वार्षिक प्रतिवेदन
ANNUAL REPORT
2018-19

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भाकृअनुप
ICAR

भाकृअनुप–कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, कानपुर
ICAR-AGRICULTURAL TECHNOLOGY APPLICATION RESEARCH INSTITUTE (ATARI), KANPUR

ZONE - III

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Published

2019

Citation

Annual Report (2018-19)

ICAR-Agricultural Technology Application Research Institute, (ATARI), Kanpur

Contents

Published by

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Executive Summary

Training Programmes

KVKs organized 7161 training courses with the participation of 164644 farmers, farm women, rural youths and extension functionaries. The farmers and farm women were represented in a proportion of 79.77 % and 20.23 % respectively. In all 134364 farmers and farm women and 14703 rural youths were provided skill training in different enterprises. Similarly, 15577 extension personnel were also trained in different areas.

Frontline Demonstrations

A total of 23911 frontline demonstrations were organized out of which on crops (19468), horticulture (1641), farm implements (597), livestock strains (1870) and other enterprises (335). Farm implement component was addressed covering 436.38 ha area.

Technology Assessment

In this zone, 566 technologies were tested with involvement of **2523** farmers. KVKs have conducted on-farm trials in 13 major thematic areas. Total of 415 crop related technologies were tested with involvement of 1628 farmers. Cereals, pulses, oilseeds, vegetables, fruits, cash crops, etc. were assessed under different thematic areas. A total of 87 technologies were assessed under livestock management with active participation of 564 beneficiaries. A total of 64 enterprise related technologies were assessed with active participation of 331 farmers and farm women.

Extension Programmes

A large number of extension activities were organized by KVKs of Uttar Pradesh. Under this category KVKs have organised total 43675 programmes with the participation of 947336 farmers and 37981 extension personal.

A total of 66622 mass communication activities were organised such as radio talks, TV talks, film shows, news paper coverage etc.

Kisan mobile advisory services were given by KVKs with 9526 text messages and 18556 voice messages to 69.68 lakh farmers. The use of mobile has enabled the KVKs to reach the unreached farmers in distant and remotely located areas.

KVKs have also analysed 37870 soil samples by benefitting 62317 farmers.

Under Technology Week Celebration programme total 4486 activities were organised by benefitting 284665 farmers.

Seed Production

Seed production is one of the important activity of KVKs. They undertake quality seed production which may play a greater role in enhancing production and productivity of different crops. During the year 2018-19, KVKs of Uttar Pradesh produced 19241.83 q seed including cereals (13969.39q), oilseeds (493.66q), pulses (2876.19q), vegetables (53.15 q), commercial crops (1802.34 q), spices (27.61 q) and fodder (19.49 q).

Planting Material Production

The planting material/sapling production of vegetables, fruits, ornamentals, forestry, medicinal & fodder plants developed by KVKs. During this year KVKs produced 3540529 planting materials including vegetable seedlings (3202642), fruit saplings (70110) & ornamental (117743), medicinal & aromatic (8036), forestry (22617) and fodder plants (119381).

Bio-Products

The KVKs of Uttar Pradesh produced 263270.03 kg of bio-products including vermi compost, NADEP compost and bio pesticides.

Livestock & Fingerling Production

KVKs have produced 2696 livestock's including castles, calf goat, piglets and 52.72 lakh fingerlings.

HRD Activities

Under HRD, 42 KVKs of different SAUs have organised 21 programmes for 901 scientists. Such programmes were organized at the University level to provide technological backstopping in frontier areas of the technologies. Similarly, ICAR-ATARI, Kanpur organized 11 training programmes and 16 workshop/meetings at zonal level. All 83 KVKs have benefitted by these programmes. KVKs may take technological support from ICAR research institutes for experimenting new technologies at field level.

Publications

By KVKs : In all 36335 publications have developed by all KVKs of Uttar Pradesh. In total 119 books, 6144 training manual, 95 book chapter, 297 research papers, 116 seminar papers, 26108 technical bulletins, 783 technical reports, 2654 abstracts and 23 newsletters (19 by KVKs and 4 by ICAR-ATARI, Kanpur) were developed in this zone.

By ICAR-ATARI, Kanpur: A total 36 publications have developed by the ICAR-ATARI, Kanpur including technical books/bulletins (7), research papers (14), lead papers (4), book chapters (2), newsletters (4), technical reports (4) and popular article (1).

Instructure Facilities

Most of KVKs are having their own infrastructure facilities, in Uttar Pradesh availability of infrastructure are admin building (66), farmers hostel (59), staff quarters (59), soil testing labs (47), rain water harvesting structure (4), demo unit-1 (59), demo unit-2 (34), demo unit-3 (47) and others jeep (68), motor cycle (41), tractor (66).

Staff Position

ICAR-ATARI, Kanpur have filled up 12 staff personnel out of total 21 vacancies. There are still 5 positions of Scientific (1 PS, 2 Sr. Scientist, 2 Scientist), 3 positions of administrative and 1 supporting staff are lying vacant.

Out of total sanctioned post (1329), KVKs have filled 904 posts including Head (60), Scientist(343), Programme Asstt. (160), Administrative (112), Auxiliary(108), Supporting (121). Filled positions are 68.02 % and vacant post lying as 31.97 %

Status of Budget

During the financial year 2018-19, an amount of Rs 10302.77 lakh was utilized/released against the total budget of Rs. 10304.64 lakh.

Special Programmes

ICAR-ATARI, Kanpur is being also implemented special programmes such as Farmers FIRST: SAUs and ICAR Institute at 9, ARYA (Muzaffarnagar-1), NICRA KVKs-13, NIFTD KVKs-12, CFLD on Pulses – all KVKs, CFLD Oilseeds- 40 districts, Seed Hub-10 KVKs, Soil testing-72 KVKs, Women drudgery reduction project (30 KVKs), TSP-4 KVKs, PPV&FRA-60 KVKs, MGMG-15 ICAR Institutes, TSP-10 KVKs, IFS-31, RWH-37 KVKs, CRM-23 KVKs, CSISA and VATIKA.

कार्यकारी सारांश

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कृषि विज्ञान केन्द्रों द्वारा 7161 प्रशिक्षण सत्रों का आयोजन कर 164644 कृषकों जिसमें ग्रामीण युवा, महिला कृषक एवं कृषकों की सहभागिता रही। सहभागियों में 79.77 प्रतिशत कृषक तथा 20.23 प्रतिशत कृषक महिलाओं की भागीदारी रही, कुल 134364 कृषक तथा महिला कृषक 14703 तथा ग्रामीण युवाओं को विभिन्न कृषि व्यवसाय में क्षमता विकास में प्रशिक्षित किया साथ ही 15577 प्रसार कार्यकर्ताओं को विभिन्न क्षेत्रों में प्रशिक्षण दिया गया।

çFke ifä çn'ku

कुल 23911 प्रथम पंक्ति प्रदर्शनों का आयोजन किया गया जिसमें 19468 फसल विज्ञान 1641 उद्यान, 1870 पशुधन एवं 597 प्रक्षेत्र मशीनीकरण/यंत्र एवं 335 प्रदर्शन अन्य विषयों के अन्तर्गत आयोजित किये गये।

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इस प्रखण्ड में 2523 कृषकों के यहाँ 566 तकनीकी का परीक्षण किया गया। कृषि विज्ञान केन्द्रों ने 13 समस्याओं पर आधारित प्रक्षेत्र परीक्षण 415 फसलों से सम्बन्धित तकनीकी परीक्षण 1628, कृषकों के खेतों पर किये गये जिसमें खाद्यान्न, दलहनी, तिलहनी, सब्जी, फल एवं नकदी फसलें विशेष रूप से थी। 87 तकनीकी पशुपालन सम्बन्धी समस्याओं पर परीक्षण किये गये जिसमें 564 लाभार्थी चुने गये। 64 तकनीकी जो व्यवसाय से सम्बन्धित थीं 331 कृषकों के यहाँ तकनीकी का परीक्षण किया गया।

çlkj dk;Øe

उत्तर प्रदेश के विभिन्न कृषि विज्ञान केन्द्रों के द्वारा बडी संख्या में प्रसार कार्यक्रमों का आयोजन किया गया जिनकी संख्या 43675 है। इन कार्यक्रमों में 947336 की संख्या में कृषक लाभार्थी तथा 37981 प्रसार कार्यकर्ताओं को प्रशिक्षित किया गया। कुल 66622 संचार सेवा में कार्यक्रम आयोजित हुए जिसमें रेडियोकर्ता, फिल्म प्रदर्शन, न्यूजपेपर कवरेज आदि गतिविधियाँ प्रमुख है।

मोबाइल के माध्यम से परामर्शी सेवा में 9526 सन्देश तथा 18556 वायस सन्देश भेजे गये जिससे 69.68 लाख कृषक लाभान्वित हुए। इस प्रकार की सेवा से दूर–दराज के किसानों तक लाभ पहुँचाया गया। कृषि विज्ञान केन्द्रों द्वारा 37870 मृदा के नमूनों का परीक्षण कर 62317 किसानों को लाभ पहुँचाया गया, 4486 गतिविधियाँ तकनीकी सप्ताह के अन्तर्गत आयोजित कर 284665 कृषकों को लाभान्वित किया गया।

cht mRiknu

कृषि विज्ञान केन्द्रों का बीज उत्पादन एक प्रमुख कार्यक्रम है। विभिन्न फसलों के उत्पादन एवं उत्पादन क्षमता बढ़ाने में अच्छे बीजों की महत्वपूर्ण भूमिका है। वर्ष 2018–19 में उत्तर प्रदेश के कृषि विज्ञान केन्द्रों द्वारा 19241.83 कुन्तल बीज उत्पादित किया जिसमें खाद्यान्न (13969.39) कुन्तल, तिलहनी फसलों का (493.66) कुन्तल, दलहन का (2876.19) कुन्तल, सब्जियों का (53.15) कुन्तल, व्यवसायिक फसलों का (1802.34) कुन्तल, मसाले का (27.61) कुन्तल, तथा चारा वाली फसलों का (19.49) कुन्तल, उत्पादित किया गया।

lykfVx elVfj;y mRiknu

सब्जी पौध, फल पौध, साज–सज्जा, वन प्रजाति, औषधी एवं अन्य पौध तैयार की गई। वर्ष 2018–19 में 3540529 की संख्या में प्लाटिंग मैटेरियल तैयार हुआ जिसमें सब्जी पौध 3202662, फल पौध 70110, साज सज्जा 11774, वन प्रजाति 22617, सगन्ध एवं औषधीय 8036 एवं चारा की 119381 पौध विकसित की गई।

tfod mRiknu

कृषि विज्ञान केन्द्रों द्वारा 2696 जैविक उत्पाद जिसमें दुधारू पशु बकरी, सुअर एवं 52.72 लाख मत्स्य बीज तैयार किये गये ।

ekuo lalk/ku fodkl dk;Øe

इस कार्यक्रम के अन्तर्गत विभिन्न कृषि विश्वविद्यालय के 42 कृषि विज्ञान केन्द्रों द्वारा 21 कार्यक्रम आयोजित कर 901 वैज्ञानिकों को विश्वविद्यालय स्तर पर प्रशिक्षण देकर ज्ञानवर्धन आधुनिक नवीन तकनीक से अवगत कराया गया। इस क्रम मे अटारी कानपुर द्वारा 11 प्रशिक्षण आयोजित कर साथ ही 16 कार्यशालाओं के माध्यम से 83 कृषि विज्ञान केन्द्रों के वैज्ञानिकों को प्रशिक्षित किया गया।

