesame (488 ha) with the productivity of 1.68 q ha⁻¹. Rabi crops of the district are wheat (188891 ha) with the productivity of 28.50 q ha⁻¹, barley (8989 ha) with the productivity of 24.99 q ha⁻¹, mustard (49137 ha) with the productivity of 16.52 q ha⁻¹, potato (8608 ha) with the productivity of 286.94 q ha⁻¹ and sugarcane (10576 ha) with the productivity of 425.20 q ha⁻¹. Sugarcane (6292 ha) is another crop raised with the productivity of 442.88 q ha⁻¹. Total consumption of NPK (68.57, 29.09 and 1.55 kg/ha) was 99.21 kg/ha.

Cattles (130871), buffaloes (666360), sheeps (43595), goats (71044) and poultry birds (50419) are the major livestock.

Agra district is situated on 27.2° north latitude and 77.9° east longitude. River Chambal makes the southern boundary of district and flows from west to east separating district. Average annual rainfall of 750 mm and temperature between 4 °C to 48 °C are reported. District is comprised of 6 tehsils, 15 blocks and 904 villages. The total reported population is 3.62 million with the density of 899 km² and literacy of 62.60%. 36.48% of land holders occupy < 0.5 ha land. Total reported area is 398460 ha, out of which net sown area is 285496 ha and irrigated area is 235063 ha with the cropping intensity of 139.51%. The soils of the district are sandy loam to loam in nature with poor to medium status of soil fertility. *Brackish* water is the major problem. Major crops of

the district are rice (2656 ha) with the productivity of 18.93 q ha⁻¹, pearl millet (100918 ha) with the productivity of 13.84 q ha⁻¹, sorghum (3380 ha) with the productivity of 11.37 q ha⁻¹, pigeonpea (2567 ha) with the productivity of 5.31 q ha⁻¹, urdbean (291 ha) with the productivity of 5.61 q ha⁻¹ and sesame (111 ha) with the productivity of 1.68 q ha⁻¹ in kharif. In rabi, major crops grown are wheat (124278 ha) with the productivity of 27.70 q ha⁻¹, barley (8592 ha) with the productivity of 24.12 q ha⁻¹, chickpea (6227 ha) with the productivity of 8.32 q ha⁻¹, lentil (1587 ha) with the productivity of 9.05 q ha⁻¹, mustard (71073 ha) with the productivity of 12.59 q ha⁻¹ and potato (37453 ha) with the productivity of 232.58 q ha⁻¹. Total consumption of NPK (90.53, 37.34 and 5.09 kg/ha) was 132.95 kg/ha.

Cattles (160929), buffaloes (710522), sheeps (72296), goats (250990), pigs (41885) and poultry birds (61979) are the major livestock.

Firozabad district is situated on 78.39° east longitude and 27.15° north latitude. The district receives an annual rainfall between 605 to 715 mm and temperature ranges between 7.4 °C to 45.6 °C. It is comprised of 3 tehsils, 9 blocks and 795 villages. The population of district is 2.05 million with the density of 870 km², literacy of 64.50%. More than 38% farmers are marginal in nature. The cropping intensity of the district is 151.06%. Total reported area is 241180 ha out of which total net sown area is 169806 ha. Total irrigated area of the district is 174356 ha. Soil is alluvial and texture varies from sandy loam to clay loam. A large tract is ravinous. The major field crops are rice (43963 ha) with the productivity of 29.33 q ha⁻¹, maize (5284 ha) with the productivity of 24.00 q ha⁻¹, pearl millet (59566 ha) with the productivity of 18.39 q ha⁻¹, urdbean (867 ha) with the productivity of 5.61 q ha⁻¹, sesame (766 ha) with the productivity of 1.68 q ha⁻¹ and pigeonpea (1025 ha) with the productivity of 8.47 q ha⁻¹. In rabi, principal crops grown are wheat (105443 ha) with the productivity of 29.35 q ha⁻¹, barley (9940 ha) with the productivity of 28.16 q ha⁻¹, chickpea (1741 ha) with the productivity of 8.30 q ha⁻¹, field pea (391 ha) with the productivity of 9.67 q ha⁻¹, mustard (10362 ha) with the productivity of 12.84 q ha⁻¹ and potato (38106 ha) with the productivity of 261.67 q ha⁻¹. Total

consumption of NPK (102.33, 41.76 and 3.18 kg/ha) was 147.27 kg/ha.

In livestock, cattles (85929), buffaloes (444726), goats (196723), sheeps (14288), pigs (25729) and poultry birds (50629), etc. are the major animals.

Mainpuri district is situated on 78° 27' to 79° 26' east longitude and 26° 53' to 27° 31' north latitude. The temperature varies between 1.4 °C to 45.4 °C and annual rainfall of 738 mm is reported. It is comprised of 3 tehsils, 9 blocks and 826 villages. The population of the district is 1.59 million with density of 579 per km² and literacy rate of 66.10%. The cropping intensity of the district is 147.78%. Total reported area is 273074 ha, out of which total net sown area is 191051 ha. Total irrigated area of the district is 181045 ha. Majority of the farmers are marginal as they have less than 0.50 ha land. Soils are alluvial. Textured class varies from loamy sand to silty clay loam with low to very low in nitrogen as well as phosphorus and medium & high in potash. The major crops grown in kharif are rice (204174 ha) with the productivity of 25.06 q ha⁻¹, maize (51579 ha) with the productivity of 20.06 q ha⁻¹, pearl millet (6475 ha) with the productivity of 19.36 q ha⁻¹, urdbean-summer (1206 ha) with the productivity of 4.71 q ha⁻¹, pigeonpea (1240 ha) with the productivity of 8.47 q ha⁻¹, groundnut (214 ha) with the productivity of 7.23 q ha⁻¹ and sorghum (773 ha) with the productivity of 7.75 q ha⁻¹. In rabi, major crops grown are wheat (119101 ha) with the productivity of 29.85 q ha⁻¹, barley (3541 ha) with the productivity of 24.12 q ha⁻¹, chickpea (919 ha) with the productivity of 8.30 q ha⁻¹, field pea (1638 ha) with the productivity of 9.67 q ha⁻¹, mustard (8624 ha) with the productivity of 12.48 q ha⁻¹ and potato (13997 ha) with the productivity of 196.30 q ha⁻¹. Total consumption of NPK (87.80, 40.04 and 2.91 kg/ha) was 130.75 kg/ha.

In the case of livestock, cattles (81378), buffaloes (282430), sheeps (4027), goats (196866), pigs (19496) and poultry (63426) form the major livestock strength.

Etah district is situated on 78° 11' to 79° 17' east longitude and 27° 18' to 28° 2' north latitude. The district is characterized by temperature between 4.5 °C to 47.0 °C and annual rainfall of 770 mm. It is comprised of 5 tehsils, 15 blocks and 1507 villages. The district is having a population of 2.79 million, density of 628 km² and literacy of 54.60%. The average size of holding (0.87 ha), cropping intensity (158.99%), total reported area (439445 ha), net sown area (317061 ha) and irrigated area (294751 ha) present the agricultural scenario of the district. The soils of the district are sandy to sandy loam and sodic in nature. The major crops grown in kharif are rice (90028 ha) with the productivity of 21.66 q ha⁻¹, maize (49307 ha) with the productivity of 19.40 q ha⁻¹, pearl millet (75841 ha) with the productivity of 18.10 q ha⁻¹, pigeonpea (5974 ha) with the productivity of 10.64 q ha⁻¹, urdbean (1338 ha) with the productivity of 5.61 q ha⁻¹ and mungbean (738 ha) with the productivity of 3.98 q ha⁻¹. In rabi, wheat (227576 ha) with the productivity of 28.32 q ha⁻¹, barley (7303 ha) with the productivity of 24.12 q ha⁻¹, chickpea (946 ha) with the productivity of 8.30 q ha⁻¹, lentil (5606 ha) with the productivity of 9.05 q ha⁻¹, mustard (12256 ha) with the productivity of 10.80 q ha⁻¹ and potato (10900 ha) with the productivity of 228.13 q ha⁻¹ are the major crops of the district. Sugarcane (8197 ha) is also raised with the productivity of 521.68 q ha⁻¹. Total consumption of NPK (71.74, 28.51 and 3.08 kg/ha) was 103.33 kg/ha.

Cattles (181454), buffaloes (683301), sheeps (8343), goats (274942), pigs (32118) and poultry birds (80124) are the major livestock.

C. Problems and Priorities

Agriculture	
Problems and Issues	Priorities
Problem of <i>brackish</i> water	<ul style="list-style-type: none"> • Development of the technologies for the use of <i>brackish</i> water. • Development of cropping system.
Poor seed replacement rate	<ul style="list-style-type: none"> • Awareness about improved varieties and hybrids. • Promotion of seed village production programmes.
Problem of yellow mosaic virus disease in mungbean and urdbean	<ul style="list-style-type: none"> • Promotion of resistant varieties to yellow vein mosaic virus.
Problem of wilt and sterility mosaic disease in pigeonpea	<ul style="list-style-type: none"> • Promoting inter cropping of pigeonpea with sorghum. • Promotion of integrated pest management.
Problem of wilt and pod borer in chickpea	<ul style="list-style-type: none"> • Awareness about wilt and pod borer tolerant/ resistant varieties. • Promotion of integrated pest management.
Problem of micro-nutrient deficiency	<ul style="list-style-type: none"> • Awareness about soil test based application of micronutrients. • Training and demonstration on application of micronutrients.
Low productivity of mustard	<ul style="list-style-type: none"> • Promotion of recommended cultivars. • Rearing of honey bees. • Promotion of integrated pest management.
Low productivity of pearl millet	<ul style="list-style-type: none"> • Promotion of hybrids. • Cultivation of pearl millet in summer season.

Horticulture

Problems and Issues	Priorities
<i>Brackish</i> water problem	<ul style="list-style-type: none"> • Development/ identification of suitable varieties/ germplasms of aonla, guava, ber, brinjal, pea, cucurbits, garlic, coriander, potato, rose, tuberose and medicinal plants tolerant to <i>brackish</i> water. • Development of modules for conjunctive use of <i>brackish</i> water.
Sodicity and undulating ravines	<ul style="list-style-type: none"> • Encouraging cultivation of aonla, ber, bael and guava on sodic soils and inter-cropping. • Afforestation on ravines and degraded lands.
Alternate bearing and blind shoot problem in damask rose	<ul style="list-style-type: none"> • Popularization of Noorjahan variety (developed by CIMAP) for commercial cultivation.
Lack of improved varieties of ash gourd for processing	<ul style="list-style-type: none"> • Development/ screening of improved ash gourd varieties for processing.
Lack of improved varieties and post harvest management practices in garlic	<ul style="list-style-type: none"> • Development/ screening of high yielding disease resistant varieties of garlic having bold clones and better shell life. • Techniques for controlling sprouting during storage.

III. Bundelkhand Zone

This zone consists of 7 districts. The geomorphology of these districts is given below.

A. Agroclimatic Features

This zone comprises the districts of Jhansi, Lalitpur, Banda, Hamirpur, Jalaun, Mahoba and Chitrakoot. Hot climate, undulating topography, residual and low depth of soil and exploitation of groundwater because of land impermeable rock on the surface characterize the zone. It has semi arid climate with average annual rainfall of 800 mm and the temperature ranging between 3.0 °C to 47.8 °C. The relative humidity in this zone ranges from 26% to 88%. The zone has 4 broad soil groups, namely, *Rakar, Parwa, Kabar* and *Mar*. Cropping intensity is about 111%. The prominent crops are wheat, chickpea, pearl millet and sorghum. Other crops grown are pigeonpea, lentil, linseed and rice. Ginger and beetle vine cultivation is prominent in this zone. Amongst fruits, citrus fruits are cultivated. Tomato and brinjal are the main vegetables. The major limitations are inferior soils, lack of irrigation resources and improved implements.

B. Geomorphology of Districts

Jhansi district is located at 25.45° north latitude and 78.56° east longitude. It is comprised of 5 tehsils, 8 blocks and 760 villages. The population of the district is 1.74 million with population density of 347 km² and literacy of 65.50%. The average size of holding is 1.74 ha. The reported area of the district is 499393 ha, net sown area 326079 ha and cropping intensity 116.14%. The total irrigated area of the district is 205209 ha. The average annual rainfall is 850 mm. The temperature ranges between 3.4 °C to 46.5 °C. The major soils in the district are rocky; fields are undulated (0.5% to 10%) with hill rocks here and there. The major kharif crops are rice (1080 ha) with the productivity of 12.62 q ha⁻¹, maize (2411 ha) with the productivity of 5.32 q ha⁻¹, sorghum (9616 ha) with the productivity of 9.67 q ha⁻¹, urdbean (67225 ha) with the productivity of 4.27 q ha⁻¹, mungbean (6543 ha) with the productivity of 3.05 q ha⁻¹, pigeonpea (3910 ha) with the productivity of 3.87 q ha⁻¹, groundnut (31041 ha) with the productivity of

5.05 q ha⁻¹, sesame (602 ha) with the productivity of 9.76 q ha⁻¹ and soybean (1418 ha) with the productivity of 6.56 q ha⁻¹. In rabi, the major crops grown are wheat (112811 ha) with the productivity of 20.81 q ha⁻¹, chickpea (58587 ha) with the productivity of 6.02 q ha⁻¹, field pea (100185 ha) with the productivity of 9.86 q ha⁻¹, lentil (27686 ha) with the productivity of 5.04 q ha⁻¹, mustard (6465 ha) with the productivity of 6.04 q ha⁻¹ and linseed (2925 ha) with the productivity of 4.66 q ha⁻¹. Total consumption of NPK (34.04, 23.66 and 0.05 kg/ha) was 57.75 kg/ha.

Cattles (306827), buffaloes (182382), sheeps (55705), goats (218781), pigs (14004) and poultry birds (61732) are the major animals of the district.

Lalitpur district lies between 24° 11' and 25° 13' north latitude and 78° 11' and 79° east longitude. Total geographical area is 5039 km², number of tehsils 3, blocks 6 and villages 689. The population is 0.97 million, population density 194 km² and literacy 49.50%. Average size of holding is 1.88 ha. The reported area of the district is 509436 ha and net sown area is 237480 ha with the cropping intensity of 133.95%. The total irrigated area of the district is 171355 ha. The average annual rainfall of 1044 mm and temperature between 3 °C to 46.5 °C are received. The major crops of the district are rice (4996 ha) with the productivity of 7.23q ha⁻¹, maize (39225 ha) with the productivity of 9.42 q ha⁻¹, sorghum (4176 ha) with the productivity of 15.69 q ha⁻¹, urdbean (88620 ha) with the productivity of 8.06 q ha⁻¹, mungbean (5414 ha) with the productivity of 6.70 q ha⁻¹, groundnut (7350 ha) with the productivity of 7.18 q ha⁻¹, sesame (13212 ha) with the productivity of 1.62 q ha⁻¹ and soybean (5297 ha) with the productivity of 9.76 q ha⁻¹. In rabi, the major crops grown are wheat (96659 ha) with the productivity of 18.65 q ha⁻¹, barley (5625 ha) with the productivity of 19.22 q ha⁻¹, chickpea (43508 ha) with the productivity of 10.05 q ha⁻¹, field pea (58071 ha) with the productivity of 11.07 q ha⁻¹, lentil (33067 ha) with the productivity of 8.94 q ha⁻¹, mustard (2901 ha) with the productivity of 5.50 q ha⁻¹ and linseed (601 ha) with the productivity of 4.55 q ha⁻¹. Sugarcane (398 ha) is also grown in few pockets with the productivity of 385.29 q ha⁻¹. Total consumption of NPK (18.58, 17.91 and 0.08 kg/ha) was 36.57 kg/ha.

Cattles (439576), buffaloes (163746), sheep (12216), goats (153714), pigs (4028) and poultry birds (65200) are the major livestock.

Jalaun district is the part of Jhansi division and located on 25.99° north latitude and 79.45° east longitude. The district is comprised of 5 tehsils, 9 blocks and 942 villages. The population is 1.45 million, population density is 319 km² and literacy is 64.50%. Average size of holding is 1.68 ha. The reported area of the district is 454434 ha, net sown area is 345131 ha and cropping intensity is 110.16%. The net irrigated area of the district is 157239 ha. The average rainfall of 717.81 mm, temperature between 3.1 °C to 48.20 °C and Bundelkhand soils characterize geomorphology. Soils are made up from igneous and metamorphic rocks. According to the depth of water table, soils are classified as *Parwa, Kabar, Mar, Rakar* and Yamuna alluvium. According to soil texture classification soils are called as black soils, red soils, sandy soils, sandy loam soils and rakar soils. The major crops of the district are rice (4185 ha) with the productivity of 8.20 q ha⁻¹, pearl millet (14402 ha) with the productivity of 18.32 q ha⁻¹, sorghum (11791 ha) with the productivity of 16.84 q ha⁻¹, urdbean (32799 ha) with the productivity of 5.07 q ha⁻¹, mungbean (1693 ha) with the productivity of 6.70 q ha⁻¹, pigeonpea (8677 ha) with the productivity of 6.94 q ha⁻¹, sesame (26665 ha) with the productivity of 1.55 q ha⁻¹ and soybean (905 ha) with the productivity of 9.76 q ha⁻¹. In rabi, the major crops grown are wheat (116484 ha) with the productivity of 28.16 q ha⁻¹, chickpea (56153 ha) with the productivity of 6.58 q ha⁻¹, field pea (59003 ha) with the productivity of 10.46 q ha⁻¹, lentil (45968 ha) with the productivity of 6.59 q ha⁻¹ and mustard (15702 ha) with the productivity of 4.42 q ha⁻¹. Sugarcane (3644 ha) is raised with the productivity of 385.33 ha⁻¹. Total consumption of NPK (45.57, 22.98 and 0.19 kg/ha) was 68.74 kg/ha.

Cattles (237087), buffaloes (239162), sheep (30048), goats (257389), pigs (26522) and poultry birds (50740) are the major livestock.

Hamirpur district is situated on 79° 17' to 80° 21' east longitude and 25° 7' to 26° 7' north latitude. The district is comprised of 2 tehsils, 7 blocks and 926 villages. The total population of the district is 1.04

million with the density of 244 km² and literacy of 57.40%. Average size of holding is 1.95 ha. The reported area of the district is 389705 ha, net sown area is 297689 ha, cropping intensity is 111.19% and irrigated area is 101411 ha. Average annual rainfall is 864 mm with the relative humidity 94% and temperature ranges between 2.6 °C to 47 °C. The soils of the district are shallow textured, light to deep textured black and alluvial soils with varied effective crop growing period. The area is generally rocky, undulating plain of black soil interrupted with scattered hills and numerous drainage channels. The major crops of the district are rice (630 ha) with the productivity of 8.53 q ha⁻¹, sorghum (28590 ha) with the productivity of 5.55 q ha⁻¹ and urdbean (34211 ha) with the productivity of 2.97 q ha⁻¹, mungbean (5446 ha) with the productivity of 3.12 q ha⁻¹, pigeonpea (12496 ha) with the productivity of 10.29 q ha⁻¹ and sesame (9790 ha) with the productivity of 1.61 q ha⁻¹. In rabi, wheat (82453 ha) with the productivity of 20.44 q ha⁻¹, barley (1818 ha) with the productivity of 8.72 q ha⁻¹, chickpea (85949 ha) with the productivity of 6.19 q ha⁻¹, lentil (40453 ha) with the productivity of 4.51 q ha⁻¹, field pea (33862 ha) with the productivity of 6.67 q ha⁻¹, mustard (5260 ha) with the productivity of 4.45 q ha⁻¹, linseed (3466 ha) with the productivity of 3.99 q ha⁻¹ are grown. Sugarcane (4430 ha) is also cultivated with the productivity of 426.64 q ha⁻¹. Total consumption of NPK (17.92, 10.56 and 0.11 kg/ha) was 28.59 kg/ha.

Cattles (266208), buffaloes (133391) sheep (25872), goats (128723) pigs (25076) and poultry birds (81240) are major livestock. The reported fish pond area is 114 ha with the productivity of 23.4 q/ha.

Mahoba district is located at 25° 18' north latitude and 79° 53' east longitude. It is comprised of 3 tehsils and 4 blocks. The total population of the district is 0.70 million with the density of 246 km² and literacy of 53.30%. The average size of holding is 1.74 ha. The net sown area is 238749 ha and cropping intensity is 108.30%. The reported area of the district is 326190 ha and total irrigated area is 88529 ha. The average rainfall is 398.2 mm and temperature ranges between 3 °C to 47 °C. The major crops grown in kharif are rice (109 ha) with the productivity of 8.53 q

ha⁻¹, sorghum (5207 ha) with the productivity of 8.70 q ha⁻¹, urdbean (36733 ha) with the productivity of 4.04 q ha⁻¹, mungbean (7551 ha) with the productivity of 2.00 q ha⁻¹, pigeonpea (4843 ha) with the productivity of 6.30 q ha⁻¹, sesame (9970 ha) with the productivity of 1.61 q ha⁻¹ and groundnut (8176 ha) with the productivity of 5.43 q ha⁻¹, etc. In rabi, the major crops grown are wheat (68763 ha) with the productivity of 13.25 q ha⁻¹, barley (3020 ha) with the productivity of 8.72 q ha⁻¹, chickpea (70133 ha) with the productivity of 5.72 q ha⁻¹, lentil (25343 ha) with the productivity of 3.78 q ha⁻¹, field pea (38614 ha) with the productivity of 6.43 q ha⁻¹, mustard (3092 ha) with the productivity of 3.75 q ha⁻¹ and linseed (7441 ha) with the productivity of 5.04 q ha⁻¹. Sugarcane (1869 ha) is cultivated with the productivity of 426.64 q ha⁻¹. Total consumption of NPK (14.44, 13.77 and 0.15 kg/ha) was 28.36 kg/ha.

Cattles (200091), buffaloes (102969), sheeps (23772), goats (154531), pigs (25765) and poultry birds (77590) are the major livestock.

Banda district is situated on 80° 07' to 81° 34' east longitude and 24° 53' to 25° 55' north latitude. It is comprised of 4 tehsils, 8 blocks and 1204 villages. The total population of the district is 1.53 million with the density of 345 km² and literacy of 54.40%. Average size of holding is 1.50 ha. The reported area of the district is 438575 ha, net sown area is 346218 ha, cropping intensity 119.28% and irrigated area is 121274 ha. The annual rainfall is 612 mm and temperature ranges between 2.6 °C to 47.0 °C. The major crops grown in kharif are rice (57838 ha) with the productivity of 8.84 q ha⁻¹, pearl millet (2005 ha) with the productivity of 8.18 q ha⁻¹, sorghum (26677 ha) with the productivity of 7.39 q ha⁻¹, urdbean (4784 ha) with the productivity of 2.48 q ha⁻¹, pigeonpea (19129 ha) with the productivity of 7.97 q ha⁻¹, mungbean (2033 ha) with the productivity of 2.61 q ha⁻¹, sesame (1298 ha) with the productivity of 1.61 q ha⁻¹, groundnut (808 ha) with the productivity of 4.84 q ha⁻¹, etc. In rabi, the major crops grown are wheat (127107 ha) with the productivity of 14.66 q ha⁻¹, barley (1222 ha) with the productivity of 8.72 q ha⁻¹, chickpea (104656 ha) with the productivity of 5.71 q ha⁻¹, field pea (1807 ha) with the productivity of 5.12

q ha⁻¹, lentil (47250 ha) with the productivity of 4.83 q ha⁻¹, mustard (1835 ha) with the productivity of 3.60 q ha⁻¹ and linseed (3026 ha) with the productivity of 3.92 q ha⁻¹. Total consumption of NPK (12.33, 7.32 and 0.10 kg/ha) was 19.75 kg/ha.

Cattles (386718), buffaloes (232638) sheeps (12491), goats (151273) pigs (17887) and poultry birds (45760) are the major livestock.

Chitrakoot district is situated at 80° 58' to 81° 34' east longitude and 24° 48' to 25° 12' north latitude. It is comprised of 2 tehsils and 5 blocks. The total population of the district is 0.80 million with the density of 242 km² and literacy of 65.00%. The average size of holding is 1.59 ha. The net sown area is 167894 ha with cropping intensity of 109.07%. The reported area of the district is 340801 ha, out of which 50254 ha is irrigated. An annual rainfall of 700 mm or even less with the relative humidity of 54.5% and temperature between 3.0 °C to 48.0 °C are usually recorded. The district is divided into four agro-ecological situations i.e. Heavy soils (*Mar*) with minimum irrigation facilities, fertile, black soil in colour; sandy loam (*Parwa*) soils have no irrigation facilities, medium in fertility, suitable for vegetable and cereals; clay loam (*Kabar*) soils are suitable for cultivation of orchards, fertile in nature; and sandy (*Raker*) poor in fertility, not suitable for cultivation. The major crops of the district are rice (10584 ha) with the productivity of 4.68 q ha⁻¹, sorghum (16072 ha) with the productivity of 6.26 q ha⁻¹, pearl millet (9608 ha) with the productivity of 8.01 q ha⁻¹, urdbean (869 ha) with the productivity of 3.64 q ha⁻¹, mungbean (1215 ha) with the productivity of 2.61 q ha⁻¹, pigeonpea (16266 ha) with the productivity of 5.41 q ha⁻¹. In rabi, wheat (52023 ha) with the productivity of 12.53 q ha⁻¹, barley (6683 ha) with the productivity of 8.44 q ha⁻¹, lentil (17091 ha) with the productivity of 3.73 q ha⁻¹, chickpea (38478 ha) with the productivity of 4.11 q ha⁻¹, mustard (3784 ha) with the productivity of 2.44 q ha⁻¹ are grown. Total consumption of NPK (22.92, 13.25 and 0.26 kg/ha) was 36.43 kg/ha.

Cattles (420334), buffaloes (138847), sheeps (18547), goats (95788), pigs (10276) and poultry birds (20010) are the major livestock population.

C. Problems and Priorities

Agriculture	
Problems and Issues	Priorities
Problem of irrigation water	<ul style="list-style-type: none"> • Rainwater harvesting using watershed technology. • Training of farmers for effective use of watershed technology for proper utilization of available rain water.
Poor seed replacement rate	<ul style="list-style-type: none"> • Awareness about improved varieties and hybrids. • Promotion of seed village production programme.
Low yield of pigeon pea due to wilt and sterility mosaic virus diseases	<ul style="list-style-type: none"> • Popularization of sterility mosaic virus resistant varieties.
Low yield of chickpea due to high incidence of wilt disease and pod borer	<ul style="list-style-type: none"> • Popularization of integrated pest management (IPM) in control of pod borer.
Lack of suitable varieties of durum wheat	<ul style="list-style-type: none"> • Promoting durum wheat cultivation.
Problem of micro nutrient deficiency	<ul style="list-style-type: none"> • Awareness about soil test based application of micro nutrients • Training and demonstration on application of micro nutrients • Ensuring the availability of good quality micronutrients at reasonable prices.
Others	<ul style="list-style-type: none"> • Popularization of inter-cropping of sorghum, pearl millet and soybean with pigeonpea.
Horticulture	
Problems and Issues	Priorities
Lack of irrigation water	<ul style="list-style-type: none"> • Popularization of drip/ sprinkler irrigation system. • Rain water management using watershed approach especially for vegetables.
Predomination of non-arable and degraded lands	<ul style="list-style-type: none"> • Diversification for agro forestry. • Large scale plantation of multipurpose tree species. • Encouraging silvi-pastoral system.
Grazing/ browsing of crops by stray cattle	<ul style="list-style-type: none"> • Educating farmers regarding growing kharif crops.
Lack of drought resistant varieties	<ul style="list-style-type: none"> • Popularization of diseases free, quality seed production programme.
Low productivity and poor quality of ginger and colocasia	<ul style="list-style-type: none"> • Encouraging commercial cultivation of ginger, colocasia, turmeric and coriander. • IPM for control of ginger rot.
Citrus decline	<ul style="list-style-type: none"> • Focussed programme on citrus.
Under-exploitation of arid horticulture	<ul style="list-style-type: none"> • Promotion of citrus, bael, aonla and chiraunji cultivation

IV. Technological Options

Name of technology	Releasing organization and year	Characteristics of technology	Districts where applicable
KHARIF			
RICE			
Pusa Sugandh-2 (scented rice)	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown. • Its plant height is 110-120 cm. • It matures in 125-130 days, a fortnight earlier and saves 2 irrigation water. • Grain is longer (80 mm). • Average yield -55.0 q/ ha. • Resistant to disease. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Pusa Sugandh-3 (scented rice)	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown. • Plant height is 110-120 cm. • It matures in 125-130 days. • Saves 2-3 irrigation water. • Grain is long (80 mm). • Average yield- 60.0 q/ ha. • Resistant to disease. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
PRH-10 (hybrid scented rice)	2001 IARI, New Delhi	<ul style="list-style-type: none"> • This variety is suitable for the whole Basmati growing region. • Its plant height is 110-120 cm. • Matures in 135-140 days, a fortnight earlier than Basmati. • Grain is long (80 mm). • Average yield- 65.0 q/ ha. • Suitable for rice-wheat cropping system. • Resistant to insect, pest and disease. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Pro agro-6444 (hybrid rice)	2002 HRI, Ltd., Hyderabad	<ul style="list-style-type: none"> • Medium slender grain. • Widely adaptable hybrid. • 20-25 % high yield notified hybrid. • It matures in 125-130 days. • Average yield- 65.0-70.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Barani Deep (NDR 1025-2)	2003 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for early sown conditions. • Grain is longer and fine. • It matures in 95-100 days. • Average yield-40.0-45.0 q/ ha. • Ratio of rice 65 %. 	Aligarh, Mahamaya Nagar, Mathura Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
HUBR 2-1 (scented rice)	2004 BHU, Varanasi	<ul style="list-style-type: none"> • Plant height 100-110 cm. • Semi dwarf and medium maturing. • Suitable for rice-wheat cropping system. • Wheat/ mustard/ potato can be taken after its harvesting. • It matures in 125-130 days. • Average yield -45.0-50.0 q/ ha. • Tolerant to brown plant hopper. 	Aligarh, Mahamaya Nagar, Mathura Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
HUR-3022	2004 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for early maturing. • Plant height 100-105 cm. • Dwarf with long slender grain and good cooking quality • Suitable for rice-potato/ rapeseed/ cauliflower based cropping system. • It matures in 105-110 days • Average yield- 50.0-55.0 q/ ha. • Resistant to neck and leaf blast disease. • Milling 70 %. 	Aligarh, Mahamaya Nagar, Mathura Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Pusa Sugandh-4 (scented rice)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • This variety is suitable for the whole Basmati growing region. • Its plant height is 110-120 cm. • Grain is long (80 mm). • Excellent cooking quality as compared to Basmati. • Export quality. • It matures in 125-130 days, a fortnight earlier and saves 2-3 irrigation water. • Average yield-45.0-50.0 q/ ha. • Resistant to insect, pest and diseases. 	Aligarh, Mahamaya Nagar, Mathura Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

Pusa Sugandh-5 (scented rice)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for early maturing. • Plant height 115-120 cm. • It matures in 125-130 days. • Saves 2-3 irrigation water. • Grain is long (80 mm). • Average yield-50.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Selection-1121 (super fine rice)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Export quality. • Better market value. • Good cooking quality. • It matures in 130-145 days. • Average yield-45.0-50.0 q/ ha. • Wide acceptability by farmers. 	Aligarh, Mahamaya Nagar, Mathura Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
MAIZE			
Shaktiman-1	2003 DMR, New Delhi	<ul style="list-style-type: none"> • It is quality protein maize. • Suitable for irrigated condition and timely sown. • Seed colour white. • Long cobs and spherical size. • It matures in 95-100 days. • Average yield-50.0-55.0 q/ ha. • Moderately resistant to stem borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Shaktiman -2	2003 DMR, New Delhi	<ul style="list-style-type: none"> • It is quality protein maize. • Suitable for irrigated condition and timely sown. • Seed colour white. • Long cobs and spherical size. • It matures in 95-100 days. • Average yield-50.0-55.0 q/ ha. • Moderately resistant to stem borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
PEMH-5	2004 IARI, New Delhi	<ul style="list-style-type: none"> • Irrigated and timely sown conditions. • Plant tall. • Seed colour yellow. • It matures in 95-100 days. • Average yield-50.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

HQPM-1	2005 CCSHAU, Hisar	<ul style="list-style-type: none"> • It is quality protein maize. • Suitable for irrigated and timely sown conditions. • Long cobs and spherical size. • Maturity 80-85 days. • Average yield-40.0-45.0 q/ ha. • Moderately resistant to stem borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
PEARL MILLET			
Composite Pusa-383	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for rainfed and irrigated conditions. • Plant height 200-240 cm. • Maturity 80-100 days. • Length of ear medium. • Average yield-16.0-20.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Etawah, Auraiya, Hamirpur, Banda, Jalaun, Jhansi, Lalitpur, Chitrakoot
Pro Agro-9444 (hybrid)	2004 Pro Agro Company Ltd.	<ul style="list-style-type: none"> • Suitable for rainfed and irrigated conditions. • Plant height 180-220 cm. • It matures in 80-90 days. • Length of ear long. • Average yield-25.0-30.0 q/ ha 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Etawah, Auraiya, Hamirpur, Banda, Jalaun, Jhansi, Lalitpur, Chitrakoot
RHB-121 (hybrid)	2004	<ul style="list-style-type: none"> • Medium tall. • Compact thick conical ear heads. • Yellow anthers. • Long purple bristles. • Globular grey brown grains. • It matures in 85 days. • Average yield-27.20 q/ ha. • Resistant to downy mildew. • Suitable for drought prone areas. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
SORGHUM			
CSH 16	2006 NRC Sorghum, Hyderabad	<ul style="list-style-type: none"> • Suitable for rainfed and irrigated condition. • 50% flowering at 68 days. • Fodder yield – 112 q/ ha. • Plant height – 188 cm. • Grain yield – 28.46 q/ ha. • Medium tall 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Lakhimpur Kheri, Hardoi, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
CSV 15	2006 NRC Sorghum, Hyderabad	<ul style="list-style-type: none"> • Suitable for rainfed and irrigated condition. • 50% flowering at 61 days. • Fodder yield – 93 q/ ha. • Plant height – 179 cm. • Grain yield – 35.59 q/ ha. • Medium tall 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Lakhimpur Kheri, Hardoi, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

PIGEONPEA			
Narendra Arhar-1	1997 NDUAT, Faizabad	<ul style="list-style-type: none"> • Test weight (11.5 gram / 100 seeds). • Matures in 240-260 days. • Average yield-20.0-22.0 q / ha. • Resistant to sterility mosaic disease (SMD) and tolerant to wilt and phytophthora blight. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Malviya Vikas Arhar-6	2003 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for rainfed/ irrigated conditions. • Bolder seed size. • High recovery of dal. • It matures in 250-270 days. • Average yield-25.0-30.0 q/ ha. • Tolerant to wilt. • Resistant to sterility mosaic disease (SMD). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Malviya Chamatkar	2005 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for rainfed conditions. • Bolder seed size. • Taste sweet. • High recovery of dal. • It matures in 230-250 days. • Average yield-30.0-32.0 q/ ha. • Highly resistant to wilt & sterility mosaic disease (SMD). • Tolerant to Phytophthora and pod fly. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pusa-992	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for the short duration. • Sowing in 1st week of June. • Rainfed / irrigated conditions. • Suitable for pigeonpea-wheat cropping system. • Matures in 150-160 days. • Average yield-16.0-20.0 q/ ha. • Resistant to wilt disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Narendra Arhar-2	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for rainfed/ irrigated conditions. • It matures in 250-270 days. • Average yield-30.0-35.0 q/ ha. • Tolerant to wilt disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

URD BEAN			
Uttara (IPU-94-1)	1999 IIPR, Kanpur	<ul style="list-style-type: none"> • Suitable for kharif season. • Black seeded. • It matures in 70-75 days. • Average yield-12.0-14.0 q/ ha. • Resistant to mungbean yellow vein mosaic virus (YVMV). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Azad Urd-1	2000 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for kharif and spring seasons. • It matures in 75-80 days. • Average yield-10.0-12.0 q/ ha. • Resistant to yellow vein mosaic virus (YVMV). 	Aligarh, Mahamaya Nagar, Mainpuri, Firozabad, Etah, Etawah
Shekhar-2	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for spring season. • Green seeded. • It matures in 70-75 days. • Average yield-10-12 q/ ha. • Resistant to yellow vein mosaic virus (YVMV). 	Mainpuri, Farrukhabad, Kannauj, Kanpur Nagar, Kanpur Dehat, Fatehpur, Raebareli
Azad Urd-2	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for spring and kharif seasons. • Bold and black seed. • It matures in 70-75 days. • Average yield-10-12 q/ ha. • Resistant to yellow vein mosaic virus (YVMV). 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Azad Urd-3	2003 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for kharif season. • Brownish black seeded. • It matures in 75-80 days. • Average yield 10.0-12.0 q/ ha. • Resistant to yellow vein mosaic virus (YVMV). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Shekhar-3	2003 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for kharif season. • Green seeded. • It matures in 80-85 days. • Average yield-10-12 q/ ha. • Resistant to yellow vein mosaic virus (YVMV) and Cercospora. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

MUNGBEAN			
Samrat	2001 IIPR, Kanpur	<ul style="list-style-type: none"> • Suitable for summer and kharif seasons. • Seeds are shining green and small. • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV) 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pusa Vishal	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for summer season. • Seeds are bold (6 gram/ 100 seed). • Shining green in colour. • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV) 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi
HUM-6	2001 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for summer season. • Seeds are green and medium bold. • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha • Protein content- 27 % • Resistant to mungbean yellow mosaic virus (MYMV) 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
HUM-12	2002 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for summer season. • Seeds are shining green and small. • It matures in 65-70 days. • Average yield-15.0-20.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV) 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pant M-5	2002 GBPUAT. Pantnagar	<ul style="list-style-type: none"> • Suitable for spring and kharif seasons. • Bold seeded. • Long, black pods and hanging downward. • It matures in 65-70 days. • Average yield-10.0-12.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV), Cercospora leaf spot and Anthracnose. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Meha (IPM 99-125)	2004 IIPR, Kanpur	<ul style="list-style-type: none"> ❖ Suitable for kharif and summer seasons. ❖ Seeds are shining green. ❖ It matures in 65-70 days. ❖ Average yield-12.0-15.0 q/ ha. ❖ Resistant to mungbean yellow mosaic virus (MYMV). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

TMB-37	2005 BARC, Trombay	<ul style="list-style-type: none"> • Suitable for summer season. • Large seeded (5 gram/ 100 seeds). • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
HUM-16	2006 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for spring and kharif seasons. • Bold seeded. • Long, black pods and hanging downward. • It matures in 65-70 days. • Average yield-10.0-12.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV), Cercospora leaf spot and Anthracnose. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
MH 2-15	2007 CCSHAU, Hissar	<ul style="list-style-type: none"> • Suitable for kharif season. • Seeds are large (4.5 gram/ 100 seeds). • It matures in 68-75 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
SOYBEAN			
Pant Soya -1092	2000 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for medium duration. • Seed colour yellow and round shape. • It matures in 100-110 days. • Average yield-22.0-25.0 q/ ha. • Moderately resistant to leaf borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pant Soybean- 1347	2006 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for medium duration. • Seed colour yellow and round shape. • It matures in 100-110 days. • Average yield-22.0-25.0 q/ ha. • Moderately resistant to leaf borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
GROUNDNUT (SUMMER)			
DH- 86	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Tolerant to bud necrosis disease (BND) and heat. • It matures in 90-95 days. • Average yield-28.0-30.0 q/ ha. • Oil content 50 %. • Shelling 70 %. 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi

Inventory of Agricultural Technologies for Uttar Pradesh

ICGS- 44	2004 ICRISAT, Hyderabad	<ul style="list-style-type: none"> • Minimum moisture. • Tolerant to bud necrosis disease (BND) and heat. • It matures in 95-100 days. • Average yield-25.0-27.0 q/ ha. • Oil content 43 %. • Shelling 70 %. 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi
SESAME			
Pragati	2002 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Seed colour white. • It matures in 80-85 days. • Average yield-8.0-10.0 q/ ha. • Resistant to Phylodi disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
JTS- 8	2001	<ul style="list-style-type: none"> • Seed colour white. • It matures in 80-85 days. • Average yield-6.29 q/ ha. • Resistant to Phylodi disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
SUNFLOWER			
KBSH-41 (hybrid)	2004 UAS, Bangalore	<ul style="list-style-type: none"> • Suitable for medium duration. • It matures in 85-90 days. • Average yield-14.0-17.0 q/ ha. • High oil content (40-42 %). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
KBSH-42 (hybrid)	2004 UAS, Bangalore	<ul style="list-style-type: none"> • Suitable for medium duration. • It matures in 90 days. • Average yield-14.0-18.0 q/ ha. • High oil content (40 %). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
KBSH-44 (hybrid)	2004 UAS, Bangalore	<ul style="list-style-type: none"> • Suitable for medium duration. • Broad size head with convex flat thalamus. • Plant height 150-180 days. • It matures in 95 days. • Average yield-17.0-20.0 q/ ha. • High oil content (40 %). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot



Pusa Rice Hybrid 10



Pusa Sugandh 4



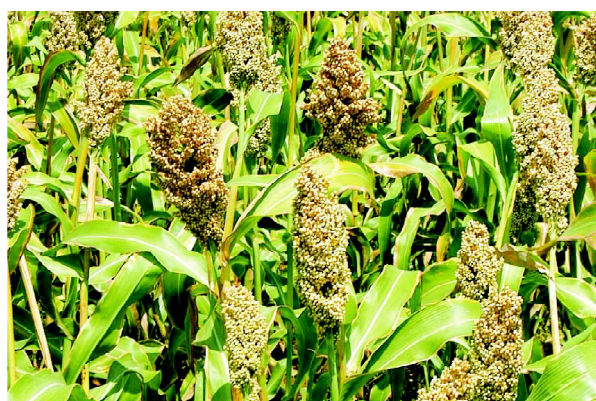
Pusa Sugandh 2

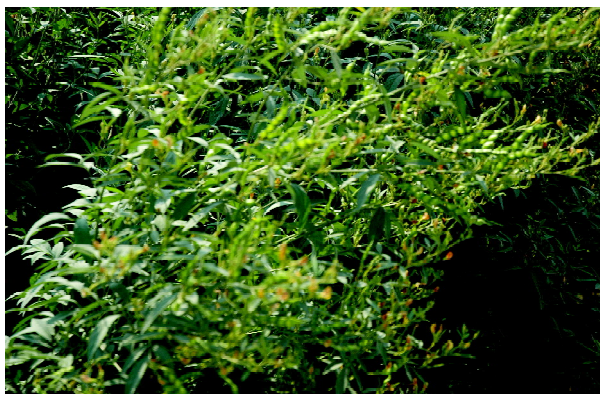


Pusa Sugandh 5



HQPM 1





Narendra Arhar 1



Urdbean - Uttara



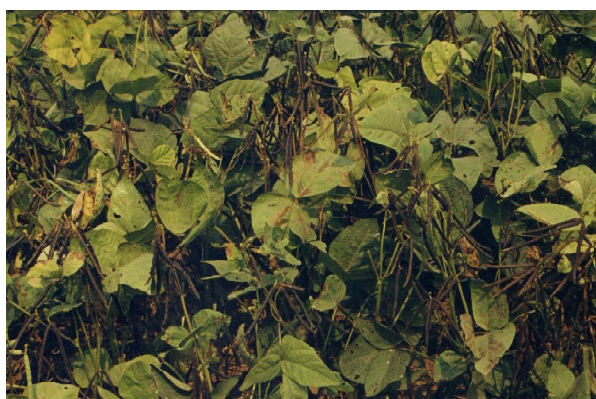
Urdbean - Azad Urd 1



Mungbean - Samrat



Mungbean - Meha



Mungbean - Pusa Vishal



HD-2733



Pusa Vishesh



Shatabadi (K 307)