çdk'ku

वर्ष 2018–19 में कुल 36335 की संख्या में प्रकाशन विभिन्न कृषि विज्ञान केन्द्रों द्वारा किया गया जिसमें शोधपत्र (297), तकनीकी बुलेटिन(26108), तकनीकी रिपोर्ट (783), पुस्तक (95), प्रशिक्षण माड्यूल (6144), पुस्तक चौप्टर (95), सेमिनार पेपर (116), न्यूजलेटर (23), एब्सट्रेक्ट (2654) भाकृअनुप–अटारी कानपुर द्वारा कुल 36 प्रकाशन प्रकाशित कराये गये। लीड पेपर (4), पुस्तक (7), तकनीकी रिपोर्ट (4), तकनीकी बुलेटिन (7), न्यूजलेटर (4) प्रकाशित किये गये।

bZkLVªDpj dh fLFkfr

उत्तर प्रदेश के अधिकांश कृषि विज्ञान केन्द्रों के पास अवस्थापना सुविधाएँ उपलब्ध है। इन सुविधाओं में प्रशासनिक भवन 66, कृषक छात्रावास 59 के.वी.के,, स्टाफ आवास 59 के.वी.के, मृदा परिक्षण प्रयोगशाला 47 के.वी. के, वर्षा जल संग्रहण संरचना 4, प्रदर्शन इकाई–I–59, प्रदर्शन इकाई–II–34, प्रदर्शन इकाई–III–47, जीप 68, मोटर साइकिल 41, ट्रेक्टर 66, की संख्या में कृषि विज्ञान केन्द्रों के पास उपलब्ध है

LVkQ dh fLFkfr

भाकृअनुप–अटारी, कानपुर में आर.एम.पी. सहित कुल 9 पद रिक्त है। प्रधान वैज्ञानिक (1), वरिष्ठ वैज्ञानिक (2), वैज्ञानिक (2), प्रशासनिक (3), सपोर्टिंग (1) तथा कृषि विज्ञान केन्द्रों में कुल स्वीकृत पद (1327) में से 425 (31.97%) पद रिक्त है। इसमें अध्यक्ष/वरिष्ठ वैज्ञानिक (23) वैज्ञानिक (155) कार्यक्रम सहायक (89) प्रशासनिक (55) आक्जलरी (58) तथा सपोर्टिंग (45) पद रिक्त है।

ctV dh fLFkfr

वित्तीय वर्ष 2018–19 में रूपये 10302.77 लाख की धनराशि अवमुक्त/उपभोग की गई जो कुल उपलब्ध बजट 10304.64 लाख के सापेक्ष उपयोग की गई।

fo'k"k dk;Øe

भाकृअनुप–अटारी, कानपुर द्वारा विशेष कार्यक्रम आयोजित किये जा रहे है जैसे "फार्मर फर्स्ट" कृषि विश्वविद्यालय एवं भाकृअनुप संस्थानों (9) आर्या (मुजफ्फरनगर–I), निकरा केवीके (13), एन आई.एफ टी डी (12), सी.एफ. एल.डी. दलहन (सभी केवीके), सी.एफ.एल.डी. तिलहन (40 केवीके), सीड हब (10 केवीके), मृदा परीक्षण लैब (81 केवीके), महिला ड्रगरी परियोजना (30 केवीके), टीएसपी (4 केवीके), एमजीएमजी (15 केवीके), पीपीवीएफआरए (60 केवीके), आयएफ एस (31 केवीके), आरडब्लूएच (37 केवीके), सीआरएम. (23 केवीके), सीसा एवं वाटिका कार्यक्रम आदि शामिल किये गए है।

Chapter-1

Introduction & Achievements at a Glance

1.1 Introduction

Indian Council of Agricultural Research established Zonal Coordination Unit at Kanpur in 1979 to monitor transfer of technology projects. The Zonal Coordination Unit was upgraded as Zonal Project Directorate in March, 2009. Again it was upgraded as ICAR-Agricultural Technology Application Research Institute (ATARI). Presently, ICAR-ATARI, Kanpur is engaged in planning, monitoring, reviewing and supporting ICAR initiated technology dissemination projects mainly KrishiVigyanKendras in Uttar Pradesh.

The major functions of the ICAR-ATARI, Kanpur are:

- Planning, monitoring and reviewing of KVK activities in the zone; to identify, prioritize and implement various activities related to technology integration and dissemination
- Coordinating with SAUs, ICAR institutes/ organizations, line departments and voluntary organizations in the zone for implementation of KVK mandated activities and
- Facilitating financial and infrastructural support to KVKs for effective functioning.

KVK and its mandate

In Zone-IV, 83 KVKs have been established by the ICAR in Uttar Pradesh.

The mandate of KVK is – Technology Assessment and Demonstration for its Application and Capacity Development (TADA-CD).

The activities of KVK include –

- On-farm testing to identify the location specificity of agricultural technologies under various farming systems.
- Frontline demonstrations to establish production potential of technologies on the farmers' fields.
- Capacity development of farmers and extension personnel to update their knowledge and skills on modern agricultural technologies.
- To work as Knowledge and Resource Centre of agricultural technologies for supporting initiatives of public, private and voluntary sector in improving the agricultural economy of the district.
- Provide farm advisories using ICT and other media means on varied subjects of interest to farmers.
- To produce quality technological products (seed, planting material, bio-agents, livestock) and make it available to farmers, organize frontline extension activities, identify and document selected farm innovations and converge with ongoing schemes and programmes within the mandate of KVK.

1.2 KVKs at a Glance

Table 3.2: KVKs in Uttar Pradesh at a Glance

No. of Districts in U.P.	No. of KVKs under				Total KVKs
	SAU	ICAR	NGO	Other (Educational)	
75	61	6	13	3	83

Note: Following 14 new/additional KVKs are established during 2018-19

- 6 new KVKs (Amethi, Kasganj, Sambhal, Shamli, Amroha & Hapur)
- 8 additional KVKs (Bahraich-II, Gonda-II, Sultanpur-II, Jaunpur-II, Ghazipur-II, Badaun-II, Muzaffarnagar-II & Lakhimpur Kheri-II)

Table 3.3: Host institution wise list of KVKs with their establishment year

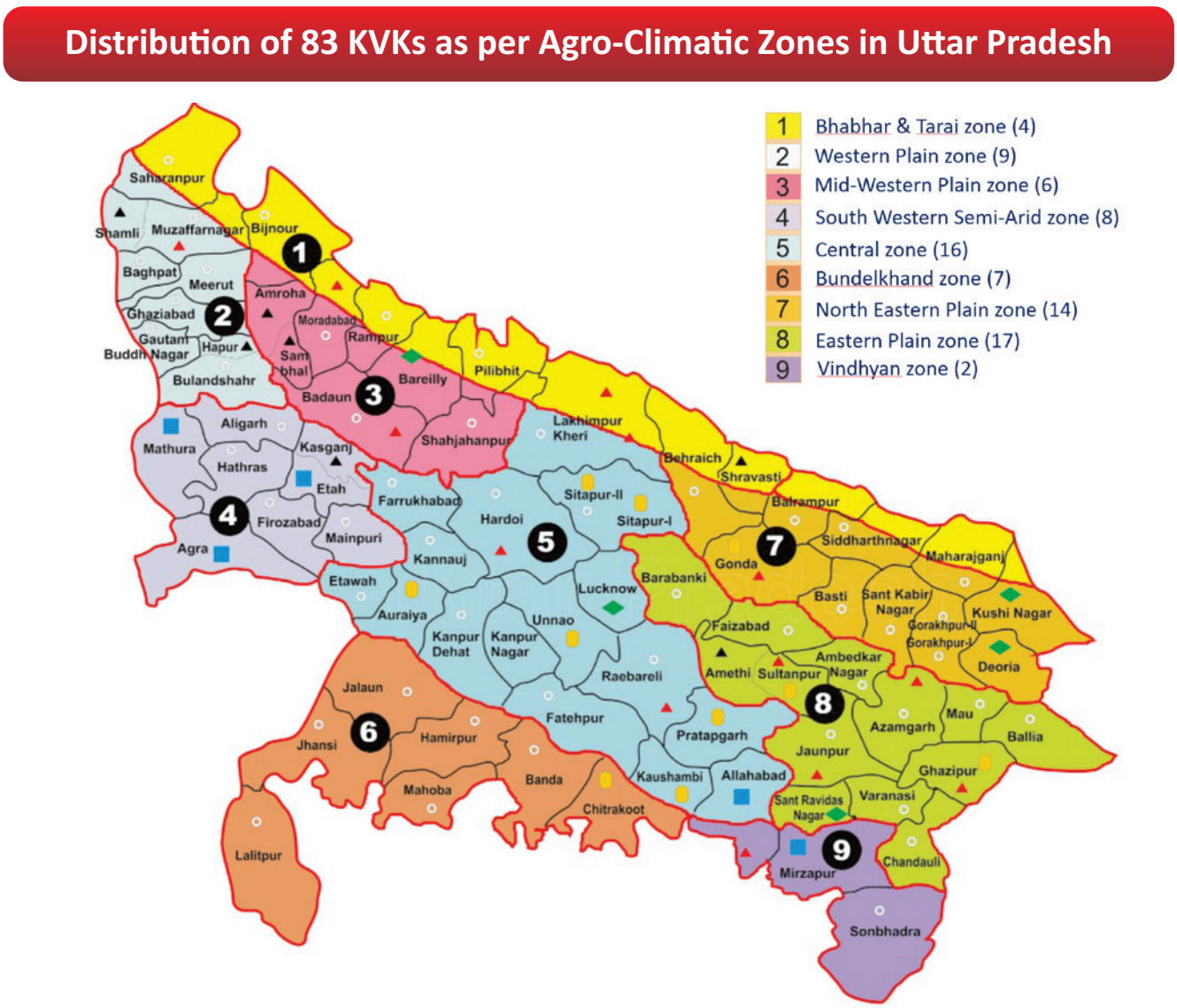
S.N.	Name of the KVK	Year of establishment	S.No.	Name of the KVK	Year of establishment
	NDUA&T, Faizabad				
1	Bahraich	1983	13	Balrampur	2005
2	Ballia	1989	14	Chandauli	2005
3	Basti	1984	15	Jaunpur-I	2005
4	Mau	1989	16	SantKabir Nagar	2009
5	Varanasi	1989	17	Ambedkar Nagar	2010
6	Siddharthnagar	1992	18	Amethi	2018
7	Faizabad	2004	19	Bahraich-II	2018
8	Gorakhpur	2004	20	Gonda-II	2018
9	Maharajganj	2004	21	Sultanpur-II	2018
10	Sonbhadra	2004	22	Jaunpur-II	2018
11	Azamgarh	2004	23	Ghazipur-II	2018
12	Barabanki	2004			
	CSAUA&T, Kanpur				
24	Raebareli	1984	31	Firozabad	2004
25	Fatehpur	1989	32	LakhimpurKheri	2005
26	Aligarh	1992	33	Farrukhabad	2005
27	Kannauj	2004	34	Hardoi	2005
28	Etawah	2004	35	Mahamaya Nagar	2009
29	Mainpuri	2004	36	Kasganj	2018
30	Kanpur Dehat	2004			
	BUAT, Banda				
37	Jhansi	1984	40	Jalaun	2005
38	Mahoba	2004	41	Lalitpur	2005
39	Hamirpur	2005	42	Banda	2007
	SVPUA&T, Meerut				
43	Bijnor	1992	53	Moradabad	2005
44	Rampur	1992	54	Gautam Budha Nagar	2005
45	Badaun-I	1992	55	Bulandshahar	2004
46	Saharanpur	1992	56	Badaun-II	2018
47	Ghaziabad	1992	57	Sambhal	2018
48	Sahajahanpur	1994	58	Shamli	2018
49	Meerut	1994	59	Amroha	2018
50	Muzaffarnagar-I	1994	60	Hapur	2018
51	Pilibhit	1998	61	Muzaffarnagar-II	2019
52	Baghpat	2004			
	U.P. Pt. Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwa Vidyalaya Evam Go Anusandhan Sansthan, Mathura				
62	Mathura	1984			
	Kamla Nehru Memorial Trust, Sultanpur				
63	Sultanpur	1976			