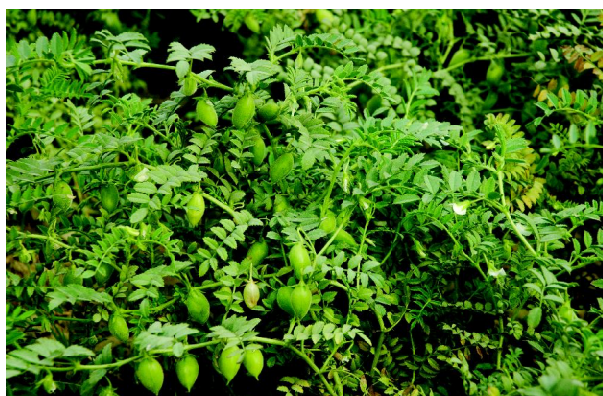
Mandakini (K 9351)



Halna (K 7903)



Unnat Halna (K 9423)



Pusa-1088 (Kabuli)



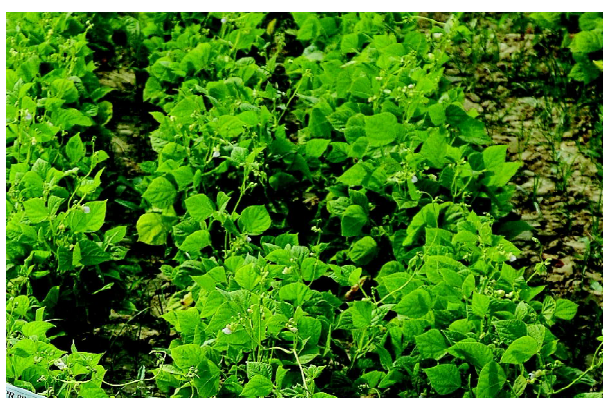
DCP-92-3



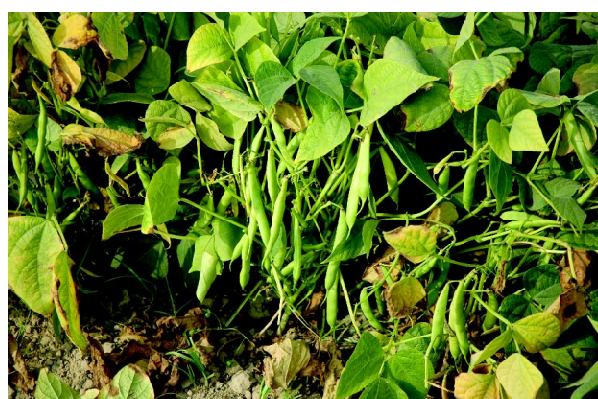
KPMR 522



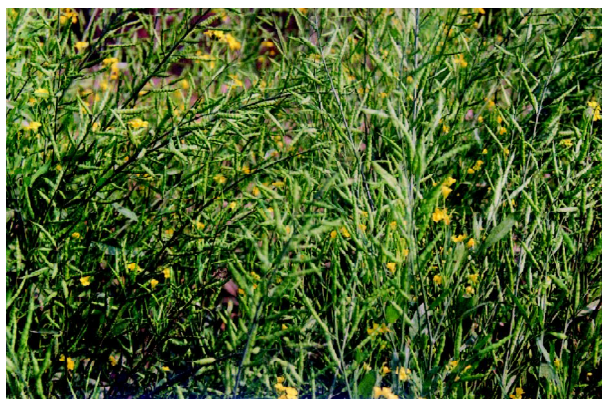
KPMR 400



Rajmash - Arun



Rajmash - Utkarsh



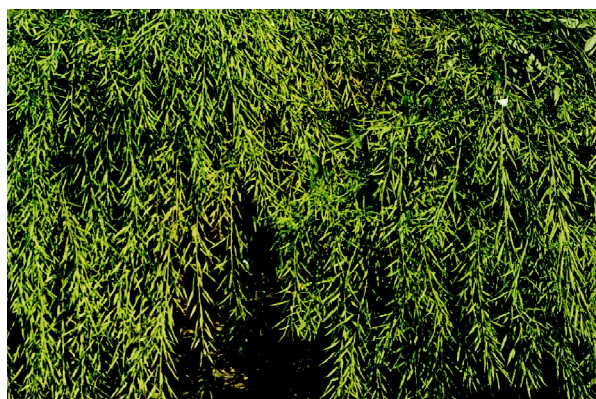
Urvashi



Kanti



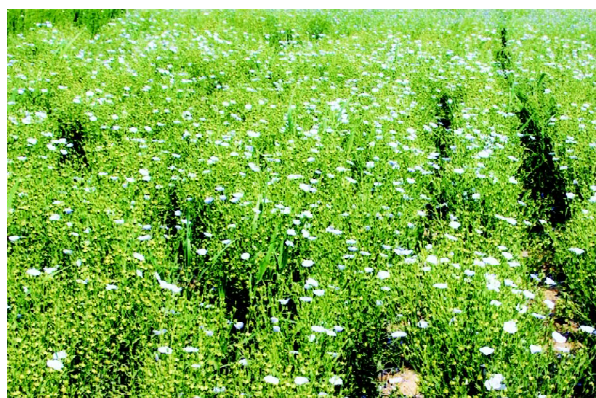
Maya



Pusa Jagannath



Aashirvaad



Linseed - Shekhar



Azad T-5



Azad T-6



KTH-2



KTH-1



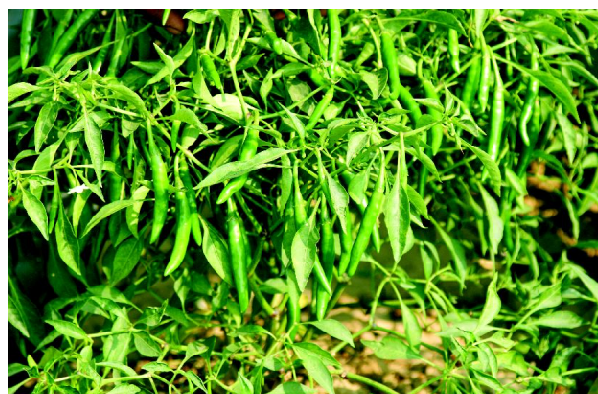
Azad B-4



Azad Hybrid



Kashi Anmol



Kashi Vishwanath (Hybrid)



Kashi Kunwari



KGMR-1



Azad P-5



Kashi Nandini



Kashi Mohini



Pusa A-4



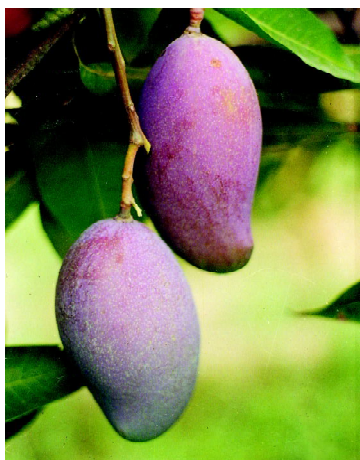
Kashi Mangali



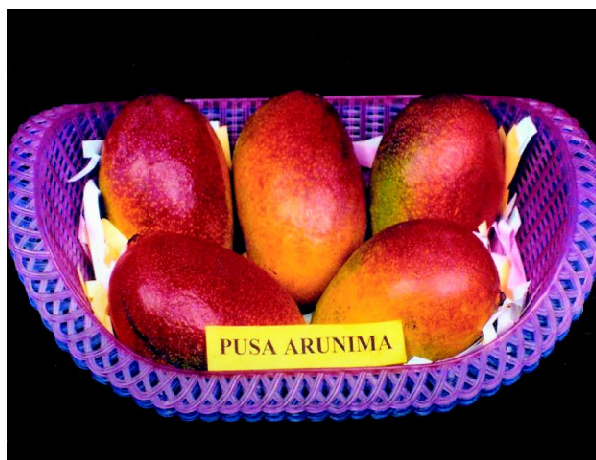
VRO-6



Azad Bhindi-3



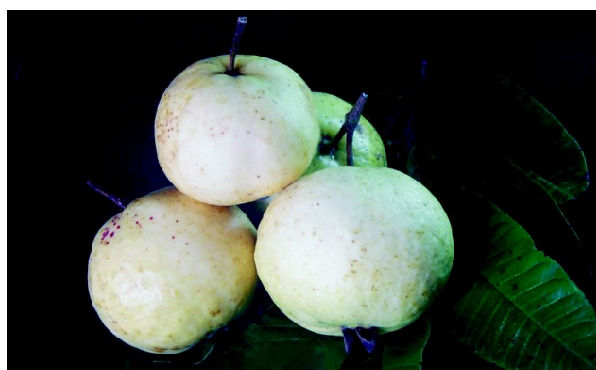
Ambika



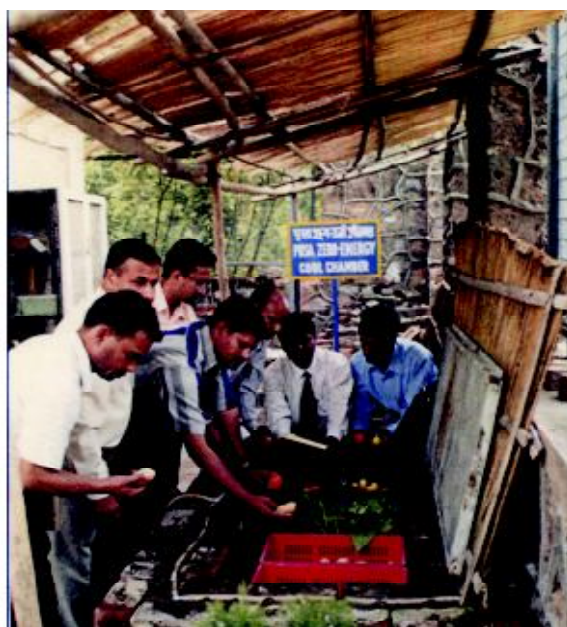
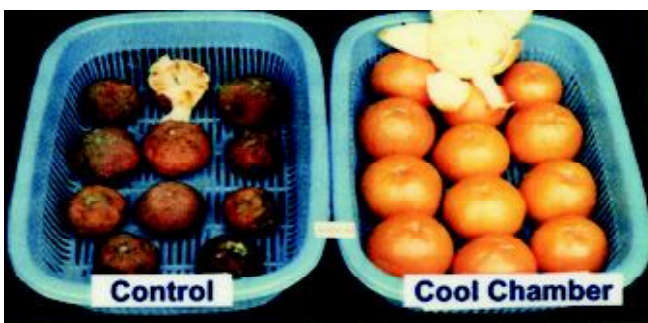
Pusa Arunima



Lalit



Shweta



Zero Energy Cool Chamber

Inventory of Agricultural Technologies for Uttar Pradesh

RABI			
WHEAT			
Halna (K-7903)	2000 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for very late sown and irrigated conditions. • Bold grain size. • Heat tolerant and terminal heat tolerant. • It matures in 80-85 days. • Average yield-25.0-45.0 q/ ha. • Resistant to all the rusts. • Protein 10-12 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
PBW-443	2000 PAU, Ludhiana	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height-90-95 cm. • It matures in 125-135 days. • Average yield-50.0-55.0 q/ ha. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi
KRL-19	2000 DWR, Karnal	<ul style="list-style-type: none"> • Recommended for usar areas. • Suitable for late sown and irrigated conditions. • Plant height-90-100 cm. • It matures in 130-145 days. • Average yield-40.0-45.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
K-9644	2000 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for timely sown conditions. • Suitable for rainfed conditions. • Plant height 95-100 cm. • It matures in 105-110 days. • Average yield-35.0-40.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah
Prasad (K-8434)	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-90-95 cm. • It matures in 135-140 days. • Average yield-40.0-45.0 q/ ha. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi
HD-2733	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height-92-95 cm. • It matures in 135-140 days. • Average yield-55.0-60.0 q/ ha. • Resistant to rust, blast and karnal bunt disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
HW-2045	2002 CCSHAU, Hisar	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-85-90 cm. • It matures in 120-125 days. • Average yield-41.0 q/ ha. • Resistant to rust disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

Narendra Wheat-2036	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-80-85 cm. • It matures in 110-115 days. • Average yield- 40.0-45.0 q/ ha. • Resistant to rust disease. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi
DBW-14	2002 DWR, Karnal	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-85-90 cm. • It matures in 110-120 days. • Average yield-40.0-45.0 q/ ha. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi
HD-2643 (Ganga)	2003 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-85-95 cm. • It matures in 120-130 days. • Average yield-35.0-45.0 q/ ha. • Resistant to rust disease. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi
HD-2864	2004 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-85-90 cm. • It matures in 120-125 days. • Average yield-42.0 q/ ha. • Resistant to rust disease. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
HD-2824	2004 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height-90-100 cm. • It matures in 125-135 days. • Average yield-55.0-60.0 q/ ha. • Resistant to rust disease. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi
Naina (K-9533)	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-85-90 cm. • It matures in 105-110 days. • Average yield-40.0-45.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh,
Narendra Wheat-1076	2004 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-80-90 cm. • It matures in 110-115 days. • Average yield-40.0-45.0 q/ ha. • Resistant to rust and blast disease. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi

Inventory of Agricultural Technologies for Uttar Pradesh

Unnat Halna (K-9423)	2005 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late and very late sown conditions. • Free from shattering problem. • It matures in 85-100 days. • Average yield-35.0-45.0 q/ ha. • Suited in paddy-wheat, maize-potato-wheat and maize-mustard-wheat cropping system. • Protein 12-13 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
K-9162	2005 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height-90-95 cm. • It matures in 110-115 days. • Average yield-40.0-45.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
HD-2888	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown condition. • Suited to limited irrigations. • Plant height-100-110 cm. • It matures in 120-125 days. • Average yield-30.0-35.0 q/ ha. • Resistant to rust disease. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Shatabdi (K-307)	2006 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Suitable for high fertility in irrigated conditions. • Plant height-85-95 cm. • Matures in 125-130 days. • Average yield-55.0-60.0 q/ ha. • Resistant to rust, blast and karnal bunt diseases. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh,
Mandakini (K-9351)	2006 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for limited irrigation water. • Suitable for Bundelkhand. • Plant height-95-110 cm. • It matures in 115-120 days. • Average yield-30.0-35.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Lucknow, Unnao, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

HI-1531 (Harshita)	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown conditions. • One week earlier in heading and maturity. • Semi dwarf bread variety. • Restricted irrigation conditions. • Low fertility status. • Plant height-95-100 cm. • It matures in 115-120 days. • Average yield-45.0 q/ ha. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
DBW-16	2006 DWR, Karnal	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Early maturing. • Plant height 95-110 cm. • It matures in 115-125 days. • Average yield-40.0-45.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
GW-366	2006 GAU, Junagarh	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • High fertility conditions. • Plant height-95-100 cm. • Maturity 115-120 days. • Average yield-45.0 q/ ha. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
BARLEY			
Narendra Barley-3	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for saline alkaline soils. • Suited to rainfed/ irrigated conditions. • It matures in 90-100 days. • Average yield-25.0-27.0 q/ ha. • Resistant to smut disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
DWR-28	2002 DWR, Karnal	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • It matures in 130-135 days. • Average yield-40.0-45.0 q/ ha. • Specialty preferred for malt purpose. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Narendra Barley-1173	2004 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for problematic areas. • Suitable for usar areas. • Suited to rainfed/ irrigated conditions. • It matures in 115-120 days. • Average yield-35.0-45.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

K-713	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> Suitable for irrigated / rainfed conditions. It matures in 120-125 days. Average yield-35.0-40.0 q/ ha. Resistant to diseases. 	Aligarh, Firozabad, Mainpuri, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Unnao, Raebareli, Hardoi
Ritambhara (K-551)	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> Suitable for irrigated / rainfed conditions. It matures in 120-125 days. Average yield-40.0-45.0 q/ ha. Specialy preferred for malt and bear. 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
CHICKPEA			
DCP 92-3	1999 IPR, Kanpur	<ul style="list-style-type: none"> Suitable for rainfed and irrigated situation. Golden yellow and medium seed size. It matures in 130-135 days. Average yield-20.0-24.0 q/ ha. Resistant to fusarium wilt. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
GCP-105 (GG- 4)	2000 GAU, Junagarh	<ul style="list-style-type: none"> Plant type medium tall. Semi-erect. Pinkish flower. Smooth, round and brown seeds. Tolerant to wilt disease. It matures in 120-130 days. Average yield-18.0-20.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pusa Chamatkar (BG-1053), Kabuli	2000 IARI, New Delhi	<ul style="list-style-type: none"> Suitable for rainfed/ irrigated conditions. Seed colour white. It matures in 130-135 days. Average yield-35.0-30.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
SAKI-9516	2000 JNKVV, Jabalpur	<ul style="list-style-type: none"> Medium seed size. Tolerant to collar rot, Botrytis Gray Mould (BGM) and stunt. It matures in 110-140 days. Average yield-20.0 q/ ha. Resistant to wilt. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
HK-1	2001 CCSHAU, Hisar	<ul style="list-style-type: none"> Bold seeded kabuli type. It matures in 130-150 days. Average yield-15.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

RSG-888	2002 RAU, Bikaner	<ul style="list-style-type: none"> • Semi-spreading. • Small seeded. • Drought tolerant. • Twin podded genotype. • It matures in 130-135 days. • Average yield-21.0 q/ ha. • Tolerant to root rot. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Jawahar Gram Kabuli-1 (JGK-1)	2002 JNKVV, Jabalpur	<ul style="list-style-type: none"> • Bold seeded kabuli. • Semi-spreading. • Early flowering. • It matures in 100-110 days. • Average yield-15.0-18.0 q/ ha. • Resistant to wilt disease. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
RSG-963	2004 RAU, Bikaner	<ul style="list-style-type: none"> • Medium bold seeded. • Suitable for late sown conditions. • It matures in 125-130 days. • Average yield-19.0-20.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Phule G 94-25-9	2005 MPKV, Rahuri	<ul style="list-style-type: none"> • Semi-erect plants with profuse fruiting and branching. • Yellowish brown seeds. • It matures in 136 days. • Average yield-19.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pusa-1088 (kabuli)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for rainfed and irrigated conditions. • Suitable for late sown conditions. • It matures in 140-145 days. • Average yield-25-35 q/ ha. • Tolerant to wilt and pod borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
BGM-547	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Semi-erect plant. • Bold and golden brown seeds. • Suitable for late sow conditions. • It matures in 130-135 days. • Average yield-18.0 q/ ha. • Tolerant to wilt, blight and root rot disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

Pusa Subhra (BGD- 128, kabuli)	2006 IARI, Regional Station, Dharwad	<ul style="list-style-type: none"> • Plant semi-erect with more secondary branches. • Seed weight 27.7 g/ 100 seeds weight. • It matures in 125-130 days. • Average yield-19.0 q/ ha. • Moderately resistant to wilt/ dry root rot disease. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
FIELD PEA			
Pusa Prabhat (DDR-23)	2000\ IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for irrigated/ rainfed conditions. • Very early variety. • Plant type dwarf. • It matures in 95-112 days. • Average yield-17.0-18.0 q/ ha. • Resistant to powdery mildew. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Jai (KPMR- 522)	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Plant type dwarf. • Seed colour white. • It matures in 125-130 days. • Average yield-32.0-35.0 q/ ha. • Resistant to powdery mildew and rust disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Indra (KPMR-400)	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Plant type dwarf. • Seed colour white and round shape and tendrilar. • It matures in 125-130 days. • Average yield-30.0-32.0 q/ ha. • Resistant to powdery mildew and wilt disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Adarsh (IPF 99-25)	2003 IIPR, Kanpur	<ul style="list-style-type: none"> • Plant type tall. • It matures in 110-120 days. • Average yield-23.0 q/ ha. • Resistant to powdery mildew disease. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

Vikas (IPFD-99-13)	2005 IIPR, Kanpur	<ul style="list-style-type: none"> Plant type dwarf. Seed colour white and round shape. It matures in 100-110 days. Average yield-22.0-25.0 q/ ha. Resistant to powdery mildew and short duration. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
IPFD 1-10	2006 IIPR, Kanpur	<ul style="list-style-type: none"> Plant type dwarf. It matures in 100-110 days. Average yield-22.0-25.0 q/ ha. Resistant to powdery mildew and short duration. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
HPF-9907 B	2007 CCSHAU, Hisar	<ul style="list-style-type: none"> Plant type dwarf. It matures in 125 days. Average yield- 23.0 q/ ha. Resistant to powdery mildew disease. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
LENTIL			
Noori (IPL-81)	2000 IIPR , Kanpur	<ul style="list-style-type: none"> Semi-spreading plant type. Bold seeded. Test weight 2.7 g (100 seed weight). Matures in 110-120 days. Average yield-22.50 q/ ha. Tolerant to rust and wilt diseases. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
HUL-57	2003 BHU, Varanasi	<ul style="list-style-type: none"> Suited to rainfed condition. Grey colour. Small seeded. Matures in 121 days. Average yield-15.0-20.0 q/ ha. Resistant to rust disease. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
KLS-218	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> Small seeded. Grey colour. Matures in 120-125 days. Average yield-18.0-20. q/ ha. Resistant to rust disease. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

KLB-303	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Spotted bold seeded. • Matures in 120-125 days. • Average yield-15.0-18.0 q/ ha. • Resistant to wilt disease. 	Aligarh, Mahamaya Nagar, Firozabad, Mainpuri, Etah, Farrukhabad, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Hardoi
KL-320	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Violet flowers. • Medium bold seeded. • Matures in 120-130 days. • Average yield-15.0-18.0 q/ ha. • Resistant to wilt disease. • Tolerant to rust disease. 	Aligarh, Mahamaya Nagar, Firozabad, Mainpuri, Etah, Farrukhabad, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Hardoi
IPL-406	2007 IIPR, Kanpur	<ul style="list-style-type: none"> • Large seeded. • Test weight 3.9 g/ 100 seed. • It matures in 125-130 days. • Average yield-17.0 q/ ha. 	Aligarh, Mahamaya Nagar, Firozabad, Mainpuri, Etah, Farrukhabad, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Hardoi
RAJMASH			
IPR 96-4 (Amber)	2002 IIPR, Kanpur	<ul style="list-style-type: none"> • Red colour seeds. • Erect & determinate plant type. • It matures in 130-140 days. • Average yield-15.0-16.0 q/ ha. • Tolerant to BCMV. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
IPR- 98-5 (Utkarsh)	2005 IIPR, Kanpur	<ul style="list-style-type: none"> • Gulf red seeds. • It matures in 120-125 days. • Average yield-17.0-18.0 q/ ha. • Tolerant to leaf curl mosaic virus. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
IPR-98-3-1 (Arun)	2007 IIPR, Kanpur	<ul style="list-style-type: none"> • Gulf red seeds. • It matures in 120 days. • Average yield-16.0 q/ ha. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

MUSTARD/RAI			
Urvashi	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for irrigated and timely sown conditions. • It matures in 120-125 days. • Average yield-17.0 q/ ha. • Oil content-39 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Kanti	2002 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for maize-mustard-wheat cropping systems. • Short duration variety. • It matures in 100-105 days. • Average yield-20.0-22.0 q/ ha. • Oil content 40-42 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Narendra Ageti Rai	2001 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • It matures in 100-110 days. • Average yield-20.0 q/ ha 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Maya	2002 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for irrigated conditions. • It matures in 130-135 days. • Average yield-25.0-28.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Kaushambi, Allahabad, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pusa Jagannath	2003 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for early and late sowing and irrigated conditions. • It matures in 125-135 days. • Average yield-25.0 q/ ha. • Resistant to aphid. • Oil content 40-42 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

Pusa Swarnim (IGC-01)	2003 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for irrigated/ rainfed conditions. • Suitable for timely & late sown conditions. • Plant height-170-180 days. • Primary branches 2-4 and secondary branches 10-12. • Seed medium size and yellow in colour. • It matures in 155-160 days. • Average yield in irrigated situation 16.0-17.0 q/ ha and 14.0-15.0 q/ ha in rainfed condition. • Resistant to aphid, white rust and Alternaria blight. • Oil content 40-43 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Ashirvad	2005 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late sown rainfed conditions. • It matures in 130-135 days. • Average yield-20.0-22.0 q/ ha. • Oil content 35-40 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
LINSEED			
Meera (RL-993)	2000 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Double purpose type (seed & fibre). • Suitable for irrigated / rainfed conditions. • Violet blue flowers. • Brown seeded. • It matures in 138 days. • Average yield-14.39 q/ ha (seed) and 10.11 q/ ha (fibre). • Resistant to rust, wilt, powdery mildew and moderately resistant to Alternaria blight. • Tolerant to bud fly. • Oil content 42 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Shekhar (LCK-9313)	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for irrigated and rainfed conditions. • Shining brown seeded. • It matures in 137 days. • Average yield in irrigated situation 15.50 q/ ha and rainfed condition 9.20 q/ ha. • Resistant to powdery mildew, rust and wilt. • Moderately resistant to Alternaria blight and bud fly. • High oil content (43 %). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Parvati (LMH-16-5)	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for irrigated and rainfed conditions. • Double purpose type (seed & fibre). • Blue flowers. • Light brown and medium seeded. • It matures in 140-146 days. • Average yield-16.0 q/ ha and fibre 12.26 q/ ha. • Resistant to rust and powdery mildew. • Moderately resistant to Alternaria blight and bud fly. • Oil content 41-42 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Padmini (LMH-62)	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for irrigated and rainfed conditions. • Blue flowers. • Brown seeded. • It matures in 123 days. • Average yield-15.0-18.0 q/ ha in irrigated situation and 9.43 q/ ha in rainfed condition. • Resistant to rust and powdery mildew. • Moderately resistant to rust, wilt and powdery mildew. • Oil content 41-43 %. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Suyog (SLS-27)	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for irrigated conditions. • Medium in plant height. • White flowers. • Light brown coloured seed. • It matures in 121 days. • Average yield-15.09 q/ ha. • Moderately resistant to rust, powdery mildew and bud fly. • Oil content 41-43 %. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
SUGARCANE			
Co Pant- 97222	2006 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for mid-late maturing. • Possesses high sucrose content in juice (16.5-19.5%). • High sugar recovery (11.5-13.0%). • Average yield-850-900 q/ ha. • Moderately resistant to red rot. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

Sugarcane + Rajmash (PDR-14)	IISR, Lucknow	<ul style="list-style-type: none"> • Suitable for planting period mid October. • Seed rate of sugarcane- 60 q/ ha and rajmash- 80 kg/ ha. • Crop geometry: 1:2 row ratio, sugarcane planted at 90 cm and two rows of rajmash accommodated at 30 cm spacing. • System based nutrient management (NPK kg/ ha) : Sugarcane-150:60:60 1/ 3 N and full P and K at planting and 1/ 3 N after harvest of intercrop and 1/ 3 N at late tillering stage (first week of June) and Rajmash - 100:60:40:1/ 2 N and full P and K at sowing, rest amount of N after first irrigation. • Irrigation at 40, 70 & 100 days after sowing for the system. • Production/ economic gain : 1500 Kg rajmash grain / ha • Profitability Rs 74855.0/ ha and B:C ratio is 2:1 	Hardoi, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Unnao, Lucknow, Sitapur, Raebareli, Fatehpur, Allahabad, Pratapgarh, Kaushambi, Lakhimpur Kheri
Sugarcane + Maize (Azad Uttam)	IISR, Lucknow	<ul style="list-style-type: none"> • Suitable for planting in mid October. • Seed rate of sugarcane- 60 q/ ha and maize-20 kg/ ha. • Crop geometry: 1:1 row ratio, sugarcane planted at 90 cm and one row of maize accommodated in between two rows of sugarcane. • System based nutrient management (NPK kg/ ha): sugarcane- 150:60:60 1/ 3 N and full P and K at planting and 1/ 3 N after harvest of maize and 1/ 3 N at late tillering stage (first week of June) and Maize – 120:60:40 1/ 3N + full P and K at sowing 1/ 3N at knee high stage 1/ 3N at tasselling stage. • 3-4 irrigations at critical physiological stages of maize. • Production/ economic gain: 50-60 thousand green cobs / ha. • Profitability Rs 72320.0 / ha and B:C ratio 2.02. 	Hardoi, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Unnao, Lucknow, Sitapur, Raebareli, Fatehpur, Allahabad, Pratapgarh, Kaushambi, Lakhimpur Kheri
FODDER CROPS			
OAT			
Bundel Jai-822	IGFRI, Jhansi	<ul style="list-style-type: none"> • Suitable for rabi season. • Excellent growing habit. • First cut at 50 days followed by 3-4 cuts at interval of 30-35 days. • Flowering at 95-100 days. • It matures in 125-130 days. • Average green fodder yield-45-55 t/ ha. • Dry matter yield – 12.0 t/ ha. • Seed yield - 1.50 t/ ha. • Crude protein yield is 1.01 t/ ha. • Suitable variety for sodic soils. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Bundel Jai-851	IGFRI, Jhansi	<ul style="list-style-type: none"> • Suitable for rabi season. • A multicut variety (4 cuttings). • Takes 110-115 days for flowering and 140-145 days for seed setting. • It has prostrate growth habit but becomes erect after tillering. • Green fodder yield- 50-55 t/ ha. • Dry matter yield - 8.0 t/ ha. • Seed yield-1.2 t/ ha. • Crude protein yield - 0.99 t/ ha. • The variety possesses desirable traits such as high regeneration potential. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
BERSEEM			
Bundel Berseem-2 (JHB-146)	IGFRI, Jhansi	<ul style="list-style-type: none"> • Crop gives 6-7 cuts during November-May. • Good forage quality (20% crude protein). • Green fodder yield 58.0-85.0 q/ ha. • Sowing time (mid October). 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
COWPEA			
Bundel Lobia-1	IGFRI, Jhansi	<ul style="list-style-type: none"> • Average seed yield- 7.0 q/ ha. • Green fodder yield-25.0-30.0 t/ ha. • Medium tolerance to pest and diseases. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Bundel Lobia-2	IGFRI, Jhansi	<ul style="list-style-type: none"> • Green fodder yield 25.0-30.0 t/ ha. • Medium tolerance to pest and diseases. • Suitable for rabi season. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
CLUSTERBEAN			
Bundel Guar-1	IGFRI, Jhansi	<ul style="list-style-type: none"> • Suitable for kharif season. • Green fodder yield- 30.0-35.0 t/ ha. • Dry matter yield- 6.0-8.0 t/ ha. • Crude protein 0.70 – 0.90 t/ ha. • Seed yield- 0.07- 0.09 t/ ha. • Branched forage type. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

Bundel Guar-2	IGFRI, Jhansi	<ul style="list-style-type: none"> • Suitable for kharif season. • Green fodder yield- 30.0-35.0 t/ ha. • Dry matter yield- 7.0-9.0 t/ ha. • Crude protein 0.70 – 0.90 t/ ha. • Seed yield- 1.0- 1.40 t/ ha. • Branched forage cum grain type. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Bundel Guar-3	IGFRI, Jhansi	<ul style="list-style-type: none"> • Suitable for kharif season. • Green fodder yield- 30.0-35.0 t/ ha. • Grain yield- 10.46 q/ ha. • Crude protein 0.70 – 0.90 t/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
LUCERN (Alfaalfa)			
Chetak	IGFRI, Jhansi	<ul style="list-style-type: none"> • Lucern is estimated to fix 83-594 kg N/ ha. • green fodder yield -45.0-50.0 t/ ha. • Sowing early (3rd week of October). • Tolerant to major pests. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
BAJRA HYBRID			
IGFRI-10	IGFRI, Jhansi	<ul style="list-style-type: none"> • Green fodder yield-150.0-180.0 q/ ha. • Suitable for sub-temperate areas and acidic soils. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
GREEN MANURING SUNHEMP			
Narendra Sunhemp-1	2003 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for green manuring. • Suitable for seed and fibre production. • Added organic matter in soil. • Incorporate in soil at 45 days after sowing. • Fix the nitrogen 60-80 kg/ ha. • Fast decomposition. • Green bio matter 25.0-30.0 tonnes/ ha. • Capacity of seed production 16.0 q/ ha. • Effective root nodules. • Susceptible to saline and alkali soils. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

DHAINCHA			
Pant Dhaincha-1	2003 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for green manuring. • Added organic matter in soil. • Green and bio dry matter 60 days after sowing. • Higher root nodules. • Higher seed production. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Hisar Dhaincha	2003 CCSHAU, Hisar	<ul style="list-style-type: none"> • Suitable for green manuring. • Added organic matter in soil. • Green and dry bio matter at 45 days after sowing. • Medium seed. • Effective root nodules and per plant higher. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
POTATO			
Kufri Surya	2004 CPRI, Regional Station, Meerut	<ul style="list-style-type: none"> • Canopy- medium compact. • Stem-green with purple pigment randomly distributed. • Tuber- creamy white, ovate with shallow eyes and creamy flesh. • Sprout- red purple. • Average yield potential- 300-350 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kufri Arun	2004 CPRI, Regional Station, Meerut	<ul style="list-style-type: none"> • Canopy- medium compact. • Stem-purple with green pigment randomly distributed. • Tuber- red, ovate with medium deep eyes and creamy flesh. • Sprout- red- purple. • Average yield potential- 300-350 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kufri Chipsona-3	2005 CPRI, Regional Station, Meerut	<ul style="list-style-type: none"> • Canopy- medium compact. • Stem-green with purple pigment randomly distributed. • Tuber- yellow, ovate with medium deep eyes and creamy flesh. • Sprout- red & purple. • Average yield potential- 300-350 q/ ha 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

TOMATO			
Azad T-5	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Plants type indeterminate. • Round red and bold fruits. • Better shelf life. • It matures in 150-160 days. • Average yield-400-450 q/ ha. • Suitable for sauce making. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Azad T-6	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Plants type determinate. • Round red and bold fruits. • Better shelf life. • It matures in 150-160 days. • Average yield-450-500 q/ ha. • Suitable for sauce making. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Hybrid Tomato (KTH-2)	2002 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Round shape. • Red colour. • It matures in 140-150 days. • Average yield-550-600 q/ ha. • Suitable for sauce making. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
KTH-1	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Round shape. • Red colour. • It matures in 140-150 days. • Average yield-400-450 q/ ha. • Suitable for sauce making. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
NDTS-2001-3	2004 NDUAT, Faizabad	<ul style="list-style-type: none"> • Plant type determinate. • Open pollinated crop. • Fruit weight varies from 75-80 gram. • First harvest at 70-75 days. • Average yield-350-400 q/ ha. • Resistant to tomato leaf curl virus. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Kashi Sharad	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plant type indeterminate. • Oval shaped fruits • Attractive red colour. • Concentrated fruiting. • Fruit weight varies from 90-95 gram. • Thick pericarp. • Longer self life. • Average yield-400-500 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Anupam	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plant type determinate. • Fruit large. • Flattish round. • Attractive red colour. • First harvest at 75-80 days after transplanting. • Average yield-500-600 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Videsh	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants type determinate. • Fruits are spherical. • Fruit weight varies from 80-85 gram. • First harvest at 72-75 days. • Average yield- 400-450 q/ ha. • Resistant to tomato leaf curl virus. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Vishesh (H-86)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants type determinate. • Plants are dark green, fruit colour red, spherical. • Fruit size medium to large and weight of fruit 80 gram. • First harvest at 70-75 days after transplanting. • Average yield-400-450 q/ ha. • Resistant to tomato leaf curl virus. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Hemant	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants are determinate. • Fruits are attractive, red and round. • Fruit size varies from 80-85 gram. • Average yield-400-420 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

BRINJAL			
Kashi Sandesh (hybrid)	2002 IIVR, Varanasi	<ul style="list-style-type: none"> • Round-fruited hybrid having semi-upright plant habit with green stems. • Fruits are purple round. • Fruit length 12.4 cm & diameter 10.2 cm. • Average weight 225.3 gram. • Picking starts in 76 days after transplanting. • Average yield-780.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Azad B-4 (KS- 235)	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Better shelf life • Round fruits • Lighter purple in colour. • Calyx green. • It matures in 180 -200 days. • Average yield-300-350 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Komal (Hybrid)	2004 IIVR, Varanasi	<ul style="list-style-type: none"> • Excellent long fruited and prolific-bearing hybrid. • Fruits are light purple. • Soft textured. • Average length 13 cm & diameter 3 cm. • Picking starts in 65-70 days after transplanting. • Average yield-800.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Prakash	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Fruits are oblong. • Attractive with light green spot. • Plants are semi-upright with green stems. • Average weight 190 gram. • Picking starts in 80-82 days after transplanting. • Average yield-650-700 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Azad Hybrid	2005 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Round shape size. • Calyx green. • It matures in 180-210 days. • Average yield-650-750 q/ ha. • Tolerant to stem borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

CHILLI			
Azad Mirch-1	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Fruits erect type. • Borne cluster. • It matures in 140-150 days. • Average yield-15.0-20.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Azad Mirch-2	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Attractive fruits. • Long, smooth and blunt. • Suitable for pickle purpose. • It matures in 140-150 days. • Average yield-90.0-100.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Anmol	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants are determinate with umbrella type growth. • Fruits are attractive. • Compact, dark green at maturity (150-160 days). • Average yield-250.0 q/ ha. • Suitable for long distance transportation at least 17-20 days earlier than other hybrid chilli cultivars. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
KCH-3 (hybrid)	2005 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Bold fruited. • Suitable for pickles. • It matures in 150-160 days. • Average yield-100-125 q/ ha. • Resistant to leaf spot. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Vishwanath (hybrid)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants are semi-determinate. • Fruits are light green & straight. • Suitable for green as well as red fruit production. • Fruits are long (10 cm). • Highly attractive. • It matures in 220 days • Average yield-200 q/ ha 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Early (hybrid)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for green as well as dry fruit production. • Plants are tall. • Long fruits, highly attractive, dark green and turn bright red. • It matures in 220 days. • First picking starts in 45 days. • Average yield-300.0 q/ ha (red ripe fruit). 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

CAULIFLOWER			
Kashi Kunwari	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for early maturing. • Tolerate high rainfall during its vegetative growth. • Curds of semi-dome type. • White compact and fine texture. • Average weight 300-450 gram. • Average yield-300-350 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
CABBAGE			
KGMR-1	2005 IARI Regional Station, Katrain	<ul style="list-style-type: none"> • Plants with short stalk. • Head very compact. • Round weight about 1 kg. • It matures in 60-75 days. • Average yield-350.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
GARLIC			
Jamuna Safed-4 (G-323)	2005 NHRDF, Nasik	<ul style="list-style-type: none"> • Bulbs are compact. • White creamy flesh. • 10 bulbs weight 170-250 gram. • Total Soluble Solids (T.S.S.) 38-40 %. • Dry matter 40-45 %. • Diameter 3.5-4.5 cm. • Number of cloves 35-40. • Clove size index 1.75-2.5 cm². • Average yield- 200.0-250.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
VEGETABLE PEA			
Azad P-5	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Pods medium. • Extended bearing up to March. • It matures in 120-130 days. • Average yield- 90.0-100.0 q/ ha. • Resistant to powdery mildew. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Kashi Kanak (VRP-2)	2001 IIVR, Varanasi	<ul style="list-style-type: none"> • Early maturing. • Plant height up to 50 cm. • Vigorous dark green foliage. • Pods are straight, medium sized (7-8 cm), light green filled with bold ovules. • Flowering starts at 38 days after sowing. • Green pods may be harvested at 55-58 days after sowing. • Average yield-100.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

Kashi Nandini	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for early maturing. • Pods are 8-9 cm long. • Well filled with 8 to 9 seeds. • Flowering at 32 days after sowing. • Shelling percentage 47-48. • Bears 7-8 pods/ plant. • Average yield-110-120 q/ ha. • Tolerant to leaf minor and pod borer. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pusa Pragati	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Pods long (10 cm). • Green with 9 seeds per pod. • First picking starts at 60-65 days. • Average yield-70.0 q/ ha. • Resistant to powdery mildew. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Kashi Udai	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for early maturing. • Plant height 58-62 cm. • Plants have dark green foliage. • 50 % flowers at 35-37 days after sowing. • Length 9-10 cm. • 8-10 pods per plant. • Pods are attractive. • Filled with 8-9 bold seeds. • Average yield -100-110 q/ ha. • Shelling percentage 48. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Kashi Shakti	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for medium maturing. • Plants have dark green foliage with 11-12 pods per plant. • 50 % flowers at 54-56 days after sowing. • Filled with 8-9 bold seeds. • Pods are 10-10.5 cm long. • Average yield- 140.0-160.0 q/ ha. • Shelling percentage 48-49. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
OKRA (LADY FINGER)			
Kashi Mohini	2001 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants height 110-140 cm. • Flowres at 4-5 nodes during summer and 5-7 nodes during rainy season after 39-41 days after sowing. • Fruit size 11.3-12.6 cm long at marketable stage. • Fruits five ridges. • Average yield- 130.0-150.0 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions. • Tolerant to high temperature. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

Pusa A-4	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Fruits are dark green. • Fruit size 12-15 cm long. • First picking starts in 45 days. • Average yield - 140.0 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions and high temperature during summer season. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Azad Bhindi-2	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Fruits are long and green. • Average yield - 125.0-150.0 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Mangali	2002 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for cultivation under summer as well as for rainy season. • Plant height-122-125 cm. • Flowers appear on 4-5 nodes. • Fruits are green with five ridges • Average yield - 160.0 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions and stands high temperature during summer season. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Kashi Pragati (VRO-6)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants are tall. • Plant height-130-175 cm. • Effective branches 1-2. • First flower appears at 36-38 days after sowing on 4 nodes during kharif and 3 nodes during zaid season. • Length of fruits 8-10 cm at marketable stage. • 25-30 fruits per plant • Average yield -180.0-190.0 q/ ha (kharif) and 130-140 q/ ha (zaid). • Resistant to Yellow Vein Mosaic Virus and OLCV. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Kashi Bhairo (hybrid)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Medium tall. • Fruits are dark green with 10-12 cm long. • Average yield -200-220 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Azad Bhindi-3	2007 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Fruits are green in colour. • Fruits are thin with medium ripening. • Average yield-125.0-150.0 q/ ha. • Moderately resistant to Yellow Vein Mosaic Virus under field conditions. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
BOTTLE GOURD			
Narendra Rashmi (NDBG-4)	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> • Bears approximately 8 fruits / plant. • Fruits are bottle shaped, having shallow neck, white flash. • Average weight 1 kg with 400-500 seeds. • First harvesting at 60 days after sowing. • Average yield-300.0 q/ ha. • Plants are moderately tolerant to red pumpkin beetle and powdery mildew. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
COWPEA			
Kashi Shyamal	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants are dwarf and bushy. • Plant height-70-75 cm. • Number of branches 3-4 per plant. • Early flowering at 40 days after sowing. • Pods per plant 35-40. • Average yield -70.0-80.0 q/ ha (pods). • Tolerant to golden mosaic virus. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

COLOCASIA			
Azad Arvi-1	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Corms are round to oval. • Average yield - 200-250 q/ ha. • Resistant to leaf blight. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
TURMERIC			
Azad Haldi-1	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • High curcumin content. • Average yield - 350.0-400.0 q/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Horticulture			
MANGO			
Ambika (CISH-M-1)	CISH, Lucknow	<ul style="list-style-type: none"> • Regular bearer having yellow colour with red blush. • Firm flesh and scanty fibres. • It has good potential for domestic and export markets. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
CISH-M-2		<ul style="list-style-type: none"> • A cross-developed with Dashehari and Chausa. • Suitable for late sown variety. • Dark yellow in colour with firm flesh and scanty fibres. • It is a good commercial value. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Bangalora (Totapuri)		<ul style="list-style-type: none"> • Regular bearing. • High yielding under Lucknow conditions. • Recommended for its cultivation in northern India. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Amrapali	IARI, New Delhi	<ul style="list-style-type: none"> • Regular fruiting. • Dwarf stature suitable for high density planting with regular annual pruning. • Excellent fruit quality. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Pusa Arunima		<ul style="list-style-type: none"> • Medium size tree. • Regular fruiting. • Fruit size medium (250 g). • Attractive red peel colour. • Sweet and delicious. • Very good shelf-life (12 days). • Suitable for export 	Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Pusa Surya		<ul style="list-style-type: none"> • Fruit size is medium to large in size (270 g). • Attractive apricot yellow peel colour. • Good shelf-life (8-10 days). • Room temperature after ripening. • Suitable for domestic and international market. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Mango (Malformation)	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Use healthy scion for grafting. • Removal of malformed panicle in June-July. • Spraying of Chelated Copper (40 ppm) and Phosphamidon 0.05 % in Sept.-October and Feb.-March. • Spraying of Carbendazim (0.1 %) before flowering. 	Farrukhabad, Unnao, Lucknow
CROP PRODUCTION			
Mango	CISH, Lucknow	<ul style="list-style-type: none"> • A spacing of 5m x 5m with 400 plants/ ha is recommended for higher production of mango cultivar Dashehari. • Cowpea-potato system gives found high monetary return up to 10 years age of the plantation. • Soil application of paclobutrazol (3.2 ml m⁻¹ canopy diameter) is effective in inducing regular flowering and fruiting and thus controlling irregular bearing in mango cultivar. Dashehari. • Soil application of NPK (1:1:1 kg/ tree) to 10-years old Dashehari mango increased yield. Trench application of fertilizers around the tree in July is most efficient. • Application of FYM (40 kg) enriched with <i>Azospyrillum</i> (250 g) per tree is effective for 15-years old mango cvcultivar Dashehari. 	Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
CROP PROTECTION			
Mango	CISH, Lucknow	<ul style="list-style-type: none"> • Imidacloprid (0.005%) is effective against mango hopper. • Methyl eugenol wooden block trap soaked in alcohol, methyl eugenol and malathion (6:4:1) is highly effective in trapping fruit flies and thus reducing its infestation in mango orchards and demonstrated at farmers' fields in large areas. • <i>Melipona/Trigona</i> spp. identified as main pollinators on mango. • Mango powdery mildew is effectively controlled by spraying of Carbendazim + Apsa (0.1+0.2%), Index (0.1%) and Companion (0.2%). • Die-back disease in mango nursery plants reduced up to 50% using spray of <i>Streptosporangium pseudovulgare</i> at a concentration of 6.8 x 10⁹ cells/ ml. • Maximum and minimum temperatures (31-34 °C & 25-26 °C with intermittent rain were found conducive for development of anthracnose in mango. • Carbendazim (0.1%), Companion (0.2%) and copper oxychloride (0.3%) is effective in controlling anthracnose of mango. Combined application of Prochloraz + Velvet (0.125 + 2.5%) are effective against the disease. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

GUAVA			
Lalit (CISH-G-3)	CISH, Lucknow	<ul style="list-style-type: none"> Fruits are attractive, saffron yellow coloured with red blush. Medium sized, firm and pink flesh with good blend of sugar and acid. It gives 24% higher yield than popular variety Allahabad Safeda. Pink colour in the beverage made from the pulp of this variety remains stable for more than a year during storage. Jelly made from Lalit is of high quality 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Shweta (CISH-G-4)	CISH, Lucknow	<ul style="list-style-type: none"> Subglobose fruits with few soft seeds, Attractive pink blush. It has good yield potential. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Control of wilt in guava	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> <i>Pusa Mrida</i> and <i>Trichoderma viridae</i> mixed with FYM/ plant in July. 1.8 to 2.0 kg Gypsum/ tree applied in July. <i>Psidium friedrichsthalianum</i> found resistant to wilt may be used as root stock. 	Farrukhabad Kanpur Nagar, Kanpur Dehat, Fatehpur, Unnao
AONLA			
Kanchan (NA-4):	1984 NDUAT, Faizabad	<ul style="list-style-type: none"> It is a seedling selection from Chakaiya. It is regular and heavy bearer. Fruits are of medium size with higher fiber content, preferred by industry for preparation of various products. It is a mid season variety. 	Pratapgarh, Kaushambi, Raebareli, Fatehpur, Kanpur Nagar, Kanpur Dehat, Hardoi, Lucknow, Unnao, Sitapur, Agra
Krishna (NA-5)	1984) NDUAT, Faizabad	<ul style="list-style-type: none"> Krishna is a seedling selection from Banarasi. The fruits are large, triangular, conical, smooth, whitish green to apricot yellow with red spot. Flesh is pinkish green and less fibrous. It is an ideal variety for preparing candy and juice. It is an early maturing genotype. 	Pratapgarh, Kaushambi, Raebareli, Fatehpur, Kanpur Nagar, Kanpur Dehat, Hardoi, Lucknow, Unnao, Sitapur, Agra

District Specific Technological Interventions for Central & Southern Region

NA-6	1993 NDUAT, Faizabad	<ul style="list-style-type: none"> • It is a selection from Chakaiya. • Fruits are most attractive and shining, medium to large in size, flattened and very low in fiber content. • This is an excellent variety for making preserve, candy and jam. • It is a mid season variety. 	Pratapgarh, Kaushambi, Raebareli, Fatehpur, Kanpur Nagar, Kanpur Dehat, Hardoi, Lucknow, Unnao, Sitapur, Agra
NA-7	1987 NDUAT, Faizabad	<ul style="list-style-type: none"> • It is a seedling selection from Francis. It is precocious and prolific regular bearer. Fruits are of medium to large with conical apex. Fiber content is little higher than NA-6. It is a mid season variety. 	Pratapgarh, Kaushambi, Raebareli, Fatehpur, Kanpur Nagar, Kanpur Dehat, Hardoi, Lucknow, Unnao, Sitapur, Agra
NA-10	1993 NDUAT, Faizabad	<ul style="list-style-type: none"> • This is a chance seedling selection from cultivar Banarasi, which bears profusely. Fruits are attractive, medium to large in size and flattened round in shape. Skin is rough, yellowish green with pink tinge. Its pulp is whitish green with higher fiber and lower phenolic contents. 	Pratapgarh, Kaushambi, Raebareli, Fatehpur, Kanpur Nagar, Kanpur Dehat, Hardoi, Lucknow, Unnao, Sitapur, Agra
Laxmi-52	2007 NDUAT, Faizabad	<ul style="list-style-type: none"> • It is seedling selection from the cv. Francis. • The tree is semi erect in growth with semi spreading branches. • During early period of growth fruit colour (particularly ridges) is light pink, which disappear on full development and maturity. • Fruits are free from necrosis. • A full-grown tree yields up to 2.0-2.5q/ ha. • Due to heavy fruit load cracking in branches has been observed. 	Pratapgarh, Kaushambi, Raebareli, Fatehpur, Kanpur Nagar, Kanpur Dehat, Hardoi, Lucknow, Unnao, Sitapur, Agra
CROP PRODUCTION			
Guava	CISH, Lucknow	<ul style="list-style-type: none"> • Trees at the highest density (3mx1.5m) were taller. The population density of 555 trees/ ha with a spacing of 3mx6m is suitable for higher yield and quality produce. • Current season shoot pruning influenced the canopy architecture and flowering under high density planting when imposed in the month of May. • Highest fruit yield (79.5 kg/ tree) recorded from the trees planted at 3.0mx6.0m. • Application of 20 kg FYM inoculated with <i>Azotobacter</i> produced highest yield (13.69 & 40.11kg/ tree) in guava cultivar Allahabad Safeda in 1st and 2nd year of fruiting. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

CROP PROTECTION			
Guava	CISH, Lucknow	<ul style="list-style-type: none"> • Cartap hydrochloride is effective in control of guava fruit borer. • Inoculation technique (stem hole inoculation) for reproduction of wilt in guava has been standardized. • <i>Gliocladium roseum</i> has been found most potent causal pathogen for guava wilt, as it produces symptoms in grown up plants in field within 2 months of inoculation. • Bio-control agents, <i>Aspergillus niger</i> (AN 17) and <i>Penicillium citrinum</i> have been identified for the control of guava wilt. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Papaya	CISH, Lucknow	<ul style="list-style-type: none"> • Ring spot and leaf curl have been identified as important viral diseases of papaya causing considerable loss to the crop. Insect vectors responsible for the transmission of these viruses have been identified. • Antiviral plant substances from <i>Boerhaavia diffusa</i> and <i>Clerodendrum aculeatum</i> are effective against ring spot disease. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
USAR RECLAMATION			
Low cost technology for sodic land reclamation	2002 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Leveling & bunding in March-April. • Apply Gypsum @25 % gypsum requirement in soil. • Flood the field up to 9 cm for a week & repeat the process once again. • Apply press mud or rice straw @10 t/ ha mixed with decomposer bioinoculant @1.0 kg/ lit. 	Aligarh, Mainpuri, Etah, Etawah, Auraiya, Kanpur, Fatehpur, Unnao, Raebareli
INTEGRATED PEST MANAGEMENT			
Integrated pest management in Chickpea	2001 NCIPM, New Delhi	<ul style="list-style-type: none"> • Soil application of <i>Trichoderma harzianum</i> @ 2.5 kg in 50 kg of FYM/ ha • Seed treatment with Chlorpyrifos 20 EC @8ml/ kg for control of termite. • Erection of bird percher. • Monitoring of Helicoverpa through Pheromone trap @5/ ha • Application of NPV@250 LE/ ha+ washing powder+ gur for Helicoverpa • Spray NSKE 5% 	Kanpur Dehat, Fatehpur, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pigeonpea	2004 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Soil application of <i>Trichoderma harzianum</i> @ 2.5 kg in 50 kg of FYM/ ha • Erection of bird percher. • Monitoring of Helicoverpa through Pheromone trap @5 kg/ ha. • Application of NPV @250LE/ ha. • Spray of NSKE 5% • Need based spray of Endosulfan 	Kanpur Dehat, Fatehpur, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

PRODUCTION TECHNOLOGY OF FIELD CROPS			
Foliar spray of urea in Chickpea	IIPR, Kanpur	<ul style="list-style-type: none"> Foliar application of 2% urea/ DAP at the time of flowering and 10 days there after show significant increase in grain yield. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
5 tonnes / ha FYM in Mungbean	IIPR, Kanpur	<ul style="list-style-type: none"> Under rainfed situation, addition of 5 tonnes/ ha FYM increases yield by 35.45% over 40 kg P₂O₅/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Combined application of NPKS + Borax, NPKS + Molybdate and NPKS + Zn SO ₄ in Mungbean	IIPR, Kanpur	<ul style="list-style-type: none"> Combined application of NPKS + 10 kg Borax / ha produces higher yield by 49.22 %. NPKS + Molybdate @2 kg/ ha produces higher yield by 48.33 % and NPKS + Zn SO₄ produces higher yield by 41.43 % higher yields than NPKS alone. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Intercropping of Sorghum with Mungbean and Pigeon pea	IIPR, Kanpur	<ul style="list-style-type: none"> Intercropping of Sorghum with Mungbean and Pigeon pea with Urdbean produced highest respective equivalent yields (6065 kg/ ha) and (970 kg/ ha), 2/ 3rd dose of fertilizer saved in Mungbean and Urdbean. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Fertilizer application in late planted mungbean	IIPR, Kanpur	<ul style="list-style-type: none"> Under late planted (August sown), application of N@ 20 kg / ha + 10 kg/ ha N as foliar proved beneficial and resulted into higher yield at higher planting densities (4 & 5 lakh per ha) in Mungbean. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

Ridge planting of Mungbean	IIPR, Kanpur	<ul style="list-style-type: none"> Ridge planting of mungbean increased the yield by 20% over flat planting. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Urdbean + Ragi intercropping	GBPUAT, Pantnagar	<ul style="list-style-type: none"> Urdbean + Ragi at 2:1 or 1:1 row ratio and pre-emergence application of Alachlor @2 kg a.i. / ha increased the yield in Urdbean +Ragi intercropping. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Spray of 2 % urea in Rajmash	IIPR, Kanpur	<ul style="list-style-type: none"> Two sprays of 2 % urea at pre-flowering and pod development stages increased the yield significantly in Rajmash 	Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Unnao, Sitapur, Lakhimpur Kheri, Hardoi
Rice-Chickpea (Kabuli)	IIPR, Kanpur	<ul style="list-style-type: none"> Rice-Chickpea (kabuli) system is gaining popularity because of higher economic returns as compared to rice-wheat system 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Sprouted seeds of Lentil	IIPR, Kanpur	<ul style="list-style-type: none"> Sprouted seeds of lentil sown 15 days before the harvest of Rice crop increase the lentil yield by 30 % 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

INTEGRATED NUTRIENT MANAGEMENT FOR OILSEED CROPS			
GROUNDNUT			
Groundnut	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Sulphur deficiency is the most common problem of groundnut and soil application of 20 kg/ ha, sulphur either as pyrite or as element sulphur is most effective 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi
Groundnut	2005 DOR, Hyderabad	<ul style="list-style-type: none"> The requirement of the Ca and Sulphur can be met through application of gypsum (Ca 24 % and Sulphur 15-18 %). Well powdered gypsum (80 mesh) @500 kg/ ha should be applied to the crop, as close to the base of the plant as possible at flowering stage in every season. The recommended rate of gypsum application is 200 kg/ ha. 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi
Groundnut	2005 DOR, Hyderabad	<ul style="list-style-type: none"> The bold-seeded groundnut requires higher amount of nutrients and farmers growing this, are advised to apply 100 kg/ ha of Ca as gypsum, 50 kg/ ha K₂O as Murate of Potash and 2 kg/ ha of boron as borax for getting well filled seed with high seed mass and sound mature kernels to fetch high price. 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi
RAPESEED-MUSTARD			
Mustard	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Use farm yard manure @10 t/ ha to reduce 50 % nitrogen need and increase mustard yield besides improvement in soil fertility and water use efficiency. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Mustard	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Apply Sulphur and Boron @20 and 1 kg/ ha, respectively to increase mustard yield. The response of mustard to Zn varies from 11 to 40 %. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

Mustard	2005 DOR, Hyderabad	<ul style="list-style-type: none"> In rice-mustard sequence, incorporate dhaincha green manure to reduce the nitrogen requirement of succeeding mustard to the extent of 30-40 kg/ ha. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
SUNFLOWER			
Sunflower	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Sunflower yield increase by 29 % with 20 kg Ca + 15 kg sulphur in the form of gypsum and by 23 % with 10 kg Mg + 13 kg sulphur as Mg SO₄ in soils deficient in sulphur and other secondary nutrients. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Sunflower	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Apply Sulphur, Boron and limiting micronutrient of the region to sunflower along with recommended fertilizers (80 N: 60 P: 40 K) to the crops in sequence for higher production. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Sunflower	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Apply 10 t/ ha FYM along with 100 % recommended dose of fertilizer for realsing highest sustainable yield of sunflower. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Sunflower	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Spray of boric acid @0.2 % solution or dust 2 kg Borax/ ha at ray floret stage to increase seed yield and profit. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

SESAME			
Sesame	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Sesame is generally grown in rainfed areas. Its response to NPK and Sulphur varies from 20 to 60 kg N, 10 to 40 kg P₂O₅, 10 to 25 K₂O and 10 to 45 kg S/ ha depending upon growing situations. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Sesame	2005 DOR, Hyderabad	<ul style="list-style-type: none"> In general, of the nutrients taken up by the crop, on an average, 25 % N and P, 50 % S and 75 % of K is retained in crop residues making them valuable nutrient sources. Crop residues besides supplying nutrients, leave substantial residual effect on succeeding crops in the system. Organic N is slowly mineralized and about 30 % N is generally available to the first crop. About 60-70 % P and 75 % of K also is likely to become available to the first crop and the rest to the subsequent crop. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Sesame	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Green manuring with subabul @5 t/ ha increases the yield of sesame with a saving of 25 kg N/ ha. Application of caster cake @1 t/ ha or FYM 5 t/ ha with 50 kg N/ ha is recommended under assured rainfall conditions. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Sesame	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Seed treatment with Azospirillum or Azotobacter can save 20 to 30 kg N/ ha. Azospirillum or Phosphate Solubilising Bacteria (PSB) inoculation along with 100 % fertilizer results in highest yield and net return in most of the sesame growing areas. Half of the N can be profitably substituted by FYM and half of P with PSB. With the nominal investment of Rs 10-15/ ha, 10 to 20 % yield improvement is possible through the application of biofertilizers. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

LINSEED			
Linseed	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Apply sulphur @30 kg / ha + recommended dose of fertilizer (60-80 kg N, 40 kg P₂O₅/ ha) under irrigated situation of Indo-gangetic belt of Uttar Pradesh to improve the linseed yield significantly. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Linseed	2005 DOR, Hyderabad	<ul style="list-style-type: none"> Application of zinc sulphate @25 kg/ ha in rabi either with or without FYM @5 t/ ha in kharif could be advantageous in rice-linseed crop sequence. 	Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur
Linseed	2005 DOR, Hyderabad	<ul style="list-style-type: none"> It would be advantageous to adopt any one module out of three i.e. 75 % recommended dose of fertilizer + 5 t FYM/ ha + 5 kg zinc/ ha +25 kg S/ ha + biofertilizer (Azotobacter +PSB) or 75 % recommended dose of fertilizer + 5 kg zinc/ ha + 25 kg S/ ha + biofertilizer (Azotobacter +PSB) or 75 % recommended dose of fertilizer + 5 t FYM/ ha + 5 kg zinc/ ha + 25 kg S/ ha for higher linseed yield, net return and soil health in rice-linseed crop sequence. 	Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur
Linseed	2005 DOR, Hyderabad	<ul style="list-style-type: none"> It would be appropriate to adopt 75 % recommended dose of fertilizer + 5 t FYM/ ha + 5 kg Zn/ ha + 25 kg S/ ha + biofertilizer (Azotobacter +PSB) for higher seed yield, net return and soil health in sesame-linseed crop sequence. 	Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
PROTECTION TECHNOLOGY			
Insecticides (Chickpea)	IIPR, Kanpur	<ul style="list-style-type: none"> Two spray of insecticides Betacyfluthrin 18.75 g a.i./ ha and Koranda showed superiority over Endosulphan in controlling <i>Heliothis armigera</i> 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

Seed treatment in rabi pulses	IIPR, Kanpur	<ul style="list-style-type: none"> Seed treatment with Carbosulfan 25 ST 3 % was found effective in reducing 40 % root knot nematode population. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Seed treatment in chickpea	IIPR, Kanpur	<ul style="list-style-type: none"> Seed should be treated with 4 gram <i>Trichoderma viride</i> + 1 g Vitavax per kg of seed before sowing to check the wilt / root rot incidence. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Insecticides in chickpea and pigeonpea	IIPR, Kanpur	<ul style="list-style-type: none"> Among newer insecticides, Novaluron 10 EC 100 g and Proclaim 5 EC, 11 g gave 78.3 % and 71.9 % reduction in pod damage over control, respectively. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Chickpea	IIPR, Kanpur	<ul style="list-style-type: none"> Normal planting with intercrops protected with NSKE-NPV and Profenofas is comparable to 3 sprays of Profenofas for management of <i>Helicoverpa armigera</i>. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

PROTECTION CULTIVATION TECHNOLOGIES FOR HIGHER PRODUCTION			
Protected cultivation technology of quality tomato and cucumber	IARI, New Delhi	<ul style="list-style-type: none"> • Production technology of big-fruited tomato and cherry tomato has been developed and standardized for naturally ventilated greenhouse conditions. In case of big- fruited and cherry tomatoes, yield levels ranging between 150-160 t/ ha and 40-50 t/ ha, respectively are attainable with superior quality of fruits. • The production technology of parthenocarpic cucumber has also been developed and standardized for its cultivation under naturally ventilated greenhouse conditions. Three crops of parthenocarpic cucumber can be grown over a duration of 10-11 months under naturally ventilated greenhouse conditions with productivity ranging between 120-130 t/ ha with very high quality fruits. The technology eliminates stresses due to biotic and abiotic factors and the use of pesticides in both the vegetable crops can be minimized. The technology is highly remunerative for the growers near peri urban areas of the country who can access and target niche markets. The growers can also take full advantage of the off-season produce of tomato and cucumber, which is not possible under outdoor cultivation. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Plug-tray nursery raising technology	IARI, New Delhi	<ul style="list-style-type: none"> • It is an excellent proposition to grow high-density seedlings and propagate any suitable plant material required for higher productivity of horticultural crops. • It is possible to raise disease-free nursery independent of season. • Nursery of cucurbits during off-season can be raised to get higher returns from the crop. • It can be adopted as self-employed enterprise by agri.-graduates of progressive farmers for enhancing income. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

District Specific Technological Interventions for Central & Southern Region

<p>Plastic low tunnel technology for off-season vegetable cultivation</p>	<p>IARI, New Delhi</p>	<ul style="list-style-type: none"> In the first step seedlings of the required cucurbitaceous vegetables are raised through plug tray nursery raising technology. Thereafter, seedlings are raised on beds having drip irrigation facility. After transplanting of the seedling individual rows of the crop are covered by making low tunnels at a height and width of 45-60 cm. Mostly, 20-30 micron thickness transparent plastic is used for making low tunnels. Plastic low tunnels can be made manually and mechanically both. By using this technology, different cucurbits can be advanced from 30-60 days over their normal season of cultivation. This technology highly suitable for those areas where light temperature during winter season is going below 80 °C for a period of 30-40 days (Dec.-Jan months) and it is not possible to grow these vegetables in open fields. 	<p>Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot</p>
<p>Tractor-operated air-sleeve sprayer for field crops.</p>	<p>IARI, New Delhi</p>	<ul style="list-style-type: none"> The sprayer was designed based on artificially induced air currents or air-assistance to the droplet spectrum produced by hydraulic nozzles not only to facilitate in transporting and depositing the droplets in different part of the canopy but also to reduce the application rate of chemicals. The air streams increased the velocity of smaller droplets so that extra momentum could increase impaction and improve penetration in to the crop as well as minimize the influence of wind on the drift. Incorporation of air assistance in the sprayer increased deposition uniformity in the entire plant canopy. Thus, the amount of spray volume required in order to get rid-off insects or pest was reduced drastically without compromising the effectiveness of the spray. The sprayer showed a much superior performance over the conventional spraying systems. Use of this machine will enhance the application efficiency of pesticides in field crops especially in vegetables. This will not only save precious pesticides but would also reduce the pollution load as a result of existing practice of pesticide spraying. 	<p>Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot</p>

Inventory of Agricultural Technologies for Uttar Pradesh

Plastic mulch laying machine	IARI, New Delhi	<ul style="list-style-type: none"> Plastic mulching offers several advantages, like water and nutrient conservation in root zone, reducing leaching of nutrients during rains, weed control and enhancing soil temperature during winter for better root growth. This technology is gaining a big leap forward in several states where water is a severe constraint for practicing agriculture. However, laying plastic mulch in large fields is labour intensive and involves high cost and time. Keeping this in view, a tractor-operated machine was designed and developed to lay plastic mulch in fields. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Deep tillage chisel plough	IARI, New Delhi	<ul style="list-style-type: none"> Modern technology of growing vegetables under protected conditions involves use of drip irrigation to apply water and fertilizers to the plants. While drip irrigation ensures judicious and efficient use of both of these inputs, it has also been found to result in accumulation of salts and consolidation of soil within the root zone during a crop cycle. This is more pronounced in soils of medium to heavy texture. Deep ploughing after each crop cycle is recommended to break the consolidated layers to allow leaching of salts and to reduce the initial bulk density to facilitate aeration and good root growth. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
POST HARVEST TECHNOLOGY			
Controlled atmosphere protocol for storage of mango	IARI, New Delhi	<ul style="list-style-type: none"> Technology right from the pre-harvest crop management to post harvest handling, packaging and various controlled atmosphere regimes required (CO₂+O₂+N₂) for quality assurance and retention of green life of mango cultivars viz Dashehari, Chausa and Baneshan for three weeks or more have been optimized. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Packaging of fresh mangoes	IARI, New Delhi	<ul style="list-style-type: none"> Designed and developed appropriate packaging technology using CFB boxes with individual fruit partitions that retains the post harvest quality of mango cv Alphonso during transit and storage. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Mango	CISH, Lucknow	<ul style="list-style-type: none"> Fruits of Dashehari mangoes harvested with 8-10 mm stalks could be stored for 21 days at 12°C and 85-90% relative humidity, while under ambient conditions they can be stored for 6 days. Uniform ripening of early harvested mangoes could be achieved by dip treatment of fruits in 750 ppm ethrel in hot water at 52±2oC for 5 minutes. Concentration of the Ethrel could be reduced to 100-500 ppm depending upon stage of fruit maturity and variety. The optimum low temperature for storage (2-3 weeks) of Langra, Dashehari and Chausa were found to be 14, 12 and 10 °C, respectively. Beverages prepared from blends of mango-pineapple (1:1), mango-pear (any ratio) and mango-papaya (2:1) was ideal with better acceptability. Recipe of oil less pickle of mango has been developed with salt, chilli and asafoetida as ingredients. It could be safely stored for nine months. Good quality vinegar from mango peel could be obtained by use of <i>Acetobacter aceti</i>. A simple low cost mango harvester has been fabricated which could harvest 800-1000 fruits per hour. Corrugated fibre board (CFB) boxes of 5 and 10 kg capacities have been fabricated with 0.5 per cent ventilation for packaging mangoes as per codex standards. Pre-harvest sprayings of Calcium Chloride dihydrate (2%) at 10 days internal checked the jelly formation, while its combination with carbendazim and postharvest dip in calcium chloride (dihydrate) has extended the shelf life of fruits. Among 34 mango varieties screened for nectar preparation, hybrids H-817, H-533, H-500, H-486, H-577, EC-95862 and H-896 were found most suitable. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

Controlled atmosphere protocol for storage of guava	IARI, New Delhi	<ul style="list-style-type: none"> Technology right from the pre-harvest crop management to post harvest handling, packaging and various controlled atmosphere regimes required (CO₂+O₂+N₂) for quality assurance and retention of green life of guava cultivars viz Lucknow-49 and Allahabad Safeda for three weeks or more have been optimized. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Guava	CISH, Lucknow	<ul style="list-style-type: none"> Guava fruits of cultivar Allahabad Safeda could be stored for 28 days in 0.25% ventilated LDPE bags at 5 °C. Among 5 pink fleshed guava varieties, HPSI-16 was found best for processing. CFB boxes (190X300X80mm) of 2 kg capacity with 0.5% ventilation were designed and fabricated for extending the self-life of guava fruits (cultivar Sardar). 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Aonla	CISH, Lucknow	<ul style="list-style-type: none"> LDPE film of 200 gauge thickness with 2 % ventilation is suitable to extend the self life of aonla fruits for 15-days. Self life of aonla fruits of cultivar NA-6 is 10 days, while in case of cultivar Kanchan it is 6-8 days. Dip treatment in 2 % Ca(OH)₂ solution for 30 min. is more effective in extending the self life of aonla fruits with minimum spoilage. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Packaging of banana fruits	IARI, New Delhi	<ul style="list-style-type: none"> Designed and developed modified atmosphere packaging technology using CFB boxes, silicone membrane windows, PE bag in box packaging for storage of banana for three weeks or more at low temperature. 	Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Technology for extending shelf-life of white button mushroom	IARI, New Delhi	<ul style="list-style-type: none"> Technology for retention of whiteness of button mushroom after harvest and prevention of gill opening using calcium infiltration technique under low pressure followed by packaging in polymeric films has been standardized. 	Aligarh, Agra, Kannauj, Kanpur Nagar, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

Pusa zero-energy cool chamber	IARI, New Delhi	<ul style="list-style-type: none"> • Low cost evaporative cooling chamber made of bricks, sand, bamboo, gunny clothes, sirki, khaskhas etc having capacity to store 100 kg or more fresh fruits and vegetables. The chamber maintains relatively low temperature and high relative humidity that are conducive for maintenance of freshness of harvested produce. The chamber is very effective in storage of citrus group of fruits (more than 2 months). Excellent for ripening of tomato and banana. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Pusa fruit drinks	IARI, New Delhi	<ul style="list-style-type: none"> • Ready to serve drinks made from clear juice of fresh Lime, Aonla, Grapes, Jamun, Pineapple, etc. with varying degree of brix-acid ratio (BAR) and post mix carbonation techniques. These drinks had shelf life of 3 months at ambient condition. Technology for production of clear juice from Jamun fruits having high hypoglycemic activity has been standardized. Similarly, technology for clarification of Pineapple juice has been standardized. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
Steeping preservation of vegetables	IARI, New Delhi	<ul style="list-style-type: none"> • Simple and low cost intermediate technology and easily adoptable. • Natural and modified eco-friendly traditional technique. • Utilization of surplus produce this technology has vast scope in urban, rural cosmopolitan cities particularly among housewives, small scale industries and hotels, etc. • Benefits of growers and consumers • Nutritive products (preserved material can be used for salad, soup, oilless pickles and chutneys, etc.) • The product can be stored safely upto 6-7 months at ambient temperature and upto one year at low temperature (1-3 °C) 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot

Inventory of Agricultural Technologies for Uttar Pradesh

High quality frozen Broccoli	IARI, New Delhi	<ul style="list-style-type: none"> • For preparation high quality, convenient product requiring less time for meal preparation for consumers. • Cutting and separation of broccoli heads into florets. • Blanching using two step, low temperature long time (LTLT) 50 °C for 20 minute followed by high temperature short time (HTST) at 90 °C for one minute. • Cooling with portable water at ambient temperature. • Draining • Storing at (-20 °C) 	Aligarh, Agra, Kannauj, Kanpur Nagar, Fatehpur, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur
MECHANIZATION			
AQUAFERTISEED DRILL AND UTILITY UNDER RAINFED AGRICULTURE			
Aquafertiseed Drill	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Ensures adequate moisture around root zone at the time of sowing and facilitates good germination. • Initial growth and development of the plants is vigorous owing to adequate moisture and nutrients availability. • Requirement of water for making fertilizer solution is about 7000 lit of maize and 10000 lit for wheat, mustard, and lentil crops. • Amount of water for dissolving fertilizer is hardly 1 to 1.5 % of that normally required for presowing irrigation under conventional sowing. • Experimental results have evinced its immense utility for Kharif crop of maize and rabi crops of wheat, chickpea, mustard and lentil under rainfed conditions. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Etawah Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
PUSA OKRA PLANTER			
Okra planter	1999 IARI, New Delhi	<ul style="list-style-type: none"> • Planting of soaked okra on ridges. • Capacity 0.20 ha per hour. • Power 35 h.p. tractor. • Weight 220 kg. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Central & Southern Region

PUSA POWER OPERATED TWO ROW MAIZE PLANTER			
Pusa Power Operated Maize Planter	IARI, New Delhi	<ul style="list-style-type: none"> Weeding and sowing of row crops. Capacity: 0.09 ha/ hour. Power: 3.0 horse power engine. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
MAIZE SHELLER			
Maize Sheller	Natioanl Agro-Industries, Ludhiana	<ul style="list-style-type: none"> The threshing is spike tooth type. Round bars are used as spikes, which are fitted on circular rings. The head comes out through the opening at the far end of threshing drum. A blower is used for cleaning the grains. It is 50-60% cost effective as compared to manual shelling with hand. It is used for shelling of maize cobs and the chaff is removed by winnowing. 	Aligarh, Mahamaya Nagar, Mathura, Agra, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh, Jhansi, Jalaun, Hamirpur, Mahoba, Lalitpur, Banda, Chitrakoot
GROUNDNUT HARVESTER			
Groundnut Harvester	Zonal Research Centre, TNAU, Coimbatore	<ul style="list-style-type: none"> The digger is operated by a tractor of 35 hp or higher. It digs the groundnut vines below the pod zone and elevates them by an elevator-picker for dropping on the ground. The soil attached to the vines is shaken off in the process and a window is formed with the help of deflector fenders. It is 30% cost effective as compared to local animal drawn. For harvesting and windrowing groundnut crop at soil moisture levels of 8-15% dry basis. 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi

Inventory of Agricultural Technologies for Uttar Pradesh

GROUNDNUT POD STRIPPER			
Groundnut Pod Stripper	ANGRAU, Hyderabad	<ul style="list-style-type: none"> • It is suitable for stripping of ground nut pod from freshly harvested crop. It saves 40% labour, 50% operating time, 30% on cost of operation and it also results in 4% reduction in losses compared to conventional method of manual stripping. • The machine is used for stripping the groundnut haulms, thus separating the pods from the vines. 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi
GROUNDNUT DECORTICATOR			
Groundnut Decorticator	CIAE, Bhopal	<ul style="list-style-type: none"> • The groundnut cum castor decorticator is simple equipment and easy to install and operate. The decortication takes place due to the friction between the pods. The sieve opening is kept greater than the size of the pod and less than the size of the kernels. Therefore, kernels and broken shells from the kernels is done manually by shifting or other method. For effective decortication, the pods should be dry which can be judged by breaking the pod between the fingers. It saves 70% in labour 40 % in cost of operation as compared to conventional method of hand shelling. • The groundnut cum castor decorticator is used for decortication of groundnut and castor crops. 	Aligarh, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Hardoi.

District Specific Technological Interventions for Eastern Region

I. Eastern Plain Zone

This zone consists of 12 districts. The geomorphology of these districts is given below :

A. Agroclimatic Features

The zone consists of Sultanpur, Mau, Ballia, Varanasi, Ghazipur, Azamgarh, Chandauli, Jaunpur districts. The zone has plenty of ground water, however, the surface water is scanty. Three types of soils, namely, alluvial, usar and diara land are found in this zone. Usar soils are found in Sultanpur, Ballia and Azamgarh districts. Average annual rainfall is between 803 mm of which about 96% is received during June to September. The temperature ranges from 5.7 °C to 41.4 °C and the relative humidity ranges from 30% to 86%. Cropping intensity in the zone is 138%. The major crops of the zone are rice, wheat, maize, sugarcane, chickpea, fieldpea and pigeonpea. Vegetables are also cultivated at large scale. The prominent vegetables are potato, tomato, chillies, radish, vegetable pea, brinjal, okra and capsicum. Mango, aonla, ber, guava, citrus and jackfruit are the major fruits. Commercial flower cultivation is also practiced in few districts of this zone. Large areas are affected with alkalinity and salinity.

B. Geomorphology of Districts

Faizabad district is situated on 26°47' north latitude and 82°12' east longitude. It is comprised of 5 tehsils, 11 blocks and 1270 villages. The population of 2.09 million, population density of 892 km² and literacy of 56.30% are recorded. Total reported area of 262826 ha, net sown area of 169806 ha and irrigated area of 148697 ha with cropping intensity of 151.06% are reported. Average annual rainfall is 1035 mm and temperature ranges between 2.2 °C to 43.7 °C. The soils are sandy loam to loam. Major cropping

systems are rice-wheat, rice-vegetable, sugarcane based, vegetables and mango based farming systems, etc. In kharif, the major crops grown are rice (72337 ha) with the productivity of 17.40 q ha⁻¹, maize (1270 ha) with the productivity of 9.36 q ha⁻¹, sorghum (2195ha) with the productivity of 8.85 q ha⁻¹, urdbean (676 ha) with the productivity of 5.61 q ha⁻¹ and pigeonpea (2518 ha) with the productivity of 9.80 q ha⁻¹. In rabi, the crops cultivated are wheat (78887 ha) with the productivity of 26.85 q ha⁻¹, chickpea (1339 ha) with the productivity of 7.36 q ha⁻¹, field pea (2352 ha) with the productivity of 9.67 q ha⁻¹, lentil (1118 ha) with the productivity of 8.56 q ha⁻¹, mustard (2570 ha) with the productivity of 12.64 q ha⁻¹ and potato (3696 ha) with the productivity of 115.80 q ha⁻¹. Another major crop grown is sugarcane (18529 ha) with the productivity of 416 q ha⁻¹. Fertilizer consumption of 224.72 kg/ha as reported and application of NPK was found in the proportion of 171.11, 48.62 and 4.99 kg/ha, respectively.

Cattles (340129), buffaloes (222347), sheeps (13339), goats (148257), pigs (38947) and poultry birds (169687) are the major livestock in the district.

Barabanki district is situated on 26°30' to 27°19' north latitude and 80°58' to 81°55' east longitude. It is comprised of 7 tehsils, 17 blocks and 2087 villages with the population of 2.67 million, population density of 607 km² and literacy of 47.4%. Annual rainfall is reported 1058 mm and temperature ranges between 4.3 °C to 44.8 °C. The soil type is alluvial in nature. The reported area is 385999 ha, net sown area is 253478 ha and irrigated area is 232027 ha with cropping intensity of 174.07%.

In kharif, the major crops grown are rice (182527 ha) with the productivity of 26.63 q ha⁻¹, maize (6231 ha) with the productivity of 6.35 q ha⁻¹, pearl millet (949 ha) with the productivity of 14.95 q ha⁻¹, sorghum

(3724 ha) with the productivity of 11.55 q ha⁻¹, pigeonpea (4733 ha) with the productivity of 7.10 q ha⁻¹ and groundnut (709 ha) with the productivity of 7.23 q ha⁻¹. In rabi, wheat (165876 ha) with the productivity of 25.96 q ha⁻¹, chickpea (944 ha) with the productivity of 7.36 q ha⁻¹, field pea (3324 ha) with the productivity of 9.67 q ha⁻¹, lentil (33369 ha) with the productivity of 8.56 q ha⁻¹, mustard (9394 ha) with the productivity of 12.58 q ha⁻¹ and potato (15296 ha) with the productivity of 115.80 q ha⁻¹ are grown. Sugarcane (18861 ha) is also grown with the productivity of 565.92 q ha⁻¹. Fertilizer consumption of 164.90 kg/ha is reported and application of NPK was found 111.77, 41.63 and 11.50 kg/ha, respectively.

The population of livestock includes cattles (401772), buffaloes (319619), goats (278421), pigs (62378) and poultry birds (160650), etc.

Ambedkarnagar district situated on 82.54° east longitude and 26.42° north latitude is the part of Faizabad division of Uttar Pradesh. The temperature in the district ranges between 2.5 °C to 44 °C and average annual rainfall of 1005 mm is reported. It is comprised of 5 tehsils and 9 blocks. The population of the district is 2.02 million with population density of 863 per km² and literacy of 58.40%. The cropping intensity of the district is 169.06%. Total reported area is 236148 ha out of which net sown area is 164299 ha. Total irrigated area of the district is 153516 ha. Soils are sandy to sandy loam. The major crops grown in kharif are rice (113782 ha) with the productivity of 17.98 q ha⁻¹, maize (518 ha) with the productivity of 9.36 q ha⁻¹, pearl millet (34 ha) with the productivity of 14.95 q ha⁻¹, sorghum (1245 ha) with the productivity of 8.85 q ha⁻¹ and pigeonpea (3234 ha) with the productivity of 9.80 q ha⁻¹. In rabi, major crops grown are wheat (114866 ha) with the productivity of 29.60 q ha⁻¹, barley (1085 ha) with the productivity of 20.94 q ha⁻¹, chickpea (1570 ha) with the productivity of 7.36 q ha⁻¹, field pea (4566 ha) with the productivity of 9.67 q ha⁻¹, mustard (3312 ha) with the productivity of 12.64 q ha⁻¹ and potato (4615 ha) with the productivity of 115.80 q ha⁻¹. Sugarcane (9033 ha) is cultivated with the productivity of 416 q ha⁻¹. Fertilizer consumption is 157.32 kg/ha and application of NPK is found in the

proportion of 127.01, 25.89 and 4.42 kg/ha, respectively.

In case of livestock, cattles (234756), buffaloes (231459), sheeps (13552), goats (125327), pigs (15419) and poultry (165877) form the major strength.

Sultanpur district is situated on 82.06° east longitude and 26.26° north latitude. It is comprised of 6 tehsils, 22 blocks and 2495 villages. Total population of the district is 3.21 million with the literacy of 55.80% and density of 725 km². The average size of holding is 0.57 ha with the cropping intensity of 143.50%. The district has reported area of 439679 ha, net sown area of 280228 ha and irrigated area of 229542 ha. Annual rainfall of 1005 mm and temperature between 2.5 °C to 44.8 °C are recorded. The soils of the district are mainly sandy loam, clay loam and saline type. The major crops of kharif grown are rice (211833 ha) with the productivity of 17.87 q ha⁻¹, maize (5102 ha) with the productivity of 13.06 q ha⁻¹, sorghum (7603 ha) with the productivity of 7.60 q ha⁻¹, mungbean (3235 ha) with the productivity of 5.61 q ha⁻¹ and pigeonpea (8336 ha) with the productivity of 13.38 q ha⁻¹. In rabi, wheat (165817 ha), barley (1712 ha), chickpea (6057 ha), field pea (9904 ha), lentil (5829 ha), mustard (4038 ha), linseed (472 ha) and potato (6875 ha) with the productivity of 27.27 q ha⁻¹, 20.94 q ha⁻¹, 7.36 q ha⁻¹, 9.67 q ha⁻¹, 8.56 q ha⁻¹, 12.64 q ha⁻¹, 4.55 q ha⁻¹ and 115.80 q ha⁻¹, respectively are grown. Sugarcane (10423 ha) is also raised with the productivity of 542.56 q ha⁻¹. Fertilizer consumption is 96.10 kg/ha in the district with the application of NPK in the ratio of 73.22, 19.74 and 3.14 kg/ha, respectively.

The livestock population is mainly dominated by cattles (565228), buffaloes (337839), sheeps (47196), goats (266933), pigs (80271) and poultry birds (260484).

Azamgarh district is situated between 25°38' & 26°27' north and between 82°40' & 83°52' east longitude. It is bounded by Mau district in east, Gorakhpur in north, Ghazipur in south-east, Jaunpur in south-west, Sultanpur in west and Ambedkar Nagar district in north-west. The river Ghaghra separates the district from the Gorakhpur. It is comprised of 7 tehsils, 22 blocks, and 4122 villages with the population of 3.93 million. The population

density of 992 km² is recorded with literacy of 57%. Average annual rainfall is about 1114 mm and temperature ranges between 6.8 °C to 43.5 °C. The major soils are sandy loam to clay loam. Total area of 423985 ha, net sown area of 298864 ha and irrigated area of 273990 ha with cropping intensity of 158.32% in the district have been recorded.

In kharif, the major crops grown are rice (145562 ha) with the productivity of 14.69 q ha⁻¹, maize (7926 ha) with the productivity of 15.30 q ha⁻¹, pigeonpea (10234 ha) with the productivity of 3.53 q ha⁻¹ and sugarcane (20697 ha) with the productivity of 406.84 q ha⁻¹. In rabi, wheat (221335 ha) with the productivity of 24.49 q ha⁻¹, barley (3413 ha) with the productivity of 17.57 q ha⁻¹, chickpea (2995 ha) with the productivity of 10.54 q ha⁻¹, field pea (6411 ha) with the productivity of 9.67 q ha⁻¹, mustard (873 ha) with the productivity of 10.31 q ha⁻¹ and potato (3820 ha) with the productivity of 248.78 q ha⁻¹ are grown. Fertilizer consumption is 104.12 kg/ha with the application of NPK in the ratio of 82.72, 17.49 and 3.91 kg/ha, respectively.