	RBS College, Agra				
64	Etah	1992	65	Agra	2002
	BHU, Varanasi				
66	Mirzapur	1984			
	Deendayal Research Institute, Gonda				
67	Gonda	1989	68	Chitrakoot	1992
	SHIAS&T, Allahabad				
69	Allahabad	1992			
	Raja Avadesh Singh Memorial Society, Pratatgarh				
70	Pratapgarh	1999			
	Kunwar Ram Bux Singh Educational Society, Lucknow				
71	Unnao	1999			
	Indian Veterinary Research Institute, Bareilly				
72	Bareilly	1985			
	Indian Institute of Sugarcane Research, Lucknow				
73	Lucknow	1994	74	Lakhimpur Kheri-II	2019
	Post Graduate College, Gazipur				
75	Gazipur	2002			
	Indian Institute of Vegetables Research, Varanasi				
76	Kushinagar	2005	78	St. Ravidas Nagar	2008
77	Deoria	2009			
	Manav Vikas Evam Seva Sansthan, Lucknow				
79	Sitapur-I	2005			
	Dr. Bhimrao Ambedkar Welfare Society, Allahabad				
80	Kaushambi	2006			
	SarpanchSamaj, New Delhi				
81	Auraiya	2007			
	Ranvir Rananjay Degree College Association, Sultanpur				
82	Sitapur-II	2011			
	Guru Gorakshnath Sewa Sansthan				
83	Gorakhpur-II	2016			

1.3 Agro-climatic Zones

Uttar Pradesh is divided into 9 agro climatic zones (South Western Semi Arid, Bhabhar and Tarai, Western Plain, Mid Western Plain, Central Plain, Bundelkhand, North Eastern Plain, Eastern Plain and Vindhyan Zone).

Distribution of KVKs in Uttar Pradesh



SAU KVKs (61)	**NDUAT (23):** Bahraich, Ballia, Varanasi, Basti, Siddharth Nagar, Mau, Faizabad, Gorakhpur, Maharajganj, Sonbhadra, Azamgarh, Barabanki, Jaunpur, Chandauli, Balrampur, Sant Kabir Nagar, Ambedkar Nagar, Amethi, Bahraich-II, Gonda-II, Sultanpur-II, Jaunpur-II, Ghazipur-II **CSAUAT (13):** Raibareli, Fatehpur, Aligarh, Kanpur Dehat, Mainpuri, Etawah, Kannauj, Firozabad, Lakhimpur Kheri, Farrukhabad, Hardoi, Mahamaya Nagar (Hathrus), Kasganj **BUAT (6):** Jhansi, Mahoba, Hamirpur, Jalaun, Lalitpur, Banda **SVPUAT (19):** Bijnor, Saharanpur, Badaun, Ghaziabad, Rampur, Meerut, Sahajahanpur, Muzaffarnagar, Pilibhit, Baghpat, Moradabad, Bulandshahar, Gautam Budha Nagar, Badaun, Sambhal, Shamli, Amroha, Simbhaoli (Hapur), Muzaffarnagar
ICAR KVKs (6)	Bareilly, Lucknow, Kushinagar, Bhadoi, Deoria, Lakhimpur Kheri
Educational KVKs (3)	Mathura, Allahabad, Mirzapur
NGO KVKs (13)	Sultanpur, Etah, Gonda, Chitrakoot, Unnao, Pratapgarh, Agra, Ghazipur, Sitapur, Kaushambi, Auraiya, Sitapur, Gorakhpur-II

1.4 Achievements of KVKs at a glance during 2018-19

1	**Training programmes**	**Courses**	7161	
		Participants	164644	
2.	**Frontline Demonstrations**	**Enterprises**	**Farmers**	**Area (ha)/Units (No.)**
		Pulses	8969	2950.06
		Oilseeds	5330	1973.00
		Cereals	3606	1498.45
		Millets	86	29.60
		Hybrids	378	127.37
		Fodder	631	55.78
		Spices	123	15.82
		Commercial	345	103.37
		Total (Crops)	**19468**	**6753.46**
		Vegetables	1454	214.64
		Fruits	127	34.00
		Flowers	60	4.30
		Total (Hort)	**1641**	**252.94**
		Farm Implements	**597**	**436.38**
		Livestock strains	**1870**	**5657**(units)
		Other Enterprises	**335**	**365** (units)
		Intercropping	**15**	**4.00**
		Grand Total	**23911**	**7846.78 (6022 units)**
3.	**Technology Assessment**			
		Technologies	**Trials**	-
	Crops	415	1628	-
	Livestock	87	564	-
	Other Enterprises	64	331	-
	Total	**566**	**2523**	-
4.	**Extension Programmes**			-
		Number	**Beneficiaries**	-
	Extension activities	43675	985317	-
	Other extension programmes (mass comm..)	66622	mass	-
	Mobile advisories	28082	6968358	-
	Soil samples	37870	62317	-
5.	**Seed Production (quintal)**	19241.83	-	-
6.	**Planting materials (lakh)**	35.40	-	-
7.	**Bio-Production (quintal)**	2632.70	-	-
8	**Livestock strains**			
	Livestock (No.)	2696	-	-
	Fisheries (lakh)	52.72		
10.	**Publications (No.)**	36369		
11.	HRD Programmes organised			
	No. of Programmes	26		
	No. of Participants	909		
12.	**Staff Position**	**KVKs**	**ATARIs**	
	Sanctioned	1329	20	
	Filled	904	11	
	Vacant	425	9	

Chapter-2

Training Programmes

KVKs organized 7161 training courses with the participation of 164644 farmers, farm women, rural youths and extension functionaries. The farmers and farm women were represented in a proportion of 79.77 % and 20.23 % respectively. In all 134364 farmers and farm women and 14703 rural youths were provided skill training in different enterprises. Similarly, 15577 extension personnel were also trained in different areas.

Table 2.1: Host wise physical achievement of Training Programme.

Category of institutions	Farmers and Farm women		Rural Youths		Extension Functionaries		Total	
	Courses	Participants	Courses	Participants	Courses	Participants	Courses	Participants
CSAUAT, Kanpur	794	20803	97	2048	93	2511	984	25362
NDUAT, Faizabad	1860	45903	316	6931	202	4536	2378	57370
SVPUAT, Meerut	876	18199	134	1510	229	3748	1239	23457
BUAT, Banda	391	10349	39	718	41	955	471	12022
ICAR KVKs	347	7716	45	980	8	360	400	9056
NGO KVKs	1196	26383	87	1592	105	2598	1388	30573
Educational KVKs	225	5011	42	924	34	869	301	6804
Grand Total	5689	134364	760	14703	712	15577	7161	164644

Table 2.2: Physical achievement of training programmes at a glance.

Clientele	Courses	Male	Female	Total
Farmers & Farm women	5689	106309	28055	134364
Rural Youths	760	11376	3327	14703
Extension Functionaries	712	13656	1921	15577
Total	**7161**	**131341**	**33303**	**164644**

2.1 Farmers and Farm Women

Total of 5689 courses were conducted by KVKs of the Uttar Pradesh with the participation of 134364 farmers and farm women. Maximum courses (1147) and participants (26496) were related to crop production. The other areas of trainings were horticulture (969 courses and 23613 participants); livestock production management (820 courses and 18594 participants); women empowerment (749 courses and 17176 participants); and soil health and fertility management (496) courses and 11516 participants).

Table 2.3: Training of farmers and farm women

Area of training	Courses	Male	Female	Total
Crop Production	1147	23819	2677	26496
Horticulture	969	20690	2923	23613
Soil Health & Fertility Management	496	10374	1142	11516
Livestock Production & Management	820	16404	2190	18594
Home Science/ Women empowerment	749	2262	14914	17176
Agril. Engineering	224	5327	419	5746
Plant Protection	715	15672	2217	17889
Fisheries	45	903	125	1028
Production of Input at site	170	3316	345	3661
Capacity Building & Group Dynamics	267	5836	883	6719
Agro forestry	87	1706	220	1926
Total	**5689**	**106309**	**28055**	**134364**

2.1.1 Crop Production

With respect to crop production, 1147 training courses were organized in Uttar Pradesh with the participation of 26496 farmers and farm women. Integrated crop management related 206 courses were organized in which 4771 farmers and farm women participated; followed by 144 courses on weed management, 82 on resource conservation technologies 150 courses on seed production and with the participation of 3255, 1834 and 3589 farmers and farm women respectively. The other important areas like cropping systems, crop diversification, integrated farming, integrated nutrient management, nursery management, production of organic inputs, etc. were also taken up.