Cattles (496123), buffaloes (379364), sheeps (24112), goats (326830), pigs (44466) and poultry birds (627489) are the major livestock in the district.

Mau district is situated on 25.96° north latitude and 83.56° east longitude. It is bounded by Ghazipur district in the south, Ballia district in east and Azamgarh district in the west side. Average annual rainfall is 1021 mm and temperature ranges between 6 °C to 44 °C. Major soils are loam, clay loam and sodic in nature. The district is comprised of 4 tehsils, 9 blocks and 1644 villages with population of 1.85 million, population density of 1082 km² and literacy of 62.20%. The district has a total area of 171653 ha, net sown area of 123975 ha and irrigated area of 109487 ha with 169.40% cropping intensity. The major crops grown in kharif are rice (85278 ha) with the productivity of 10.37 q ha⁻¹, maize (421 ha) with the productivity of 10.38 q ha⁻¹, pearl millet (309 ha) with the productivity of 15.47 q ha⁻¹ and pigeonpea (2507 ha) with the productivity of 3.53 q ha⁻¹. In rabi, the main crops cultivated are wheat (87596 ha) with the productivity of 24.32 q ha⁻¹, barley (652 ha) with the productivity of 17.57 q ha⁻¹, chickpea (529 ha) with the productivity of 10.54 q ha⁻¹, lentil (75 ha)

with the productivity of 9.24 q ha⁻¹ and potato (1553 ha) with the productivity of 248.78 q ha⁻¹. Sugarcane (7040 ha) is cultivated with the productivity of 382.80 q ha⁻¹. Fertilizer consumption is 128.52 kg/ha with the application of NPK in the ratio of 97.92, 25.93 and 4.67 kg/ha, respectively.

The major livestock reared are cattles (172662), buffaloes (154682), sheeps (5982), goats (165352), pigs (23145) and poultry birds (265910). Fish pond area is 264 ha.

Ballia district is situated on 83° 38' to 84° 39' east longitude and 25° 33' to 26° 11' north latitude. The temperature in the district ranges between 4.9 °C to 43.4 °C and annual rainfall of 963 mm is reported. The district is comprised of 7 tehsils, 17 blocks and 805 villages. The population of the district is 2.76 million with a density of 926 per km² and literacy of 57.9%. The cropping intensity is 159.75%. Total reported area is 299265 ha, out of which total net sown area is 217840 ha and irrigated area is 165404 ha. Majority (79.3%) of the farmers are marginal. Soils are clay loam, loam and sandy, waterlogged and flood prone. The major crops grown in kharif are rice (119243 ha) with the productivity of 13.36 q ha⁻¹, maize (26231 ha) with the productivity of 8.88 q ha⁻¹, pearl millet (2296 ha) with the productivity of 15.47 q ha⁻¹, sorghum (2066 ha) with the productivity of 12.40 q ha⁻¹, groundnut (109 ha) with the productivity of 7.23 q ha⁻¹ and pigeonpea (6766 ha) with the productivity of 4.25 q ha⁻¹. In rabi, major crops grown are wheat (143467 ha) with the productivity of 24.71 q ha⁻¹, barley (6353 ha) with the productivity of 11.57 q ha⁻¹, chickpea (3524 ha) with the productivity of 8.35 q ha⁻¹, field pea (2896 ha) with the productivity of 9.67 q ha⁻¹, lentil (20273 ha) with the productivity of 9.24 q ha⁻¹, mustard (924 ha) with the productivity of 10.31 q ha⁻¹ and potato (10355 ha) with the productivity of 248.78 q ha⁻¹. Sugarcane (7497 ha) is grown with the productivity of 316.96 q ha⁻¹. Fertilizer consumption is 100.71 kg/ha with the application of NPK in proportion of 80.07, 17.42 and 3.22 kg/ha, respectively.

In case of livestock, cattles (263580), buffaloes (186571), sheeps (18272), goats (153667), pigs (28989) and poultry (218034) form the major strength.

Jaunpur district is situated on 82.44° east longitude and 25.46° north latitude. The temperature in the district ranges between 4.5 °C to 45 °C and annual rainfall of 987 mm is reported. It is comprised of 7 tehsils, 21 blocks and 3391 villages. The population is 3.91 million with density of 969 per km² and literacy of 59.8%. The cropping intensity of the district is 154.88%. Total reported area is 399713 ha out of which net sown area is 276335 ha. Total irrigated area of the district is 241298 ha. Soils are loam, sandy loam and clay loam irrigated, usar and waterlogged situation. The major crops grown in kharif are rice (144237 ha) with the productivity of 18.57 q ha⁻¹, maize (43413 ha) with the productivity of 13.21 q ha⁻¹, pearl millet (12330 ha) with the productivity of 11.68 q ha⁻¹, sorghum (1465 ha) with the productivity of 13.37 q ha⁻¹, urdbean (4089 ha) with the productivity of 7.22 q ha⁻¹, pigeonpea (10875 ha) with the productivity of 10.69 q ha⁻¹, sesame (570 ha) with the productivity of 1.68 q ha⁻¹ and sugarcane (10545 ha) with the productivity of 588.60 q ha⁻¹. In rabi, major crops grown are wheat (193364 ha) with the productivity of 26.83 q ha⁻¹, barley (716 ha) with the productivity of 15.92 q ha⁻¹, chickpea (5855 ha) with the productivity of 8.64 q ha⁻¹, field pea (4913 ha) with the productivity of 10.69 q ha⁻¹, mustard (2026 ha) with the productivity of 10.29 q ha⁻¹ and potato (10075 ha) with the productivity of 151.51 q ha⁻¹. Fertilizer consumption is 93.73 kg/ha in the district with the application of NPK with the proportion of 71.22, 19.50 and 3.01 kg/ha, respectively.

In case of livestock, cattles (479812), buffaloes (401121), sheeps (46841), goats (212592), pigs (36665) and poultry birds (37950) form the major livestock strength.

Varanasi district is situated on 83° longitude and 25.20° latitude. Average annual rainfall is reported 1019 mm and temperature ranges between 4.8 °C to 44.8 °C. The district is comprised of 2 tehsils, 8 blocks and 1336 villages. A population of 3.14 million, literacy of 66.10% and density of 2045 persons per km² depict the demography pattern. The soils are sandy loam to clay loam (good for cultivation), loam to clay loam (waterlogged) and sodic in nature. The reported area is 152674 ha, net sown area is 113946

ha and irrigated area is 99787 ha with 138.84% cropping intensity.

The major crops grown are rice (60959 ha) with the productivity of 15.69 q ha⁻¹, maize (8331 ha) with the productivity of 13.21 q ha⁻¹, pearl millet (2455 ha) with the productivity of 13.29 q ha⁻¹, sorghum (1661 ha) with the productivity of 13.37 q ha⁻¹, urdbean (796 ha) with the productivity of 7.22 q ha⁻¹ and pigeonpea (1278 ha) with the productivity of 7.70 q ha⁻¹. In rabi, wheat (69702 ha) with the productivity of 25.35 q ha⁻¹, chickpea (2210 ha) with the productivity of 8.64 q ha⁻¹, field pea (2638 ha) with the productivity of 10.69 q ha⁻¹, mustard (560 ha) with the productivity of 10.29 q ha⁻¹ and potato (2986 ha) with the productivity of 194.31 q ha⁻¹ are grown. Sugarcane (4818 ha) is also grown with the productivity of 414.72 q ha⁻¹. Fertilizer consumption of 322.41 kg/ha is reported with application of NPK in proportion of 222.01, 85.50 and 14.90 kg/ha, respectively.

The major livestock reared in the district are cattles (175991), buffaloes (143589), sheeps (16506), goats (104912), pigs (7379) and poultry birds (355900), etc.

Chandauli district is situated on 83.12° east longitude and 25.30° north latitude. The temperature in the district ranges between 5 °C to 47 °C and annual rainfall of 869 mm is reported. It is comprised of 3 tehsils and 6 blocks. The population of the district is 1.64 million with density of 647 per km² and literacy rate of 59.7%. The cropping intensity of the district is 177.27%. Total reported area is 253070 ha out of which total net sown area is 137427 ha. Total irrigated area of the district is 129142 ha. Soils are sandy loam to clay loam type. The major crops grown in kharif are rice (140300 ha) with the productivity of 25.60 q ha⁻¹, maize (66 ha) with the productivity of 13.21 q ha⁻¹, pearl millet (2848 ha) with the productivity of 15.77 q ha⁻¹, sorghum (1214 ha) with the productivity of 13.37 q ha⁻¹, urdbean (164 ha) with the productivity of 7.22 q ha⁻¹, pigeonpea (2602 ha) with the productivity of 7.70 q ha⁻¹ and sugarcane (821 ha) with the productivity of 414.72 q ha⁻¹. In rabi, major crops grown are wheat (90871 ha) with the productivity of 22.63 q ha⁻¹, barley (4204 ha) with the productivity of 15.92 q ha⁻¹, chickpea (2018 ha)

with the productivity of 8.64 q ha⁻¹, field pea (3129 ha) with the productivity of 10.69 q ha⁻¹, lentil (6334 ha) with the productivity of 5.49 q ha⁻¹, mustard (412 ha) with the productivity of 10.29 q ha⁻¹, linseed (2318 ha) with the productivity of 4.39 q ha⁻¹ and potato (1375 ha) with the productivity of 194.31 q ha⁻¹. Fertilizer consumption is 140.42 kg/ha in the district and application of NPK was found 100.59, 32.81 and 7.02 kg/ha, respectively.

In case of livestock, cattles (173580), buffaloes (156042), sheeps (23723), goats (86744), pigs (7499) and poultry birds (213338) form the major livestock strength.

Ghazipur district is situated on 83.59^o east longitude and 25.59^o north latitude. It consists of 5 tehsils, 16 blocks and 2583 villages with the population of 3.03 million, population density of 899 km² and literacy rate of 59.60%. The reported area of the district is 333209 ha, net sown area is 256468 ha and cropping intensity is 160.18%. Total irrigated area is 212258 ha. The annual rainfall varies from 800 mm to 1034 mm and temperature ranges between 4 °C to 44.6 °C with the relative humidity of 100%. The major soils of the district are clay loam, sandy loam, *diara* (silt) and black (*karail*). The major crops in kharif are rice (149754 ha) with the productivity of 19.27 q ha⁻¹, maize (667 ha) with the productivity of 13.21 q ha⁻¹, pearl millet (13981 ha) with the productivity of 14.16 q ha⁻¹, sorghum (3753 ha) with the productivity of 14.74 q ha⁻¹, urdbean (578 ha) with the productivity of 7.22 q ha⁻¹ and pigeonpea (7005 ha) with the productivity of 9.54 q ha⁻¹. In rabi, the principal crops cultivated are wheat (166359 ha) with the productivity of 24.27 q ha⁻¹, barley (4484 ha) with the productivity of 15.92 q ha⁻¹, field pea, (7849 ha) with the productivity of 10.69 q ha⁻¹, lentil (15287 ha) with the productivity of 8.43 q ha⁻¹, chickpea (2680 ha) with the productivity of 8.64 q ha⁻¹, potato (72628 ha) with the productivity of 253.63 q ha⁻¹ and mustard (477 ha) with the productivity of 8.96 q ha⁻¹, respectively. Another major crop grown is sugarcane (7448 ha)

with the productivity of 528.03 q ha⁻¹. Fertilizer consumption was 123.59 kg/ha in which application of NPK was 96.61, 23.82 and 3.16 kg/ha, respectively.

Cattles (352864), buffaloes (345089), sheeps (46528), goats (250194), pigs (15232) and poultry birds (46950) are the major animals.

Sant Ravidasnagar district is situated on 82.56^o east longitude and 25.40^o north latitude. The temperature in the district ranges between 5 °C to 46 °C and annual rainfall of 1563 mm is reported. It is comprised of 3 tehsils and 5 blocks. The population of the district is 1.42 million with density of 863 per km² and literacy rate of 57.9%. The cropping intensity of the district is 143.62%. Total reported area is 103037 ha out of which net sown area is 69063 ha. Total irrigated area of the district is 55950 ha. Soils are sandy loam to loam and saline alkaline in nature. The major crops grown in kharif are rice (33388 ha) with the productivity of 15.74 q ha⁻¹, maize (135 ha) with the productivity of 6.52 q ha⁻¹, pearl millet (6508 ha) with the productivity of 9.11 q ha⁻¹, sorghum (505 ha) with the productivity of 11.21 q ha⁻¹, urdbean (667ha) with the productivity of 4.95 q ha⁻¹, sesame (235 ha) with the productivity of 1.06 q ha⁻¹, groundnut (841 ha) with the productivity of 7.23 q ha⁻¹, pigeonpea (2621 ha) with the productivity of 7.73 q ha⁻¹ and sugarcane (1223 ha) with the productivity of 433 q ha⁻¹. In rabi, major crops grown are wheat (37926 ha) with the productivity of 24.44 q ha⁻¹, barley (1759 ha) with the productivity of 10.50 q ha⁻¹, chickpea (1646 ha) with the productivity of 10.47 q ha⁻¹, field pea (2712 ha) with the productivity of 10.85 q ha⁻¹, mustard (288 ha) with the productivity of 5.30 q ha⁻¹ and potato (1401 ha) with the productivity of 218.37 q ha⁻¹. Fertilizer consumption of 185.48 kg/ha is reported with application of NPK in proportion of 146.94, 33.19 and 5.35 kg/ha, respectively.

In case of livestock, cattles (142704), buffaloes (110627), sheeps (4331), goats (106267), pigs (4391) and poultry (73078) form the major livestock strength.

C. Problems and Priorities

Agriculture

Problems and Issues	Priorities
Increasing sodicity	<ul style="list-style-type: none"> • Awareness campaign for need based use of canal water. • Campaign for the maintenance of reclaimed sodic soils. • Promoting the cultivation of sesbania. • Promoting the cultivation of salt tolerant varieties.
Problem of waterlogging	<ul style="list-style-type: none"> • Development of suitable drainage system. • Cultivation technology for waterlogged conditions.
Decline in soil fertility	<ul style="list-style-type: none"> • Promoting the balanced use of fertilizers. • Adoption of integrated plant nutrient management techniques. • Use of organic manure.
Poor seed replacement rate	<ul style="list-style-type: none"> • Awareness about improved varieties and hybrids. • Promotion of seed village production programmes.
Low yield of rice	<ul style="list-style-type: none"> • Promoting the adoption of hybrids & improved package of practices. • Timely sowing of nursery. • Application of balanced dose of fertilizers.
Low yield of indigenous scented cultivars	<ul style="list-style-type: none"> • Introduction of newly evolved cultivars.
Low yield of wheat in rice-wheat cropping system	<ul style="list-style-type: none"> • Popularization of variety suitable for late sown conditions viz PBW-373, UP-2338, Raj-3077 and Raj 3765 and for very late sown conditions viz Halna (K-7903) and Unnat Halna (K-9423). • Motivation for timely sowing of nursery of rice. • Popularization of Zero till ferti seed drill in rice-wheat cropping system.
Low yield of maize	<ul style="list-style-type: none"> • Promoting the cultivation of early maturing composites, hybrids and quality protein maize (QPM).
Problem of wilt in pigeonpea	<ul style="list-style-type: none"> • Promoting ridge sowing & bed planting of pigeon pea. • Promoting inter cropping with sorghum.
Problem of <i>Phalaris minor</i> in wheat	<ul style="list-style-type: none"> • Promoting the crop rotation in wheat grown fields.
Low yield of ratoon crop in sugarcane	<ul style="list-style-type: none"> • Training and awareness for using the improved package of practices for ratoon management.
Others	<ul style="list-style-type: none"> • Promoting the cultivation of rabi maize. • Promoting the cultivation of rajmash in rabi season. • Awareness campaign for soil test based fertilizers application. • Awareness campaign for adoption of integrated pest management.

Horticulture

Problems and Issues	Priorities
Sodicity and deficiency of micro-nutrients	<ul style="list-style-type: none"> • Screening of suitable varieties/ germ plasm of brinjal, vegetable pea, garlic, coriander, potato, rose, tuberose and medicinal plants (perowinkle, withania, lemongrass, pamalrosa, chamomile, french basil, etc) for sodic soils. • Use of analysis based secondary and micro-nutrients in the soil and suitable technologies. • Integrated plant nutrients management for major crops in sodic soils.
Lack of maturity standards and improper post-harvest management of hari chhaal banana	<ul style="list-style-type: none"> • Popularization of technology. • Awareness about carbide injury.
Severe incidence of insect-pest, diseases and other complex problems	
a) Malformation, alternate bearing and fruit drop in mango	<ul style="list-style-type: none"> • Rejuvenation of old and unproductive orchards. • Popularization of regular bearing Dashehari-51.
b) Wilt in guava	<ul style="list-style-type: none"> • Popularization of wilt resistant root stocks.
c) Phomopsis and fruit and shoot borer in brinjal	<ul style="list-style-type: none"> • Promotion of resistant varieties.
d) Powdery mildew in vegetable pea	<ul style="list-style-type: none"> • Promotion of resistant varieties.
e) Late blight of potato and lack of proper storage facilities	<ul style="list-style-type: none"> • Promotion of late blight resistant varieties. • Availability of quality seed. • Renovation of cold storage facilities. • Encouraging cultivation of processing potato varieties viz Kufri Chipsona-1, Kufri Chipsona-2 and Kufri Chipsona-3.
Off-season flowering and heavy fruit drop in aonla	<ul style="list-style-type: none"> • Popularization of recommended varieties and agro-technology.
Under-exploitation of medicinal & aromatic plants	<ul style="list-style-type: none"> • Promotion of improved varieties and technologies for commercial cultivation of aromatic & medicinal plants..

II. North Eastern Plain Zone

This zone consists of 11 districts. The geomorphology of these districts is given below:

A. Agroclimatic Features

The zone comprises 39% of the total area of eastern Uttar Pradesh, which has abundant surface and ground water. Two main soil types are found, namely alluvial and calcareous. The annual average rainfall is 1240 mm and the temperature ranges from

4.9 °C to 44.2 °C. The relative humidity ranges from 39% to 85%. Cropping intensity is 152%. Rice, wheat, maize, chickpea, fieldpea, rapeseed and mustard are major crops. Potato, chillies, banana, litchi, jackfruit, cucurbits especially parwal and few spices are also cultivated. This is flood prone zone and water congestion is a major problem.

B. Geomorphology of Districts

Bahraich district is situated on 27.58^o north latitude

and 81.59° east longitude. District is bounded by international border with Nepal on the northern part. The district is comprised of 4 tehsils, 14 blocks and 1369 villages with a population of 2.38 million, population density of 539 km² and literacy of 35.20%.

The major farming systems in the district are agriculture + horticulture + animal husbandry and agriculture + animal husbandry. Annual average rainfall of 1125 mm, temperature between 5 °C and 44 °C and sandy loam to clay loam soils characterize the agro-ecological situation of the district. Total geographical area of 486062 ha, net sown area of 333709 ha and irrigated area of 159120 ha have been reported with 153.50% cropping intensity. Major crops grown are rice (254892 ha) with the productivity of 16.56 q ha⁻¹, maize (81417 ha) with the productivity of 10.79 q ha⁻¹, groundnut (2196 ha) with the productivity of 7.23 q ha⁻¹, pigeonpea (4437 ha) with productivity of 6.54 q ha⁻¹ and urdbean (1159 ha) with the productivity of 5.61 q ha⁻¹ in kharif. In rabi, principal crops grown are wheat (153196 ha) with the productivity of 26.45 q ha⁻¹, lentil (44007 ha) with the productivity of 8.39 q ha⁻¹, field pea (1164 ha) with the productivity of 9.67 q ha⁻¹, chickpea (307 ha) with the productivity of 7.53 q ha⁻¹, mustard (7273 ha) with the productivity of 8.47 q ha⁻¹ and potato (2302 ha) with the productivity of 218.37 q ha⁻¹. Sugarcane (40681 ha) is another crop raised with productivity of 508.28 q ha⁻¹. Fertilizer consumption is very low i.e. 62.43 kg/ha with application of NPK @ 41.99, 18.42 and 2.02 kg/ha, respectively.

The cattles population is 471634 followed by buffaloes (296972), goats (438552), sheeps (13756), pigs (43458) and poultry birds (221791), etc.

Shravasti is a newly created district of Uttar Pradesh carved out from districts of Gonda and Bahraich. The temperature in the district ranges between 3.4 °C to 42 °C and annual rainfall of 1012 mm is reported. It is comprised of 3 tehsils and 7 blocks. The population of the district is 1.17 million with density of 479 per km² and literacy rate of 33.8%. The cropping intensity of the district is 150.92%. Total reported area is 193147 ha, out of which net sown area is 128010 ha. Total irrigated area of the district is 55499 ha. Soils vary from sandy to sandy loam. The major crops grown in kharif are rice (66170 ha) with the

productivity of 14.38 q ha⁻¹, maize (23789 ha) with the productivity of 6.83 q ha⁻¹, sorghum (252 ha) with the productivity of 10.58 q ha⁻¹, urdbean (321 ha) with the productivity of 5.61 q ha⁻¹, sesame (365 ha) with the productivity of 1.68 q ha⁻¹, groundnut (322 ha) with the productivity of 7.23 q ha⁻¹ and pigeonpea (3561 ha) with the productivity of 6.54 q ha⁻¹. In rabi, major crops grown are wheat (58426 ha) with the productivity of 26.23 q ha⁻¹, chickpea (139 ha) with the productivity of 7.53 q ha⁻¹, field pea (121 ha) with the productivity of 9.67 q ha⁻¹, lentil (22809 ha) with the productivity of 5.44 q ha⁻¹, linseed (336 ha) with the productivity of 4.55 q ha⁻¹, mustard (3570 ha) with the productivity of 8.99 q ha⁻¹ and potato (460 ha) with the productivity of 218.37 q ha⁻¹. Sugarcane (3459 ha) is grown with the productivity of 591.24 q ha⁻¹. Fertilizer consumption is 74.73 kg/ha in the district with application of NPK @ 51.19, 19.95 and 3.59 kg/ha, respectively.

In case of livestock, cattles (233023), buffaloes (109843), sheeps (4848), goats (112125), pigs (9054) and poultry birds (55745) form the major strength.

Balrampur district is situated on 82.18° east longitude 27.43° north latitude. It is comprised of 3 tehsils, 9 blocks and 1021 villages. The temperature in the district ranges between 2 °C to 45 °C and annual rainfall of 1152 mm is reported. The population of the district is 1.68 million with a density of 502 per km² and literacy of 34.6%. The cropping intensity of the district is 152.42%. Total geographical area of 324852 ha, net sown area of 194224 ha and irrigated area of 79734 ha are reported. Majority (93%) of the farmers are marginal. Soils are sandy loam to clay. The major crops grown in kharif are rice (122512 ha) with the productivity of 18.18 q ha⁻¹, maize (8525 ha) with the productivity of 9.29 q ha⁻¹, kodo millet (1124 ha) with the productivity of 6.02 q ha⁻¹, urdbean (1441 ha) with the productivity of 5.61 q ha⁻¹, pigeonpea (8053 ha) with the productivity of 6.54 q ha⁻¹ and sugarcane (86605 ha) with the productivity of 547.16 q ha⁻¹. In rabi, major crops grown are wheat (81219 ha) with the productivity of 24.36 q ha⁻¹, chickpea (547 ha) with the productivity of 7.53 q ha⁻¹, field pea (1619 ha) with the productivity of 9.67 q ha⁻¹, lentil (26119 ha) with the productivity of 12.05 q ha⁻¹, mustard (16802 ha) with the productivity of 9.71 q

ha⁻¹ and potato (1549 ha) with the productivity of 218.37 q ha⁻¹. Fertilizer consumption is 70.38 kg/ha only in the district with the application of NPK @ 60.19, 8.74 and 1.45 kg/ha, respectively.

In case of livestock, cattles (298256), buffaloes (143246), sheeps (6963), goats (151150), pigs (16586) and poultry birds (163227) are reared. Fish pond area is 700 ha.

Gonda district is situated on 81°30' to 82°46' east longitude and 26°47' to 27°20' north latitude. The temperature in the district ranges between 5.6 °C to 43.8 °C and annual rainfall of 1152 mm are recorded. It is comprised of 4 tehsils, 16 blocks and 2818 villages. The population of the district is 2.76 million with a density of 691 per km² and literacy rate of 42.6%. The cropping intensity of the district is 156.27%. Total geographical area of 400874 ha, net sown area of 294021 ha and irrigated area of 206803 ha are recorded. Soils are sandy, loam and clay loam. The major crops grown in kharif are rice (139035 ha) with the productivity of 15.67 q ha⁻¹, maize (56250 ha) with the productivity of 8.25 q ha⁻¹, urdbean (380 ha) with the productivity of 5.61 q ha⁻¹, pigeonpea (7395 ha) with the productivity of 6.54 q ha⁻¹ and sesame (124 ha) with the productivity of 1.68 q ha⁻¹. In rabi, major crops grown are wheat (156719 ha) with the productivity of 27.36 q ha⁻¹, barley (1540 ha) with the productivity of 20.05 q ha⁻¹, chickpea (3388 ha) with the productivity of 7.53 q ha⁻¹, field pea (3458 ha) with the productivity of 9.67 q ha⁻¹, lentil (12803 ha) with the productivity of 7.73 q ha⁻¹, mustard (7261 ha) with the productivity of 9.28 q ha⁻¹ and potato (3079 ha) with the productivity of 218.37 q ha⁻¹. Sugarcane (66268 ha) is cultivated with the productivity of 458.84 q ha⁻¹. Fertilizer consumption is 86.89 kg/ha in the district with the application of NPK in the proportion of 68.46, 16.05 and 2.38 kg/ha, respectively.

In case of livestock, cattles (462149), buffaloes (348626), sheeps (12255), goats (248809), pigs (12376) and poultry birds (176571) are reared.

Basti district lies between the parallels of 26.80° north latitude and 82.74° east longitude. It is comprised of 3 tehsils, 15 blocks and 4504 villages. The population of the district is 2.08 million with a density of 776

km² and 52.50% of literacy. The average rainfall is 1166 mm and temperature ranges between 5.4 °C to 44 °C. The reported area of 276456 ha, net sown area of 207449 ha and irrigated area of 129729 ha with 146.09% cropping intensity are reported.

The major existing farming systems are rice-wheat; sugarcane; vegetable; and fish and animal based. The soils are sandy, sandy loam and clay loam type. The major crops grown are rice 109692 ha (15.09 q ha⁻¹), maize 3842 ha (13.26 q ha⁻¹) and pigeonpea 7104 ha (6.53 q ha⁻¹). In rabi, the major crops grown are wheat 114347 ha (23.69 q ha⁻¹), chickpea 1856 ha (7.29 q ha⁻¹), field pea 6233 ha (9.67 q ha⁻¹), lentil 902 ha (7.05 q ha⁻¹), mustard 1999 ha (10.31 q ha⁻¹) and potato 1054 ha (218.37 q ha⁻¹). Sugarcane is grown on 39063 ha (531.16 q ha⁻¹). Fertilizer consumption is very high i.e. 260.26 kg/ha in the district with application of NPK in proportion of 205.26, 48.37 and 6.63 kg/ha, respectively.

Cattles (186262), buffaloes (206100), goats (121714) and poultry birds (90242), etc. are the major livestock in the district.

Santkabirnagar district is situated on 83.08° east longitude and 26.78° north latitude. The temperature in the district ranges between 4 °C to 45 °C and annual rainfall of 851 mm is reported. It is comprised of 3 tehsils and 7 blocks. The population of the district is 1.47 million with a density of 863 per km² and literacy rate of 50.9%. The cropping intensity of the district is 173.87%. Total reported area is 174914 ha out of which net sown area is 117711 ha. Total irrigated area of the district is 98311 ha. Soils vary from sandy loam to clay loam type. The major crops grown in kharif are rice (85996 ha) with the productivity of 14.09 q ha⁻¹, maize (1587 ha) with the productivity of 13.26 q ha⁻¹, kodo millet (50 ha) with the productivity of 6.18 q ha⁻¹, sesame (126 ha) with the productivity of 1.68 q ha⁻¹, pigeonpea (3494 ha) with the productivity of 6.53 q ha⁻¹ and groundnut (519 ha) with the productivity of 6.62 q ha⁻¹. In rabi, major crops grown are wheat (90187 ha) with the productivity of 24.56 q ha⁻¹, barley (608 ha) with the productivity of 21.17 q ha⁻¹, chickpea (656 ha) with the productivity of 7.29 q ha⁻¹, field pea (2955 ha) with the productivity of 9.67 q ha⁻¹, lentil (1351 ha) with the productivity of 7.05 q ha⁻¹, mustard (2144

ha) with the productivity of 10.31 q ha⁻¹ and potato (1615 ha) with the productivity of 218.37 q ha⁻¹. Sugarcane (4475 ha) is also cultivated with the productivity of 531.16 q ha⁻¹. Fertilizer consumption of 107.10 kg/ha is reported with application of NPK in ratio of 92.37, 11.91 and 2.81 kg/ha, respectively.

Cattles (142704), buffaloes (110627), sheeps (4331), goats (106267), pigs (4391) and poultry birds (73078) form the major livestock strength.

Gorakhpur district is situated on 83.36^o east longitude and 26.76^o north latitude. The temperature in the range of 5.2 °C to 43.4 °C and annual rainfall of 1221 mm are reported. The district is comprised of 7 tehsils, 20 blocks and 2880 villages. The population of the district is 3.76 million with density of 1135 per km² and literacy rate of 58.5%. The cropping intensity is 152.81%. Total reported area is 335223 ha out of which net sown area is 252932 ha. Total irrigated area in the district is 204329 ha. Soils vary from sandy to loam. The major crops grown in kharif are rice (145171 ha) with the productivity of 16.96 q ha⁻¹, maize (4293 ha) with the productivity of 12.47 q ha⁻¹, pearl millet (161 ha) with the productivity of 16.14 q ha⁻¹, sesame (204 ha) with the productivity of 1.68 q ha⁻¹, kodo millet (185 ha) with the productivity of 6.18 q ha⁻¹, pigeonpea (8613 ha) with the productivity of 5.39 q ha⁻¹ and groundnut (3648 ha) with the productivity of 9.30 q ha⁻¹. In rabi, major crops grown are wheat (184304 ha) with the productivity of 25.25 q ha⁻¹, barley (895 ha) with the productivity of 14.96 q ha⁻¹, chickpea (867 ha) with the productivity of 7.10 q ha⁻¹, field pea (2084 ha) with the productivity of 9.67 q ha⁻¹, lentil (1739 ha) with the productivity of 6.14 q ha⁻¹, mustard (3679 ha) with the productivity of 6.24 q ha⁻¹ and potato (4667 ha) with the productivity of 184.30 q ha⁻¹. Sugarcane (4225 ha) is also raised with the productivity of 547.52 q ha⁻¹. Fertilizer consumption is 167.07 kg/ha in the district in which application of NPK was 120.12, 38.01 and 8.94 kg/ha, respectively.

In case of livestock, cattles (276632), buffaloes (196132), sheeps (13960), goats (161656), pigs (37161) and poultry birds (325181) form the major livestock strength.

Siddharthnagar district is situated on 82.93^o east longitude and 27.18^o north latitude. The temperature in the district ranges between 4 °C to 41 °C and annual rainfall of 1376 mm is reported. The district is comprised of 5 tehsils, 13 blocks and 2437 villages. The population of the district is 2.04 million with density of 705 per km² and literacy rate of 42.3%. The cropping intensity is 150.06%. Total geographical area is 298293 ha out of which net sown area is 236791 ha and irrigated area is 160896 ha. Soils are clay loam to clay type and having waterlogged situation. The major crops grown in kharif are rice (170011 ha) with the productivity of 13.94 q ha⁻¹, maize (819 ha) with the productivity of 13.26 q ha⁻¹, kodo millet (348 ha) with the productivity of 6.18 q ha⁻¹, urdbean (535 ha) with the productivity of 5.61 q ha⁻¹ and pigeonpea (5054 ha) with the productivity of 6.53 q ha⁻¹. In rabi, major crops grown are wheat (152837 ha) with the productivity of 25.20 q ha⁻¹, chickpea (64 ha) with the productivity of 7.29 q ha⁻¹, field pea (3805 ha) with the productivity of 9.67 q ha⁻¹, lentil (4726 ha) with the productivity of 7.05 q ha⁻¹, mustard (4748 ha) with the productivity of 10.31 q ha⁻¹, linseed (916 ha) with the productivity of 4.39 q ha⁻¹ and potato (2560 ha) with the productivity of 218.37 q ha⁻¹. Sugarcane (5069 ha) is another crop harvested with the productivity of 531.16 q ha⁻¹. Fertilizer consumption is 127.07 kg/ha in the district with the use of NPK in the ratio of 91.76, 32.27 and 3.04 kg/ha, respectively.

In case of livestock, cattles (301066), buffaloes (156953), sheeps (6578), goats (206863), pigs (16118) and poultry birds (237056) form the major strength.

Maharajganj district is situated at Indo-Nepal border. Its boundaries touch Nepal estate in north, Gorakhpur district in south, Padrauna in east and Siddharthnagar & Sant Kabirnagar districts in west. It is comprised of 4 tehsils, 12 blocks and 1207 villages. Population of 2.17 million, literacy of 46.6% and population density of density 736 km² present the demographic pattern. The geographical area of the district is 290669 ha, out of which net sown area is 202172 ha and irrigated area is 160027 ha with cropping intensity of 176.91%. The annual rainfall is about 1022 mm and temperature ranges between 4.5 °C to 45 °C. Major soils are alluvial, loam in nature with good fertility status. The major crops grown in

kharif are rice (168666 ha) with the productivity of 23.08 q ha⁻¹, maize (247 ha) with the productivity of 12.47 q ha⁻¹, groundnut (1267 ha) with the productivity of 9.30 q ha⁻¹ and pigeonpea (734 ha) with the productivity of 5.39 q ha⁻¹. In rabi, the major crops grown are wheat (143903 ha) with the productivity of 27.81 q ha⁻¹, field pea (1383 ha) with the productivity of 9.67 q ha⁻¹, lentil (9610 ha) with the productivity of 6.14 q ha⁻¹, mustard (5301 ha) with the productivity of 4.26 q ha⁻¹, linseed (643 ha) with the productivity of 4.55 q ha⁻¹ and potato (3164 ha) with the productivity of 184.30 q ha⁻¹. Sugarcane (22711 ha) is grown with the productivity of 503.48 q ha⁻¹. Fertilizer consumption is 161.80 kg/ha in the district with application of NPK @ 106.96, 41.77 and 13.07 kg/ha, respectively.

Cattles (177064), buffaloes (165895), sheeps (2960), goats (236456), pigs (34752) and poultry birds (305718) are the major animals in the district.

Kushi Nagar district is situated on 81° to 24' east longitude and 26° to 45' north latitude. The temperature in the district ranges between 5 °C to 43.4 °C and annual rainfall of 907 mm is reported. It is comprised of 4 tehsils and 14 blocks. The population of the district is 2.89 million with a density of 996 per km² and literacy rate of 46.9%. The cropping intensity of the district is 151.36%. Total reported area is 291573 ha, out of which net sown area is 220838 ha and irrigated area is 160898 ha. Soils are sandy loam to loam and clay loam. Typical *Bhat* soils are also found which are clay type and has high water holding capacity. The major crops grown in kharif are rice (119909 ha) with the productivity of 20.09 q ha⁻¹, maize (2924 ha) with the productivity of 9.36 q ha⁻¹, pearl millet (103 ha) with the productivity of 16.14 q ha⁻¹, groundnut (468 ha) with the productivity of 9.30 q ha⁻¹, kodo millet (128 ha) with the productivity of 6.18 q ha⁻¹ and pigeonpea (1272 ha) with the productivity of 5.39 q ha⁻¹. In rabi, major crops grown are wheat (117988 ha) with the productivity of 27.94 q ha⁻¹, barley (120 ha) with the productivity of 19.46 q ha⁻¹, field pea (484 ha) with the productivity of 9.67 q ha⁻¹, lentil (2274 ha) with

the productivity of 6.14 q ha⁻¹, mustard (10368 ha) with the productivity of 7.27 q ha⁻¹ and potato (1688 ha) with the productivity of 184.30 q ha⁻¹. Sugarcane (74959 ha) is cultivated with the productivity of 539.12 q ha⁻¹. Fertilizer consumption is 160.98 kg/ha in the district with application of NPK @ 117.27, 33.55 and 10.17 kg/ha, respectively.

Cattles (151238), buffaloes (198312), sheeps (5695), goats (277042), pigs (16301) and poultry birds (236623) form the major livestock strength.

Deoria district is situated on 83° to 85° east longitude and 26° to 28° north latitude. The temperature in the district ranges between 5 °C to 43.5 °C and annual rainfall of 1203 mm is reported. It is comprised of 5 tehsils, 15 blocks and 3550 villages. The population of the district is 2.71 million with a density of 1069 per km² and literacy rate of 58.6%. The cropping intensity of the district is 161.07%. Total reported area is 248941 ha, out of which net sown area is 198622 ha and irrigated area is 167315 ha. Soils are loam and clay loam type. The major crops grown in kharif are rice (121228 ha) with the productivity of 17.14 q ha⁻¹, maize (8997 ha) with the productivity of 13.48 q ha⁻¹, pearl millet (468 ha) with the productivity of 16.14 q ha⁻¹, sesame (242 ha) with the productivity of 1.68 q ha⁻¹, kodo millet (125 ha) with the productivity of 6.18 q ha⁻¹, pigeonpea (3736 ha) with the productivity of 5.43 q ha⁻¹ and groundnut (3304 ha) with the productivity of 9.30 q ha⁻¹. In rabi, major crops grown are wheat (126116 ha) with the productivity of 25.10 q ha⁻¹, barley (2108 ha) with the productivity of 19.46 q ha⁻¹, chickpea (164 ha) with the productivity of 7.10 q ha⁻¹, field pea (1626 ha) with the productivity of 9.67 q ha⁻¹, lentil (645 ha) with the productivity of 6.14 q ha⁻¹, mustard (1625 ha) with the productivity of 6.24 q ha⁻¹ and potato (1601 ha) with the productivity of 184.30 q ha⁻¹. Sugarcane (18002 ha) is raised with the productivity of 483.96 q ha⁻¹. Fertilizer consumption is 247.26 kg/ha in the district with application of NPK @ 180.17, 53.35 and 13.75 kg/ha, respectively.

Cattles (176138), buffaloes (169266), sheeps (3912), goats (210858), pigs (20954) and poultry birds (219100) form the major livestock strength.

C. Problems and Priorities

Agriculture

Problems and Issues	Priorities
Problem of sodicity	<ul style="list-style-type: none"> • Awareness campaign for need based use of canal water. • Maintenance of reclaimed sodic soils. • Promoting the cultivation of sesbania promoting the cultivation of salt tolerant varieties.
Problem of waterlogging	<ul style="list-style-type: none"> • Development of suitable drainage system.
Poor seed replacement rate	<ul style="list-style-type: none"> • Awareness about improved varieties and hybrids. • Ensuring availability of seed of improved varieties through large-scale production. • Promotion of seed village production programme.
Low yield of high yielding varieties of rice	<ul style="list-style-type: none"> • Promoting the adoption of improved package of practices. • Timely sowing of nursery. • Application of balanced dose of fertilizers. • Promotion of hybrids.
Low yield of wheat in rice wheat cropping system	<ul style="list-style-type: none"> • Popularization of variety suitable for late sown condition viz., PBW-373, UP-2338, Raj-3077 and Raj- 3765 and very late sown viz, Halna and Unnat Halna. • Motivation for timely sowing of nursery of rice.
Low yield of maize in kharif season	<ul style="list-style-type: none"> • Promoting the cultivation of early maturing hybrids, as composites, quality protein maize (QPM) and replacement of local cultivars.
Problem of micronutrient deficiency	<ul style="list-style-type: none"> • Awareness about soil test based application of micro nutrient. • Training and demonstration on application of micronutrients.
Problem of red rot in sugarcane	<ul style="list-style-type: none"> • Promoting the treatment of cane sets before planting.
Low yield of sugarcane	<ul style="list-style-type: none"> • Use of varieties suitable for waterlogged and saline area.
Others	<ul style="list-style-type: none"> • Promotion of rabi maize cultivation.

Horticulture

Problems and Issues	Priorities
Flood, poor drainage system and micro-nutrient deficiency	<ul style="list-style-type: none"> • Contingent plan in case of severe flood. • Relevant cropping systems/ varieties.
Lack of maturity standards and improper post harvest management of Hari Chhaal Banana	<ul style="list-style-type: none"> • Awareness about carbide injury. • Training and demonstration on post harvest management.
Low productivity of spices	<ul style="list-style-type: none"> • Adoption of recommended package of practices.
Under-exploitation of medicinal and aromatic plants	<ul style="list-style-type: none"> • Popularization of agro technologies. • Promotion of organic based agro-technology for flowers like tuberose and marigold.

III. Vindhyan Zone

This zone consists of 2 districts. The geomorphology of these districts is given below :

A. Agroclimatic Features

It is the driest of all three zones of eastern Uttar Pradesh. Most of the land is undulating and rocky. Soils are black, heavy, red and coarse soils. The soils are alluvial in plain area. The average annual rainfall of the zone is 1134 mm and the temperature varies from 5.0 °C to 45.2 °C. About 40% of the total area is used under forest and about 33% is under cultivation. Mostly single cropping is practiced except for the areas with irrigation facilities, primarily canals. The crops grown in black soils are rice, wheat, chickpea, pigeonpea and linseed and in red soils barley, chickpea and small millets. In addition, brinjal, chillies, citrus fruits, aonla and guava are also cultivated. Undulating and rocky area is one of the limitations.

B. Geomorphology of Districts

Mirzapur district is situated on 82°7' to 83°33' east longitude and 23°52' to 25°32' north latitude. It is comprised of 4 tehsils, 12 blocks and 1722 villages. Total population of the district is 2.11 million with the literacy of 55.30%. Major soils are alluvial and laterite. The density of population is low i.e. 468 km². Average size of holding is 1.05 ha with the cropping intensity of 137.61%. The district has reported area of 451862 ha, net sown area of 207864 ha and 108837 ha of irrigated area. Annual rainfall of 789 mm, temperature between 4.8 °C to 45 °C and alluvial and fertile soils characterize the agro-ecological situation. The major crops cultivated in kharif are rice (99740 ha) with the productivity of 19.46 q ha⁻¹, maize (2361 ha) with the productivity of 6.23 q ha⁻¹, pearl millet (12909 ha) with the productivity of 9.40 q ha⁻¹, sorghum (2694 ha) with the productivity of 9.67 q ha⁻¹, urdbean (498 ha) with the productivity of 4.95 q ha⁻¹, pigeonpea (13646 ha) with the productivity of 7.88 q ha⁻¹, sesame (1408 ha) with the productivity of 1.01 q ha⁻¹ and groundnut (2927 ha) with the productivity of 15.05 q ha⁻¹. In rabi, wheat (101402 ha), barley (3317 ha), chickpea (13209 ha), field pea (4724 ha), lentil (8353 ha), mustard (2535 ha), linseed

(5117 ha) and potato (2177 ha) with the productivity of 20.35 q ha⁻¹, 10.50 q ha⁻¹, 10.53 q ha⁻¹, 14.28 q ha⁻¹, 8.09 q ha⁻¹, 5.60 q ha⁻¹, 6.23 q ha⁻¹, 218.37 q ha⁻¹, respectively are grown. Sugarcane (1756 ha) is grown with the productivity of 433 q ha⁻¹. Fertilizer consumption is 73.67 kg/ha in the district with application of NPK was @ 45.69, 26.54 and 1.44 kg/ha, respectively.