Table 2.4: Training programmes related to crop production

Area of training	Courses	Male	Female	Total
Weed Management	144	2947	308	3255
Resource Conservation Technologies	82	1682	152	1834
Cropping Systems	116	2654	353	3007

Crop Diversification	64	1270	290	1560
Integrated Farming	59	1022	194	1216
Micro irrigation/irrigation	32	659	59	718
Seed production	150	3117	472	3589
Nursery management	49	972	114	1086
Integrated Crop Management	206	4452	319	4771
Soil & water conservation	26	489	40	529
Integrated nutrient Management	111	2263	158	2421
Production of organic inputs	56	1054	142	1196
Others	52	1238	76	1314
Total	**1147**	**23819**	**2677**	**26496**

2.1.2 Horticulture

Training on production technologies of vegetables, fruits, ornamental plants, plantation crops, tuber crops, spices and medicinal plants were organized. 492 courses on vegetables involving 12814 and 284 courses on fruit with the participation of 6455 were held. Similarly, in case of ornamental plants, organization of 63 courses with participation of 1431 persons was ensured. In the area of plantation crops, tuber crops, spices, medicinal & other crops 10, 35, 48 and 37 courses were organized with participation of 217, 782, 1227 and 687 farmers and farm women.

Table 2.5: Training on horticulture including sponsored training

Area of Training	Courses	Male	Female	Total
a) Vegetable Crops				
Production of low value and high valume crops	172	3694	421	4115
Off-season vegetables	62	1188	144	1332
Nursery raising	101	1933	213	2146
Exotic vegetables	19	470	21	491
Export potential vegetables	14	243	38	281
Grading and standardization	19	321	70	391
Protective cultivation	69	2520	820	3340
Others	36	669	49	718
Total (a)	**492**	**11038**	**1776**	**12814**
b) Fruits				
Training and Pruning	39	731	108	839
Layout and Management of Orchards	60	1183	109	1292
Cultivation of Fruit	65	1468	194	1662
Management of young plants/orchards	29	570	74	644
Rejuvenation of old orchards	41	755	105	860
Export potential fruits	3	69	6	75
Micro irrigation systems of orchards	22	486	48	534
Plant propagation techniques	17	347	37	384
Others	8	153	12	165
Total (b)	**284**	**5762**	**693**	**6455**
c) Ornamental Plants				
Nursery Management	33	685	95	780
Management of potted plants	2	37	2	39
Export potential of ornamental plants	5	100	15	115
Propagation techniques of Ornamental Plants	9	167	38	205
Others	14	274	18	292
Total (c)	**63**	**1263**	**168**	**1431**
d) Plantation crops				
Production and Management technology	8	146	19	165
Processing and value addition	2	45	7	52
Total (d)	**10**	**191**	**26**	**217**
e) Tuber crops				
Production and Management technology	33	682	36	718
Processing and value addition	2	64	0	64
Total (e)	**35**	**746**	**36**	**782**
f) Spices				
Production and Management technology	40	923	144	1067
Processing and value addition	5	109	9	118
Others	3	42	0	42
Total (f)	**48**	**1074**	**153**	**1227**
g) Medicinal and Aromatic Plants				
Nursery management	12	241	26	267
Production and management technology	16	243	28	271
Post harvest technology and value addition	6	72	17	89
Others	3	60	0	60
Total (g)	**37**	**616**	**71**	**687**
GT (a-g)	**969**	**20690**	**2923**	**23613**

2.1.3 Soil Health and Fertility Management

Total of 496 courses were attended by 11516 participants. The courses in the area of soil fertility management (102), integrated nutrient management (26), soil & water testing (91), production & use of organic inputs (60), balanced use of fertilizer (35), management of problem soils (18), etc. were organized with the objectives to create awareness, knowledge and skill among farmers to address various issues.

Table 2.6: Training on soil health and fertility management

Area of training	Courses	Male	Female	Total
Soil fertility management	102	2069	334	2403
Integrated water management	26	505	67	572
Integrated nutrient management	104	2222	269	2491
Production and use of organic inputs	60	1186	79	1265
Management of problematic soils	18	459	35	494
Micro nutrient deficiency in crops	33	693	51	744
Nutrient use efficiency	23	489	60	549
Balance use of fertilizer	35	734	82	816
Soil & water testing	91	1735	165	1900
others	4	282	0	282
Total	**496**	**10374**	**1142**	**11516**

2.1.4 Livestock Production Management

All together 820 courses were organized with the participation of 18594 participants. The courses related to disease management (218) were organized with the participation of 4874 cattle owners. Dairy management (189) was second preferred programme attended by 4216 participants. Feed and fodder management, animal nutrition, poultry, quality animal products, etc were other priority areas.

Table 2.7: Training on livestock production and management

Area of training	Courses	Male	Female	Total
Dairy Management	189	3738	478	4216
Poultry Management	63	1071	252	1323
Piggery Management	10	243	20	263
Rabbit Management	6	164	27	191
Animal Nutrition Management	124	2549	267	2816
Disease Management	218	4338	536	4874
Feed & fodder technology	135	2644	455	3099
Production of quality animal products	36	775	85	860
Others	39	882	70	952
Total	**820**	**16404**	**2190**	**18594**

2.1.5 Women Empowerment

A range of courses (749) related to women empowerment were organized with the participation of 14931 farm women. Value addition courses (124) were attended by highest number of farm women (2849), followed by courses on women and child care (85) attended by 1857 participants, household food security by kitchen gardening (97) attended by 2239 farm women, etc. The farm women also showed interest in courses like storage losses, women & child care, rural craft, developing high nutrient efficient diet, drudgery reduction, diet related courses, etc. were also conducted.

Table 2.8: Training on Home Science/Women Empowerment

Areas of training	Courses	Male	Female	Total
Household food security by kitchen gardening	97	153	2086	2239
Design and development of low/minimum cost diet	48	99	964	1063
Development of high nutrient efficiency diet	42	46	842	888
Minimization of nutrient loss in processing	45	77	843	920
Processing & cooking	27	23	562	585
Gender mainstreaming through SHGs	28	140	419	559
Storage loss minimization techniques	52	149	978	1127
Value addition	124	238	2611	2849
Women empowerment	59	184	1125	1309
Location specific drudgery reduction technologies	64	119	1289	1408
Rural crafts	22	14	427	441
Women and child care	85	68	1789	1857
Others	56	952	979	1931
Total	**749**	**2262**	**14914**	**17176**

2.1.6 Agricultural Engineering

Total of 224 courses in various aspects related to farm machinery, implements and its maintenance, post harvest and value addition were organized by KVKs, benefiting 5746. farmers and farm women. Maximum courses on repair & maintenance of farm machinery & implements (42) were organized benefiting 832 persons. Newer areas like installation and maintenance of micro irrigation system, use of plastics, small tools, etc. were also taken up in training programmes.

Table 2.9: Training on agricultural engineering

Areas of training	Courses	Male	Female	Total
Farm machinery & its maintenance	42	790	42	832

Installation and maintenance of micro irrigation systems	17	342	16	358
Use of plastics in farming practices	10	161	34	195
Production of small tools & implements	8	91	22	113
Repair and maintenance of farm machinery and implements	99	1890	86	1976
Small scale processing & value addition	8	91	62	153
Post harvest technology	14	196	76	272
Others	26	1766	81	1847
Total	**224**	**5327**	**419**	**5746**

2.1.7 Plant Protection

Under Plant Protection total 715 courses were organized with the participation of 17889 persons. The highlights of these programmes and others each course were on IDM (196), IPM (335), bio control of pests and diseases (93), production of bio control agents & bio pesticides (43).

Table 2.10: Training on plant protection

Areas of training	Courses	Male	Female	Total
Integrated pest management	335	6711	708	7419
Integrated disease management	196	4041	361	4402
Bio-control of pests and diseases	93	2072	271	2343
Production of bio control agents & bio pesticides	43	785	106	891
Others	48	2063	771	2834
Total	**715**	**15672**	**2217**	**17889**

2.1.8 Fish Production

The courses on integrated fish farming (15) and composite fish culture (10) were mainly organized with the participation of 344 and 213 persons. Overall 45 courses attracted participation of 1028 persons.

Table 2.11: Training on fish production

Areas of training	Courses	Male	Female	Total
Integrated fish farming	15	268	76	344
Carp breeding and hatchery management	4	75	0	75
Carp fry and fingerling rearing	1	16	0	16
Composite fish culture	10	202	11	213
Hatchery management and culture of freshwater prawn	6	123	13	136
Portable plastic carp hatchery	2	38	2	40
Others	7	181	23	204
Total	**45**	**903**	**125**	**1028**

2.1.9 Production of inputs at site

Total 170 courses on this theme attracted participation of 3661 persons were organized. Seed production, vermi composting and organic manures attracted maximum participation.

Table 2.12: Training on production of input at the site

Areas of training	Courses	Male	Female	Total
Seed Production	58	1138	80	1218
Planting material production	11	202	18	220
Bio-agents production	3	51	16	67
Bio-pesticides production	6	96	30	126
Bio-fertilizer production	12	206	11	217
Vermi-compost production	30	661	60	721
Organic manures production	12	210	53	263
Production of Bee-colonies and wax sheets	2	50	0	50
Small tools and implements	2	45	7	52
Production of livestock feed and fodder	7	126	16	142
Mushroom Production	15	301	54	355
Apiculture	3	50	0	50
Others	9	180	0	180
Total	**170**	**3316**	**345**	**3661**

2.1.10 Capacity Building and Group Dynamics

267 courses were organized benefiting 6719 persons. The topics covered in the programmes included leadership development, group dynamics, SHGs, entrepreneurship development, WTO & IPR, etc.

Table 2.13: Training on capacity building and group dynamics

Areas of training	Courses	Male	Female	Total
Leadership development	49	1061	151	1212
Group dynamics	27	521	88	609
Formation and Management of SHGs	66	1321	340	1661
Mobilization of social capital	16	344	13	357
Entrepreneurial development of farmers/ youths	59	1284	114	1398
WTO and IPR issues	12	264	32	296
Others	38	1041	145	1186
Total	**267**	**5836**	**883**	**6719**

2.1.11 Agro-forestry

In this area, 87 courses were organized benefiting 1926 farmers. The topics covered in the programmes included production technology, nursery management, integrated farming systems, etc.

Table 2.14: Training on agro-forestry

Areas of training	Courses	Male	Female	Total
Production technologies	40	785	62	847
Nursery management	25	477	81	558
Integrated Farming Systems	17	352	61	413
Others	5	92	16	108
Total	**87**	**1706**	**220**	**1926**

2.2 Training of Rural Youths

Total of 761 courses involving 14703 persons were conducted. The highest participation was attracted towards the programmes like seed production (95), nursery management of horticultural crops (46), vermi culture (33), mushroom production (63) and organic inputs production (34). Other courses viz protected cultivation, commercial fruit production, planting material production, bee keeping, value addition, rural crafts, dairying, poultry, etc were preferred by the youth. Similarly, livestock and fisheries, crop production and management and post harvest management related programmes were also organized.

Table 2.15: Training on Rural youths

Areas of training	Courses	Male	Female	Total
Nursery Management of Horticulture crops	46	765	96	861
Training and pruning of orchards	18	313	23	336
Protected cultivation of vegetable crops	29	528	50	578
Commercial fruit production	20	371	49	420
Integrated farming	19	335	37	372
Seed production	95	1787	151	1938
Production of organic inputs	34	571	86	657
Planting material production	21	348	50	398
Vermi-culture	33	564	113	677
Mushroom Production	63	1059	198	1257
Bee-keeping	34	631	32	663
Sericulture	2	37	3	40
Repair and maintenance of farm machinery & implements	30	515	18	533
Value addition	54	187	797	984
Small scale processing	11	44	149	193
Post Harvest Technology	16	113	171	284
Tailoring and Stitching	21	25	405	430
Rural Crafts	19	66	262	328
Production of quality animal products	3	35	19	54
Dairying	43	730	146	876
Sheep and goat rearing	45	756	146	902
Piggery	9	185	0	185
Poultry production	46	724	166	890
Ornamental fisheries	1	0	15	15
Composite fish culture	4	140	1	141
Pearl culture	4	30	0	30
Fish harvest and processing technology	1	15	0	15
Fry and fingerling rearing	1	15	10	25
Other	39	487	134	621
TOTAL	**761**	**11376**	**3327**	**14703**

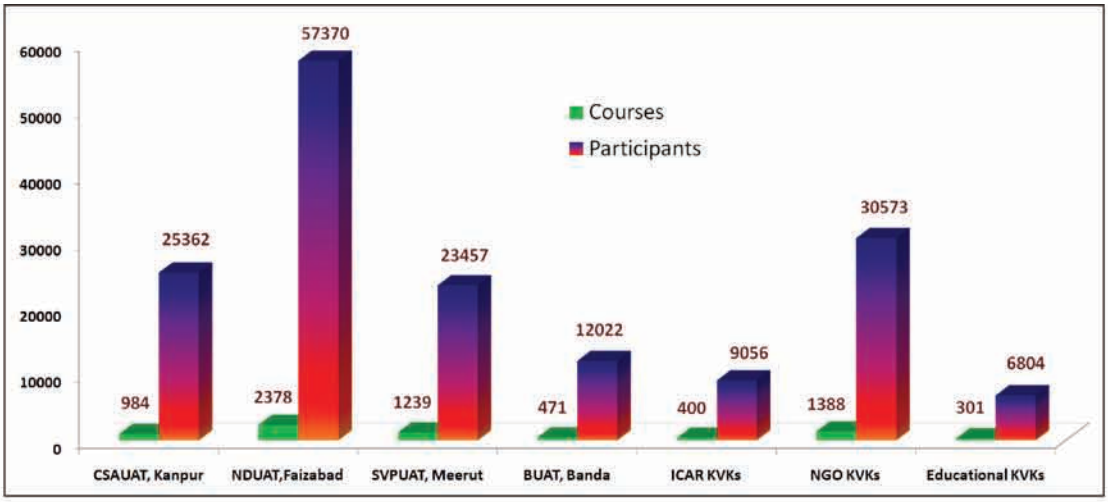
2.3 Training Of Extension Personnel

712 courses involving 15577 extension personnel were organized in the by the KVKs of Uttar Pradesh. Major areas in which extension personnel were trained were productivity enhancement in field crops (98), integrated pest management (105), INM (64), production of organic inputs (34), livestock feed & fodder (45), women & child care (37) etc.

Table 2.16: Training for extension personnel

Areas of training	Courses	Male	Female	Total
Productivity enhancement in field crops	98	2272	56	2328
Integrated Pest Management	105	2224	42	2266
Integrated Nutrient management	64	1291	70	1361
Rejuvenation of old orchards	32	706	5	711
Protected cultivation technology	32	769	7	776
Production and use of organic inputs	34	812	19	831
Care & maintenance of farm machinery & implements	27	567	9	576
Gender mainstreaming through SHGs	5	86	12	98
Formation and Management of SHGs	9	129	50	179
Women and Child care	37	60	760	820
Low cost and nutrient efficient diet designing	24	82	357	439
Group Dynamics and farmers organization	13	241	98	339
Information networking among farmers	6	142	47	189
Capacity building for ICT application	13	248	32	280
Management in farm animals	61	1317	16	1333
Livestock feed and fodder production	45	929	36	965
Household food security	21	135	291	426
Other	86	1646	14	1660
TOTAL	**712**	**13656**	**1921**	**15577**

Training Programmes



On campus training on grafting: KVK Hamirpur

Off campus training on weed management: KVK Lalitpur

On campus training on drum seeder: KVK Raebareilly

On campus training on value addition for rural women: KVK Jalaun

On campus training on seed treatment: KVK Sitapur-I

On campus training on surf making: KVK Bareilly

Chapter-3

Frontline Demonstrations

Frontline demonstration (FLD) is an important activity of KVKs. It shows the production potential of improved technologies to the farmers. KVKs played important role to showcase and promote the latest varieties and other technologies related to cereals, oilseeds, pulses, vegetables, fruits, etc. to enhance the production and productivity. A total of 23911 frontline demonstrations were organized out of which on crops (19468), horticulture (1641), farm implements (597), livestock strains (1870) and other enterprises (335). Farm implement component was addressed covering 436.38 ha area.

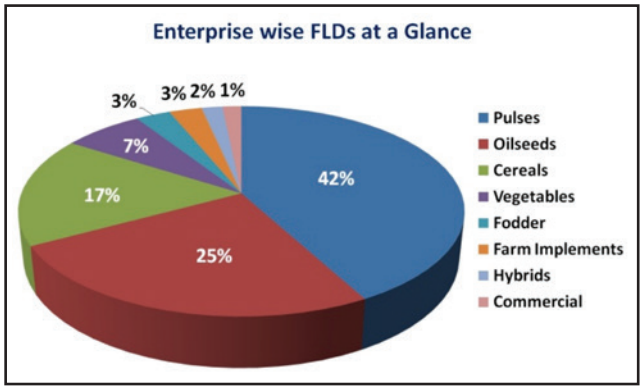


Table 3.1 : Physical achievement of frontline demonstrations

Enterprise	Demo	Area (ha)/units
Pulses	8969	2950.06
Oilseeds	5330	1973.00
Cereals	3606	1498.45
Fodder	631	55.78
Hybrids	378	127.37
Commercial	345	103.37
Spices	123	15.82
Millets	86	29.60
Total (Crops)	**19468**	**6753.46**
Vegetables	1454	214.64
Fruits	127	34.00
Flowers	60	4.30
Total (Hort)	**1641**	**252.94**
Livestock strains	**1870**	**5657**(units)
Farm Implements	**597**	**436.38**
Other Enterprises	**335**	**365** (units)
Intercropping	15	4.00
Grand Total	23911	**7846.78 (6022 units)**

3.1 Cluster FLD on Pulses and Oilseeds

Technology demonstrations on pulses were organized on an area of 2950.05 ha involving 8969 farmers and on oilseeds on an area of 1973 ha. Involving 5330 farmers. The crop wise and thematic area wise information is exhibited in tables.

3.1.1 Cluster FLD on Pulses

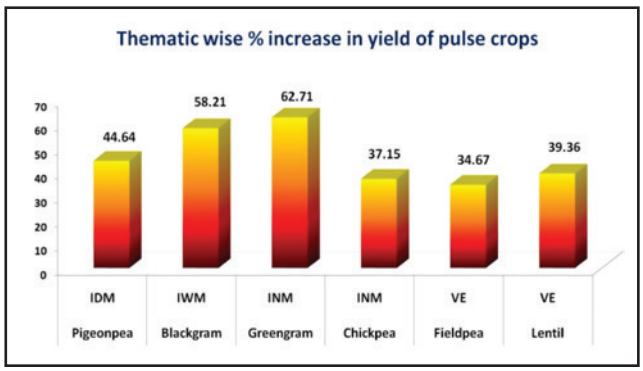


Table 3.1.1: Thematic area wise physical achievement of Cluster FLD on pulses (U.P.)

Crop/ No. of KVKs	Thematic Area	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase
Pigeonpea (32)	Varietal	939	291.13	16.50	11.81	39.68
	ICM	606	202.00	15.78	11.71	34.79
	IPM	125	50.00	22.20	16.50	34.55
	RCT	25	10.00	18.60	14.20	30.99
	IDM	10	3.00	16.20	11.20	44.64
Total		**1705**	**556.133**	**17.86**	**13.08**	**36.47**
Blackgram (31)	Varietal	775	283.28	8.65	6.03	43.39
	ICM	531	181.00	10.17	7.99	27.21
	IWM	241	90.00	10.60	6.70	58.21
	INM	50	20.00	10.70	9.30	15.05
	IPM	45	20.00	10.50	7.50	40.00
Total		**1642**	**594.28**	**10.12**	**7.50**	**34.89**
Greengram (24)	Varietal	899	327.26	10.92	7.03	55.37
	ICM	190	53.00	9.26	7.20	28.48
	INM	75	30.00	7.20	4.43	62.71
	IPM	7	7.00	10.87	7.81	39.18
Total		**1171**	**417.26**	**9.56**	**6.62**	**44.50**
Chickpea (28)	Varietal	842	288.58	19.16	14.19	34.97
	ICM	465	127.63	17.54	13.47	30.26
	INM	35	12.50	15.71	11.46	37.15
	IPM	34	12.00	16.91	12.69	33.31
	IDM	4	1.00	14.92	12.54	18.98
Total		**1380**	**441.705**	**16.85**	**12.87**	**30.93**

Fieldpea (20)	VE	1167	301.34	19.67	14.61	34.67
	ICM	194	39.20	19.21	15.15	26.83
Total		**1361**	**340.54**	**19.44**	**14.88**	**30.67**
Lentil (39)	Varietal	1038	376.74	14.57	10.45	39.36
	ICM	580	174.40	14.58	11.08	31.58
	IWM	50	20.00	12.65	9.9	27.78
	INM	38	28.00	19.68	15.98	23.15
	RCT	4	1.00	12.08	11.11	8.73
Total		**1710**	**600.14**	**14.71**	**11.71**	**25.69**
Grand Total		**8969**	**2950.05**	**14.76**	**11.11**	**32.83**

Pigeonpea: The thirty two KVKs conducted 1705 demonstrations on pigeonpea by covering an area of 556.13 ha exhibited average yield realization of 17.86 q/ha which was 36.47 % higher than local check with net return of Rs. 70547.03/ha. Six KVKs attained more than 20 q/ha of yield and eight KVKs reported yield of more than 18 q/ha in all the components. Highest yield was obtained under varietal evaluation by variety NDA-1 (25.8 q/ha) at district Ambedkar Nagar followed by variety IPA-203 (23.5 q/ha) at. Gonda Similarly, performance of component demonstrations was considerably better under ICM (23.11 q/ha) with variety Prakash at district Mirzapur followed by integrated pest management (22.20 q/ha) with variety IPA-203 at District Pratapgarh.