The livestock population is mainly dominated by cattles (454720), buffaloes (195126), sheeps (83329), goats (145181), pigs (23149) and poultry birds (31310).

Sonbhadra district is situated on 82.72° & 83.33° longitude and 23.52 & 25.32 north latitude. It is comprised of 3 tehsils, 8 blocks and 1426 villages with population of 1.46 million. The literacy is 49.20%. Average annual rainfall is 599 mm and temperature ranges between 6.4 °C to 44.20 °C. Major soils are loam to clay loam and red laterite. Reported area of 68160 ha, net sown area of 189568 ha and irrigated area of 50589 ha with 138.87% cropping intensity determine the agro-eco situation. The major crops grown in kharif are rice (82060 ha) with the productivity of 14.65 q ha⁻¹, maize (16909 ha) with the productivity of 6.25 q ha⁻¹, sorghum (2276 ha) with the productivity of 11.88 q ha⁻¹, barn yard millet (7723 ha) with the productivity of 6.65 q ha⁻¹, kodo millet (3411 ha) with the productivity of 6.44 q ha⁻¹, urdbean (3029 ha) with the productivity of 4.95 q ha⁻¹, pigeonpea (13245 ha) with the productivity of 5.03 q ha⁻¹, sesame (4742 ha) with the productivity of 0.98 q ha⁻¹, etc. In rabi, the crops grown are wheat (52112 ha) with the productivity of 12.94 q ha⁻¹, barley (11360 ha) with the productivity of 8.56 q ha⁻¹, chickpea (8903 ha) with the productivity of 8.26 q ha⁻¹, field pea (3399 ha) with the productivity of 6.05 q ha⁻¹, lentil (9161 ha) with the productivity of 5.81 q ha⁻¹, mustard (3402 ha) with the productivity of 5.30 q ha⁻¹, linseed (9922 ha) with the productivity of 4.15 q ha⁻¹ and potato (843 ha) with the productivity of 218.37 q ha⁻¹. Fertilizer consumption is very low i.e. 36.97 kg/ha with NPK use @ 26.11, 10.51 and 0.35 kg/ha, respectively.

Cattles (553126), buffaloes (148027), sheeps (31371), goats (242407), pigs (18777) and poultry birds (61349), etc. are the major livestock in the district.

C. Problems and Priorities

Agriculture	
Problems and Issues	Priorities
Problem of irrigation water	<ul style="list-style-type: none"> • Awareness campaign for rainwater harvesting using watershed technology. • Training of farmers for effective use of watershed technology for proper utilization of available rainwater. • Use of short duration varieties water saving technologies.
Problem of micro-nutrient deficiency	<ul style="list-style-type: none"> • Awareness about soil test based application of micronutrients. • Training and demonstrations on application of micronutrients.
Poor seed replacement rate	<ul style="list-style-type: none"> • Awareness about improved varieties and hybrids. • Promotion of seed village production programmes.
Low yield of rice due to delayed transplanting	<ul style="list-style-type: none"> • Promoting the timely sowing of nursery.
Low yield of wheat	<ul style="list-style-type: none"> • Promoting the cultivation of varieties recommended for rainfed situation.
Low yield of barley due to the use of local cultivars	<ul style="list-style-type: none"> • Promoting the recommended varieties.
Low yield of rapeseed and mustard due to broadcast sowing, utera cultivation and aphid and disease problem	<ul style="list-style-type: none"> • Promoting the improved package of practices and sowing of disease and insect pest resistant varieties.
Low yield of pigeonpea due to waterlogging and wilt problem	<ul style="list-style-type: none"> • Promoting wilt tolerant varieties and sowing on ridges & beds.
Others	<ul style="list-style-type: none"> • Awareness campaign for promoting the integrated pest management and integrated plant nutrients management technologies. • Promoting the cultivation of durum wheat.
Horticulture	
Problems and Issues	Priorities
Lack of irrigation water	<ul style="list-style-type: none"> • Popularization of drip/ sprinkler irrigation system. • Rain water management using watershed approach especially for vegetables.
Lack of drought resistant varieties	<ul style="list-style-type: none"> • Popularization of disease free, quality seed production programme.
Under-exploitation of arid horticulture	<ul style="list-style-type: none"> • Promotion of citrus, ber, bael, aonla and chiraunji cultivation.

IV. Technological Options

Name of technology	Releasing organization & year	Characteristics of the technology	Districts where applicable
A. CEREAL CROPS			
RICE			
NUSD-3 (Narendra Usar Sankar Dhan-3)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for irrigated condition and usar soils. • Medium slender grains. • Grain weight 24g/ 1000 grains. • Plant height -100-105 cm. • It matures in 130-135 days. • Potential yield-50.0-55.0 q/ ha in alkaline soil and 70.0-72.0 q/ ha in normal soil. • Resistant to bacterial leaf blight, bacterial leaf streak, sheath rot and leaf blast. 	Sultanpur, Mau, Azamgarh, Ballia, Faizabad, Barabanki, Gorakhpur
NDR - 8002	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Semi dwarf and medium duration. • Submergence tolerance. • Suitable for lowland condition. • It matures in 140-145 days. • Slender grains. • Moderate disease resistance. • Head rice recovery-65%. • Good cooking quality. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Varanasi, Faizabad, Chandauli
NDR-2026 (Richa)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Plant height 89-90 cm. • It matures in 110-115 days. • Suitable for early-medium duration. • Resistant to brown rot, sheath rot. • Potential yield-45.0-50.0 q/ ha. • Head rice recovery-67.2 %. • Suitable for rainfed condition. 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur
NDR 1045-2 (Shushak Samrat)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for rainfed condition. • It matures in 100-105 days. • Yield potential- 35.0-40.0 q/ ha. • Suitable for flood escape condition 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
WHEAT			
NDW-2036	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for late sown (20th Nov.-25th Dec.) irrigated conditions of North Eastern Plain zone. • Resistant to Brown rust. • Suitable for surface seeding. • Potential yield 45.0q/ ha. • It matures in 112-115 days. • Grain weight 36-38g/ 1000 grains. • Protein content 12%. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Varanasi, Faizabad, Barabanki, Chandauli and Sultanpur

Inventory of Agricultural Technologies for Uttar Pradesh

NDW-1067	2004 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for sodic soil under timely sown (15th Nov.25th to Nov.). • Resistant to brown rust and highly resistant to yellow rust. • Medium, bold (1000 grain weight 38g). • Potential yield under sodic soil-35.0 q/ ha and normal soil-45.0-50.0 q/ ha. • It matures in 122-124 days. • Protein content 12.37%. 	Sodic soils of Faizabad, Barabanki, Sultanpur Azamgarh, Mau, Ballia, Gorakhpur and Sonbhadra
BARLEY			
Narendra Jau-4	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suited for rainfed condition. • Dwarf plant stature. • Hulled. • Six rowed. • High tillering capacity. • It matures in 115-120 days. • Yield potential-35.0-40.0 q/ ha. 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
NDB-1173	2003 NDUAT , Faizabad	<ul style="list-style-type: none"> • Most suited to saline-alkaline soils. • Suitable for rainfed, low fertility ecosystem. • Resistant to foliar diseases. • It matures in 115-120 days. • Yield potential-35.0-40.0 q/ ha. 	Sodic soils of Gorakhpur, Mau, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Narendra Jau-5 (Upasana)	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> • Hull-less and 6 rowed. • Better tillering capacity. • Bold seeds with 1000 grain weight 48 g. • Suitable for barley based industries like balahar, maltova, horlicks, feed for animal & poultry. • It matures in 115-120 days. • Potential yield-35-45q/ ha 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
MAIZE			
Pragati	2003 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Extra early maturing 80 days. • Seed colour yellow bright. • Type of medium size cobs. • Tolerant to waterlogging. • It matures in 80-85 days. • Yield potential-40.0-45.0 q/ ha. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Balrampur, Mau, Ballia, Varanasi, Faizabad, Barabanki, Jaunpur, Chandauli and Sultanpur
PULSE CROPS			
MUNGBEAN			
Meha (IPM 99-125)	2004 IIPR, Kanpur	<ul style="list-style-type: none"> • Suitable for kharif and summer seasons. • Seeds are shining green. • It matures in 65-70 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Balrampur, Mau, Ballia, Varanasi, Faizabad, Barabanki, Jaunpur, Chandauli and Sultanpur

District Specific Technological Interventions for Eastern Region

TMB-37	2005 BARC, Trombay	<ul style="list-style-type: none"> • Suitable for summer season. • Large seeded (5 gram/ 100 seeds). • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Balrampur, Mau, Ballia, Varanasi, Faizabad, Barabanki, Jaunpur, Chandauli and Sultanpur
Narendra Mung-2	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • High yielding. • Resistant/ tolerant to major diseases of mungbean. • Resistant donor for mungbean yellow mosaic virus. • Suitable for <i>Kharif</i> season. • It matures in 70-75 days. • Average yield-12.0-15.0 q/ ha. 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Faizabad, Azamgarh, Sonbhadra and Sultanpur
MH 2-15	2007 CCSHAU, Hisar	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> season. • Seeds are large (4.5 gram/ 100 seeds). • It matures in 68-75 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Balrampur, Mau, Ballia, Varanasi, Faizabad, Barabanki, Jaunpur, Chandauli and Sultanpur
URD BEAN			
Uttara	1999 IIPR, Kanpur	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> season. • Black seeded. • It matures in 70-75 days. • Average yield-12.0-14.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Narendra Urd-2	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for <i>Kharif</i> and <i>Zaid</i> season. • High yielding. • Bold seeded. • Grain weight 3.68g/ 100 seeds. • Resistant donor for yellow vein mosaic virus. • It matures in 80-85 days. • Average yield-12.0-15.0 q/ ha. 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
PIGEONPEA			
Narendra Arhar-1	1997 NDUAT, Faizabad	<ul style="list-style-type: none"> • Test weight (11.5 gram / 100 seeds). • Its maturity 240-260 days. • Average yield-20.0-22.0 q / ha. • Resistant to sterility mosaic disease (SMD) and tolerant to wilt and phytophthora blight. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur

Inventory of Agricultural Technologies for Uttar Pradesh

Narendra Arhar-2	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Suitable for <i>Kharif</i> season. • High yielding. • Bold seeded (13.5g/ 100 seeds). • Resistant to sterility mosaic virus and wilt. • It matures in 240-250 days. • Average yield-30.0-35.0 q/ ha. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Narendra Arhar-3	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • High yielding. • Suitable both for timely sown (in the month of June) and pre-rabi sowing (upto 10th of September). • It matures in 195-206 days. • Average yield-20.0 q/ ha. 	Bahraich, Basti, S. Nagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
LENTIL			
Narendra Masoor-2	2003 NDUAT , Faizabad	<ul style="list-style-type: none"> • High yielding. • Small seeded (2.2g/ 100 seeds). • Resistant to major diseases. • Suitable for timely sown condition (15th Oct. to 15th Nov.) and late sown condition (last week of Nov.). 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
OILSEED CROPS			
MUSTARD AND RAI			
Narendra Swarna Rai-8, (NDYR-8)	2004 NDUAT , Faizabad	<ul style="list-style-type: none"> • Yellow seeded with high oil content (oil content 45.69%). • Moderately resistant to alternaria white rust. • It matures in 130-135 days. • Seed weight- 3.8g/ 1000 seeds. • Potential yield-20.0-25.0 q/ ha. 	Basti, Gorakhpur, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Jaunpur, Chandauli, Sonbhadra
Jagrati (NDYS-2018)	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> • High yielding. • Yield potential-15.0-20.0 q/ ha. • Yellow colour seeds. • Oil content-43.17% 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur

District Specific Technological Interventions for Eastern Region

Sugarcane + Rajmash (PDR-14)	IISR, Lucknow	<ul style="list-style-type: none"> • Suitable for planting period mid October. • Seed rate of sugarcane- 60 q/ ha and rajmash- 80 kg/ ha. • Crop geometry: 1:2 row ratio, sugarcane planted at 90 cm and two rows of rajmash accommodated at 30 cm spacing. • System based nutrient management (NPK kg/ ha) : Sugarcane-150:60:60 1/ 3 N and full P and K at planting and 1/ 3 N after harvest of intercrop and 1/ 3 N at late tillering stage (first week of June) and Rajmash - 100:60:40:1/ 2 N and full P and K at sowing, rest amount of N after first irrigation. • Irrigation at 40, 70 & 100 days after sowing for the system. • Production/ economic gain : 1500 Kg rajmash grain / ha • Profitability Rs. 74855.0/ ha and B:C ratio is 2:1 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
Sugarcane + Maize (Azad Uttam)	IISR, Lucknow	<ul style="list-style-type: none"> • Suitable for planting in mid October. • Seed rate of sugarcane- 60 q/ ha and maize-20 kg/ ha. • Crop geometry: 1:1 row ratio, sugarcane planted at 90 cm and one row of maize accommodated in between two rows of sugarcane. • System based nutrient management (NPK kg/ ha): sugarcane- 150:60:60 1/ 3 N and full P and K at planting and 1/ 3 N after harvest of maize and 1/ 3 N at late tillering stage (first week of June) and Maize – 120:60:40 1/ 3N + full P and K at sowing 1/ 3N at knee high stage 1/ 3N at tasselling stage. • 3-4 irrigations at critical physiological stages of maize. • Production/ economic gain: 50-60 thousand green cobs / ha. • Profitability Rs. 72320.0 / ha and B:C ratio 2.02. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
GREEN MANURE CROPS			
Narendra Sanai-1	2003 NDUAT , Faizabad	<ul style="list-style-type: none"> • Produce more number and weight of root nodules per plant. • Succulent stem. • Adds 60-80 kg N ha⁻¹. • Suitable for fibre and green manuring. • Normal and partially reclaimed saline-alkali soils. 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur



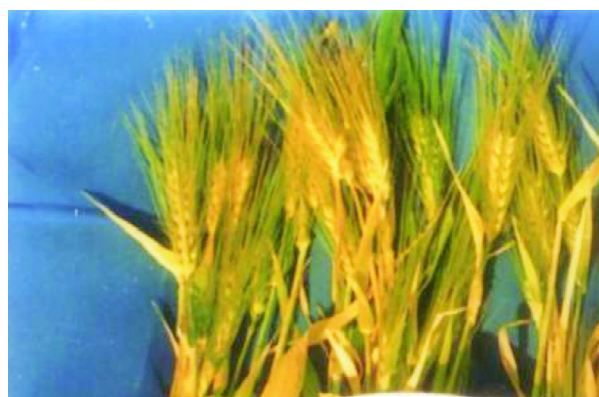
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NW 1067



Narendra Jau 4



Narendra Jau 5



Sugarcane + Maize



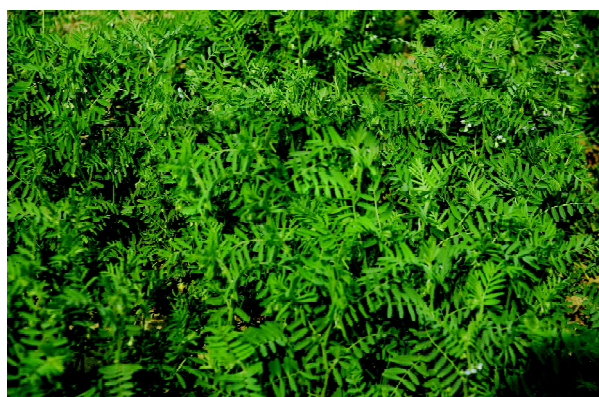
Narendra Moong 2



Narendra Urd 2



Narendra Arhar 1



Narendra Masoor 2



Narendra Swarna



Jagriti



Narendra Jyoti



Narendra Madhuri



Narendra Shivani



Narendra Upcar



Narendra Abhooshan



Narendra Karela Barahmasi 1



Narendra Bael 16



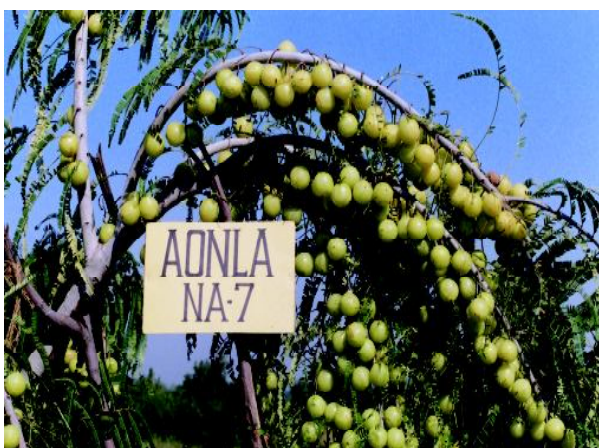
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Narendra Aonla 5



Narendra Aonla 6



Narendra Aonla 7



Laxmi 52

Inventory of Agricultural Technologies for Uttar Pradesh

Pant Dhaincha-1	2003 GBPUAT, Pantnagar	<ul style="list-style-type: none"> Plant height 3.25 m. It matures in 150 days. Nitrogen accumulation @180 kg/ ha. Biomass yield-23.0-42.0 q/ ha at 45-60 days after sowing. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
VEGETABLE CROPS			
BRINJAL			
Narendra Brinjal-2 (NDB-28-2)	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> Fruits long. Dark purple shining colour. Medium maturity 70-75 days. Average yield-350.0-400.0 q/ ha 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra
Narendra Brinjal-3 (NDB-18)	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> Early maturity. Fruit long. Medium thick. Shining purple colour. Highly tolerant to fruit & shoot borer. Average yield-350.0 q/ ha. 	Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
BOTTLE GOURD			
Narendra Jyoti	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> Summer type bottle gourd. Days to first harvest 60 days. Fruit yield-350.0 q/ ha. Attractive slender fruits. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Narendra Madhuri	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> Winter type bottle gourd. Round fruited. Fruit yield-1000 q/ ha in mid July sown crop grown on bowers. Days to first harvest 70 days. Highly palatable cooked vegetable. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Narendra Shivani	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> Winter type and long fruited variety. Days to first harvest-70 days. Average fruit yield-1100.0 q/ ha in mid July sown winter crop grown on bowers 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra

District Specific Technological Interventions for Eastern Region

PUMPKIN			
Narendra Abhooshan (NDPKH-1)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Striped dark green fruit colour. • Highly palatable cooked vegetable. • Days to first harvest 56 days. • Average fruit weight 4.0 kg. • Average fruit yield-550 q/ ha. 	Bahraich, Basti, Gorakhpur, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Narendra Upcar	2007 NDUAT, Faizabad	<ul style="list-style-type: none"> • Striped dark green fruit colour. • Field resistance against pumpkin mosaic virus. • Days to first harvest-55 days. • Average fruit yield-400.0 q/ ha. • Average fruit weight-2.0 kg. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
BITTER GOURD			
Narendra Barahmasi-1	2007 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for mid May to mid July sowing. • Average fruit yield-232.0 q/ ha. • Days to first harvest-60days. • Average fruit length-40 cm. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
LOBIA			
Narendra Lobia-2 (NDCP-13)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Plant bushy with dark green, long, fleshy pods. • Early maturity (around 45 days). • Mature seed colour red. • Average yield about-75.0-100.0 q/ ha. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
MUSK MELON			
Narendra Muskmelon-2 (NDM-15)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Fruits are oval round. • Light orange colour. • Weight 150-200 g. • Total soluble solids-13-16%. • Average yield about 150.0-200.0 q/ ha. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mau, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur and Sultanpur
OKRA			
Narendra Bhindi-1 (NDO-10)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for summer and rainy season. • Fruit dark green colour with 5 ribs. • Early maturing. • Resistant to yellow vein mosaic virus. • Average yield- 75.0-80.0 q/ ha. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
TOMATO			
Narendra Tomato-3 (NDT-3)	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> • Fruits are small to medium size, flat round. • Early maturity (60-65 days). • Tolerant to root knot nematode. • Average yield about 400.0 q/ ha. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur

Inventory of Agricultural Technologies for Uttar Pradesh

Narendra Tomato-4 (NDT-9)	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Early maturing. • Flat round, slightly grooved fruit. • Acidic in taste. • Average yield-350.0-375.0 q/ ha 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Narendra Tomato-7 (NDTS-2001-3)	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> • Plant determinate. • Fruit round medium size. • Tolerant to leaf curl virus and blight. • Average yield-400.0-425.0 q/ ha. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Narendra Tomato-8 (NDT-VR-60)	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> • Determinate type plant. • Fruit round medium. • Thick pericarp. • Moderately resistant to leaf curl virus and blight. • Average yield 350.0-400.0 q/ ha. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
TURMERIC			
Narendra Haldi-1 (NDTH-18)	2007 NDUAT , Faizabad	<ul style="list-style-type: none"> • High curcumin percentage 2-3%. • Oleoresin 9-10%. • Essential oil 2-3%. • Average yield- 350.0 q/ ha. 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Horticulture			
MANGO			
Ambika (CISH-M-1)	CISH, Lucknow	<ul style="list-style-type: none"> • Regular bearer having yellow colour with red blush. • Firm flesh and scanty fibres. • It has good potential for domestic and export markets. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
CISH-M-2		<ul style="list-style-type: none"> • A cross-developed with Dashehari and Chausa. • Suitable for late sown variety. • Dark yellow in colour with firm flesh and scanty fibres. <p>It is a good commercial value.</p>	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
Bangalora (Totapuri)		<ul style="list-style-type: none"> • Regular bearing. • High yielding under Lucknow conditions. • Recommended for its cultivation in northern India. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur

District Specific Technological Interventions for Eastern Region

Amrapali	IARI, New Delhi	<ul style="list-style-type: none"> • Regular fruiting. • Dwarf stature suitable for high density planting with regular annual pruning. • Excellent fruit quality. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
Pusa Arunima		<ul style="list-style-type: none"> • Medium size tree. • Regular fruiting. • Fruit size medium (250g). • Attractive red peel colour. • Sweet and delicious. • Very good shelf-life (12 days). • Suitable for export 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
Pusa Surya		<ul style="list-style-type: none"> • Fruit size is medium to large in size (270 g). • Attractive apricot yellow peel colour. • Good shelf-life (8-10 days). • Room temperature after ripening. • Suitable for domestic and international market. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
CROP PRODUCTION			
MANGO	CISH, Lucknow	<ul style="list-style-type: none"> • A spacing of 5m x 5m with 400 plants/ ha is recommended for higher production of mango cultivar Dashehari. • Cowpea-potato system has been found to give high monetary returns up to 10 years age of the plantation. • Soil application of paclobutrazol (3.2 ml m⁻¹ canopy diameter) has been found effective in inducing regular flowering and fruiting and thus controlling irregular bearing in mango cultivar Dashehari. • Soil application of NPK (1:1:1 kg/ tree) to 10-years old Dashehari mango increased yield. Trench application of fertilizers around the tree in July is most efficient. • Application of FYM (40kg) enriched with <i>Azospyrillum</i> (250g) per tree is effective for 15-years old mango cultivar Dashehari. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
CROP PROTECTION			
MANGO	CISH, Lucknow	<ul style="list-style-type: none"> • Imidacloprid (0.005%) is effective against mango hopper. • Methyl eugenol wooden block trap soaked in alcohol, methyl eugenol and malathion (6:4:1) is highly effective in trapping fruit flies and thus reducing its infestation in mango orchards and demonstrated at farmers fields in large areas. • <i>Melipona/Trigona</i> spp. identified as main pollinators on mango. • Mango powdery mildew is effectively controlled by spraying of Carbendazim + Apsa (0.1+0.2%), Index (0.1%) and Companion (0.2%). 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur

Inventory of Agricultural Technologies for Uttar Pradesh

		<ul style="list-style-type: none"> Die-back disease in mango nursery plants reduced up to 50% using spray of <i>Streptosporangium pseudovulgare</i> at a concentration of 6.8 x 10⁹ cells/ ml. Maximum and minimum temperatures (31-34 °C & 25-26 °C with intermittent rain were found conducive for development of anthracnose in mango. Carbendazim (0.1%), Companion (0.2%) and copper oxychloride (0.3%) is effective in controlling anthracnose of mango. Combined application of Prochloraz + Velvet (0.125 + 2.5%) are effective against the disease. 	
GUAVA			
Lalit (CISH-G-3)	CISH, Lucknow	<ul style="list-style-type: none"> Fruits are attractive, saffron yellow coloured with red blush. Medium sized, firm and pink flesh with good blend of sugar and acid. It gives 24% higher yield than popular variety Allahabad Safeda. Pink colour in the beverage made from the pulp of this variety remains stable for more than a year during storage. Jelly made from Lalit is of high quality 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
Shweta (CISH-G-4)	CISH, Lucknow	<ul style="list-style-type: none"> Subglobose fruits with few soft seeds, Attractive pink blush. It has good yield potential. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
CROP PRODUCTION			
GUAVA	CISH, Lucknow	<ul style="list-style-type: none"> Trees at the highest density (3mx1.5m) were taller. The population density of 555 trees/ ha with a spacing of 3mx6m is suitable for higher yield and quality produce. Current season shoot pruning influenced the canopy architecture and flowering under high density planting when imposed in the month of May. Highest fruit yield (79.5 kg/ tree) recorded from the trees planted at 3.0mx6.0m. Application of 20 kg FYM inoculated with <i>Azotobacter</i> produced highest yield (13.69 & 40.11kg/ tree) in guava cultivar Allahabad Safeda in 1st and 2nd year of fruiting. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur

District Specific Technological Interventions for Eastern Region

CROP PROTECTION			
GUAVA	CISH, Lucknow	<ul style="list-style-type: none"> • Cartap hydrochloride is effective in control of guava fruit borer. • Inoculation technique (stem hole inoculation) for reproduction of wilt in guava has been standardized. • <i>Gliocladium roseum</i> has been found most potent causal pathogen for guava wilt, as it produces symptoms in grown up plants in field within 2 months of inoculation. • Bio-control agents, <i>Aspergillus niger</i> (AN 17) and <i>Penicillium citrinum</i> have been identified for the control of guava wilt. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
PAPAYA	CISH, Lucknow	<ul style="list-style-type: none"> • Ring spot and leaf curl have been identified as important viral diseases of papaya causing considerable loss to the crop. Insect vectors responsible for the transmission of these viruses have been identified. • Antiviral plant substances from <i>Boerhaavia diffusa</i> and <i>Clerodendrum aculeatum</i> are effective against ring spot disease. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
BAEL			
Narendra Bael -16	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Fruit elliptical round. • Pulp yellow. • Average fruit weight 1.2 kg. • Medium seed. • Low fibre content. 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Narendra Bael-17	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Fruit attractive. • Average fruit weight 1.75 kg. • Total soluble solid-32%. • Pulp orange colour. • Low fibre content 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
BER			
Narendra Ber Selection-1	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Tree spreading type. • Heavy yielder. • Fruit round to oblong. • Fruit yellowish green in colour. • Fruit weight 35.6 g. • Total soluble solid-15.5%. • Acidity 0.3% 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Narendra Ber Selection-2	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Tree medium in height. • Semi spreading tree. • Fruit obviate. • Fruit skin yellowish green. • Fruit weight 30 g. • Total soluble solids-14%. • Acidity 0.28%. 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur

Inventory of Agricultural Technologies for Uttar Pradesh

AONLA			
Kanchan (NA-4):	1984 NDUAT, Faizabad	<ul style="list-style-type: none"> • It is a seedling selection from Chakaiya. • It is regular and heavy bearer. • Fruits are of medium size with higher fiber content, preferred by industry for preparation of various products. • It is a mid season variety. 	Faizabad, Basti, Bahraich, Siddharthnagar, Gorakhpur, Barabanki, Kushi Nagar, Maharajganj, Ambedkar Nagar, Sant Kabir Nagar, Sultanpur
Krishna (NA-5)	1984 NDUAT, Faizabad	<ul style="list-style-type: none"> • Krishna is a seedling selection from Banarasi. • The fruits are large, triangular, conical, smooth, whitish green to apricot yellow with red spot. • Flesh is pinkish green and less fibrous. • It is an ideal variety for preparing candy and juice. • It is an early maturing genotype. 	Faizabad, Basti, Bahraich, Siddharthnagar, Gorakhpur, Barabanki, Kushi Nagar, Maharajganj, Ambedkar Nagar, Sant Kabir Nagar, Sultanpur
NA-6	1993 NDUAT, Faizabad	<ul style="list-style-type: none"> • It is a selection from Chakaiya. • Fruits are most attractive and shining, medium to large in size, flattened and very low in fiber content. • This is an excellent variety for making preserve, candy and jam. • It is a mid season variety. 	Faizabad, Basti, Bahraich, Siddharthnagar, Gorakhpur, Barabanki, Kushi Nagar, Maharajganj, Ambedkar Nagar, Sant Kabir Nagar, Sultanpur
NA-7	1987 NDUAT, Faizabad	<ul style="list-style-type: none"> • It is a seedling selection from Francis. It is precocious and prolific regular bearer. Fruits are of medium to large with conical apex. Fiber content is little higher than NA-6. It is a mid season variety. 	Faizabad, Basti, Bahraich, Siddharthnagar, Gorakhpur, Barabanki, Kushi Nagar, Maharajganj, Ambedkar Nagar, Sant Kabir Nagar, Sultanpur
NA-10	1993 NDUAT, Faizabad	<ul style="list-style-type: none"> • This is a chance seedling selection from cultivar Banarasi, which bears profusely. Fruits are attractive, medium to large in size and flattened round in shape. Skin is rough, yellowish green with pink tinge. Its pulp is whitish green with higher fiber and lower phenolic contents. 	Faizabad, Basti, Bahraich, Siddharthnagar, Gorakhpur, Barabanki, Kushi Nagar, Maharajganj, Ambedkar Nagar, Sant Kabir Nagar, Sultanpur
Laxmi-52	2007 NDUAT, Faizabad	<ul style="list-style-type: none"> • It is seedling selection from the cv. Francis. • The tree is semi erect in growth with semi spreading branches. • During early period of growth fruit colour (particularly ridges) is light pink, which disappear on full development and maturity. • Fruits are free from necrosis. • A full-grown tree yields up to 2.0-2.5q/ ha. • Due to heavy fruit load cracking in branches has been observed. 	Faizabad, Basti, Bahraich, Siddharthnagar, Gorakhpur, Barabanki, Kushi Nagar, Maharajganj, Ambedkar Nagar, Sant Kabir Nagar, Sultanpur

District Specific Technological Interventions for Eastern Region

JATROPHA			
Jatropha NJC-1	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> Biodiesel recovery up to 42%. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur

THEMATIC AREA BASED TECHNOLOGIES

Thematic areas	Characteristics of the technology	Releasing organization & year	Technology developed	Districts where applicable
Integrated cropping system	Intercropping of <i>rabi</i> crops (gram, pea and wheat) with mustard	2004 NDUAT , Faizabad	<ul style="list-style-type: none"> Intercropping systems Gram + mustard (4:1), Pea + mustard (2:2), wheat + mustard (9:1) gave higher gross return (Rs. 48082, Rs. 23694 and Rs. 31787 per ha, respectively) as compared to their pure crops. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Jaunpur
Integrated cropping system	Intercropping of rice and pigeon pea under rainfed condition	2004 NDUAT , Faizabad	<ul style="list-style-type: none"> Higher rice equivalent yield (12.30 t/ ha) is recorded under rice + pigeonpea (5:2 row ratio) with 5 cm irrigation at 7 days after disappearance of ponded water than other intercropping ratios as well as pure stands of both the crops. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Jaunpur
Integrated cropping system in rice and pigeon pea based cropping system	Intercropping in rice and pigeon pea based system	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> Rice + Pigeonpea (5:2) followed by lentil is best cropping system in rainfed condition. Irrigation of 5 cm at 7 days disappearance of ponded water is best. Pigeon pea sown in paired row on raised bed gave higher return (Rs. 16780/ ha). 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Jaunpur

Inventory of Agricultural Technologies for Uttar Pradesh

Integrated cropping system in Bael	Intercropping in Bael orchard	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Intercropping of fenugreek and mustard gave maximum return in Bael orchard. 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Diversification of rice-wheat cropping system	Cropping system of rice-potato-mungbean and rice-onion in place of rice-wheat cropping system	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Rice – Potato – Mungbean followed by Rice – Onion found to be best rotation from yield and economic return point of view as compared to Rice – Wheat crop rotation. • The highest net return of Rs. 43,180 ha⁻¹ year⁻¹ was also provided by rice-potato-mungbean sequence followed by rice-onion (Rs. 36,419 ha⁻¹ year⁻¹) and both the sequences gave significantly higher net return than other crop sequences (Rs. 25287/ ha/ year) 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Jaunpur
Diversification of rice-wheat cropping system	Cropping system of rice-chickpea instead of rice-wheat cropping system	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Rice-Chickpea cropping system was more profitable recorded Rs. 10642 / ha/ year additional income than traditional Rice-Wheat System (Rs. 25287/ ha/ year) 	Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Diversification of pigeonpea-wheat cropping system	Incorporation of urdbean in pigeonpea-wheat cropping system under upland condition	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Pigeon pea + Urdbean – Wheat cropping system was more profitable recorded Rs. 5613/ ha/ year additional income than traditional Pigeonpea-Wheat system (Rs. 20490/ ha/ year) 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj and Balrampur
Integrated nutrient management in maize, potato and onion	Nutrient management with organic and inorganic fertilizers for organic farming of maize, potato and onion	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Highest economical yield of maize (4.58 t/ ha) potato (30.2 t/ ha) and onion (20.0 t/ ha) obtained with recommended dose of chemical fertilizers followed by integrated nutrient management i.e. 50% through fertilizers + 50% N through FYM. • Organic treated plots showed respective lower yields during first year, however, the yield gaps between chemical fertilizers and organic manures were reduced during second and third year in all the crops. • In case of potato and onion, organic manured plots gave equal or more yield than that of chemical fertilized plots during third year. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur

District Specific Technological Interventions for Eastern Region

Crop management in tomato	Planting pattern of tomato	2002 NDUAT , Faizabad	<ul style="list-style-type: none"> Paired planting of tomato on ridge gave higher yield than flat and ridge planting. 	Bahraich, Gorakhpur, Ballia, Varanasi, Faizabad, Barabanki, Jaunpur and Sultanpur
Crop management in wheat	Efficient use of water and nitrogen management in wheat	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> Highest grain yield of wheat (38.60 q/ ha) was recorded when irrigated at 1.0 IW/ CPE ratio with 4 cm depth. Significantly higher yield was obtained with 150 kg N/ ha. 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Sultanpur
Integrated crop management in <i>Colocasia esculenta</i> (Banda)	Nitrogen and seed management in <i>Colocasia esculenta</i> (Banda)	2001-03 NDUAT , Faizabad	<ul style="list-style-type: none"> 100 kg N/ ha with 40-50 g of seed size is recommended for profitable cultivation of <i>Colocasia esculenta</i> (Banda). 	Bahraich, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Integrated crop management in Elephant Foot Yam (<i>Dioscaria</i>)	Seed size and spatial management in Elephant Foot Yam (<i>Dioscaria</i>)	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> Spacing of 60 x 45 cm with 200 g seed size of Elephant Foot Yam (<i>Dioscaria</i>) is recommended. 	Bahraich, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Crop management under sodic and heavy soil	Planting techniques of Elephant Foot Yam (<i>Dioscaria</i>) under sodic and heavy soil condition	2001-03 NDUAT , Faizabad	<ul style="list-style-type: none"> Planting of Elephant Foot Yam (<i>Dioscaria</i>) at 8" wide 6" deep trench filled by 3 tonnes of <i>Leucaenia leucocephala</i> (subabool) + 3 tonnes paddy straw under sodic & heavy soil condition is most appropriate technique. 	Bahraich, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Integrated Nutrient Management in rice	Incorporation of organic manure (FYM/ Green manuring) along with fertilizer in rice crop	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> Substitution of 25-50 per cent N through FYM and Sesbania green manuring to rice result in equal or more yields as compared to 100 per cent NPK fertilizers alone (5.6 t/ ha). Among the different organic N sources, green manuring of Sesbania and FYM are best. 	Bahraich, Basti, S. Nagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Integrated nutrient management in sweet potato	Fertilizer and vermin-compost management	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> Application of 45:40:60 NPK/ ha along with 15 kg N as vermi-compost in sweet potato is highly useful. 	Bahraich, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur

Inventory of Agricultural Technologies for Uttar Pradesh

Integrated nutrient management in Elephant Foot Yam (<i>Dioscaria</i>)	Inorganic and organic fertilizer management in Elephant Foot Yam (<i>Dioscaria</i>) crop	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> Application of 125:100 kg NPK/ ha along with 50 kg N through FYM in Elephant Foot Yam (<i>Dioscaria</i>) is recommended. 	Bahraich, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Water management in wheat	Efficient use of irrigation water	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> Irrigation at 0.8 IW/ CPE level give higher yield (38.21 q/ ha) over 1.0 IW/ CPE (35.67 q/ ha) and 0.6 IW/ CPE (30.52 q/ ha) ratio in wheat. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Water management in onion	Efficient use of irrigation water	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> Bulb yield of onion (23.4 q/ ha) increase with increasing irrigation supply and highest at 1.4 IW/ CPE ratio (8-10 irrigations). 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sultanpur
Water management in Rice + Pigeon pea system	Irrigation scheduling in rice + pigeon pea intercropping	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> Higher rice equivalent yield (10.6 t/ ha) obtained under rice + pigeon pea (long duration variety NDA-1) with 7 cm irrigation 7 days after disappearance of ponded water. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Jaunpur
Water management in paddy	Irrigation scheduling in paddy	2004 NDUAT, Faizabad	<ul style="list-style-type: none"> Irrigation with 7 cm depth at day after disappearance of ponded water in paddy produce higher yield (52.62 q/ ha). 	Bahraich, Basti, Siddharthnagar, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad and Chandauli
Water management in wheat	Irrigation scheduling and efficient use of water in wheat	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> Irrigation with 4 cm depth at 1.0 IW/ CPE in wheat up to late jointing and 1.2 IW/ CPE up to dough stage is best (43.1 q/ ha). 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Sultanpur
Weed management in rice-wheat cropping system	Diversification of rice-wheat cropping system to rice-oat and rice-berseem reduce weed population	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> Diversification of rice-wheat to rice-oat and rice-berseem effectively reduce the weed population of grassy weeds in <i>rabi</i> recording 88.7% weed control efficiency as compared to rice-wheat system. 	Bahraich, Basti, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Jaunpur

District Specific Technological Interventions for Eastern Region

Weed Management in rice	Chemical weeds management for transplanted rice	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> Application of thiobencarb @1.5 kg ha⁻¹ and pendimethalin @1.5 kg ha⁻¹ has been found safe on rice cultivars i.e. Sarjoo-52, Jhona-349, NDR-80, N-22, Narendra-1, NDR-118, Sita and Caveri. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Weed Management in wheat	Herbicide rotation for avoiding resistant biotype of various weeds in wheat crop	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> Isoproturon @1.0 kg ha⁻¹ as spray or broadcast mixed with sand can be applied at 30-35 days after sowing to control <i>Phalaris minor</i>. Application of pendimethalin @ 1.0 kg ha⁻¹ as pre-emergence and Isoguard @1.0 kg ha⁻¹ may be used as post emergence (30-35 DAS). Clodinothop @60-80 g ha⁻¹ and sulfosulfuron @25-30 g ha⁻¹ can be used in wheat in place of isoproturon in herbicide rotation system to avoid development of resistant biotype. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Weed Management in wheat	Application and management of newly introduced herbicide in wheat crop	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> New molecules of herbicides e.g. fenoxaprop-p-ethyl @100 g and sulfosulfuron @25 g ha⁻¹ are safe and effective in controlling weeds. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Weed Management in maize	Chemical control of weeds in <i>rabi</i> maize	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> In <i>rabi</i> maize, pendimethalin @ 1.0 kg/ ha or metolochlor @1.0-1.5 kg/ ha or atrazine @1.0 kg/ ha may be used safely to control weeds effectively. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Ballia, Varanasi, Barabanki and Jaunpur
Weed Management in potato	Herbicide management in potato crop	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> Isoproturon can safely be used as pre- emergence spray @0.75 kg/ ha to control weeds in potato. Early post-emergence (at the time of 5% emergence of potato) application of paraquat @0.5 kg/ ha can also be used to control weeds effectively. 	Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Jaunpur

Inventory of Agricultural Technologies for Uttar Pradesh

Weed Management in tomato	Herbicide management in tomato planting	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> • Fluchloralin @1.0 kg/ ha as pre plant incorporation or pendimethalin @1.0 kg/ ha as pre-emergence can safely be applied just before transplanting of tomato seedlings. 	Ballia, Varanasi, Faizabad, Barabanki, Jaunpur and Sultanpur
Management of <i>Cyperus</i>	Management of <i>Cyperus rotundus</i>	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> • Management of <i>Cyperus</i> (Motha) can be done by spray of Glyphosate 41% SL at 4 lit ha-1 with 400-500 lit of water in the month of mid August to mid September. • Within 10-15 days of spray almost all the weeds are dried. • Use of Glyphosate should be done when there is no crop in field. 	Bahraich, Basti, S. Nagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Management of water hyacinth	Management of water hyacinth in aquatic ecosystem	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> • Water hyacinth can be controlled to the extent of 99% with application of paraquat + 2, 4D Ethyl Easter each @1.0 kg/ ha. • Mixed application of paraquat @1.0 kg/ ha + fluroxypyr @0.4 kg/ ha may control the water hyacinth more effectively than the application of paraquat @ 1.0 kg/ ha alone. • Mixing of urea (2%) or fluroxypyr with 2,4-D enhanced the efficacy of 2,4-D Ethyl Easter in controlling water hyacinth. 	Bahraich, Basti, S. Nagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Management of <i>Parthenium</i> (Congress grass)	Management of <i>Parthenium</i>	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> • <i>Parthenium</i> can be controlled by pre- emergence application of atrazine (50% WP) at 2-3 kg ha-1 with 600-800 liters of water. • Post-emergence application of paraquat 24% EC at 4-5 lit ha-1 or glyphosate 41% SL at 4-5 lit ha-1 or 2,4-D (Na) salt 80% WP at 1.0 kg ha-1 along with 600-800 liters of water should be sprayed before the flowering of <i>Parthenium</i>. 	Bahraich, Basti, S. Nagar, Gorakhpur, Mahrajganj, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli, Sonbhadra and Sultanpur

District Specific Technological Interventions for Eastern Region

Biological weed control	Biological control of water Hyacinth	2004 NDUAT , Faizabad	<ul style="list-style-type: none"> • Release of six Neochetina weevils/ plant could kill the water hyacinth plant in 60 days, while four Neochetina weevils/ plant kill the water hyacinth effectively in 80 days. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra
Biological weed control	Biological control of <i>Parthenium</i>	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Release 6 grubs/ plant of Mexican beetle. • <i>Zygomma bicolorata</i> Pallister controls 20 day old <i>Parthenium hysterophorus</i> Linn. plant effectively. 	Bahraich, Basti, Siddharthnagar, Gorakhpur, Balrampur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Jaunpur, Chandauli, Sonbhadra and Sultanpur
Integrated Pest Management (IPM) in Brinjal	IPM module for pest management in Brinjal	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Deep summer ploughing • Insert affected shoot clipping at 30 days after transplanting. • Two sprays of 5% NSKE at 30 & 60 days after transplanting. • Use of Pheromone trap and shoot clipping to continue. • Spray of Endosulfan 35 EC @ 1.25 l/ ha (need based). 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra
Mango hopper management	Module for control of mango hopper	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Spraying of Monochrotophos 30 EC 1 ml/ l of water in the month of December. • Spraying of Dimethoate 30 EC + Sulfex 80 EC 2 g/ l of water at time of mustard size of fruits. • Spraying of Indosulphon 35 EC + Karathin • 2 g/ l of water at pea size of fruits 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra
IPM in Pigeon pea	IPM module for pest management in Pigeon pea	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Use of improved seed NA-2 + Seed treatment with Trichoderma 5g/ kg seed. • Spraying of neem seed kernel extract before flowering. • Spraying of NPV 350 LE/ ha at IInd larval stage. • Use of Endosulphan @1.25 l/ ha (need based). 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra

Inventory of Agricultural Technologies for Uttar Pradesh

Pest management in Brinjal	Fruit and shoot borer management in brinjal	2003 NDUAT , Faizabad	<ul style="list-style-type: none"> • Removal and destruction of infested twigs/ fruits and dry fallen leaves twice in a week. • Raising of 2 m high nylon mosquito net barrier on all four sides. • Keeping the <i>Leucinoides arbonalis</i> below economic threshold level. 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra
Pest management in citrus	Chemical Control of Citrus psylla	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Profenfos 50 SL 0.07% and dimethoate 30 EC 0.03%. • Ethion 40% + cypermethrin 5 EC 0.03% and acephate 75 SP 0.03% effectively control the citrus psylla, Diaphorma citri 	Bahraich, Basti, Gorakhpur, Mahrajganj, Balrampur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Chandauli and Sonbhadra
Integrated pest management in sweet potato	IPM module for the management of sweet potato weevil	2001-03 NDUAT , Faizabad	<ul style="list-style-type: none"> • IPM package involving synthetic sex pheromone was found to very effective in controlling sweet potato weevil in all major sweet potato growing areas. The IPM package for sweet potato growers is as under: • Selection of field and cleaning Ipomoea weeds in and around the field. • Installation of pheromone traps @1 trap/ 100 m² (10 x 10m). • Use of pest free planting material and disinfecting the planting setts by dipping in monocrotophos 0.05% a.i. • Collection of weevils from the traps and changing water with detergent at periodical intervals. • Reridging the crop at 30 and 60 DAP • Harvesting at 105-110 days. • Destruction of crop resides and weevil attacked plant parts. • Continue the pheromone trapping till a fortnight after harvest. 	Bahraich, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur

District Specific Technological Interventions for Eastern Region

Integrated disease management in <i>Colocasia</i>	IDM module for blight disease of <i>Colocasia</i>	2001-03 NDUAT , Faizabad	<ul style="list-style-type: none"> • IDM package for blight disease of <i>Colocasia</i> is as under: • Use healthy planting material of tolerant cultivar of the area/ center. • Mulching with paddy straw/ locally available plant material after planting followed by an earthing up after first weeding. • During peak disease season <i>i.e.</i> middle of August, one spraying with neem leaf powder extracts (fully dried neem leaves are to be powdered and stored in air tight containers). One day before spraying, one kg dried neem leaf powder is to be soaked in 10 lit of water. The mixture is to be filtered through muslin cloth and the extract is to be sprayed. 	Bahraich, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Plant Propagation Technique in Jackfruit	Plant Propagation Technique	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Soft wood grafting technique in July gives 75% success in jack fruit. 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Plant Propagation Technique in Bael	Plant Propagation Technique	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> • Soft Wood Grafting technique in July- August month give 70% success in Bael crop. 	Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Jaunpur, Sonbhadra and Sultanpur
Resource conservation technology	Establishment method and water management in wheat	2006 NDUAT , Faizabad	<ul style="list-style-type: none"> • Sowing on bed planting or with rotadrill sowing. • 6 cm irrigation at 1.2 W/ CPE. 	Bahraich, Basti, Gorakhpur, Mau, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki and Sultanpur
Resource conservation technology	Planting technique in pigeon pea	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • Paired planting on raised bed in pigeon pea produced highest yield (16.4 q/ ha). • Results in higher germination percentage. 	Upland condition of Bahraich, Basti, Siddharth Nagar, Gorakhpur, Ballia, Varanasi, Faizabad, Azamgarh, Barabanki, Sonbhadra and Sultanpur
Resource conservation technology	DSR with Stale seed bed technique and nutrient management	2005 NDUAT , Faizabad	<ul style="list-style-type: none"> • DSRSB with normal ZT machine + Herbicide + 80% N basal and rest N based on LCC (yielded 36.4 q/ ha). • Option I+green manure of <i>Sesbania</i> (yielded 37.2 q/ ha). 	Bahraich, Basti, Mau, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh and Barabanki

District Specific Technological Interventions for Western Region

I. Bhabhar & Tarai Zone

This zone consists of 4 districts. The geomorphology of these districts is given below:

A. Agroclimatic Features

There is a narrow strip of land just below the foothills of Himalayas known as Bhabhar covering part of Saharanpur and Bijnor districts of the state. Tarai comprises the central part of Saharanpur district, northern portion of Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur and Lakhimpur Kheri. Tarai has a dry season from early October to mid June and a wet season from mid June to early October. Temperature is the highest in May-June (38.4 °C) and the lowest in December-January (4.3 °C). Relative humidity is the highest in July (81.7%) and the lowest in May (39%). The average rainfall is 1400 mm. Soils of Tarai zone are alluvial in nature, low to medium in phosphorus, medium to high in potassium and high in organic matter. Bhabhar soils are mixed with coarse gravel and stones. Cropping intensity of the zone is 146 %. The main crops of the area are wheat and rice. Chickpea and lentil are the major pulses while rapeseed and mustard are the principal oilseed crops. Potato, tomato, cole crops, vegetable pea and cucurbits are major vegetables and mango, litchi, papaya and guava are the major fruits grown in this zone. The major limitation of Bhabhar soils is drought prone on account of rapid infiltration of water.

B. Geomorphology of Districts

Bijnor district is situated on 78° 0' to 78° 57' east longitude and 29° 2' to 29° 58' north latitude. It is comprised of 5 tehsils, 11 blocks and 2132 villages. The total population of the district is 3.13 million with the literacy of 58.10% and population density of 687 km². The average size of holding is 1.34 ha

and the cropping intensity of the district is 126.67%. The district has a reported area of 464578 ha, net sown area of 345070 ha and irrigated area of 305049 ha. 756 mm annual rainfall is received whereas temperature ranges between 3.7 °C to 41.9 °C. The major soils of the district are sandy, sandy loam, loam and clay loam. The major crops grown in kharif are rice (158641 ha) with the productivity of 25.86 q ha⁻¹, urdbean (4030 ha) with the productivity of 8.24 q ha⁻¹, groundnut (1716 ha) with the productivity of 13.59 q ha⁻¹. In rabi, crops cultivated are wheat (112729 ha) with the productivity of 29.53 q ha⁻¹, chickpea (176 ha) with the productivity of 7.30 q ha⁻¹, field pea (163 ha) with the productivity of 9.67 q ha⁻¹, lentil (1618 ha) with the productivity of 7.05 q ha⁻¹, mustard (2429 ha) with the productivity of 10.27 q ha⁻¹ and potato (1092 ha) with the productivity of 260.67 q ha⁻¹, respectively. Sugarcane is a major crop (222127 ha) with the productivity of 621.92 q ha⁻¹. Total consumption of NPK fertilizers in the district is 157.04 kg/ha with the application of nitrogen (135.42 kg/ha), phosphorus (19.42 kg/ha) and potash (2.20 kg/ha).

Cattles (261168), buffaloes (526188), sheeps (5769), goats (104429), pigs (30365) and poultry birds (152327) are the major livestock.

Rampur district is located between longitude of 78°54' and 69°28' east and latitude of 28°25' & 29°10' north and spread in an area of 2367 km². It has 5 tehsils, 6 blocks and 1098 villages with the population of 1.92 million and population density of 813 km² with 38.80% literacy. Temperature ranges between 4.3 °C to 38.4 °C, whereas reported annual rainfall is 730.32 mm. The soils of the district are silt clay loam, loam and sandy loam. The reported area is 235717 ha, net sown area is 193152 ha and irrigated area is 86447 ha with 178% cropping intensity. Major crops

grown in kharif are rice (144038 ha) with the productivity of 21.09 q ha⁻¹, pearl millet (3298 ha) with the productivity of 14.71 q ha⁻¹, sorghum (1059 ha) with the productivity of 11.54 q ha⁻¹ and urdbean (2457 ha) with the productivity of 8.24 q ha⁻¹, etc. In rabi, wheat (140239 ha), fieldpea (1009 ha), lentil (2618 ha), mustard (3375 ha) and potato (2482 ha) with the productivity of 32.23 q ha⁻¹, 9.67 q ha⁻¹, 7.05 q ha⁻¹, 9.69 q ha⁻¹, 260.67 q ha⁻¹, respectively are grown. Sugarcane (17457 ha) is raised with the productivity of 610.48 q ha⁻¹. Total consumption of NPK fertilizers in the district is 148.71 kg/ha with the application of nitrogen (108.16 kg/ha), phosphorus (24.55 kg/ha) and potash (16.00 kg/ha).

Cattles (131100) and buffaloes (348976), goats (99600), pigs (11366), sheeps (9357) and poultry birds (443181) are the major livestock. Fish ponds occupy 361 ha area.

Bareilly district is situated between the latitude of 28.36° north and longitude of 79.41° east. It is comprised of 6 tehsils, 15 blocks and 1851 villages. Total population of the district is 3.62 million, literacy 47.80% and density of population is 878 km². The average size of holding is 0.89 ha with the cropping intensity of 152.25%. The district has reported area of 406845 ha, net sown area of 328113 ha and irrigated area of 294507 ha. Temperature between 4.8°C to 45.5 °C, annual rainfall of 781 mm and prevalence of loam and clay loam soils determine agro-ecology of the district. The major crops cultivated are rice (335484 ha), maize (292 ha), pearl millet (10142 ha), urdbean (6870 ha) and sesame (3101 ha), etc. with the productivity of 17.89 q ha⁻¹, 18.87 q ha⁻¹, 13.20 q ha⁻¹, 7.66 q ha⁻¹, 1.11 q ha⁻¹, respectively. In rabi, the major crops grown are wheat (196808 ha), barley (103 ha), field pea (1041 ha), lentil (13879 ha), mustard (15951 ha) and potato (6850 ha) with the productivity of 28.50 q ha⁻¹, 21.60 q ha⁻¹, 9.67 q ha⁻¹, 6.98 q ha⁻¹, 8.04 q ha⁻¹, 193.82 q ha⁻¹, respectively. Sugarcane (71317 ha) is cultivated with the productivity of 551.0 q ha⁻¹. Total consumption of NPK fertilizers in the

district is 170.08 kg/ha with the application of nitrogen (113.28 kg/ha), phosphorus (39.77 kg/ha) and potash (17.03 kg/ha).

Cattles (239074), buffaloes (485484), sheeps (2751), goats (168285), pigs (24037) and poultry birds (183300) are the major livestock.

Pilibhit district is situated in the sub Himalayan belt on the boundary of Nepal and its major part is covered by dense forest (78478 ha). It lies between the parallels of 28°6' and 28°53' north latitude and the meridians of 79°57' and 80°27' east longitude. The district is having population of 1.64 million with the literacy of 49.80% and density of 470 km². Temperature ranges between 5.4 °C to 43.5 °C, whereas annual rainfall is 749 mm. The soils of the district are clay loam, loamy clay and loam which are well drained, rich in organic matter, low in nitrogen and phosphorus and medium to high in potash. Total reported area of 377778 ha, net sown area of 235411 ha and irrigated area of 219521 ha with cropping intensity of 163.20% are reported. The crops of kharif are rice (397116 ha) with the productivity of 23.99 q ha⁻¹, maize (519 ha) with the productivity of 16.87 q ha⁻¹, sesame (702 ha) with the productivity of 1.21 q ha⁻¹, groundnut (7761 ha) with the productivity of 9.25 q ha⁻¹ and pigeonpea (106 ha) with the productivity of 8.45 q ha⁻¹. The major crops grown in rabi are wheat (155439 ha) with the productivity of 33.26 q ha⁻¹, field pea (343 ha) with the productivity of 9.67 q ha⁻¹, lentil (2886 ha) with the productivity of 5.23 q ha⁻¹, mustard (6559 ha) with the productivity of 8.10 q ha⁻¹ and potato (780 ha) with the productivity of 176.31 q ha⁻¹. Sugarcane is major cash crop grown (61197 ha) with the productivity of 630.48 q ha⁻¹. Total consumption of NPK fertilizers in the district is 199.33 kg/ha (nitrogen 140.47 kg/ha, phosphorus 33.81 kg/ha and potash 25.05 kg/ha).

Cattles (156132), buffaloes (234903), sheeps (883), goats (92016), pigs (10721) and poultry birds (97266) are the major livestock.

C. Problems and Priorities

Agriculture

Problems and Issues	Priorities
Depletion in ground water table	<ul style="list-style-type: none"> • Recharge of ground water. • Awareness campaign for judicious use of irrigation water. • Promotion of cropping systems regarding low water use.
Decline in soil fertility	<ul style="list-style-type: none"> • Promoting the use of balanced fertilizers. • Adoption of integrated plant nutrients management techniques. • Popularization of use of organic manure. • Promotion of pulses in summer season.
Poor yields of basmati rice and scented indigenous rice	<ul style="list-style-type: none"> • Popularization of high yielding basmati varieties, hybrids and scented rice.
Poor seed replacement rate	<ul style="list-style-type: none"> • Awareness about improved varieties and hybrids. • Ensuring availability of seed of improved varieties through large-scale production. • Promotion of seed village production programme.
High incidence of disease and pests in rice and sugarcane	<ul style="list-style-type: none"> • Awareness about disease and pest resistant varieties • Promoting the practice of integrated pest management to control the diseases and pest attack.
Problem of micro nutrients deficiency	<ul style="list-style-type: none"> • Awareness about soil test based application of nutrients and micronutrients. • Training and demonstration on application of micronutrients. • Promotion of green manure and vermi compost.
Low productivity of wheat, rice and sugarcane	<ul style="list-style-type: none"> • Intercropping in sugarcane. • Promotion of hybrid rice. • Promotion of <i>rabi</i> maize • Promotion of resource conservation technologies.

Horticulture

Problems and Issues	Priorities
Severe incidence of insect – pest, disease and other complex problem	-
a) School gall psylla, hoppers and mealy bugs in mango	<ul style="list-style-type: none"> • Use of bio-intensive IPM technology for management of hoppers and mealy bugs.
b) Die-back, anthracnose and bacterial blight in mango	<ul style="list-style-type: none"> • Relevant technological interventions.
c) Malformation, alternate bearing and fruit drop in mango	<ul style="list-style-type: none"> • Rejuvenation of old and unproductive orchards. • Popularization of regular bearing Dashehari-51.

d) Fruit fly and wilt in guava	<ul style="list-style-type: none"> • Popularization of wilt resistant root stocks.
e) Stem and fruit borer in brinjal and tomato and leaf curl virus in tomato	<ul style="list-style-type: none"> • Use of bio-intensive IPM technology for the management of tomato fruit borer.
f) Diamond black moth in cole crops	<ul style="list-style-type: none"> • Use of bio-intensive IPM technology.
g) Late blight in potato	<ul style="list-style-type: none"> • Promotion of late blight resistant varieties. • Ensure availability of breeder seed.
h) Fruit cracking in litchi	<ul style="list-style-type: none"> • Adoption of recommended agro-technology. • Replacement of fruit cracking prone variety Calcutta with Rose Scented and export & processing oriented variety. • Availability of quality planting material.

II. Western Plain Zone

This zone consists of 7 districts. The geomorphology of these districts is given below :

A. Agroclimatic Features

The zone includes districts of Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr and parts of Saharanpur located between the Ganga and Yamuna river and their tributaries. The zone is highly productive with light coloured loam soil. The average annual rainfall is 795 mm. Relative humidity ranges from 32 to 85% and the temperature ranges from 1.5°C to 4.3°C. Rice, wheat and sugarcane based cropping systems are prevalent in the zone. Cropping intensity of this zone is 157%. The principal crops of this region are rice, wheat, maize, pearl millet, urdbean, pigeonpea, groundnut, rapeseed and mustard and sugarcane. Potato, onion, tomato, vegetable pea, cole crops, chillies are the major vegetables and mango, litchi, grape, guava and papaya are the major fruits cultivated in the zone. In addition, commercial flower cultivation is also practiced in this zone. Water logging and salinity are important limitations in the zone.

B. Geomorphology of Districts

Muzaffarnagar district is situated on 77.31° east longitude and 29.46° north latitude. It is comprised of 5 tehsils, 14 blocks and 884 villages with a population of 3.54 million and population density of

884 km². Reported area of 412577 ha, net sown area of 325315 ha irrigated area of 319413 ha and cropping intensity of 141.78% indicate agricultural scenario in the district. Temperature between 1.80°C to 41.60°C with annual rainfall of 753 mm and alluvial, waterlogged and saline and sandy to sandy loam soils determine the agro-ecological situation. The major crops grown in *kharif* are rice (25690 ha) with the productivity of 22.52 q ha⁻¹, maize (328 ha) with the productivity of 14.12 q ha⁻¹, pigeonpea (118 ha) with the productivity of 6.53 q ha⁻¹, urdbean (1391 ha) with the productivity of 5.61. In rabi, main crops grown are wheat (125867 ha) with the productivity of 32.39 q ha⁻¹, barley (451 ha) with the productivity of 21.60 q ha⁻¹, field pea (133 ha) with the productivity of 9.67 q ha⁻¹, lentil (569 ha) , with the productivity of 4.22 q ha⁻¹, mustard (3396 ha), with the productivity of 10.27 q ha⁻¹ and potato (2288 ha) with the productivity of 218.37 q ha⁻¹. Sugarcane (232610 ha) is important crop with the productivity of 691.60 q ha⁻¹. Total consumption of NPK fertilizers in the district is 214.19 kg/ha (nitrogen 164.0 kg/ha, phosphorus 44.70 kg/ha and potash 5.49 kg/ha).

Cattles (221961), buffaloes (790257), sheeps (8704), goats (64523), pigs (35359) and poultry birds (199206) are the major livestock.

Saharanpur district is situated on 77°9' and 78°14' east longitude and 29°34' and 30°21' north latitude. Its total geographical area is 3860 sq km and it is comprised of 4 tehsils, 11 blocks and 1278 villages. The total population of the district is 2.89 million with literacy of 60.70% and density of 785 km². The

average size of holding is 1.32 ha and cropping intensity 153.30%. The district has a reported area of 357001 ha, net sown area of 273650 ha and irrigated area of 248572 ha. The average annual rainfall received is 877.82 mm whereas temperature ranges between 5.3 °C to 41.5 °C. The major soils of the district are sandy, sandy loam, loam and clay loam. The major crops grown in the district are rice (56475 ha) with the productivity of 22.63 q ha⁻¹, maize (7652 ha) with the productivity of 14.12 q ha⁻¹, urdbean (765 ha) with the productivity of 5.61 q ha⁻¹ and groundnut (3008 ha) with the productivity of 8.57 q ha⁻¹, respectively. In rabi, wheat (114276 ha) with the productivity of 29.39 q ha⁻¹, barley (44 ha) with the productivity of 21.60 q ha⁻¹, lentil (2877 ha) with the productivity of 4.22 q ha⁻¹, chickpea (50 ha) with the productivity of 7.30 q ha⁻¹, field pea (174 ha) with the productivity of 9.67 q ha⁻¹, mustard (1507 ha) with the productivity of 10.27 q ha⁻¹ and potato (626 ha) with the productivity of 218.37 q ha⁻¹ are grown. The vegetable crops grown in the district are vegetable pea, cauliflower, cabbage and tomato in an area of 2675, 2650, 2250, 1920 ha and productivity of 15.7, 20.2, 30.3 and 45.2 q ha⁻¹, respectively. Sugarcane (137615 ha) is harvested with the productivity of 631.64 q ha⁻¹. Total consumption of NPK fertilizers in the district is 237.97 kg/ha (nitrogen 190.32 kg/ha, phosphorus 34.69 kg/ha and potash 12.96 kg/ha).

Cattles (161963), buffaloes (476567), sheeps (26100), goats (69311) and poultry birds (184899) are the major livestock. Fish ponds area is 400 ha with productivity of 30.0 q ha⁻¹.

Meerut district is located between 28° 98' north latitude and 77° 07' east longitude. It is comprised of 3 tehsils, 12 blocks and 900 villages with the population of 3.00 million and population density of 1157 km². Reported area of 275973 ha, net sown area of 198417 ha, irrigated area of 188406 ha and cropping intensity of 151.18% mark the agricultural scenario. Rainfall is recorded at 768 mm annually and temperature varies from 3 °C to 45 °C. Soils are sandy to sandy loam. Sugarcane-Ratoon-Wheat; Sorghum-Potato-Cucurbits; Rice-Wheat-Sorghum cropping systems are mainly followed. The crops grown during kharif season are rice (39921 ha) with the productivity of 25.19 q ha⁻¹, maize (279 ha) with the productivity of 18.79 q ha⁻¹, pearl millet (52 ha)

with the productivity of 12.40 q ha⁻¹, pigeonpea (762 ha) with the productivity of 9.60 q ha⁻¹ and urdbean (563 ha) with the productivity of 5.61 q ha⁻¹. The principal crops cultivated in rabi are wheat (81314 ha) with the productivity of 37.22 q ha⁻¹, barley (222 ha) with the productivity of 36.78 q ha⁻¹, chickpea (122 ha) with the productivity of 7.30 q ha⁻¹, field pea (361 ha) with the productivity of 9.67 q ha⁻¹, lentil (332 ha) with the productivity of 7.05 q ha⁻¹, mustard (4596 ha) with the productivity of 9.87 q ha⁻¹ and potato (6247 ha) with the productivity of 148.04 q ha⁻¹. Sugarcane (128829 ha) is grown with the productivity of 693.04 q ha⁻¹. Total consumption of NPK fertilizers in the district is 215.49 kg/ha, which included nitrogen 171.20 kg/ha, phosphorus 36.02 kg/ha and potash 8.27 kg/ha.

Cattles (133279), buffaloes (567070), sheeps (3972), goats (44353), pigs (21335) and poultry birds (88048) are the major livestock.

Baghpat district is situated on 77° 13' east longitude and 28° 57' north latitude. It consists of 3 tehsils, 6 blocks and 237 villages with a population of 1.16 million, density of 881 km² and literacy of 64.2%. Temperature between 6 °C to 37.17 °C, annual rainfall of 547.3 mm and sandy to loam soils with normal pH characterize agro-ecological situation. Total reported area of 134531 ha, net sown area of 110065 ha and cropping intensity of 157.86% indicate the agricultural scenario. The crops grown during kharif season are rice (6848 ha) with the productivity of 25.97 q ha⁻¹, maize (248 ha) with the productivity of 18.79 q ha⁻¹, pearl millet (626 ha) with the productivity of 12.40 q ha⁻¹, urdbean (393 ha) with the productivity of 5.61 q ha⁻¹ and pigeonpea (1732 ha) with the productivity of 9.60 q ha⁻¹. In rabi, wheat (56458 ha) with the productivity of 40.27 q ha⁻¹, lentil (113 ha) with the productivity of 7.05 q ha⁻¹, mustard (945 ha) with the productivity of 9.87 q ha⁻¹, potato (298 ha) with the productivity of 162.92 q ha⁻¹ are grown. Sugarcane (67999 ha) is harvested with the productivity of 721.20 q ha⁻¹. Total consumption of NPK fertilizers in the district is 219.10 kg/ha, whereas nitrogen-172.93 kg/ha phosphorus-40.47 kg/ha and potash-5.70 kg/ha were applied.

Cattles (79662), buffaloes (351523), sheeps (3684), goats (17893), pigs (11409) and poultry birds (46180) are the major livestock.

Ghaziabad district is situated on longitude 77°25' east and latitude 28°40' north. There are 4 tehsils, 8 blocks and 685 villages with the population of 3.29 million, density of 2866 km² and literacy of 69.70%. Temperature ranges between 6 °C to 39 °C whereas annual rainfall of 780 mm is reported. The soils of the district are loam, sandy loam, alkaline and saline in nature. Total reported area of the district is 202505 ha, net sown area is 147467 ha and irrigated area is 134042 ha. The cropping intensity is 153.31%. In *kharif*, major crops grown are rice (49326 ha), maize (2654 ha), pigeonpea (2046 ha) and pearl millet (295 ha) with the productivity of 22.83 q ha⁻¹, 19.76 q ha⁻¹, 9.38 q ha⁻¹, 12.40 q ha⁻¹, respectively. In *rabi*, principal crops cultivated are wheat (71835 ha) with the productivity of 40.14 q ha⁻¹, barley (171 ha) with the productivity of 36.78 q ha⁻¹, field pea (613 ha) with the productivity of 9.67 q ha⁻¹, mustard (2190 ha) with the productivity of 9.87 q ha⁻¹, potato (5788 ha) with the productivity of 164.55 q ha⁻¹. Sugarcane (65587 ha) is cultivated with the productivity of 592.36 q ha⁻¹. Total consumption of NPK fertilizers in the district is 219.12 kg/ha, which consists of nitrogen-159.35 kg/ha, phosphorus-42.93 kg/ha and potash-16.84 kg/ha.

Cattles (91901), buffaloes (475763), goats (50823), pigs (9149), sheeps (911) and poultry birds (41839) are the major livestock.

Gautam Buddha Nagar district is situated on 28.57° north latitude and 77.55° east longitude. It is comprised of 3 tehsils and 4 blocks. The total population is 1.20 million with population density of 834 km² and literacy of 68.70%. Temperature between 3.5 °C to 42.4 °C, annual rainfall of 832 mm and sandy loam, loam and clay loam soils characterize agro-ecological situation. The total reported area of 193993 ha, net sown area of 127874 ha and irrigated area of 97590 ha with 100.42% cropping intensity are reported. Major crops grown in *kharif* are rice (40078 ha), maize (3731 ha), pearl millet (8932 ha) and pigeonpea (2587 ha) with the productivity of 19.87 q ha⁻¹, 18.79 q ha⁻¹, 9.92 q ha⁻¹ and 15.68 q ha⁻¹, respectively. In *rabi*, the crops cultivated are wheat (62746 ha), barley (3259 ha), lentil (245 ha), mustard (818 ha) and potato (208 ha) with

the productivity of 28.79 q ha⁻¹, 36.78 q ha⁻¹, 7.05 q ha⁻¹, 9.87 q ha⁻¹ and 162.92 q ha⁻¹, etc. Sugarcane (2406 ha) is grown with the productivity of 660.67 q ha⁻¹. Total consumption of NPK fertilizers in the district is 116.62 kg/ha, which included nitrogen-85.62 kg/ha, phosphorus-29.26 kg/ha and potash-1.74 kg/ha.

Cattles (31594), buffaloes (272842), goats (18176), sheeps (4168) and poultry birds (22811) are the major livestock.

Bulandshahr district is situated on 77.0° to 78.0° east longitude and 28.4° to 28.0° north latitude. The temperature in the district ranges between 2 °C to 44 °C and annual rainfall of 714 mm is reported. It is comprised of 7 tehsils, 15 blocks and 1359 villages. The population of the district is 2.91 million with a density of 669 per km² and literacy of 59.40%. The cropping intensity of the district is 165.34%. Total reported area is 359878 ha out of which total net sown area is 297649 ha and irrigated area is 252305 ha. Soils are sandy loam to loam type. The major crops grown in *kharif* are rice (46033 ha) with the productivity of 21.82 q ha⁻¹, maize (60192 ha) with the productivity of 18.77 q ha⁻¹, sorghum (110 ha) with the productivity of 8.08 q ha⁻¹, urdbean (1161 ha) with the productivity of 5.61 q ha⁻¹, mungbean (825 ha) with the productivity of 5.22 q ha⁻¹, pigeonpea (11255 ha) with the productivity of 8.15 q ha⁻¹, and sugarcane (60208 ha) with the productivity of 594.92 q ha⁻¹. In *rabi*, major crops grown are wheat (178444 ha) with the productivity of 37.71 q ha⁻¹, barley (7697 ha) with the productivity of 36.02 q ha⁻¹, chickpea (58 ha) with the productivity of 7.30 q ha⁻¹, field pea (850 ha) with the productivity of 9.67 q ha⁻¹, lentil (906 ha) with the productivity of 7.05 q ha⁻¹, mustard (7717 ha) with the productivity of 9.46 q ha⁻¹ and potato (7752 ha) with the productivity of 174.09 q ha⁻¹. Total consumption of NPK fertilizers in the district is 151.17 kg/ha, (nitrogen-119.06, phosphorus-28.83 and potash-3.28 kg/ha).

In the case of livestock, cattles (165102), buffaloes (1109638), sheeps (8073), goats (169199), pigs (39277) and poultry birds (182398) from the major livestock strength.

C. Problems and Priorities

Agriculture

Problems and Issues	Priorities
Depletion in ground water table	<ul style="list-style-type: none"> • Recharge of ground water reservoir through rainwater and inter basin transfer of the water. • Awareness campaign for judicious use of irrigation water. • Promotion of low water requiring cropping systems.
Declining soil fertility	<ul style="list-style-type: none"> • Promoting the use of balanced fertilizers. • Adoption of integrated plant nutrients management (IPNM) techniques. • Popularization of use of organic manure.
Poor yields of basmati rice and scented indigenous rice	<ul style="list-style-type: none"> • Popularization of high yielding Basmati varieties, hybrids and scented rice.
Low yield of maize grown in kharif season	<ul style="list-style-type: none"> • Popularization of early maturing hybrids, composites and quality protein maize (QPM) and creating awareness for replacement of local cultivars
Problem of <i>Phalaris minor</i> in wheat	<ul style="list-style-type: none"> • Awareness about the use of pre-emergence herbicides • Promoting the crop rotation in wheat grown field.
High incidence of disease in mustard	<ul style="list-style-type: none"> • Awareness about disease and insect pests resistant/tolerant variety.
Problem of red rot disease in sugarcane	<ul style="list-style-type: none"> • Promoting the cultivation of red rot resistant varieties • Promoting the treatment of cane sets before planting
Problem of micronutrient deficiency	<ul style="list-style-type: none"> • Awareness about soil test based application of micro-nutrients • Training and demonstration on application of micronutrients
Others	<ul style="list-style-type: none"> • Promoting the cultivation of urdbean and mungbean in summer season as well as inter crop in sugarcane

Horticulture

Problems and Issues	Priorities
Depletion of ground water table	<ul style="list-style-type: none"> • Popularization of drip/sprinkler irrigation system. • Rain water management using watershed approach especially for vegetables.
Malformation, alternate bearing and fruit drop in mango	<ul style="list-style-type: none"> • Rejuvenation of old and unproductive orchards. • Popularization of regular bearing Dashehari-51 clone.
Fruit cracking in litchi	<ul style="list-style-type: none"> • Adoption of recommended agro-technology. • Replacement of fruit cracking prone variety Calcutta with Rose scented- an export and processing oriented variety. • Availability of quality planting material.
Low productivity and poor quality of grapes	<ul style="list-style-type: none"> • Promotion of quality material and related technology.
Late blight of potato and lack of proper storage facilities	<ul style="list-style-type: none"> • Promotion of late blight resistant varieties. • Availability of quality seed. • Promotion of small scale storage structures. • Encouraging cultivation of processing potato varieties viz Kufri Chipsona-1, Kufri Chipsona-2 and Kufri Chipsona-3

III. Mid Western Plain Zone

This zone consists of 4 districts. The geomorphology of these districts is given below :

A. Agroclimatic Features

This region embraces the districts of Budaun, Shahjahanpur, Jyotiba Phule Nagar and parts of Moradabad, Rampur, Bareilly and Pilibhit. Rainfall in this region is received during mid June to mid October. Annual rainfall is 1032 mm and the temperature ranges from 4.5 °C to 45.4 °C. The soils of the region are mostly alluvial and have been developed on alluvial deposited by the Ganga and its tributaries. Soils are neutral to moderately alkaline and are medium in organic content. Cropping intensity in the zone is 150 %. Wheat, rice, sugarcane, barley, sorghum, maize, groundnut, rapeseed and mustard, chickpea, field pea, lentil, urdbean, pigeonpea are the major field crops. Potato, tomato, cauliflower, brinjal, vegetable pea, turmeric, cucurbits are the major vegetables. Mango, guava, ber, jackfruit and lemons are the major fruits. Cultivation of mentha is becoming popular. The major limitation in the zone is salinity and alkalinity of soils.

B. Geomorphology of Districts

Budaun district is situated on 28.04° north latitude and 79.12° east longitude. It is comprised of 6 tehsils, 18 blocks and 1780 villages. The total population of the district is 3.07 million with a literacy of 38.20% and population density of 594 km². The average size of holding is 0.92 ha and the cropping intensity of the district is 158.38%. The district has a reported area of 520028 ha, net sown area of 414287 ha and irrigated area of 341461 ha. The temperature ranges between 4.5 °C to 45.4 °C, whereas 764 mm rainfall is annually received. The soils of the district are clay loam, sandy loam and sandy having low fertility. The major crops grown in the district are rice (161030 ha) with the productivity of 18.39 q ha⁻¹, maize (11821 ha) with the productivity of 16.42 q ha⁻¹, pearl millet (142395 ha) with the productivity of 14.36 q ha⁻¹, sorghum (949 ha) with the productivity of 10.25 q ha⁻¹, urdbean (24286 ha) with the productivity of 7.26 q ha⁻¹, sesame (1441 ha) with the productivity of 1.21

q ha⁻¹ and pigeonpea (1285 ha) with the productivity of 8.45 q ha⁻¹. In rabi, wheat (283638 ha) with the productivity of 29.91 q ha⁻¹, barley (1020 ha) with the productivity of 21.60 q ha⁻¹, chickpea (334 ha) with the productivity of 7.29 q ha⁻¹, field pea (697 ha) with the productivity of 9.67 q ha⁻¹, lentil (13817 ha) with the productivity of 8.65 q ha⁻¹, mustard (17421 ha) with the productivity of 11.60 q ha⁻¹ and potato (23459 ha) with the productivity of 169.99 q ha⁻¹ are grown. Sugarcane (22430 ha) is a major crop with the productivity of 633.12 q ha⁻¹. Total consumption of NPK fertilizers in the district is 96.10 kg/ha, which included nitrogen-72.09 kg/ha, phosphorus-20.89 kg/ha and potash -.12 kg/ha.

Cattles (373382), buffaloes (721775), goats (231831), sheeps (11141), pigs (29544) and poultry birds (91356) are the major livestock.

Shahjahanpur district lies at 27.35 north latitude and 79.37 east longitude. Geographical area of the district is 4575 km². The population of the district is 2.54 million and population density 557 km² with 49.10% literacy. The temperature ranges between 4.5 °C to 45.4 °C and annual rainfall is 750 mm. The soils are alluvial, sandy, sandy loam and clay loam. The reported area of 437464 ha, net sown area of 342189 ha and irrigated area of 277244 ha with 152.40% cropping intensity are recorded. The major *kharif* crops are rice (459829 ha) with the productivity of 22.44 q ha⁻¹, maize (2973 ha) with the productivity of 18.87 q ha⁻¹, pearl millet (4666 ha) with the productivity of 11.34 q ha⁻¹, sorghum (1553 ha) with the productivity of 10.25 q ha⁻¹, pigeonpea (934 ha) with the productivity of 8.45 q ha⁻¹, urdbean (8045 ha) with the productivity of 6.22 q ha⁻¹, sesame (4765 ha) with the productivity of 1.15 q ha⁻¹ and groundnut (6101 ha) with the productivity of 10.29 q ha⁻¹. In *rabi*, crops grown are wheat (252570 ha), barley (680 ha), field pea (842 ha), lentil (8187 ha), mustard (6987 ha) and potato (5020 ha) with the productivity of 34.42 q ha⁻¹, 21.60 q ha⁻¹, 9.67 q ha⁻¹, 8.46 q ha⁻¹, 9.33 q ha⁻¹, 183.46 q ha⁻¹, respectively. Sugarcane is also grown (50232 ha) with the productivity of 569.12 q ha⁻¹. Total consumption of NPK fertilizers in the district is 199.56 kg/ha (nitrogen-139.19 kg, phosphorus-46.68 kg and potash-13.68 kg/ha).

Cattles (244535), buffaloes (315190), goats (242550), pigs (32078), sheeps (4193) and poultry birds (129677) are the major livestock.

Jyotiba Phule Nagar district is situated on 78° 28' to 78° 39' east longitude and 28° 54' to 39° 6' north latitude. The temperature in the district ranges between 4 °C to 45 °C and annual rainfall of 780 mm is reported. It is comprised of 4 tehsils and 7 blocks. The population of the district is 2.08 million with density of 726 per km² and literacy of 62.50%. The cropping intensity of the district is 151.37%. Total reported area is 216856 ha, out of which net sown area is 169666 ha. Total irrigated area in the district is 164982 ha. Soils are sandy loam type. The major crops grown in *kharif* are rice (23621ha) with the productivity of 20.61q ha⁻¹, maize (1929 ha) with the productivity of 9.60 q ha⁻¹, pearl millet (4194 ha) with the productivity of 6.91 q ha⁻¹, urdbean (2777 ha) with the productivity of 8.24 q ha⁻¹ and pigeonpea (1260 ha) with the productivity of 8.00 q ha⁻¹. In *rabi*, major crops grown are wheat (89902 ha) with the productivity of 31.42 q ha⁻¹, barley (49 ha) with the productivity of 21.60 q ha⁻¹, field pea (153 ha) with the productivity of 9.67 q ha⁻¹, lentil (126 ha) with the productivity of 7.05 q ha⁻¹, mustard (2016 ha) with the productivity of 8.92 q ha⁻¹ and potato (3140 ha) with the productivity of 165.84 q ha⁻¹. Sugarcane (73271 ha) is harvested with the productivity of 632.28 q ha⁻¹. Total consumption of NPK fertilizers in the district is 246.65 kg/ha (nitrogen-199.99 kg, phosphorus-30.64 kg and potash-16.02 kg/ha).

In case of livestock, cattles (118401), buffaloes (290930), sheeps (2189), goats (58592), pigs (10894) and poultry birds (80629) form the major livestock strength.

Moradabad district is situated in western Uttar Pradesh between 28°21' to 28°16' latitude north and 78°4' to 79° longitude east. The geographical area of the district is 3493 km². It is comprised of 5 tehsils, 12 blocks and 2475 villages having population of 3.81 million, population density of 1025 km² and literacy of 44.7%. Total geographical area of 375988 ha, net sown area of 317060 ha and irrigated area of 239994 ha are reported with cropping intensity of 163.75%. Temperature ranges between 4.5 °C to 45.4 °C and annual rainfall is 780 mm. The soils of the district are loam, clay loam and sandy loam. The major *kharif* crops are rice (289405 ha), maize (1752 ha), pearl millet (35686 ha), urdbean (12644 ha) and pigeonpea (8283 ha) with the productivity of 20.94 q ha⁻¹, 9.62 q ha⁻¹, 9.78 q ha⁻¹, 8.19 q ha⁻¹ and 6.61 q ha⁻¹, respectively. In *rabi*, wheat (195267 ha) lentil (4852 ha), mustard (6258 ha), field pea (281 ha), and potato (12447 ha) with the productivity of 30.35 q ha⁻¹, 7.05 q ha⁻¹, 11.03 q ha⁻¹, 9.67 q ha⁻¹ and 285.92, respectively are grown. Sugarcane (77814 ha) is grown with the productivity of 634.24 q ha⁻¹. Total consumption of NPK fertilizers in the district is 179.92 kg/ha, which is comprised of nitrogen (136.08 kg/ha), phosphorus (26.76 kg/ha) and potash (17.08 kg/ha).

Cattles (219373), buffaloes (690898), sheeps (5887), goats (168248), pigs (30324) and poultry birds (143957) are the major livestock.

C. Problems and Priorities

Agriculture

Problems and Issues	Priorities
Depletion in ground water table	<ul style="list-style-type: none"> Recharge of ground water reservoir through rainwater and inter basin transfer of the water. Awareness campaign for judicious use of irrigation water.
Poor yields of basmati rice and scented indigenous rice	<ul style="list-style-type: none"> Popularization of high yielding basmati varieties, hybrids and scented rice.
Low yield of maize grown in <i>kharif</i> season	<ul style="list-style-type: none"> Popularization of early maturing hybrids, composites and quality protein maize (QPM) and creating awareness for replacement of local cultivars.
High incidence of diseases in mustard	<ul style="list-style-type: none"> Awareness about disease and insect - pests resistant/tolerant variety.
Problem of <i>Phalaris minor</i> in wheat	<ul style="list-style-type: none"> Promoting the crop rotation in wheat grown field.
Problem of red rot disease in sugarcane	<ul style="list-style-type: none"> Promoting the use of red rot tolerant/resistant varieties. Promoting the treatment of cane sets before planting.
Problem of micro nutrient deficiency	<ul style="list-style-type: none"> Awareness about soil test based application of micro nutrients. Training and demonstration on application of micronutrients.
Others	<ul style="list-style-type: none"> Promoting the cultivation of urdbean and mungbean in summer season as well as inter crop in sugarcane.

Horticulture

Problems and Issues	Priorities
Depletion in ground water table	<ul style="list-style-type: none"> Popularization of drip/sprinkler irrigation system. Rain water management using watershed approach especially for vegetables.
Malformation, alternate bearing and fruit drop in mango	<ul style="list-style-type: none"> Rejuvenation of old and unproductive orchards. Popularization of regular bearing Dashehari-51 clone.
Wilt in guava	<ul style="list-style-type: none"> Popularization of wilt resistant root stocks.
Late blight of potato and lack of proper storage facilities	<ul style="list-style-type: none"> Promotion of late blight resistant varieties. Availability of quality seed. Encouraging cultivation of processing potato varieties viz Kufri Chipsona-1, Kufri Chipsona-2 and Kufri Chipsona-3.
Under-exploitation of <i>Diara</i> land	<ul style="list-style-type: none"> Popularization of cucurbits varieties suited for <i>Diara</i> land
Lack of seed extraction machines	<ul style="list-style-type: none"> Awareness for waste utilization obtained after seed extraction.