Blackgram: Thirty one KVKs laid out 1642 demonstrations on 594.28 ha area, exhibited yield levels of 10.12 q/ha against 7.50 q/ha in local checks which was 34.89 % higher. A net return of Rs. 34418/ha was realized in demonstrations which was about Rs. 14823 higher over local check. The highest yield (13.18 q/ha) was obtained with full package under ICM component at district Mirzapur with variety Sekhar-2. Performance of different component demonstrations was found satisfactory under varietal evaluation with variety PU-31 (10.92 q/ha) in Meerut followed by under INM component (10.70 q/ha) using variety PU-31 in Saharanpur district.

Greengram: Greengram related technologies were demonstrated by 24 KVKs with 1171 demonstrations on 417.26 ha area. This crop is mainly grown as summer crop with average yield of 9.56q/ha in demonstrations against 6.62 q/ha in local check with 44.50 % increase. A net return of Rs. 37811.23/ha was obtained from demonstrations. The highest yield was obtained under varietal evaluation (16.37 q/ha) with Virat in Hamirpur district followed by at district Etah (13.76 q/ha) with variety- HUM-16. In other component demonstration the highest yield was observed under ICM (11.8 q/ha) in district Ayodhya.

Chickpea : The twenty eight KVKs conducted 1380 demonstrations on chickpea by covering an area of 441.70 ha, exhibited yield of 16.85 q/ha against 14.88 q/ha of local check showing an increase of 30.67% higher than local check with net return of Rs. 44116.96/ha. Twelve KVKs realized more than 20.0 q/ha. The highest yield of 24.82 q/ha was recorded in GNG 1581 under varietal Evaluation at Unnao followed by var-RSG-975 (22.60 q/ ha) at Ambedkarnagar and var-JG-14 (20.60 q/ ha) at Chitrakoot. In other component demonstration the highest yield was observed under ICM (22.60 q/ha) in district Kaushambi followed by under IPM (16.50 q/ha) at Jhansi.

Field pea: Twenty KVKs conducted 1361 demonstrations on an area of 340.53 ha. On an average 19.44 q/ha yield of field pea was recorded in demonstrations, which was 30.67 % higher over local check. Net return of Rs. 47703.3/ha was reported. The highest yield (27.80 q/ha) was recorded with variety Aman at Varanasi followed by variety Vikash (24.4 q/ha) at Gonda under varietal evaluation. Performance of different component demonstrations was found satisfactory under ICM (23.15 q/ha) with variety IPFD 10-12 at Sultanpur-1 district fallowed by 21.16 q/ha yield with variety- IPFD 10-12 at Mahoba District.

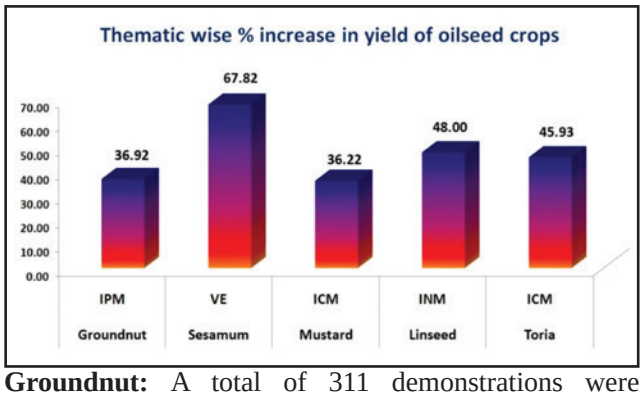
Lentil : Thirty nine districts laid out 1710 demonstrations by covering an area of 600.14 ha with lentil crop, exhibited 14.71 q/ha of productivity in demonstrations which was 25.69% higher than local check (11.71 q/ha). A net return of Rs. 39759.41 q/ha was realized in demonstrations. The highest yield (24.6 q/ha) was obtained with INM in district Saharanpur using variety PL-8 followed by variety IPL-81 under Varietal evolution gave yield of 22.50 q/ha at Chitrakoot. Variety PL-406 also gave (17.05 q/ha) yield at Shahjahanpur district under ICM component.

3.2 Cluster FLD on Oilseeds

Table 3.2: Cluster FLD on Oilseeds

Crop/ No. of KVKs	Thematic Area	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase in yield
Groundnut (8)	ICM	153	58.00	17.68	13.82	27.96
	Varietal	148	57.00	14.87	11.69	27.21
	IPM	10	4.00	8.53	6.23	36.92
Total		**311**	**119.00**	**13.69**	**10.58**	**29.44**
Sesamum (22)	Varietal	765	298.80	6.70	3.99	67.82
	ICM	286	83.00	5.14	3.99	28.72
	INM	281	103.60	7.00	4.71	48.73
	IWM	200	80.00	7.60	5.40	40.74
Total		**1532**	**565.40**	**6.61**	**4.52**	**46.14**
Mustard (52)	Varietal	1834	659.50	20.37	14.91	36.65
	ICM	882	329.40	18.45	13.54	36.22
	INM	309	114.60	18.18	14.41	26.18
	IPM	160	68.00	14.74	10.86	35.73
Total		**3185**	**1171.50**	**17.94**	**13.43**	**33.55**
Linseed (5)	Varietal	50	20.00	10.15	8.33	21.92
	INM	27	10.00	13.32	9.00	48.00
	ICM	18	6.00	7.03	5.68	23.68
Total		**95**	**36.00**	**10.17**	**7.67**	**32.56**
Toria (5)	Varietal	125	54.60	16.50	13.15	25.48
	INM	82	26.50	10.28	8.14	26.30
	ICM	28	10.00	10.58	7.25	45.93

Total	**207**	**81.10**	**13.39**	**10.64**	**25.79**
Grand Total	**5330**	**1973.00**	**12.36**	**9.37**	**31.91**



Groundnut: A total of 311 demonstrations were organized on 119 ha area in groundnut crop (Summer & Kharif season) with productivity level of 13.69 q/ha which was 29.44 % higher over local practice. The net return of Rs. 34644.58 was realized in demonstrations while it was Rs. 21127.2 in local check. A total of three component demonstrations were conducted. The highest yield of 21.35 q/ha was obtained in groundnut under ICM component with variety T.G. 37-A at Saharanpur district followed by 18.9 q/ha in ICM component in district Shahjahanpur using variety- GT-02. Variety Kadiri-6 also gave (16.60 q/ha) yield at Shahjahanpur district under ICM component.

Sesamum: The demonstrations on sesamum were laid out by twenty two KVKs at 1532 farmers' fields on 565.4 ha area. On an average 6.61 q/ha of yield was recorded in demonstrations, which was 46.14 % higher over local check (4.52 q/ha). A net return of Rs. 26126.3/ ha was realized in demonstrations. The highest yield was obtained under Varietal evaluation component at Hamirpur (7.50 q/ha) with variety Pragati followed by 6.90 q/ha in Kaushambi district under INM component with same variety Pragati. Variety RT-351 also gave (6.64 q/ha) yield at Mirzapur district under ICM component.

Mustard: The demonstrations on mustard were laid out at 3185 farmers' fields at 1171.5 ha area by fifty two KVKs. On an average 17.94 q/ha of yield was recorded in demonstrations, which was 33.55% higher over local check (13.43 q/ha). A net return of Rs. 43067.11/ha was realized in demonstrations. The highest yield of 31.80 q/ha with variety RH-749 was recorded under varietal evaluation in district Mathura followed by 29.52 q/ha by variety NRCDR-1 in Etah. The variety RH-749 also gave 28.10 q/ha yields at Saharanpur under ICM practices.

Linseed: The five KVKs namely Mirzaur, Mahoba, Banda, Lalitpur and Chitrakoot conducted 95 demonstrations on linseed by covering an area of 36.0 ha, exhibited yield of 10.17 q/ha against 7.67 q/ha of local check showing an increase of 32.56% higher than local check with net return of Rs. 37307.8/ha. The highest yield of 13.32 q/ha was recorded in variety Mau Azad 1 + sulphur at Chitrakoot district followed by var. LMS 9-2 (13.20 q/ ha) at Lalitpur.

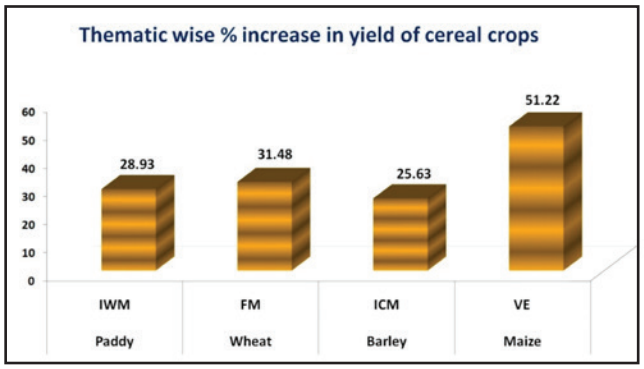
Toria: Five KVKs namely Bahraich, Gonda-II2, Kaushambi, Gonda and Ambedkarnagar conducted demonstrations in an area of 81.1 ha area with involvement of 207 farmers. On an average 13.39 q/ha yield of Toria was recorded in demonstrations, which was 25.79 % higher over local check. Net return of Rs. 23223.50/ha was reported. The highest yield of 16.8 q/ha was recorded in variety uttara at gonda district followed by var. PPT-1 (16.20 q/ ha) at Ambedakarnagar.

3.3 FLD on Cereals and Millets

A total of 3606 demonstrations were demonstrated in an area 1498.44 ha on cereals and 86 demonstrations on 29.6 ha area in millets were laid out, covering important cereal and millets crops like paddy, wheat, barley, maize and bajra in all the cropping seasons.

Table 3.3: FLD on Cereals and Millets

Crop/ No. of KVKs	Thematic Area	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase
Cereal crops						
Paddy (53)	Varietal	547	202.70	43.93	35.55	23.60
	ICM	234	77.00	40.50	34.21	18.39
	INM	232	120.40	50.66	41.96	20.74
	IPM	229	75.30	51.22	42.33	21.00
	IWM	165	84.00	50.39	39.08	28.93
	RCT	125	52.00	44.69	36.89	21.12
	IDM	119	43.30	52.43	44.19	18.66
Total		**1651**	**654.695**	**47.69**	**39.17**	**21.74**
Scented Rice (3)	Varietal	29	6.60	54.10	43.50	24.37
	ICM	1	0.40	46.95	40.62	15.58
	INM	1	0.40	31.68	28.50	11.15
Total		**31**	**7.40**	**44.24**	**37.54**	**17.86**
Coarse Rice (2)	VE	10	2.00	65.00	59.60	9.06
	WM	5	2.00	66.97	46.37	44.43
Total		**15**	**4.00**	**65.99**	**52.99**	**24.54**
Wheat (60)	Varietal	789	275.80	44.82	36.78	21.84
	FM	280	80.45	35.50	27.00	31.48
	INM	229	86.30	45.54	38.62	17.91
	ICM	170	170.00	45.86	39.14	17.17
	IWM	144	67.00	48.30	38.62	25.06
	RCT	141	98.40	44.76	36.91	21.28
	IDM	45	18.00	49.18	42.11	16.78
	IPM	10	4	40.24	27.96	17.92
Total		**1808**	**799.95**	**44.27**	**35.89**	**23.35**
Barley (2)	ICM	21	8.90	32.03	25.50	25.63
Total		**21**	**8.90**	**32.03**	**25.50**	**25.63**
Maize (5)	Varietal	45	11.00	35.23	23.30	51.22
	ICM	35	12.50	53.11	42.71	24.35
Total		**80**	**23.50**	**44.17**	**33.00**	**33.84**
G. Total (Cereal)		**3606**	**1498.44**	**46.40**	**37.35**	**24.23**
Millet Crops						
Bajra (6)	ICM	45	15.00	25.93	22.48	15.35
	Varietal	41	14.60	21.31	13.33	59.85
Total		**86**	**29.60**	**23.62**	**17.91**	**31.92**
Total (Millet)		**86**	**29.60**	**23.62**	**17.91**	**31.92**



Paddy: The demonstrations on seven thematic areas were conducted at 1651 farmers' fields on 654.6 ha area by 53 KVKs. The average yield of 47.69 q/ha was achieved in demonstrations, which was 21.74 % higher over local check (39.17 q/ha). The net return of Rs. 62395.13/ha was realized in demonstrations. The highest yield of 72.50 q/ha was recorded in IPM component in district Lucknow followed by at KVK Kaushambi (69.50 q/ha) under IDM.

Under varietal evaluation 547 demonstrations laid out in an area of 202.70 ha. The average yield of varieties was obtained 43.93 q/ha which was 23.60 % higher over local check (35.55 q/ha) with economic gain of Rs. 100249.13/ ha. The highest yield of 58.50 q/ha was recorded in PD-24 under varietal Evaluation at Moradabad followed by var-Pusa 1612 (52.80q/ ha) at G.B. Nagar and var-Improved Sambha (52.24 q/ ha) at Chandauli.

Similarly the demonstrations on scented rice were also conducted by 3 KVKs in three thematic areas at 31 farmers' fields on 7.4 ha area. The average yield of 44.24 q/ha was achieved in demonstrations, which was 17.86 % higher over local check (37.54 q/ha). Net return of Rs. 70267.33/ha was realized in demonstrations. The highest yield of 52.80q/ha was recorded under varietal evaluation with variety PB-1509 in district Bijnor followed by at KVK Bareilly (46.95 q/ha).

Beside these, the demonstrations on coarse rice by two KVKs in two thematic areas viz., VE and WM were also organized at 15 farmers' fields on 4.0 ha area. On an average 65.99 q/ha of yield was gained, which was 24.54 % higher over local check (52.99 q/ha).

Wheat: The wheat demonstrations on different thematic areas were conducted at 1808 farmers' fields covering an area of 799.95 ha. On an average 44.27 q/ha of yield was recorded in demonstrations, which was 23.35% higher over local check (35.89 q/ha). A net return of Rs. 56556/ ha was realized in demonstrations. The highest yield of 62.20 q/ha was recorded in wheat variety HD 2967 when weed management through chemical Cladinophop ethyl + Metsulfuron methyl under IWM in district Saharanpur followed by under varietal evaluation in variety HD-2967 (62.10 q/ha) and HD-3086 (57.15 q/ha) in Bahdoi and Maharaganj district.

Barley: Two KVKs laid out barley demonstrations at 21 farmers' fields covering an area of 8.90 ha. On an average 32.03 q/ha of yield was obtained over local check (25.50 q/ha) which was 25.63 % higher over local check. A net return of Rs. 25848/ha was obtained in demonstrations. The highest yield 33.95 q/ha was obtained under varietal evaluation with variety Mahamana-113 in Mirzapur followed by 30.11 q/ha under ICM in Mahoba by using BHS-400 variety.

Maize: The demonstrations on maize were laid out on varieties and ICM at 80 farmers' fields at 23.5 ha area. Maize is being grown in all the three crop seasons. The average yield of 44.17 q/ha was achieved in demonstrations, which was 33.84% higher over local check. A net return of Rs. 40452/ha was realized in demonstrations. The highest yield of 72.00 q/ha was recorded under ICM with variety DKC-9144 at District Kanpur Dehat followed by under varietal evaluation with variety HQPM-1 at Sitapur district which was 48.60 q/ ha. Variety Decalb 7074 also gave (42.10 q/ha) yield at Bulandshahar district under varietal evaluation.

Millets:

Bajra: The demonstrations on varietal evaluation and integrated crop management of bajra were laid out at 86 farmers' fields on 29.6 ha area. On an average 23.62 q/ha of yield was recorded in demonstrations, which was 31.92 % higher over local check (17.91 q/ha). A net return of Rs. 20187/ha was realized in demonstrations. The highest yield of 30.0q/ha was recorded under varietal evaluation with variety 86M86 at District Mathura followed by with variety 86M89 at Mirzapur which was 28.14 q/ ha. Variety H.P.-50 also gave (27.00 q/ha) yield at district Kanpur Dehat under ICM component.

3.4 FLD on Vegetables

A total of 1454 demonstrations on 214.64 ha were laid out on vegetables covering important crops in all the three crop seasons.

Table 3.4: FLD on Vegetables

Crop/ No. of KVKs	Thematic Area	No. of Farmers	Area (ha)	Demo (q/ha)	Local Check (q/ha)	% Increase
Bottlegourd (1)	IPM	10	2.00	255.10	208.50	22.35
	Total	**10**	**2.00**	**255.10**	**208.50**	**22.35**
Bitter-gourd (12)	Varietal	90	10.60	303.23	257.61	17.71
	ICM	10	2.00	182.00	135.00	34.81
	INM	10	1.00	310.00	275.00	12.73
	Total	**110**	**13.6**	**265.08**	**222.54**	**19.12**
Tomato (23)	Varietal	109	8.53	414.71	302.79	36.96
	ICM	20	0.70	360.56	286.58	25.81
	INM	20	4.00	260.60	226.13	15.24
	IPM	19	4.60	375.16	298.31	25.76
	IDM	17	3.40	259.38	215.13	20.57
	RCT	6	2.50	348.60	235.80	47.84

Total		**191**	**23.73**	**336.50**	**260.79**	**29.03**
	Varietal	73	5.36	160.48	130.20	23.26
	IPM	18	6.20	226.38	183.36	23.47
	ICM	10	0.20	157.00	117.00	34.19
Chilli (11)	IDM	10	1.00	148.00	112.00	32.14
Total		**111**	**12.76**	**172.97**	**135.64**	**27.52**
Brinjal (8)	Varietal	30	7.00	384.67	321.83	19.52
	ICM	29	3.45	430.65	357.11	20.59
	IPM	4	1.60	152.80	120.80	26.49
Total		**63**	**12.05**	**322.71**	**266.58**	**21.05**
Broccoli (1)	ICM	**10**	**1.00**	**54.06**	**44.30**	**22.03**
Okra (12)	Varietal	34	5.25	94.60	75.83	24.75
	ICM	29	7.50	118.16	98.41	20.08
	IPM	21	4.1	103.92	81.67	27.24
	RCT	10	0.30	114.30	96.10	18.94
	INM	10	1.00	105.00	76.00	38.16
Total		**104**	**18.15**	**107.20**	**85.60**	**25.23**
Vegetable Pea (15)	Varietal	146	8.38	1057.51	846.19	24.97
	IDM	81	13.60	70.55	59.55	18.47
	ICM	38	3.05	326.58	221.33	47.56
	INM	20	1.40	106.25	91.00	16.76
	FM	2	2.00	90.00	80.00	12.50
Total		**287**	**28.43**	**330.18**	**259.61**	**27.18**
Onion (18)	Varietal	131	7.20	249.12	166.75	49.40
	ICM	42	4.50	202.71	161.43	25.57
	INM	38	4.50	235.40	182.85	28.74
	IPM	10	2.00	290.70	245.60	18.36
Total		**221**	**18.2**	**244.48**	**189.16**	**29.25**
Capsicum (3)	INM	13	0.50	220.00	180.00	22.22
	IPM	10	5.00	162.00	150.00	8.00
	Varietal	6	0.40	159.47	121.62	31.12
	Total	**29**	**5.90**	**180.49**	**150.54**	**19.90**
Cabbage (6)	Varietal	18	6.16	256.22	209.63	22.22
	ICM	13	1.10	741.80	482.70	53.68
Total		**31**	**7.26**	**499.01**	**346.17**	**44.15**
Cauliflower (13)	Varietal	73	12.41	247.88	188.98	31.17
	INM	24	2.00	240.24	216.66	10.88
	ICM	18	3.50	150.13	131.44	14.22
	IPM	10	4.00	345.50	237.10	45.72
Total		**125**	**21.91**	**245.94**	**193.54**	**27.07**
Cucumber (7)	RCT	23	4.00	56.55	37.50	50.79
	VE	18	2.25	205.00	165.00	24.24
	ICM	5	0.50	192.00	168.50	13.95
	IPM	5	2.00	212.00	176.00	20.45
	Total	**51**	**8.75**	**165.39**	**136.75**	**21.67**
Garlic (2)	ICM	5	0.40	1670.11	835.00	100.01
	INM	5	0.50	118.00	85.00	38.82
	Total	**10**	**0.90**	**894.06**	**460.00**	**94.36**
Colocasia (1)	IDM	**12**	**5.00**	**185.64**	**160.54**	**15.63**
Pointed gourd (2)	IPM	20	7.00	108.40	92.00	17.83
	IDM	11	3.20	230.20	110.40	108.51
	Total	**31**	**10.2**	**169.30**	**101.20**	**67.29**
Pumpkin (1)	**VE**	**5**	**1.25**	**198.00**		
Radish (1)	**VE**	**8**	**0.80**	**325.00**	**250.00**	**30.00**
Sponge-gourd (1)	**VE**	**4**	**0.50**	**322.50**	**235.00**	**37.23**
Carrot (2)	Varietal	**10**	**1.50**	**176.28**	**140.56**	**25.41**
Muskmelon (1)	Varietal	**3**	**0.75**	**96.95**	**74.60**	**29.96**
Grand Total		**1454**	**214.64**	**277.12**	**194.03**	**42.83**

Bottle gourd: The demonstrations were conducted by KVK Lucknow at 10 farmers' fields on 2.0 ha area under IPM component. Average yield 255.10 q/ha was recorded in demonstrations, which was 22.35 % higher over local check (208.50 q/ha). A net profit of Rs. 64120/ ha was attained by farmers.