IV. Technological Options

Name of technology	Releasing organization & Year	Characteristics of the technology	Districts where applicable
KHARIF			
RICE			
Pusa Sugandh-2 (scented rice)	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown conditions. • Its plant height is 110-120 cm. • It matures in 125-130 days, a fortnight earlier and saves two irrigation water. • Grain is longer (80 mm). • Average yield-55.0 q/ ha. • Resistant to diseases. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
Pusa Sugandh-3 (scented rice)	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown conditions. • Plant height is 110-120 cm. • It matures in 125-130 days. • Saves 2-3 irrigation water. • Grain is longer (80 mm). • Average yield-60.0 q/ ha. • Resistant to diseases. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
PRH-10 (hybrid scented rice)	2001 IARI, New Delhi	<ul style="list-style-type: none"> • This variety is suitable for the whole basmati growing region. • Its plant height is 110-120 cm. • First hybrid scented rice. • It matures in 135-140 days. • Grain is longer (80 mm). • Average yield-65.0 q/ ha. • Suitable for rice-wheat cropping system. • Resistant to insects, pests and diseases. 	Saharanpur, Bijnor, Rampur, Moradabad, Bareilly, Pilibhit, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar, Shahjahanpur, Jyotiba Phule Nagar
Pant Sugandh Dhan-15	2003 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for mid early. • Good quality of scented rice. • Plant height-120-125 cm. • It matures in 135-140 days. • Average yield-35.0-40.0 q/ ha. • Tolerant to neck blast, leaf blast, sheath rot, stem borer and leaf folder. 	Saharanpur, Bijnor, Rampur, Moradabad, Bareilly, Pilibhit, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar, Shahjahanpur, Jyotiba Phule Nagar
Pant Sugandh Dhan-17	2004 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for medium duration. • Good quality scented rice. • Plant height 120-125 cm. • It matures in 135-140 days. • Average yield-40.0-45.0 q/ ha. • Resistant to sheath rot and sheath blight. • Moderately resistant to leaf and neck blast. • Tolerant to stem borer. 	Saharanpur, Bijnor, Rampur, Moradabad, Bareilly, Pilibhit, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar, Shahjahanpur, Jyotiba Phule Nagar

District Specific Technological Interventions for Western Region

Pant Shankar Dhan-3 (hybrid)	2004 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for medium duration. • It matures in 125-130 days. • Average yield-65.0-70.0 q/ ha. • Moderately resistant to bacterial leaf blight and free to blast & brown spot. • Moderately resistant to stem borer, brown plant hopper and leaf folder. 	Saharanpur, Bijnor, Rampur, Moradabad, Bareilly, Pilibhit, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar, Shahjahanpur, Jyotiba Phule Nagar
Pusa Sugandh-4 (scented rice)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • This variety is suitable for the whole basmati growing region. • Its plant height-110-120 cm. • It matures in 125-130 days. • Grain is long (80 mm). • Excellent cooking quality as compared to basmati. • Export quality. • Average yield-45.0-50.0 q/ ha. • Resistant to insects, pests and diseases. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
Pusa Sugandh-5 (scented rice)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Plant height 115-120 cm. • It matures in 125-130 days. • Saves 2-3 irrigation water. • Grain is long (80 mm). • Average yield-50.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
Vallabh Basmati-21	2007 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Plant height 110 cm. • Grain quality-long, cylindrical. • Having good cooking quality. • It matures in 120 days. • Average yield potential-50.0 q/ ha. 	Saharanpur, Bijnor, Rampur, Moradabad, Bareilly, Pilibhit, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar, Shahjahanpur, Jyotiba Phule Nagar
MAIZE			
Pusa Composite-3	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Number of cobs 2-3. • It matures in 75-80 days. • Average yield-30.0-35.0 q/ ha. • Moderately resistant to stem borer. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
Pusa Composite-4	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for medium duration. • Average number of cobs 2. • It matures in 80-85 days. • Average yield-30.0-35.0 q/ ha. • Moderately resistant to stem borer. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
PEMH-5 (hybrid)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for irrigated timely sown conditions. • Plants are tall. • Seed colour yellow. • It matures in 95-100 days. • Average yield-50.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar

Inventory of Agricultural Technologies for Uttar Pradesh

Hybrid AH-58	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for early maturing. • It matures in 80-85 days. • Average yield-40.0-45.0 q/ ha. • Moderately resistant to stem borer. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
PIGEONPEA			
Narendra Arhar-1	1997 NDUAT, Faizabad	<ul style="list-style-type: none"> • Test weight (11.5 gram / 100 seeds). • It matures in 240-260 days. • Average yield-20.0-22.0 q / ha. • Resistant to sterility mosaic disease (SMD) and tolerant to wilt and phytophthora blight. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Malviya Vikash Arhar-6	2003 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for rainfed/ irrigated conditions. • Bolder seed size. • High dal recovery. • It matures in 250-270 days. • Average yield-25.0-30.0 q/ ha. • Tolerant to wilt. • Resistant to sterility mosaic and wilt disease. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Malviya Chamatkar (MAL-13)	2003 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for rainfed conditions. • Larger seed size. • Taste sweet. • High dal recovery. • It matures in 230-250 days. • Average yield-30.0-32.0 q/ ha. • Resistant to sterility mosaic and wilt disease. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Pusa -992	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for the short duration. • Sowing in 1st week of June. • Rainfed / irrigated conditions. • Suitable for pigeonpea-wheat cropping system. • It matures in 150-160 days. • Average yield-16.0-20.0 q/ h. • Resistant to wilt disease. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
Narendra Arhar-2	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for rainfed / irrigated conditions. • It matures in 250-270 days. • Average yield-30.0-35.0 q/ ha. • Tolerant to wilt disease. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar

District Specific Technological Interventions for Western Region

Narendra Arhar-3	2006 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for rainfed / irrigated conditions. • It matures in 195-206 days. • Average yield-20.0 q/ ha. • Resistant to Alternaria blight disease. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
URD BEAN			
Uttara	1999 IIPR, Kanpur	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> season. • Black seeded. • It matures in 70-75 days. • Average yield-12.0-14.0 q/ha. • Resistant to yellow vein mosaic virus. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Azad Urd-1	2000 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> and spring seasons. • It matures in 75-80 days. • Average yield-10.0-12.0 q/ ha. • Resistant to yellow vein mosaic virus. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Shekhar-1	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for spring and <i>kharif</i> seasons. • Green colour seed. • It matures in 85-90 days. • Average yield-12.0-15.0 q/ ha. • Resistant to yellow vein mosaic virus. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Shekhar-2	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for spring season. • Green colour seed. • It matures in 70-75 days. • Average yield-10.0-12.0 q/ ha. • Resistant to yellow vein mosaic virus. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Azad Urd-2	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for spring and <i>kharif</i> seasons. • Bold and black seed. • It matures in 70-75 days. • Average yield-10.0-12.0 q/ ha. • Resistant to yellow vein mosaic virus. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Azad Urd-3	2003 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> season. • Brownish black seeded. • It matures in 75-80 days. • Average yield-10.0-12.0 q/ ha. • Resistant to yellow vein mosaic virus. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar

Inventory of Agricultural Technologies for Uttar Pradesh

Shekhar-3	2003 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> season. • Green seeded. • It matures in 80-85 days. • Average yield-10.0-12.0 q/ ha. • Resistant to yellow vein mosaic virus and Cercospora. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
MUNGBEAN			
Samrat	2001 IIPR, Kanpur	<ul style="list-style-type: none"> • Suitable for summer and <i>kharif</i> seasons. • Seeds are shining green and small. • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
HUM 6 (Mung Janpriya)	2001 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for summer season. • Seeds are green medium bold. • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha • Protein content 27% • Resistant to mungbean yellow mosaic virus (MYMV). 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Pusa Vishal	2001 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for summer season. • Seeds are bold (6 gram / 100 seed). • Shining green in colour. • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddh Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
Meha (IPM 99-125)	2004 IIPR, Kanpur	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> and summer seasons. • Seeds are shining green. • It matures in 65-70 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
TMB-37	2005 BARC, Trombay	<ul style="list-style-type: none"> • Suitable for summer season. • Large seeded (5 gram/ 100 seeds). • It matures in 60-65 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar

District Specific Technological Interventions for Western Region

HUM-16	2006 BHU, Varanasi	<ul style="list-style-type: none"> • Suitable for spring and <i>kharif</i> seasons. • Large seeded. • Long, black pods and hanging downward. • It matures in 65-70 days. • Average yield-10.0-12.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV), Cercospora leaf spot and Anthracnose. 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
MH 2-15	2007 CCSHAU, Hisar	<ul style="list-style-type: none"> • Suitable for <i>kharif</i> season. • Seeds are large (4.5 gram/ 100 seeds). • It matures in 68-75 days. • Average yield-12.0-15.0 q/ ha. • Resistant to mungbean yellow mosaic virus (MYMV). 	Saharanpur, Bijnor, Moradabad, Rampur, Bareilly, Pilibhit, Shahjahanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Gautam Buddha Nagar, Bulandshahr, Budaun, Jyotiba Phule Nagar
SOYBEAN			
Pant Soybean -1241	2003 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Semi-indeterminate plant type. • Plant height 80-100 cm. • It matures in 121 days. • Average yield-36.0 q/ ha. • Multiple disease resistance including pre-mature drying. 	Saharanpur, Bijnor, Rampur, Moradabad, Bareilly, Pilibhit, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar, Shahjahanpur, Jyotiba Phule Nagar, Budaun
Pant Soybean-1347	2006 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for medium duration. • Seed colour yellow round. • It matures in 100-110 days. • Average yield-22.0-25.0 q/ ha. • Moderately resistant to leaf borer. • Resistant to foliar diseases bacterial pastules, charcoal rot and <i>Rhizoctonia</i> blight. 	Saharanpur, Bijnor, Rampur, Moradabad, Bareilly, Pilibhit, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar, Shahjahanpur, Jyotiba Phule Nagar, Budaun
RABI			
CHICKPEA			
GCP-105 (GG-4)	2000 GAU, Junagarh	<ul style="list-style-type: none"> • Plant type medium tall and semi-erect. • Pinkish flower. • Smooth, round and brown seeds. • Tolerant to wilt disease. • It matures in 120-130 days. • Average yield-18.0-20.0 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr

Inventory of Agricultural Technologies for Uttar Pradesh

Pusa Chamatkar (BG-1053), Kabuli	2000 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for rainfed/ irrigated conditions. • Seed colour whiteness. • It matures in 130-135 days. • Average yield-35.0-30.0 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
HK-1	2001 CCSHAU, Hisar	<ul style="list-style-type: none"> • Large seeded kabuli type. • Test weight 26.7 g/ 100 seeds. • It matures in 130-150 days. • Average yield-15.0 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
Vallabh Dallar Chana-1	2001 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Days to 50% flowering- 70 days • Grain small & yellow with brown. • Quality protein content-22%. • Resistant against wilt, root rot, dry root, stunt virus. • Duration of maturity-133 days. • Average yield-18 q/ ha. 	Budaun, Baghpat, Bareilly, Rampur, Moradabad
RSG-888	2002 RAU, Bikaner	<ul style="list-style-type: none"> • Semi-spreading. • Small seeded. • Drought tolerant. • Twin podded genotype. • It matures in 130-135 days. • Average yield-21.0 q/ ha. • Tolerant to dry root rot. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
RSG-963	2004 RAU, Bikaner	<ul style="list-style-type: none"> • Medium bold seeded. • Suitable for late sown conditions. • It matures in 125-130 days. • Average yield-19.0-20.0 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
Phule G 94-25-9 (Rajas)	2005 MPKV, Rahuri	<ul style="list-style-type: none"> • Semi-erect plants with profuse fruiting and branching. • Yellowish brown seeds. • It matures in 136 days. • Average yield-19.0 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
Pusa-1108 (kabuli)	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for irrigated conditions. • Timely sown conditions. • It matures in 130-135 days. • Average yield-30.0-35.0 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr

District Specific Technological Interventions for Western Region

Pusa Subhra (BGD-128, kabuli)	2006 IARI, Regional Station, Dharwad	<ul style="list-style-type: none"> Plant semi-erect with more secondary branches. Seed weight 27.7 g/ 100 seeds. It matures in 125-130 days. Average yield-19.0 q/ ha. Moderately resistant to wilt / dry root rot disease. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
BG-2024 (kabuli)	2006 IARI, New Delhi	<ul style="list-style-type: none"> Suitable for timely sown conditions. Suitable for irrigated/ rainfed conditions. It matures in 125-130 days. Average yield-35.0 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
BGM-547	2006 IARI, New Delhi	<ul style="list-style-type: none"> Semi-erect plant. Large and golden brown seeds. Suitable for late sow conditions. It matures in 130-135 days. Average yield-18.0 q/ ha. Tolerant to wilt, blight and root rot disease. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
WCG-10	2001 SVBPUAT, Meerut	<ul style="list-style-type: none"> Matures in 140 days. Days to 50% flowering- 80 days Main branch emerged from ground surface Grain wrinkled and brown in colour. Grain quality- Protein content 22.8% Recovery of dal- 70% Moderately resistant against root rot, wilt, stunt virus Average yield- 21.0 q/ ha 	Ghaziabad, Muzaffarnagar, Saharanpur, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Badaun, Shahjahanpur and Bulandshahr
FIELD PEA			
Pusa Panna (DDR-27)	2001 IARI, New Delhi	<ul style="list-style-type: none"> Very early & dwarf variety. Suitable for irrigated/ rainfed conditions. It matures in 125-130 days. Average yield-18.0-20.0 q/ ha. Resistant to powdery mildew. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Budaun, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
Jai (KPMR-522)	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> Plant type dwarf. Seed colour white. It matures in 125-130 days. Average yield-32.0-35.0 q/ ha. Resistant to powdery mildew and rust disease. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Budaun, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr

Inventory of Agricultural Technologies for Uttar Pradesh

Pusa Mukta (DDR-55)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for early maturing. • Plant tall. • It matures in 125 days. • Average yield-19.0 q/ ha • Resistant to powdery mildew. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Budaun, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
HPF-9907-B	2007 CCSHAU, Hisar	<ul style="list-style-type: none"> • Plant type dwarf. • It matures in 125 days. • Average yield-23.0 q/ ha. • Resistant to powdery mildew disease. 	Meerut, Ghaziabad, Gautam Buddha Nagar, Muzaffarnagar, Saharanpur, Rampur, Bijnor, Budaun, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit, Bulandshahr
LENTIL			
L-4594	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for rainfed/ irrigated conditions. • Average yield-17.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
L-4596	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for rainfed/ irrigated conditions. • Average yield-17.5 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
IPL-406	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for rainfed/ irrigated conditions. • Seed size small. • Test weight (100 seed weight) 3.9 gm. • Average yield-17.0 q/ ha. • Wilt resistant. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
MUSTARD			
Kanti	2002 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for maize-mustard-wheat cropping systems. • Short duration variety. • It matures in 100-105 days. • Average yield-20.0-22.0 q/ ha. • Oil content 40-42%. 	Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahr, Baghpat, Gautam Buddha Nagar
Maya	2002 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for irrigated conditions. • It matures in 130-135 days. • Average yield-25.0-28.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Swarn Jyoti	2002 CCSHAU, Hisar	<ul style="list-style-type: none"> • Suitable for irrigated and normal sown conditions. • It matures in 123-130 days. • Average yield-21.0 q/ ha. • Oil content 38-40%. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

District Specific Technological Interventions for Western Region

Vashundhara	2002 CCS HAU, Hisar	<ul style="list-style-type: none"> • Suitable for irrigated and late sown conditions. • It matures in 129 -137 days. • Average yield-14.0q/ ha. • Oil content 39-43%. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Pusa Jagannath	2003 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for early and late sown conditions. • Suitable for irrigated conditions. • It matures in 125-135 days. • Average yield-25.0 q/ ha. • Resistant to aphid. • Oil content 40-42 %. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Pant Pili Sarson-1	2004 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Plant height 110 -120 cm. • Tetralocular siliquae with pendant bearing. • Tolerant to major diseases. • Seeds medium bold, yellow coloured. • It matures in 110 days. • Average yield-12.0-15.0 q/ ha • Oil content 42.9%. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Pusa Karishma	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • It matures in 130-135 days. • Average yield-22.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Pusa Mustard-21	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • It matures in 130-135 days. • Average yield-22.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Pusa Vijay	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • It matures in 130-135 days. • Average yield-25.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Pusa Aditya	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for rainfed conditions. • Suitable for marginal lands. • It matures in 125-130 days. • Average yield-14.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
5. WHEAT			
K-7903	2001 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height 85-90 cm. • It matures in 85-100 days. • Average yield-30.0-40.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

Inventory of Agricultural Technologies for Uttar Pradesh

WH-912	2002 CCSHAU, Hisar	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated condition. • Plant height 95-100 cm. • It matures in 115-120 days. • Average yield-40.0-45.0 q/ ha. • Resistant to rust and blast. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
PBW-502	2003 PAU, Ludhiana	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height 90-95 cm. • It matures in 135-140 days. • Average yield-50.0-55.0 q/ ha. • Resistant to white rust. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
UP-2565	2004 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Holds high degree of resistance to all three rusts, loose smut and powdery mildew: resistant to shattering. • Late heat tolerance and suitable for late sowing. • High protein 13.5% and good quality attributes. • Plant height 85-90 cm. • It matures in 123 days. • Average yield-45.0-50.0 q/ ha 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Narendra Wheat- 1076	2004 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height 80-90 cm. • It matures in 110-115 days. • Average yield-40.0-45.0 q/ ha. • Resistant to rust and blast disease. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Naina (K-9533)	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height 85-90 cm. • It matures in 105-110 days. • Average yield-40.0-45.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
HD-2851	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height 85-95 cm. • It matures in 135-140 days. • Average yield-56.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr

District Specific Technological Interventions for Western Region

Pusa Gold (WR-544)	2005 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height 95-100 cm. • It matures in 125-130 days. • Average yield-37.30 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
K-9162	2005 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Plant height 90-95 cm. • It matures in 110-115 days. • Average yield-40.0-45.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Unnat Halna (K-9423)	2005 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for late and very late sown conditions. • Free from shattering problem. • It matures in 85-100 days. • Average yield-35.0-45.0 qt./ ha. • Suited in paddy-wheat, maize-potato-wheat and maize-mustard-wheat cropping systems. • Protein 12-13 %. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
UP-2554	2005 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Double dwarf, good grain appearance. • It matures in 135 days. • Average yield-35.0-40.0 q/ ha. • Resistant to all major diseases of wheat. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
DBW-16	2006 DWR, Karnal	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • Early maturing. • Plant height 95-110 cm. • It matures in 115-125 days. • Average yield-40.0-45.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
HD-2888	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height 100-110 cm. • It matures in 120-125 days. • Average yield-30.0-35.0 q/ ha. • Resistant to rust disease. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

Inventory of Agricultural Technologies for Uttar Pradesh

Mandakini (K-9351)	2006 CSAUAT, Kanpur	<ul style="list-style-type: none"> • Suitable for limited irrigation water. • Suitable for Bundelkhand region. • Plant height 95-110 cm. • It matures in 115-120 days. • Average yield-30.0-35.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
HD-4713 (duram)	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height 85-90 cm. • It matures in 115-120 days. • Average yield-47.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
HD-2894	2006 IARI, New Delhi	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • Plant height 90-100 cm. • It matures in 125-135 days. • Average yield-57.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
PBW-17	2007 PAU, Ludhiana	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • It matures in 140-145 days. • Average yield-50.0-55.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
PBW-550	2007 PAU, Ludhiana	<ul style="list-style-type: none"> • Suitable for timely sown and irrigated conditions. • It matures in 135-140 days. • Average yield-55.0-60.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
WH-1021	2007 CCSHAU, Hisar	<ul style="list-style-type: none"> • Suitable for late sown and irrigated conditions. • It matures in 115-120 days. • Average yield-45.0-50.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
BARLEY			
RD-2624	2003 DWR, Karnal	<ul style="list-style-type: none"> • Suitable for saline soils and rainfed conditions. • Suitable for timely sown. • It matures in 120-125 days. • Average yield-30.0-40.0 q/ ha 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur



Pant Sugandha 15



Pant Sankar Dhan-3



UP 2565



Pusa Gold



Co Pant 94211



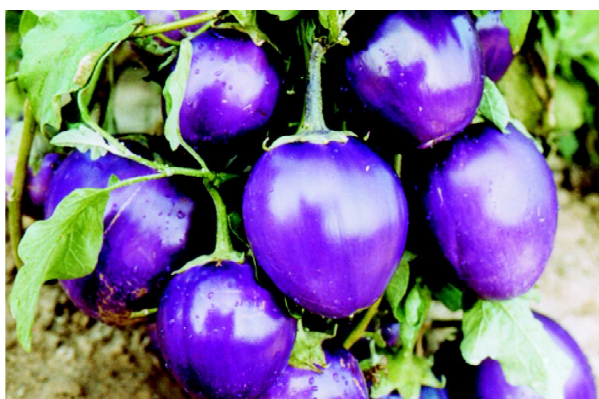
Co Pant 97222



Kashi Hemant



Kashi Vishesh



Kashi Sandesh



Kashi Vishwanath Hybrid



Kashi Shyamal



Kashi Shakti

District Specific Technological Interventions for Western Region

RD-2660	2006 DWR, Karnal	<ul style="list-style-type: none"> • Suitable for timely sown and rainfed conditions. • It matures in 120-125 days. • Average yield-30.0-40.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
SUGARCANE			
Co Pant-94211	2004 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for early maturing. • 17% sucrose (11.8% sugar recovery). • Average yield-650.0-700.0 q/ ha. • Moderately resistant to red rot. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Co Pant-94219	2004 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for mid-late maturing. • 15.5-16.5% sucrose (11.3% sugar recovery). • Average yield-700.0-800.0 q/ ha. • Moderately resistant to red rot. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Co Pant - 97222	2006 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for mid-late maturing. • Possesses high sucrose content in juice (16.5-19.5%). • High sugar recovery (11.5-13.0%). • Average yield-850.0-900.0 q/ ha. • Moderately resistant to red rot. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Co Pant-99214	2007 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for mid-late maturing. • Contains 17-18.5% sucrose. • Average yield-800.0 q/ ha. • Moderately resistant to red rot. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

Inventory of Agricultural Technologies for Uttar Pradesh

Sugarcane + Rajmash (PDR-14)	IISR, Lucknow	<ul style="list-style-type: none"> • Suitable for planting period mid October. • Seed rate of sugarcane- 60 q/ ha and rajmash- 80 kg/ ha. • Crop geometry: 1:2 row ratio, sugarcane planted at 90 cm and two rows of rajmash accommodated at 30 cm spacing. • System based nutrient management (NPK kg/ ha) : Sugarcane-150:60:60 1/ 3 N and full P and K at planting and 1/ 3 N after harvest of intercrop and 1/ 3 N at late tillering stage (first week of June) and Rajmash - 100:60:40:1/ 2 N and full P and K at sowing, rest amount of N after first irrigation. • Irrigation at 40, 70 & 100 days after sowing for the system. • Production/ economic gain : 1500 Kg rajmash grain / ha • Profitability Rs. 74855.0/ ha and B:C ratio is 2:1 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Sugarcane + Maize (Azad Uttam)	IISR, Lucknow	<ul style="list-style-type: none"> • Suitable for planting in mid October. • Seed rate of sugarcane- 60 q/ ha and maize-20 kg/ ha. • Crop geometry: 1:1 row ratio, sugarcane planted at 90 cm and one row of maize accommodated in between two rows of sugarcane. • System based nutrient management (NPK kg/ ha): sugarcane- 150:60:60 1/ 3 N and full P and K at planting and 1/ 3 N after harvest of maize and 1/ 3 N at late tillering stage (first week of June) and Maize – 120:60:40 1/ 3N + full P and K at sowing 1/ 3N at knee high stage 1/ 3N at tasselling stage. • 3-4 irrigations at critical physiological stages of maize. • Production/ economic gain: 50-60 thousand green cobs / ha. • Profitability Rs. 72320.0 / ha and B:C ratio 2.02. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

District Specific Technological Interventions for Western Region

SUMMER			
SUNHEMP			
Narendra Sunhemp-1	2003 NDUAT, Faizabad	<ul style="list-style-type: none"> • Suitable for green manuring. • Suitable for seed and fibre production. • Incorporated in soil at 45 days after sowing. • Fix the nitrogen 60-80 kg/ ha. • Fast decomposition. • Green bio-matter 25.0-30.0 tonnes/ ha. • Capacity of seed production 16.0 q/ ha. • Effective root nodules. • Susceptible to acid and alkali soils. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
DHAINCHA			
Pant Dhaincha-1	2003 GBPUAT, Pantnagar	<ul style="list-style-type: none"> • Suitable for green manuring. • Green and bio dry matter 60 days after sowing. • Higher root nodules. • Higher seed production. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Hisar Dhaincha	2003 CCSHAU, Haryana	<ul style="list-style-type: none"> • Suitable for green manuring. • Green and dry bio matter at 45 days after sowing. • Medium seed. • Effective root nodules. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
VEGETABLES			
POTATO			
Kufri Surya	2004 CPRI, Regional Station, Meerut	<ul style="list-style-type: none"> • Suitable for early planting. • Canopy-medium compact. • Stem-green with purple pigment randomly distributed. • Tuber- creamy white, ovate with shallow eyes and creamy flesh. • Sprout- red purple. • It matures in 60-70 days. • Average yield potential- 300-350 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr

Inventory of Agricultural Technologies for Uttar Pradesh

Kufri Arun	2004 CPRI, Regional Station, Meerut	<ul style="list-style-type: none"> • Matures in 90-110 days. • Canopy- medium compact. • Stem-purple with green pigment randomly distributed. • Tuber- red, ovate with medium deep eyes and creamy flesh. • Sprout- red- purple. • Average yield potential- 300.0-350.0 q/ ha. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Kufri Chipsona-3	2005 CPRI, Regional Station, Meerut	<ul style="list-style-type: none"> • Canopy- medium compact. • Stem-green with purple pigment randomly distributed. • Tuber- yellow, ovate with medium deep eyes and creamy flesh. • Sprout- red purple. • Average yield potential-300-350 q/ ha 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
TOMATO			
Kashi Sharad	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Matures in 100-110 days • Plant type indeterminate. • Oval shaped. • Attractive red colour. • Concentrated fruiting. • Fruit weight varies from 90-95 gram. • Thick pericarp. • Longer self life. • Average yield-400.0-500.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Anupam	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plant type determinate. • Fruit large. • Flattish round. • Attractive red colour. • First harvest at 75-80 days after transplanting. • Average yield-500-600 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Vishesh (H-86)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants are determinate. • Plants are dark green, fruit colour red, spherical. • Fruit size medium to large and average fruit weight-80 gm. • First harvest at 70-75 days after transplanting. • Average yield-400-450 q/ ha. • Resistant to tomato leaf curl virus. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

District Specific Technological Interventions for Western Region

Kashi Hemant	2005 IIVR, Varanasi	<ul style="list-style-type: none"> Plants are determinate. Fruits are attractive, red and round. Fruit size varies from 80-85 gram. Average yield-400.0-420.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
BRINJAL			
Kashi Sandesh (hybrid)	2002 IIVR, Varanasi	<ul style="list-style-type: none"> Round-fruited hybrid having semi-upright plant habit with green stems. Fruits are purple round. Fruit length 12.4 cm & diameter 10.2 cm. Average weight 225.3 gm. Picking starts in 76 days after transplanting. Average yield-780.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Komal (hybrid)	2004 IIVR, Varanasi	<ul style="list-style-type: none"> Excellent long fruited and prolific-bearing hybrid. Fruits are light purple. Soft textured. Average length 13 cm & diameter 3 cm. Picking starts in 65-70 days after transplanting. Average yield-800.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Prakash	2005 IIVR, Varanasi	<ul style="list-style-type: none"> Fruits are oblong. Attractive with light green spot. Plants are semi-upright with green stems. Average weight 190 gm. Picking starts in 80-82 days after transplanting. Average yield-650-700 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
CHILLI			
Kashi Anmol	2005 IIVR, Varanasi	<ul style="list-style-type: none"> Plants are determinate with umbrella type growth. Fruits are attractive. Compact, dark green at maturity (150-160 days). Average yield-250.0 q/ ha. Suitable for long distance transportation at least 17-20 days earlier than other hybrid chilli cultivars. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

Inventory of Agricultural Technologies for Uttar Pradesh

Kashi Vishwanath (hybrid)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> Plants are semi-determinate. Fruits are light green & straight. Suitable for green as well as red fruit production. Fruit are long (10 cm). Highly attractive. It matures in 220 days Average yield-200 q/ ha 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
CAULIFLOWER			
Kashi Kunwari	2005 IIVR, Varanasi	<ul style="list-style-type: none"> Suitable for early maturing. Tolerate high rainfall during its vegetative growth. Curds of semi-dome type. White compact, fine texture. Average weight 300-450 gm. Average yield-300-350 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
COWPEA			
UPC-607	2003 GBPUAT, Pantnagar	<ul style="list-style-type: none"> Suitable for green fodder and dry matter. White seeds, dual purpose Average yield-350-425 q/ ha fodder or 50-55 q/ ha dry matter Grain yield-14-16 q/ ha. Resistant to Yellow Vein Mosaic Virus, anthracnose, bacterial blight, aphid and pod borer. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Shyamal	2005 IIVR, Varanasi	<ul style="list-style-type: none"> Suitable for vegetable purpose. Plants of this variety are dwarf and bushy. Plant height 70-75 cm. Number of branches 3-4 per plant. Early flowering at 40 days after sowing. Pods per plant 35-40. Average yield-70.0-80.0 q/ ha (pods). Tolerant to golden mosaic virus. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Pant Lobia-1 Pant Lobia-2	2007 GBPUAT, Pantnagar	<ul style="list-style-type: none"> As intercrop with newly planted sugarcane- March. In rotation with potato or early mustard/ lahi- March. After wheat harvest and other fallow lands-early April. As a first kharif season crop (May- June). As a second kharif season crop (Aug.- September). As a niche crop in rice- rice system. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

District Specific Technological Interventions for Western Region

GARLIC			
Jamuna Safed-4 (G-323)	2005 NHRDF, Nasik	<ul style="list-style-type: none"> • Bulbs are compact. • Colour white creamy flesh. • 10 bulbs weight 180-240 gram. • Total soluble solids 38-40 % • Dry matter 40-43 %. • Diameter 3.5-4.5 cm. • Number of cloves 30-35. • Clove size index 1.75-2.0 cm. • Average yield-180-200 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
OKRA			
Kashi Mohini (VRO-3)	2001 IIVR, Varanasi	<ul style="list-style-type: none"> • Plants height 110-140 cm. • Flowres on 4-5 nodes during summer and 5-7 nodes during rainy season after 39-41 days after sowing. • Fruit size 11.3-12.6 cm long at marketable stage. • Fruits with five ridges. • Average yield-130-150 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions. • Tolerant to high temperature. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Mangali (VRO-4)	2002 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for cultivation under summer as well as for rainy season. • Plant height 122-125 cm. • Flowers appear on 4-5 nodes. • Fruits are green with five ridges • Average yield-160.0 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions and stands high temperature during summer season. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Bhairo (hybrid) (DVR-3)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Medium tall. • Fruits are dark green with 10-12 cm long. • Average yield-200-220 q/ ha. • Resistant to Yellow Vein Mosaic Virus under field conditions. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Pragati (VRO-6)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Plant height 130-175 cm. • Effective branches 1-2. • First flower appears 36-38 days after sowing on 4 nodes during kharif and 3 nodes during zaid seasons. • Length of fruits 8-10 cm at marketable stage. • Number of fruits-25-30 per plant. • Average yield-180.0-190.0 q/ ha (kharif) and 130.0-140.0 q/ ha (zaid). • Resistant to Yellow Vein Mosaic Virus and OLCV. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

Inventory of Agricultural Technologies for Uttar Pradesh

VEGETABLE PEA			
Kashi Kanak (VRP-2)	2001 IIVR, Varanasi	<ul style="list-style-type: none"> • Early maturing. • Plant height up to 50 cm. • Vigorous dark green foliage. • Pods are straight, medium sized (7-8 cm), light green filled with bold ovules. • Flowering starts at 38 days after sowing. • Green pods may be harvested 55-58 days after sowing. • Average yield-100.0 q/ ha. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Nandini	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Early maturing. • Pods are 8-9 cm long. • Well filled with 8 to 9 seeds. • Flower 32 days after sowing. • Shelling percentage 47-48. • Bears 7-8 pods/ plant. • Average yield-110.0-120.0 q/ ha. • Tolerant to leaf minor and pod borer. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Udai (VRP-6)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for early maturing. • Plant height 58-62 cm. • Plants have dark green foliage. • 50 % flowers at 35-37 days after sowing. • Length 9-10 cm. • 8-10 pods per plant. • The pods are attractive. • Filled with 8-9 bold seeds. • Average yield-100-110 q/ ha. • Shelling percentage 48. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Kashi Shakti (VRP-7)	2005 IIVR, Varanasi	<ul style="list-style-type: none"> • Suitable for medium maturing. • Plants have dark green foliage with 11-12 pods per plant. • 50 % flowers at 54-56 days after sowing. • Filled with 8-9 bold seeds. • Pods are 10-10.5 cm long. • Average yield-140-160 q/ ha. • Shelling percentage 48-49. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
BOTTLE GOURD			
Narendra Rashmi (NDBG-4)	2002 NDUAT, Faizabad	<ul style="list-style-type: none"> • Bear approximately 8 fruits / plant. • Fruits are bottle shaped, having shallow neck, white flash. • Average weight 1 kg with 400-500 seeds. • First harvesting at 60 days after sowing. • Average yield-300.0 q/ ha. • Plants are moderately tolerant to red pumpkin beetle, powdery mildew. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

District Specific Technological Interventions for Western Region

COLOCASIA			
Vallabh Nikki	2007 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Round in shape. • Attractive in appearance. • Yield potential-260-280 q/ ha. • Resistant to leaf blight. 	Meerut, Ghaziabad, Gautam Buddha Nagar and Muzaffarnagar
TURMERIC			
Vallabh Priya	2007 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Large size rhizome • It matures in 7-8 months. • Average yield- 250-270 q/ ha. 	Meerut, Ghaziabad, Gautam Buddha Nagar and Muzaffarnagar
RESOURCE CONSERVING TECHNOLOGIES			
Laser levelling	2002 SVBPUAT, Meerut	<ul style="list-style-type: none"> • 20% saving in water • 4% increase in cultivable land by reducing bunds and channels 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Zero tillage	2003 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Low cost technology • 20% water saving • Timely sowing • Weed management 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Raised bed planting for high value crops	2003 SVBPUAT, Meerut	<ul style="list-style-type: none"> • To reduce the cost of cultivation • To improve the yield & quality • To save water. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Deep tillage or Chiseling	2004 PDCSR, Meerut	<ul style="list-style-type: none"> • In transplanted rice-wheat system, a sub-surface hard pan develops usually after 6-8 years depending on the intensity of puddling and the precipitation of Fe, Mn and Si which hinders the root development of succeeding wheat crop. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Direct seeding of rice in place of puddled rice	2004 PDCSR, Meerut	<ul style="list-style-type: none"> • In shallow water table areas of Tarai, puddling and no puddling are equally effective. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Mechanical transplanting by self propelled rice transplanter	2004 PDCSR, Meerut	<ul style="list-style-type: none"> • Produce rice yield 28% higher than manual transplanting. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
INTEGRATED PLANT NUTRIENT MANAGEMENT SYSTEM			
Increasing the recommended NPK dose by 50%, plant density (45 hills/ m ²) in rice and reducing row spacing up to 15 cm in wheat	2004 PDCSR, Meerut	<ul style="list-style-type: none"> • Increased yield of rice-wheat cropping system. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

Inventory of Agricultural Technologies for Uttar Pradesh

Annual application of 10 t FYM/ ha in rice	2004 PDCSR, Meerut	<ul style="list-style-type: none"> Zinc and phosphorus fertilization may be skipped 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Adoption of integrated plant nutrients management system	2004 PDCSR, Meerut	<ul style="list-style-type: none"> 20% of chemical fertilizers dose can be safely curtailed. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Sulphur deficiency in soil	2004 PDCSR, Meerut	<ul style="list-style-type: none"> Use of 30-60 kg sulphur/ ha as SSP or gypsum advocated to solve the problem. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Inclusion of summer cow pea (fodder) between rice and wheat	2004 PDCSR, Meerut	<ul style="list-style-type: none"> Improve fertilizer nitrogen use efficiency and minimize ground water pollution. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Nitrogen application in three equal split dose in wheat	2004 PDCSR, Meerut	<ul style="list-style-type: none"> 1st at sowing and 2nd at first irrigation and 3rd at second irrigation Gives good result in conventionally sown wheat. 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Nutrient management (Rice-Wheat)	2005 SVBPUAT, Meerut	<ul style="list-style-type: none"> Application of zinc, FYM along with 150% NPK produce highest grain yield of wheat. Application of 50% NPK+5t FYM+ CPP@2kg/ ha produced highest grain yield of rice. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Weed management (Wheat, Chickpea and Lentil)	2006 SVBPUAT, Meerut	<ul style="list-style-type: none"> Pre emergence application of pendimethalin @1.0 kg a. i. / ha (3.3 liter) effectively control weeds in wheat, chickpea and lentil. Application of Isoproturon @0.5 kg a.i. + 2, 4-D@0.5 kg a. i. / ha as post emergence gave highest grain yield and benefit cost ratio. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

District Specific Technological Interventions for Western Region

Intercropping in sugarcane on raised bed	2006 SVBPUAT, Meerut	<ul style="list-style-type: none"> Planting of sugarcane in rows at a distance of 1 m. Planting of two rows of potato or gladiolus or mentha or wheat on bed. Optimum utilization of land. Maximum economic returns. 	Meerut, Muzaffarnagar, Saharanpur, Bijnor, Moradabad, Rampur, Budaun.
Nutrient management through leaf colour chart (LCC) & organic manuring (Rice-Wheat)	2005-06 SVBPUAT, Meerut	<ul style="list-style-type: none"> Use of leaf colour chart to avoid excess application of nitrogenous fertilizer in rice and wheat which reduce the ground water and atmospheric pollution 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
	2005-06 SVBPUAT, Meerut	<ul style="list-style-type: none"> Synergistic effect of CPP application along with bio-fertilizer on growth and yield of rice & wheat. 	
	2005-06 SVBPUAT, Meerut	<ul style="list-style-type: none"> Crop residue incorporation to maintain the soil health 	
	2006-07 SVBPUAT, Meerut	<ul style="list-style-type: none"> Substitution of 25% NPK for wheat and rice through vermi compost @ 2 t/ ha, FYM @20 t/ ha and press mud @3 t, improves the soil health. 	
Bio-fertilizer	2007 SVBPUAT, Meerut	<ul style="list-style-type: none"> Application of 75% NP+PSB+Azotobactor+ 10 t FYM/ ha gave highest grain yield of wheat 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
Forage production	2007 SVBPUAT, Meerut	<ul style="list-style-type: none"> Sorghum-berseem-maize+cowpea rotation gives maximum return than other crop rotations 	Saharanpur, Muzaffarnagar, Meerut, Gautam Buddha Nagar, Ghaziabad, Baghpat, Bulandshahr
IPM MODULE			
Rice	2004 SVBPUAT, Meerut	<ul style="list-style-type: none"> Deep summer ploughing. Seed treatment with <i>Trichoderma harzianum</i> @4g/ kg seed Mass trapping of yellow stem borer through pheromone traps. Release of <i>Trichogramma japonicum</i>/<i>T. chilonis</i> @of 50,000 adult/ ha. 4-6 times weekly interval 30 days after transplanting. Spray garlic paste/ NSKE 5% at milky stage. Need based application of insecticides. 	Meerut, Ghaziabad, Gautam Budha Nagar, Muzaffarnagar, Saharanpur, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Budaun, Shahjahanpur, Pilibhit and Bulandshahr

Inventory of Agricultural Technologies for Uttar Pradesh

Pigeonpea	2004 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Soil application of <i>Trichoderma harzianum</i> @2.5 kg in 50 kg of FYM/ ha • Erection of bird percher • Monitoring of Helicoverpa through pheromone trap@5 kg/ ha. • Application of NPV @250LE/ ha. • Spray of NSKE 5% • Need based spray of Endosulfan 	Meerut, Ghaziabad, Muzaffarnagar, Saharanpur, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Budaun, Shahjahanpur, Pilibhit and Bulandshahr
Chickpea	2004 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Soil application of <i>Trichoderma harzianum</i> @2.5 kg in 50 kg of FYM/ ha • Seed treatment with Chlorpyrifos 20 EC @8ml/ kg for control of termite. • Erection of bird percher • Monitoring of Helicoverpa through pheromone trap @5/ ha • Application of NPV@250 LE/ ha+ washing powder+ Gur for Helicoverpa • Spray NSKE 5% 	Ghaziabad, Muzaffarnagar, Saharanpur, Moradabad, Rampur, Bijnor, Bareilly, J. P. Nagar, Budaun, Shahjahanpur and Bulandshahr
Tomato	2004 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Soil solarization of nursery bed • Seed treatment with <i>Trichoderma harzianum</i> @4g/ kg seed. • Cover the nursery bed with nylon net. • Plant one row of marigold for every 16 rows of tomato. • Erection of bird percher • Release <i>Trichogramma pretiosum</i> or <i>T. bresiliensis</i> @50,000 adults/ ha. Per release (5 Times) at weekly interval started from when adult are seen. • Spray NPV 250 LE/ ha 2-3 times at 10 days interval • Need based application of endosulfan at economic threshold level. 	Meerut, Ghaziabad, G.B. Nagar, Muzaffarnagar, Saharanpur, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Budaun, Shahjahanpur, Pilibhit and Bulandshahr

District Specific Technological Interventions for Western Region

Cabbage	2004 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Raising paired rows of Indian mustard at the beginning and after every 25 rows of cabbages. • Seed treatment with <i>Trichoderma</i> @4g/ kg seed. • Spray of NSKE extract 5% • B.t spray 3-4 times at 10 days interval starting from initiation of head. • Release of <i>Trichogramma toidea bactrae</i> 50,000 adult/ ha. (3-4 times) 10 days interval. • Need based application of endosulfan at economic threshold level. 	Meerut, Ghaziabad, Gautam Budha Nagar, Muzaffarnagar, Saharanpur, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Budaun, Shahjahanpur, Pilibhit and Bulandshahr
Mustard	2004 SVBPUAT, Meerut	<ul style="list-style-type: none"> • Release of <i>Chrysopera carnea/Syrphid</i> fly 50,000 eggs/ ha. • Recommended use of nitrogen. • If needed use of methyl-o demeton @1 ml/ lit water 	Meerut, Ghaziabad, Gautam Budha Nagar, Muzaffarnagar, Saharanpur, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Badaun, Shahjahanpur, Pilibhit and Bulandshahr

Horticulture

MANGO

Ambika (CISH-M-1)	CISH, Lucknow	<ul style="list-style-type: none"> • Regular bearer having yellow colour with red blush. • Firm flesh and scanty fibres. • It has good potential for domestic and export markets. 	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr
CISH-M-2		<ul style="list-style-type: none"> • A cross-developed with Dashehari and Chausa. • Suitable for late sown variety. • Dark yellow in colour with firm flesh and scanty fibres. <p>It is a good commercial value.</p>	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr
Bangalora (Totapuri)		<ul style="list-style-type: none"> • Regular bearing. • High yielding under Lucknow conditions. • Recommended for its cultivation in northern India. 	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr

Inventory of Agricultural Technologies for Uttar Pradesh

Amrapali	IARI, New Delhi	<ul style="list-style-type: none"> • Regular fruiting. • Dwarf stature suitable for high density planting with regular annual pruning. • Excellent fruit quality. 	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr
Pusa Arunima		<ul style="list-style-type: none"> • Medium size tree. • Regular fruiting. • Fruit size medium (250g). • Attractive red peel colour. • Sweet and delicious. • Very good self-life (12 days). • Suitable for export 	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr
Pusa Surya		<ul style="list-style-type: none"> • Fruit size is medium to large in size (270 g). • Attractive apricot yellow peel colour. • Good self-life (8-10 days). • Room temperature after ripening. • Suitable for domestic and international market. 	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr
CROP PRODUCTION			
MANGO	CISH, Lucknow	<ul style="list-style-type: none"> • A spacing of 5m x 5m with 400 plants/ ha is recommended for higher production of mango cultivar Dashehari. • Cowpea-potato system has been found to give high monetary returns up to 10 years age of the plantation. • Soil application of paclobutrazol (3.2 ml m⁻¹ canopy diameter) has been found effective in inducing regular flowering and fruiting and thus controlling irregular bearing in mango cultivar. Dashehari. • Soil application of NPK (1:1:1 kg/ tree) to 10-years old Dashehari mango increased yield. Trench application of fertilizers around the tree in July is most efficient. • Application of FYM (40kg) enriched with <i>Azospyrillum</i> (250g) per tree is effective for 15-years old mango cvcultivar Dashehari. 	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr

District Specific Technological Interventions for Western Region

CROP PROTECTION			
MANGO	CISH, Lucknow	<ul style="list-style-type: none"> • Imidacloprid (0.005%) is effective against mango hopper. • Methyl eugenol wooden block trap soaked in alcohol, methyl eugenol and malathion (6:4:1) is highly effective in trapping fruit flies and thus reducing its infestation in mango orchards and demonstrated at farmers fields in large areas. • <i>Melipona/Trigona</i> spp. identified as main pollinators on mango. • Mango powdery mildew is effectively controlled by spraying of Carbendazim + Apsa (0.1+0.2%), Index (0.1%) and Companion (0.2%). • Die-back disease in mango nursery plants reduced up to 50% using spray of <i>Streptosporangium pseudovulgare</i> at a concentration of 6.8 x 10⁹ cells/ ml. • Maximum and minimum temperatures (31-34 °C & 25-26 °C with intermittent rain were found conducive for development of anthracnose in mango. • Carbendazim (0.1%), Companion (0.2%) and copper oxychloride (0.3%) is effective in controlling anthracnose of mango. Combined application of Prochloraz + Velvet (0.125 + 2.5%) are effective against the disease. 	Ghaziabad, Muzaffarnagar, Saharanpur, Gautam Budha Nagar, Baghpat, Moradabad, Rampur, Bijnor, Bareilly, Jyotiba Phule Nagar, Shahjahanpur, Pilibhit and Bulandshahr
GUAVA			
Lalit (CISH-G-3)	CISH, Lucknow	<ul style="list-style-type: none"> • Fruits are attractive, saffron yellow coloured with red blush. • Medium sized, firm and pink flesh with good blend of sugar and acid. • It gives 24 % higher yield than popular variety Allahabad Safeda. • Pink colour in the beverage made from the pulp of this variety remains stable for more than a year during storage. • Jelly made from Lalit is of high quality 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
Shweta (CISH-G-4)	CISH, Lucknow	<ul style="list-style-type: none"> • Subglobose fruits with few soft seeds, • Attractive pink blush. • It has good yield potential. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

Inventory of Agricultural Technologies for Uttar Pradesh

Control of wilt in guava	2004 CSAUAT, Kanpur	<ul style="list-style-type: none"> • <i>Pusa Mrida</i> and <i>Trichoderma viridae</i> mixed with FYM/ plant in July. • 1.8 to 2.0 kg Gypsum/ tree applied in July. • <i>Psidium triedrichsthalianum</i> found resistant to wilt may be used as root stock. 	Farrukhabad Kanpur Nagar, Kanpur Dehat, Fatehpur, Unnao
CROP PRODUCTION			
GUAVA	CISH, Lucknow	<ul style="list-style-type: none"> • Trees at the highest density (3mx1.5m) were taller. The population density of 555 trees/ ha with a spacing of 3mx6m is suitable for higher yield and quality produce. • Current season shoot pruning influenced the canopy architecture and flowering under high density planting when imposed in the month of May. • Highest fruit yield (79.5 kg/ tree) recorded from the trees planted at 3.0mx6.0m. • Application of 20 kg FYM inoculated with <i>Azotobacter</i> produced highest yield (13.69 & 40.11kg/ tree) in guava cultivar Allahabad Safeda in 1st and 2nd year of fruiting. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
CROP PROTECTION			
GUAVA	CISH, Lucknow	<ul style="list-style-type: none"> • Cartap hydrochloride is effective in control of guava fruit borer. • Inoculation technique (stem hole inoculation) for reproduction of wilt in guava has been standardized. • <i>Gliocladium roseum</i> has been found most potent causal pathogen for guava wilt, as it produces symptoms in grown up plants in field within 2 months of inoculation. • Bio-control agents, <i>Aspergillus niger</i> (AN 17) and <i>Penicillium citrinum</i> have been identified for the control of guava wilt. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh
PAPAYA	CISH, Lucknow	<ul style="list-style-type: none"> • Ring spot and leaf curl have been identified as important viral diseases of papaya causing considerable loss to the crop. Insect vectors responsible for the transmission of these viruses have been identified. • Antiviral plant substances from <i>Boerhaavia diffusa</i> and <i>Clerodendrum aculeatum</i> are effective against ring spot disease. 	Aligarh, Mahamaya Nagar, Mathura, Firozabad, Mainpuri, Etah, Farrukhabad, Kannauj, Etawah, Auraiya, Kanpur Nagar, Kanpur Dehat, Fatehpur, Allahabad, Kaushambi, Lucknow, Unnao, Raebareli, Sitapur, Lakhimpur Kheri, Hardoi, Pratapgarh

District Specific Technological Interventions for Western Region

Rootstock for Rosa indica var. Odorota	1994 GBPUAT, Pantnagar	<ul style="list-style-type: none"> Varieties budded on this have wide adaptability 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur
Production of tuberose (planting time March)	2000 GBPUAT, Pantnagar	<ul style="list-style-type: none"> March planting most suitable 100% sprouting, quick and good growth & flowering. 	Baghpat, Bulandshahr, Gautam Buddha Nagar, Ghaziabad, Meerut, Bijnor, Jyotiba Phule Nagar, Moradabad, Rampur, Muzaffarnagar, Saharanpur, Budaun, Bareilly, Pilibhit, Shahjahanpur

Chapter 5

Livestock Related Technologies

Livestock sector has been the most important and fast growing sector in rural India. About three fourth of the rural households are depending on it for supplementary income crucial to their livelihood. This sector employs 9% of the countries labour force, including small & marginal farmers, farm women & landless agricultural workers. Uttar Pradesh accounts for 16% of the total bovine population of the country. The state consists of 18.55 million cattle, 22.91 million buffaloes, 12.94 million goats, 1.43 million sheep and 2.28 million pigs and 11.72 million

poultry birds (17th livestock census, 2003). The state produces 13.86 million metric tonnes of milk annually accounting for 19% of the total production in the country with an annual growth rate of 7.25%. In fish production, the state has 28,500 km of rivers and canals, 3.15 lakh ha of reservoirs and 1.61 lakh ha of ponds and tanks and producing 2.67 lakh tonnes of fish every year. Some of the common constraints affecting the production & productivity of livestock and fisheries in the entire state are given as under :

- Poor implementation of breeding policy for cattle and buffaloes as formulated by Government of Uttar Pradesh

Sl.No.	Region	Administrative divisions	Breeds to be used		
			Buffaloes	Zebu	Exotic
1.	Bundelkhand	Jhansi, Chitrakoot & Mirzapur	Murrah & Bhadawari	Tharparkar & Haryana	Holstein Frisian, Jersey & Crosses
2.	Eastern Uttar Pradesh	Gorakhpur, Basti, Devipatan, Faizabad, Allahabad, Varanasi & Azamgarh.	Murrah	Haryana, Sahiwal & Gangatiri	Holstein Frisian, Jersey & Crosses
3.	Central & Western Uttar Pradesh	Meerut, Saharanpur, Moradabad, Agra, Bareilly, Kanpur & Lucknow.	Murrah & Bhadawari	Sahiwal & Haryana	Holstein Frisian, Jersey & Crosses
4.	Tarai Region	Pilibhit, etc.	Murrah	Sahiwal & Haryana	Holstein Frisian, Jersey & Crosses

- Exploitation of indigenous reputed breeds like Haryana, Sahiwal, Gangatiri and Tharparkar among cattle and Murrah & Bhadawari among buffaloes.
- Lack of extensive awareness campaign for vaccination against major livestock diseases viz. PPR (*Pesta des petits*), FMD (Foot & Mouth disease), BQ (Black Quarter disease) and HS (Haemorrhagic Septicemia).
- High incidence of reproductive disorders in rural bovines like late sexual maturity, long age at first calving, long post-partum anoestrus, long inter-calving intervals, poor conception rate, repeat breeding and genital infections.
- Poor availability of indigenous breeding buck of Jamunapari, Barbari and Jaunpuri to enhance milk & meat production in different zones.
- Non-availability of desired breed for piggery enterprise, costly feed, lack of organized market, social & religious taboo, high incidence of swine fever, anemia (in piglets), etc .
- Low use of local available in-gradients to compute economic concentrate mixture for cattle, goat, sheep, pig, poultry and fisheries.

8. Low adoption of processing, value addition, packaging and improving shelf life of milk and milk based dairy products, poultry products, etc.
9. Poor availability of HYVs of fodder & pasture seed crops and their package of practices for different land situation.
10. Lack of seeds of major carps including cat fishes, awareness of fresh water prawn culture, composite/ integrated fish farming, costly feed and lack of organized market facilities.

A. Agro-climatic Zone-wise Constraints

Commodity	Constraints
Bhabar & Tarai	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ High incidence of infertility/ post partum anoestrus. ▪ Acute problem of brucellosis (cow 30%, organized herds 35.60%). ▪ Lack of desired and quality semen & inadequate breeding facilities. ▪ Unavailability of location specific mineral mixture. ▪ Lack of hormonal therapeutic protocols for anoestrus to enhance the fertility status. ▪ Lack of awareness about brucellosis hazards. ▪ High incidence of distomiasis. ▪ Filariasis/ haemoglobinuria. ▪ Ticks problem. ▪ Indiscriminate use of oxytocin.
Caprine (goat)	<ul style="list-style-type: none"> ▪ Infestation of endo-parasites. ▪ Lack of appropriate breeding bucks. ▪ Lack of awareness about appropriate management practices.
Feeds & fodder	<ul style="list-style-type: none"> ▪ Non availability of HYVs of fodder seeds.
Pig farming	<ul style="list-style-type: none"> ▪ Social & religious taboo. ▪ Costly feed. ▪ High mortalities of piglets.
Poultry	<ul style="list-style-type: none"> ▪ Aflatoxicosis. ▪ Avian Stunting syndrome. ▪ Coccidiasis.
Fisheries	<ul style="list-style-type: none"> ▪ Low use of proven technology of fish production for large water bodies / reservoirs. ▪ Costly feed/ feed in-gradients. ▪ Lack of awareness about specific breeding technology for 'cat fishes'
Post harvest management	<ul style="list-style-type: none"> ▪ Poor knowledge of processing, packaging, storage & enhancing self life of dairy products. ▪ Inadequate byproducts processing knowledge.
Western Plain Zone	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ High incidence of brucellosis & filariasis ▪ Bovine viral diarrhea (BVD) ▪ Enterotoxaemia ▪ High incidence of mastitis ▪ Unavailability of quality murrh bulls/ semen. ▪ Indiscriminate slaughter of animals during economic age.
Caprine (goat)	<ul style="list-style-type: none"> ▪ High incidence of endo-parasites. ▪ Lack of appropriate breeding bucks. ▪ Lack of pasture/ grazing lands.

Inventory of Agricultural Technologies for Uttar Pradesh

Feeds & fodder	<ul style="list-style-type: none"> ▪ Lack of knowledge about feed resource utilization. ▪ Non availability of HYVs of fodder seeds ▪ Lack of knowledge about proper conservation.
Pig husbandry	<ul style="list-style-type: none"> ▪ Lack of organized market. ▪ Costly feed. ▪ Anemia & endoparasites.
Poultry	<ul style="list-style-type: none"> ▪ Poor digestibility of fibers. ▪ Costly feeds. ▪ Non use of local ingredients in feed formulation.
Fisheries	<ul style="list-style-type: none"> • Low availability of fingerlings. • Non-awareness about pond management techniques. • Costly feed/ feed in-gradients.
Post harvest management	<ul style="list-style-type: none"> ▪ Poor awareness of processing, packaging and marketing of dairy & poultry products and fishes.
Mid Western Plain Zone	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ Calf diarrhea. ▪ Infestation of endoparasites. ▪ Indiscriminate slaughter of animals. ▪ Indiscriminate use of oxytocin. ▪ Non-awareness about optimization of reproductive efficiency. ▪ Lack of appropriate management practices.
Caprine (goat)	<ul style="list-style-type: none"> ▪ High intensity of kid mortality. ▪ Lack of knowledge about optimizing reproductive performance.
Feed & fodder	<ul style="list-style-type: none"> ▪ Non availability of HYVs of leguminous fodder seeds. ▪ Non-awareness about feed resource utilization.
Pig farming	<ul style="list-style-type: none"> ▪ Lack of organized market. ▪ Costly feed. ▪ High mortality of piglets.
Poultry	<ul style="list-style-type: none"> ▪ Coccidiosis. ▪ Egg drop syndrome.
Fisheries	<ul style="list-style-type: none"> ▪ Lack of hatchery. ▪ Non-awareness of production technology for 'cat fishes'. ▪ Lack of knowledge about prawn culture.
South Western Semi Arid Zone	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ High incidence of leptospirosis. ▪ Non genetic improvement of Bhadawari. ▪ Lack of optimization of management practices. ▪ Poor knowledge about feed resource utilization. ▪ Indiscriminate use of oxytocin. ▪ Mastitis
Caprine (goat)	<ul style="list-style-type: none"> ▪ Lung worms in goats. ▪ Poor economic traits. ▪ Bone softening (Agra, Mathura). ▪ Poor availability of quality and desired bucks ▪ High incidence of Pneumonia
Feeds & fodder	<ul style="list-style-type: none"> ▪ Inadequate feeds and fodder. ▪ Lack of forage crop production system. ▪ Low use of technical know –how of agroforestry.

Livestock Related Technologies

Pig farming	<ul style="list-style-type: none"> ▪ Non-availability of improved breed. ▪ Lack of market for pig & pig products. ▪ Social & religious taboos.
Fisheries	<ul style="list-style-type: none"> ▪ Non awareness about fish production technology in problem soils. ▪ Low availability of fingerlings.
Central Plain Zone	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ Mange/ mites and trypanosomiasis (Surya) ▪ Buffalo calf mortality/ Colibacillosis ▪ Poor productivity of <i>Bhadawari</i>. ▪ Low availability of quality semen/ desired bull. ▪ Costly feed & feed ingredients. ▪ Lack of knowledge about optimization of reproductive efficiency.
Caprine (goat)	<ul style="list-style-type: none"> ▪ Low availability of breeding bucks (Barbari/ Jamunapari). ▪ Endo & Ecto-prarasitic problems. ▪ Lack of knowledge about maximizing production.
Feeds & fodder	<ul style="list-style-type: none"> ▪ Inadequate Feeds and Fodder. ▪ Low adoption of forage crop production techniques for sodic soils. ▪ Low availability of suitable seeds for salt affected soil.
Pig farming	<ul style="list-style-type: none"> ▪ High incidence of anemia and swine fever. ▪ High percentage of piglet mortalities. ▪ Lack of market for pig & pig products.
Fisheries	<ul style="list-style-type: none"> ▪ Lack of knowledge of fish production in sodic soils. ▪ Very low availability of fingerlings.
Bundelkhand Zone	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ Alopaecia ▪ Low productivity ▪ Haemoglobinuria ▪ Poor availability of <i>Bhadawari</i> breed. ▪ Deficiency of trace minerals status in grazing animals. ▪ Costly feed & feed ingredients. ▪ Lack of knowledge about optimizing management practices.
Sheep & goat	<ul style="list-style-type: none"> ▪ Lung worms in goats. ▪ High incidence of kid mortalities. ▪ Non- availability of desired breeding bucks. ▪ Blue tongue disease.
Feeds & fodder	<ul style="list-style-type: none"> ▪ Inadequate Feeds and Fodder. ▪ Poor availability of quality seeds of leguminous fodders.
Pig farming	<ul style="list-style-type: none"> ▪ Lack of organized market. ▪ Lack of desired breed.
Fisheries	<ul style="list-style-type: none"> ▪ Lack of knowledge for preparation of balanced feed using local in-gradients. ▪ Unorganized fish market. ▪ Lack of knowledge of composite fish culture. ▪ Non awareness about breeding technique of 'Cat fishes.

Inventory of Agricultural Technologies for Uttar Pradesh

North Eastern Plain Zone	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ Infertility and anoestrus. ▪ Iodine deficiency. ▪ Aflatoxicosis. ▪ Colibacillosis (newly born) ▪ High incidence of calf mortality. ▪ Exploitation of Gangatiri breed of cattle. ▪ Non awareness about formulation of cheap ration. ▪ Anorexia
Sheep & goat	<ul style="list-style-type: none"> ▪ Infestation of endoparasites. ▪ High incidence of kid mortalities. ▪ Non- availability of desired breeding bucks. ▪ Blue tongue disease.
Feed & fodder	<ul style="list-style-type: none"> ▪ Inadequate feeds and fodder. ▪ Low availability of seeds of HYVs of fodders. ▪ Non awareness about forage production in acid, saline/ sodic, water logged and marshy soils.
Pig farming	<ul style="list-style-type: none"> ▪ Lack of organized market. ▪ Lack of desired breed. ▪ Social & religious taboos.
Fisheries	<ul style="list-style-type: none"> ▪ Lack of hatchery of cat fishes. ▪ Unorganized fish market. ▪ Costly feeds
Eastern Plain	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ Ticks/ Trypanosomiasis, distomiasis, liver fluke (Fasciolosis). ▪ Iodine deficiency (Goitre). ▪ High incidence of FMD, HS and BQ. ▪ Exploitation of Gangatiri cow. ▪ Non awareness about utilization of feed resources. ▪ Indiscriminate use of oxytocin.
Sheep & goat	<ul style="list-style-type: none"> ▪ Course and short staple. ▪ High guard hair percentage. ▪ Poor adoption of sheep production activities. ▪ Exploitation of Jaunpuri breed.
Feed & fodder	<ul style="list-style-type: none"> ▪ Inadequate Feeds and Fodder. ▪ Non- availability of seeds of HYVs of fodder.
Pig farming	<ul style="list-style-type: none"> ▪ Lack of organized market. ▪ Lack of desired breed. ▪ Costly feed & feed-ingredients. ▪ Social & religious taboos.
Fisheries	<ul style="list-style-type: none"> ▪ Lack of hatchery of cat fishes. ▪ Unorganized fish market. ▪ Costly feeds
Poultry	<ul style="list-style-type: none"> ▪ Aflatoxicosis. ▪ Coccidiosis. ▪ Poor awareness about the skill of extreme summer & winter management.
Fisheries	<ul style="list-style-type: none"> ▪ Lack of breeding and specific hatchery technology for cat fishes. ▪ Unorganized fish market. ▪ Huge pollutants cause deterioration of fish health & meat quality.

Vindhyan Zone	
Bovine (cattle & buffaloes)	<ul style="list-style-type: none"> ▪ High incidence of FMD, HS & BQ. ▪ Poor genetic potential of existing local breed. ▪ Exploitation of Gangatiri breed. ▪ High incidence of endo-parasites. ▪ Non awareness about optimizing grazing lands. ▪ Lack of knowledge about optimizing reproductive efficiency.
Ovine (sheep)	<ul style="list-style-type: none"> ▪ Course and short staple. ▪ High guard hair percentage. ▪ High incidence of kid mortalities. ▪ Poor adoption of sheep production activities. ▪ Non-awareness for updated wool processing technology
Feed & fodder	<ul style="list-style-type: none"> ▪ Inadequate feeds and fodder. ▪ Low availability of seeds of HYVs of fodders for rainfed situation. ▪ Low adoption of technical knows –how about the agro-forestry. ▪ Non awareness about forage production technology for water logged & dry land soils.
Pig farming	<ul style="list-style-type: none"> ▪ Lack of organized market. ▪ Lack of desired breed. ▪ Costly feed. ▪ Social taboos.
Fisheries	<ul style="list-style-type: none"> ▪ Lack of breeding and specific hatchery technology for cat fishes. ▪ Unorganized fish market. ▪ High incidence of water pollution. ▪ Costly feeds

B. TECHNOLOGICAL OPTIONS

Name of the Technology	Characteristics of Technology	Year of release & releasing institution	Districts where applicable
Cattle, buffaloes, goat, sheep, pig, etc.			
Olinall : An ointment for skin diseases of animals.	<ul style="list-style-type: none"> ▪ The indigenous drug formulation against skin disease of animals is highly effective in all skin problems like fungal infection, mange, pyoderma, maggpted wounds, cuts, burns etc. ▪ The Lotion is bactericidal, fungicidal, miticidal, insect repellent, anti-inflammatory, antipyretic, hair growth promoter, make the skin glossy, very effective and has no side effect. ▪ Before application of lotion, the affected skin should be cleaned with clean water and allowed to dry. Then it should be rubbed thoroughly over the lesions facilitating its penetration to the cryptic sites. The lotion should be applied once daily for 5-10 days. For bathing of pets, herbal shampoo or soaps can be used. 	1987-96 IVRI, Bareilly	Applicable in entire Uttar Pradesh

Inventory of Agricultural Technologies for Uttar Pradesh

FMD Vaccine	<ul style="list-style-type: none"> ▪ The indigenously developed cost-effective and potent aluminum hydroxide gel-concentrated, oil adjuvant vaccine for foot and mouth disease facilitates concentration of the antigen by modified gel method and provides good immunity up to 150 days in cattle, buffaloes and pigs. The vaccine has good stability when stored at 4^o C for 15 months with no loss of potency. 	200-01 IVRI, Bareilly	Applicable in entire Uttar Pradesh
Cattle and buffaloes			
<p>IVRI Crysto-scope :</p> <p>A field tool for determining optimum time for fertile insemination in animals.</p>	<ul style="list-style-type: none"> ▪ It is an Indigenous methodology. IVRI Crystoscope is a field tool for determining optimum time for fertile insemination in animals. This instrument is simple field tool for assessing the insemination time of cows based on crystallization pattern of cervical mucus, which does not require any technical know-how or any sophisticated laboratory facilities. Using the tool, even an illiterate farmer can assess the insemination time of cow. ▪ The methodology is very simple. A drop of cervical discharge from the animal in heat is placed on a glass slide and dried. The dried slide is kept in the slide gasket of the instrument and the desired information can be obtained and accordingly the artificial insemination time can be ascertained for optimum results. 	1999-2004 IVRI, Bareilly	Applicable in entire Uttar Pradesh
Urea molasses mineral block	<ul style="list-style-type: none"> ▪ These are lick blocks containing soluble and fermentable nitrogen from urea, highly fermentable energy from molasses and essential minerals. ▪ Natural protein sources such as oil seed cake (ground nut cake, cotton seed cake, soybean cake) have also been added to provide peptides and amino acids. ▪ Blocks can be used to supplement the low quality roughages to balance the deficient nutrient in the ration. 	2005 GBPUAT, Pantnagar	Applicable in entire Uttar Pradesh.
Area specific mineral mixture.	<ul style="list-style-type: none"> ▪ Feeding of area specific mineral mixture increases 20-25% milk production, 25% body weight gain, early maturity of heifers and improve reproductive efficiency and health of animal. ▪ The designer mineral mixture recommended for the northern state, include essential minerals like Ca, P, Mn, Fe, Cu, Co, Zn, I and Se at optimal concentrations to balance the deficiency of these minerals in the diets of livestock. The area specific mineral mixtures were fortified with essential vitamins A, D and E and a probiotic brewers yeast. Fortification with essential vitamins and brewer's yeast enhance the usefulness for these products not only by increasing the production and reproductive performance of cattle and buffaloes but also in turn disease resistance ability of the farm animals. Control experimental trials showed significant increase in growth rate and milk production of cattle and buffaloes in the range of 20-30 %. 	2002 -04 IVRI, Bareilly	The technology can be selectively used in the state of Uttar Pradesh.

Livestock Related Technologies

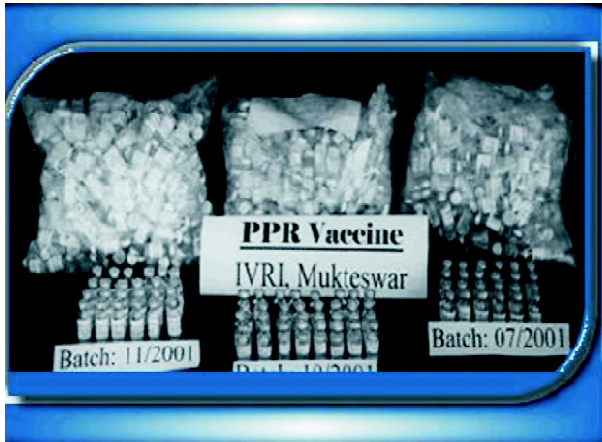
New cattle strain	<ul style="list-style-type: none"> ▪ Six new strains of high yielding Cattle (3000-3500) kg of milk/ 300 days lactation) have been evaluated. 	IVRI, Bareilly	Applicable in entire Uttar Pradesh.
New feed & improved techniques	<ul style="list-style-type: none"> ▪ Demonstration of improved feeding value of fibrous crop residues, utilization of agro industrial by-products and unconventional feed stuffs as livestock feed, development of feeding standards for buffalo and rumen manipulation for improved nutrient utilization are the new feed & improved techniques developed to enhance the livestock productivity. 	IVRI, Bareilly	Applicable in entire Uttar Pradesh.
Feeding management of urea and wheat bran in cattle	<ul style="list-style-type: none"> ▪ Feeding of 0.5 kg wheat bran and 30 g urea along conventional ration to repeat breeder cross-bred cow, improved fertility in rural area of U.P. 	2005 NDUAT, Faizabad	Bahraich, Basti, Mau, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh and Barabanki
Splashing of water on cattle in summer season	<ul style="list-style-type: none"> ▪ Splashing of water on body surface in cross-bred cow and buffaloes in eastern U.P. increased 1.5 litre/ day milk yield in summer season. 	2005 NDUAT, Faizabad	Bahraich, Basti, Mau, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh and Barabanki
Sheep and goat			
PPR Vaccine dried for sheep and goat.	<ul style="list-style-type: none"> ▪ An Asian origin live attenuated homologous vaccine for <i>Peste des petits ruminants</i> (PPR) freeze dried for sheep and goat. ▪ PPR is a highly infectious disease of small ruminants and the disease is endemic in our country causing huge economic losses. This live-attenuated vaccine developed in vero cells has been thoroughly tested for safety and potency both in in-house trials and field trials. Based on the results, the vaccine is safe to use and potent. The vaccine has been found to protect animals for a long time (expected to be more than 3 years). ▪ The technology registered for commercialization to two firms viz M/ S Indian Immunological Limited Hyderabad and M/ S Intervet Pvt Ltd, Pune. 	2004 IVRI, Bareilly	Applicable in entire Uttar Pradesh.

Inventory of Agricultural Technologies for Uttar Pradesh

Bluetongue (BT) Diagnosis kit	<ul style="list-style-type: none"> ▪ Bluetongue (BT), an endemic disease of livestock is more acute in sheep causing heavy economic losses due to deterioration of carcass quality and at times resulting in high mortality. The diagnosis of BT needs laboratory confirmation due to overlapping of clinical symptoms with other diseases like PPR, FMD, etc. For diagnosis of Bluetongue agar gel precipitation (AGP) is a test of choice as it is simple, quick and reliable. Moreover, this test does not need any sophisticated facilities and thus enabling every laboratory to use this test in field outbreaks using sero-conversion principle of diagnosis. The cost of ready-to use kits is quite low than the imported kits. 	2004 IVRI, Bareilly	Applicable in entire Uttar Pradesh.
BRUCKECK: A Dot- ELISA kit for detection of brucellosis in goats	<ul style="list-style-type: none"> ▪ A comb based Dot- ELISA kit based test has been developed for diagnosis of <i>Brucella melitensis</i> infection in goats and sheep. This technology is under patent. 	2004 CIRG, Mathura	Applicable in entire Uttar Pradesh
Diagnostic kits for PPR(goat plague) Diagnosis	<ul style="list-style-type: none"> ▪ Peste des petits ruminants (PPR), also known as goat-plague, is an acute and highly contagious viral disease of sheep and goats and characterized by high fever, pneumonia, diarrhea and dehydration. It causes death in more than 50% of the affected flock and mortality may go up to 100%. ▪ The monoclonal antibody based competitive ELISA (C-ELISA) kit and sandwich ELISA (S-ELISA) kit developed at IVRI, Mukteswar have been designed for the detection of PPR virus antibodies and antigen, respectively. The C-ELISA kit is suitable for sero-surveillance and sero-monitoring of antibodies to PPR virus in small ruminants and large animals. The S-ELISA kit has been found to be extremely useful for detection of PPR viral antigen clinical specimen. 	IVRI, Bareilly	Applicable in entire Uttar Pradesh
Ruminants			
Urea molasses mineral block- A feed supplement for ruminants	<ul style="list-style-type: none"> ▪ The primary objective for the preparation of urea molasses mineral block (UMMB) is to provide supplementary nutrition to animals in villages, subsisting on straw & crop residues. Utmost care needs to be exercised so that these blocks only serve as licks. A cold processed technology was employed for the preparation of UMBB. Experiment conducted under different categories of ruminants showed improved performance (growth, digestibility, Na and mineral balance, etc). 	IVRI, Bareilly	Applicable in entire Uttar Pradesh
Monoclonal antibody based competitive ELISA kit for rinderpest antibody detection.	<ul style="list-style-type: none"> ▪ Rinderpest is an important viral disease of cattle and all ruminants. A monoclonal antibody based competitive ELISA kit developed by IVRI Mukteswar campus specifically detects antibody to rinderpest virus and not the PPR virus. The kit validated by World Reference Laboratory of Rinderpest, Pirbright, United Kingdom is ideally suitable for sero-surveillance (disease surveillance) and sero-monitoring (vaccine antibody monitoring) rinderpest virus antibodies. 	IVRI, Izatnagar, Bareilly	Applicable in entire Uttar Pradesh

Livestock Related Technologies

Goat			
A vero cell based live attenuated vaccine for control of goat pox.	<ul style="list-style-type: none"> The goat pox vaccine available in a lyophilized form with an extended half life when stored properly confers protection for more than 2 years. The vaccine preparation is vero cell based and hence, production in large scale is commercially viable. Mass immunization with this vaccine is accepted to bring down the disease endemicity in the country contributing to improved small ruminant productivity. 	IVRI, Bareilly	Applicable in entire Uttar Pradesh
PPR and goat pox combined vaccine.	<ul style="list-style-type: none"> The combined vaccine is a vero cell based vaccine for prophylactic use against PPR and goat pox and the technology can be effectively transferred/ used in any state for prevention and control of these two diseases. 	IVRI, Izatnagar, Bareilly	Applicable in entire Uttar Pradesh
Cryo-preservation of Buck Semen	<ul style="list-style-type: none"> A protocol on freezing of buck semen has been developed for different breeds of goats. The post-thaw motility as observed in conventional system (50%) has been enhanced to 60% through programmable semen bio-freezer using desired rate of cooling. A fertility ranging from 35 to 50% using frozen semen has been achieved in the institutional flock as well as in the farmers flocks. 	2000 CIRG, Mathura	Applicable in entire Uttar Pradesh
Optimum floor space and ventilation for goats	<ul style="list-style-type: none"> The Institute has worked out the optimum floor space requirements for different categories of goats. The ventilation space has also been worked out. 	2000 CIRG, Mathura	Applicable in entire Uttar Pradesh
Tree leaves based pelleted feed	<ul style="list-style-type: none"> With intensification of goat husbandry and popularization of commercial goat farming, there is an urgent need for development of cheaper and balanced ration for goats to attain the optimum production under intensive system of goat rearing. 	2001 CIRG, Mathura	Applicable in entire Uttar Pradesh
Annual Preventive Goat Health Calendar	<ul style="list-style-type: none"> On the basis of experience of goat health management, over the years, the technology for prevention of common goat diseases has been standardized in the form of an Annual Goat Health calendar for organized goat/ sheep flocks maintained under semi arid-zones and commercial goat farmers. 	1998 CIRG, Mathura	Applicable in entire Uttar Pradesh
Diagnosis of Paratuberculosis Elisa kit	<ul style="list-style-type: none"> Paratuberculosis or Johne's disease (Pronounced 'yo-knees') is a contagious and chronic disease of goats. The present ELISA uses PPA antigen from the Map 'Bison type' bacilli infecting domestic livestock population of North India. 	2005 CIRG, Mathura	Applicable in entire Uttar Pradesh
Complete Feed Block making machine	<ul style="list-style-type: none"> Complete feed is a system of ruminant feeding in which roughage and concentrate mixture are mixed homogenously in a pre-determined ratio and processed into block form to provide the goats, a nutritionally balanced diet. 	2005 CIRG, Mathura	Applicable in entire Uttar Pradesh



PPR-Vaccine



Crystoscope



Caribro



Barbari



Jamunapari

Livestock Related Technologies

Milk Replacer	<ul style="list-style-type: none"> A Milk replacer having 24% Crude Protein has been developed for goat kids up to weaning period i.e. 90 days age. It helps in obtaining surplus goat milk for home consumption and sale. 	2003 CIRG, Mathura	Applicable in entire Uttar Pradesh
Pig Farming			
New pig strains	<ul style="list-style-type: none"> Four new strains of pig including "Black Pig" has been developed. These strains have good economic traits like fast growth, better feed conversion efficiency and higher prolificacy. 	IVRI, Bareilly	Applicable in entire Uttar Pradesh
Swine fever vaccine	<ul style="list-style-type: none"> Swine fever is the major disease of pig. To control this disease a Crystal violet vaccine against swine fever has been developed. Vaccination is done as first dose at 2 month, booster at 3 month and followed by annual revaccination. 	IVRI, Bareilly	Applicable in entire Uttar Pradesh
Product Processing			
Processes and technologies for meat products	<ul style="list-style-type: none"> A range of chicken, mutton, buffalo meat and combination meat products have been developed taking experience of western meat processing technologies and blending with oriental spicing and culinary practices to produce processed meat products of excellent quality and relevance to Indian consumers. Problem solving consultancies and contract research could be undertaken in the areas of product diversification for better returns, reduction of cooking losses for higher yields, extending shelf life, cost reduction through formulation changes, etc. 	IVRI, Bareilly	The technologies can be successfully employed by entrepreneurs in entire Uttar Pradesh.
Goat milk paneer	<ul style="list-style-type: none"> The goat milk is processed into products like Paneer using the technology developed by the Institute, a good quality Paneer can be prepared and sold to earn higher profit. 	2002 CIRG, Mathura	Applicable in entire Uttar Pradesh
Poultry Birds			
Vaccines for the control of salmonellosis in chicks (Toxoid vaccine)	<ul style="list-style-type: none"> The toxoid vaccine affords 100% protection against homologous (S.weltevreden) and 80-100% vaccinated birds against heterologous serovars. Further chicks from vaccinated hens are protected through maternal antibodies up to 3 weeks of age which is the most vulnerable period for salmonellosis. 	2004 GBPUA&T, Pantnagar	Applicable in entire Uttar Pradesh
B-77	<ul style="list-style-type: none"> A high yielding broiler strain attain a body weight of 1.30 kg at 6 weeks, 1.60 kg at 7 weeks and has good feed conversion efficiency (1:2.30kg). 	CARI Bareilly	Applicable in entire Uttar Pradesh.
CARIBRO Mrityunjai	<ul style="list-style-type: none"> A naked neck broiler with 2000-2150 g body weight at 7 weeks 	2000 CARI, Bareilly	Applicable in Uttar Pradesh
CARIBRO Dhanraja	<ul style="list-style-type: none"> A multi-coloured broiler with 2100-2150 g body weight at 7 weeks 	2000, CARI, Bareilly	Applicable in Uttar Pradesh

Inventory of Agricultural Technologies for Uttar Pradesh

CARI Nirbheek	<ul style="list-style-type: none"> ▪ Coloured birds having look of Aseel with annual egg production of 198 eggs, suitable for backyard poultry rearing and adapted to all environments, having delicious meat. 	2000 CARI, Bareilly	Applicable in Uttar Pradesh
CARI Shyama	<ul style="list-style-type: none"> ▪ Coloured birds having black plumage and fleshes with annual egg production of 210 eggs and adapted to all environments. 	2000 CARI, Bareilly	Applicable in Uttar Pradesh
Up cari	<ul style="list-style-type: none"> ▪ Coloured birds having curly feathers with annual egg production of 220 eggs and adapted to arid zones. 	2000 CARI, Bareilly	Applicable in Uttar Pradesh
Hitcari	<ul style="list-style-type: none"> ▪ Coloured birds for backyard poultry rearing, having reduced feathering specially in neck region with annual egg production of 200 eggs and adapted to tropical climates specially for hot and humid coastal regions 	2000 CARI, Bareilly	Applicable in Uttar Pradesh
Semen Diluent at Room Temperature	<ul style="list-style-type: none"> ▪ Diluent useful for commercial exploitation of poultry 	2000 CARI, Bareilly	Applicable in entire U.P.
CARI Priya	<ul style="list-style-type: none"> ▪ White egg layer with more than 301 eggs (Hen day) 	2001 CARI, Bareilly	Applicable in entire U.P.
CARI Sonali	<ul style="list-style-type: none"> ▪ A tinted egg layer with more than 283 eggs (Hen day) Laying golden brown eggs of high market demand. 	2001 CARI, Bareilly	Applicable in entire U.P.
CARI Debendra	<ul style="list-style-type: none"> ▪ Dual purpose chicken, body weight 1700-1800 g at 12 weeks, annual egg production 190-200 eggs. 	2001 CARI, Bareilly	Applicable in entire U.P.
CARI Sweta	<ul style="list-style-type: none"> ▪ Dual purpose Quail, body weight at 5 weeks 155-165 g. ▪ It is an alternative of poultry band has good scope for employment generation. 	2001 CARI, Bareilly	Applicable in entire U.P.
CARIBRO Tropicana	<ul style="list-style-type: none"> ▪ A broiler stock for tropical climate with 1800 g body weight at 7 weeks 	2003 CARI, Bareilly	Applicable in entire U.P.
CARI Brown	<ul style="list-style-type: none"> ▪ Broiler quail, body weight at 5 weeks 180-185 g 	2003 CARI, Bareilly	Applicable in entire U.P.
Make Feed Poultry	<ul style="list-style-type: none"> ▪ A computer software 	2004 CARI, Bareilly	Applicable in entire U.P.
Make Feed Dairy	<ul style="list-style-type: none"> ▪ A computer software 	2000 CARI, Bareilly	Applicable in entire U.P.
Feeding Management of exogenous enzyme in Poultry	<ul style="list-style-type: none"> ▪ Feeding of combined exogenous enzyme (amylase, β glucanase, cellulase, protease, phytase, pectinase and xylanase) at the rate of 15g/ 100 kg of poultry feed in broiler give rise in growth of about 1 kg in 28 to 30 days of age. 	2005 NDUAT , Faizabad	Bahraich, Basti, Mau, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh and Barabanki

FISHERIES				
Integrated fish farming	Stocking of fingerlings and feeding management in scientific fish culture	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> Fish yield increase upto 48% with stocking of fingerlings in proper ratio and density of Desi and Exotic breeds (Catla 15% + Rohu 25% + Mrigal 12% + Silver carp 15% + Common carp 18% + Grass carp 15%) alongwith supplementary feeding (mustard oil cake and rice bran 2% of body weight). 	Bahraich, Basti, Mau, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh and Barabanki
Integrated fish farming	Farming system management of fish, poultry and vegetable under integrated fish farming	2005 NDUAT, Faizabad	<ul style="list-style-type: none"> Integrated fish farming (Fish + Poultry + Vegetable) is more remunerative model and enhance additional income upto Rs. 75,000/ ha (127%) over traditional fish farming. 	Bahraich, Basti, Mau, Gorakhpur, Mahrajganj, Ballia, Faizabad, Azamgarh and Barabanki

ABBREVIATIONS

ANGRAU	:	Acharya N G Ranga Agricultural University
BHP	:	Brown Plant Hopper Plant Mosaic Virus
BGM	:	Botrytis Gray Mould
BHU	:	Banaras Hindu University
BLB	:	Bacterial Leaf Blight
BLS	:	Bacterial Leaf Streak
BND	:	Bud Necrosis Disease
BQ	:	Black Quarter Disease
BT	:	Blue Tongue
BVD	:	Bovine Viral Diarrhea
CARI	:	Central Avian Research Institute
CCSHAU	:	Ch. Charan Singh Haryana Agricultural University
CIAE	:	Central Institute for Agricultural Engineering
CIFE	:	Central Institute for Fisheries Education
CIMAP	:	Central Institute of Medicinal and Aromatic Plants
CIRG	:	Central Institute for Research on Goats
CISH	:	Central Institute for Sub-tropical Horticulture
CPE	:	Cumulative Pan Evaporation
CPRI-RRS	:	Central Potato Research Institute-Regional Research Station
CRIJAF	:	Central Research Institute for Jute and Allied Fibres
CSAUAT	:	Chandra Shekhar Azad University of Agriculture & Technology
CSSRI	:	Central Soil Salinity Research Institute
CSWCRTI	:	Central Soil & Water Conservation Research & Training Institute
DAS	:	Days After Sowing
DAT	:	Date After Transplanting
DMR	:	Directorate of Maize Research
DOR	:	Directorate on Oilseed Research
DSR	:	Direct Seeded Rice
DSR	:	Directorate of Seed Research
DSRSB	:	Direct Seeded Rice State Bed
DWR	:	Directorate of Wheat Research
FMD	:	Foot & Mouth Disease
FYM	:	Farm Yard Manure
GAU	:	Gujarat Agricultural University
GBPUAT	:	G. B. Pant University of Agriculture & Technology
HS	:	Haemorrhagic Septicemia
HYVs	:	High Yielding Varieties
IARI	:	Indian Agricultural Research Institute
ICAR	:	Indian Council of Agricultural Research
ICRISAT	:	International Crop Research Institute for Semi Arid Tropics, Hyderabad
IDM	:	Integrated Disease Management
IGFRI	:	Indian Grassland & Fodder Research Institute
IIPR	:	Indian Institute of Pulses Research

Abbreviations

IISR	:	Indian Institute of Sugarcane Research
IIVR	:	Indian Institute of Vegetable Research
IPM	:	Integrated Pest Management
IPNM	:	Integrated Plant Nutrients Management
IVRI	:	Indian Veterinary Research Institute, Bareilly
JNKVV	:	Jawaharlal Nehru Krishi Vishwa Vidyalaya
KGK	:	Krishi Gyan Kendra
KVK	:	Krishi Vigyan Kendra
LB	:	Leaf Blast
LCC	:	Leaf Colour Chart
LCV	:	Leaf Curl Virus
MYMV	:	Mungbean Yellow Mosaic Virus
MPKV	:	Mahatma Phule Krishi Vidyapeeth
NBAIM	:	National Bureau of Agriculturally Important Micro-organisms
NBFGR	:	National Bureau of Fisheries Genetic Resources
NBRI	:	National Botanical Research Institute
NCIPM	:	National Research Centre for integrated Pest Management
NDUAT	:	Narendra Deva University of Agriculture & Technology
NGO	:	Non-Government Organization
NHRDF	:	National Horticulture Research & Development Foundation
NPV	:	Nucleo Polyhydrosis Virus
NRCAF	:	National Research Centre for Agro-Forestry
NSKE	:	Neem Seed Kernel Extract
PAU	:	Punjab Agricultural University
PDC	:	Project Directorate on Cattle
PDCSR	:	Project Directorate on Cropping System Research
PPR	:	Pesta des petits ruminants
QPM	:	Quality Protein Maize
RAU	:	Rajasthan Agricultural University
RCT	:	Resource Conservation Technology
SAU	:	State Agricultural University
SMV	:	Sterility Mosaic Virus
SREP	:	Strategic Research and Extension Plan
SRI	:	System of Rice Intensification
SVBPUAT	:	Sardar Vallabh Bhai Patel University of Agriculture & Technology
SWSA	:	South Western Semi Arid
TNAU	:	Tamil Nadu Agricultural University
TSS	:	Total Soluble Solids
UAS	:	University of Agricultural Sciences
UMMB	:	Urea Molasses Mineral Block
WBPH	:	White Backed Plant Hopper
YMV	:	Yellow Mosaic Virus
ZARS	:	Zonal Agricultural Research Station
ZCU	:	Zonal Coordination Unit
ZT	:	Zero Tillage

Source

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