Bitter gourd: Twelve KVKs conducted 110 demonstrations on 13.6 ha area on varietal evaluation, ICM and INM. The demonstrations yielded 265.08 q/ha against 222.54 q/ha in local check showing an increase of 19.12% and net return of Rs. 206754.04/ha in demonstrations over local check.The highest yield of 482.39 q/ ha was obtained in Mirzapur district under varietal evaluation component using variety-Kashi Bahar fallowed by variety Sujata (387.50 q/ha.) at Hardoi district. In INM and ICM component, 310.0 q/ha and 182.0 q/ha. yield obtained at district Sonbhadra and Kanpur Dehat using variety –ND BGH-4 and Pusa Viswas respectively.

Tomato: 191 demonstrations were conducted by 23 KVKs in 23.73 ha area, exhibited 336.50 q/ha of yield against local check (260.79 q/ha) showing an increase of 29.03 % higher. The net return of Rs. 2.18 lakh/ha was reported. The highest yield of 660.00 q/ha was recorded by variety shridevi district Hardoi under ICM followed by variety KTH-335 (541.0 q/ha) at Azamgarh under varietal evaluation. Variety roopali also gave (403.0 q/ ha) at Rampur district under IPM component.

Chilli: 11 KVKs laid out 111 demonstrations on four different components ICM, IDM, IPM and varietal evaluation with average yield of 172.97 q/ha showing an increase of 27.52% over local check (135.64 q/ha) and net return of Rs. 346822/ha. The highest yield of 265.10 q/ha was obtained at district Kaushambi in variety NS-1701 followed by variety KA-2 (231.8 q/ha) under varietal evaluation in district Gonda. The variety VNR-750 also gave (157.0 q/ha) at Sultanpur district under ICM component.

Brinjal: A total of 63 demonstrations were carried out by eight KVKs on 12.25 ha area in the field of ICM, IPM and varietal interventions showed yield potential of 322.71 q/ha against 266.85 q/ha in checks, showing an increase of 21.05 %. The net profit of Rs. 202973/ha whereas, high yielding variety Krishna resulted yield of 588.00 q/ha at district Mathura followed by 582.64 q/ha at district Mirzapur by using Kashi Sandesh variety with ICM component. The variety VNR-750 also gave (157.0 q/ha) at Sultanpur district under ICM component.

Broccoli: KVK Lucknow laid out 10 demonstrations on 1.00 ha area with ICM aspects. The average yield was observed 54.06 q/ha showing an increase of 22.03% over local check (44.30 q/ha) and net return of Rs. 164990/ha.

Vegetable Pea: A total of 287 demonstrations laid out by 15 KVKs with five interventions namely FM, ICM,

IDM, INM and Varietal evaluation on 28.43 ha area. The average yield was observed 93.23 q/ha against 77.62 q/ha in local check with an increase of 20.11% and net return of Rs. 119416/ha. The highest yield was obtained by the variety Kashi Kanchan (149.00 q/ha) at district Mirzapur followed by AP-03 (140.03 q/ha) at Gorakhpur-I. The variety Kashi Mukti also gave (125.0 q/ha) at Chandauli district under varietal evaluation.

Okra: The twelve KVKs conducted demonstrations on 18.15 ha area with involvement of 104 farmer's field, exhibited average yield of 107.20 q/ha against 85.60 q/ha in local check with an increase of 25.23 % and net return of Rs. 109069/ha. Seven KVKs attained the yield more than 100 q/ha on different interventions whereas, 187 q/ha yield obtained under IPM by using Mahyco Bhindi-10 variety at district Gorakhpur followed by (125.0 q/ha) with variety VRO-6 at district Jaunpur and variety Kashi Kanti also gave (132.3 q/ha) at Auraiya district under varietal evaluation.

Onion: The onion demonstrations on different thematic areas namely ICM, IDM and Varietal evaluation were conducted at 221 farmers' fields covering 18.2 ha area by 18 KVKs. The average yield was obtained under demonstration was 224.48 q/ha against local check yield of 189.16 q/ha showing an increase of 29.25 % and net return of Rs. 152813 /ha. The highest yield 348.00 q/ha was obtained with variety AFDR at district Auraiya followed by 183.0 q/ha in district Sonbhadra with variety Pusa red.

Capsicum: 03 KVK conducted 29 demonstrations on of 5.9 ha area, exhibited yield of 180.49 q/ha against 150.54 q/ha of local check showing an increase of 19.90% higher than local check with net return of Rs. 162460/ha. The highest yield of 220 q/ha was recorded in variety Neptune at Raebareli.

Cabbage: Five KVKs conducted demonstrations at 31 farmer's fields in an area of 7.26 ha on ICM and varietal evaluation with yield level of 283.88 q/ha against check yield of 237.79 q/ha showing an increase of 19.38 % and net return of Rs. 183211 /ha. The highest yield 356.11 q/ha was recorded with application of Seed + Sulphur under varietal evaluation in district Balrampur.

Cauliflower: A total of 125 demonstrations were conducted in an area of 21.91 ha by thirteen KVKs on Integrated crop management, integrated pest management, INM and varietal evaluation with yield level of 245.94 q/ha against local check yield of 193.54 q/ha showing an increase of 27.07 % and net return of Rs. 115845 /ha. Highest yield of 280 q/ha was recorded under varietal evaluation using variety pusa snowbal in district Mathura followed by 275.0 q/ha in Baghpat by using variety pusa hybrid and 245.00 q/ha in district Ghaziabad.

Pointed gourd: KVK Meerut and Sitapur-II conducted 31 demonstrations on 10.20 ha area. Demonstrated field exhibited yield of 169.30 q/ha against local check (101.20 q/ha) showing an increase of 67.29 % in demonstrations. The net return of Rs. 154920/ha was reported.

Cucumber: A total of 51 demonstrations were conducted in an area of 8.75 ha by seven KVKs on ICM, IPM, RCT and varietal evaluation with yield level of 166.39 q/ha against local check yield of 136.75 q/ha showing an increase of 21.67 % and net return of Rs. 108762 /ha. Highest yield of 205 q/ha was recorded under varietal evaluation using variety Kalyanpur green in district Hardoi followed by 192.0 q/ha in Pratapgarh by using variety barsaati long.

Radis: KVK Baghpat conducted eight demonstrations on 0.80 ha area. Variety Pusa chetki gave 325.00 q/ha yield which was 30 % higher over local check (250 q/ha) with net return of Rs. 170000/ha.

Sponge gourd: KVK, Hardoi conducted four demonstrations in an area of 0.5 ha with yield level of 322.50 q/ha against check yield of 235.00 q/ha showing an increase of 37.23%.

Carrot: KVK Bareilly & GB Nagar conducted ten demonstrations on 1.50 ha area. Variety Pusa rudhira 176.28 q/ha yield which was 25.41 % higher over local check (140.56 q/ha) with net return of Rs. 125213/ha.

3.5 FLD on Fruits

Table 3.5: Physical achievement of FLD on fruits

Crop/ No. of KVKs	Thematic Area	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase in yield
Banana (4)	IPM	25	7.00	1030.00	970.00	6.19
	INM	10	4.00	825.73	725.50	13.82
	ICM	4	1.60	-	-	-
	Total	**39**	**12.60**	**927.87**	**847.75**	**9.45**
Guava (2)	IPM	**20**	**8.00**	**321.25**	**261.00**	**23.08**
Mango (4)	IPM	28	4.00	110.15	95.00	15.95
	ICM	10	5.00			
	INM	5	2.00	186.00	158.00	17.72
	Total	**43**	**11.00**	**148.08**	**126.50**	**17.06**
Musk Melan (1)	VE	**12**	**1.50**	**154.00**	**110.00**	**40.00**
Papaya (1)	ICM	**10**	**0.50**	**1246.92**	**819.44**	**52.17**
Water-melon (1)	VE	**3**	**0.40**			
Grand Total		**127**	**34.00**	**559.62**	**432.94**	**29.26**

Banana: KVK Lakhimpur and Sitapur-II conducted 39 demonstrations on INM, IPM and ICM components on 12.60 ha area. Demonstrated field exhibited yield of 927.87 q/ha against local check (847.75 q/ha) showing an increase of 9.45 % in demonstrations in the variety G-9. The net return of Rs. 6.95 lakh/ha was reported.

Mango: KVK Sitapur-II, Pratapgarh and Lucknow conducted 43 demonstrations on 11.00 ha area in the field of IPM, ICM & INM. The average yield was obtained under demonstration was 148.08 q/ha against local check yield of 126.50 q/ha showing an increase of 17.06 %. The highest yield of 186.00 q/ ha was obtained in Pratapgarh by using variety langra.

Guava: Demonstrations on guava were conducted on 20 farmer's field on an 8.0 ha area by two KVKs. The average yield of guava was obtained by 321.25 q/ ha which was 23.08% higher than local check. The net return from guava was Rs.5.03 lakh/ha.

Papaya: Demonstrations on papaya was conducted on 10 farmer's field on an 0.5 ha area by KVK . The average yield of guava was obtained by 1246.92 q/ ha which was 52.17 % higher than local check. The net return from papaya was Rs.8.56 lakh/ha.

3.6 FLD on Spices

A total of 123 demonstrations were conducted by nine KVKs on spices on an area of 15.82 ha.

Table 3.6: FLD on Spices

Crop/ No. of KVKs	Thematic Area	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase in yield
Turmeric (5)	RCT	15	1.73	546.30	435.04	25.57
	Varietal	10	0.50	245.00	190.00	28.95
	ICM	9	2.00	227.50	181.50	25.34
	Total	**34**	**4.225**	**339.60**	**268.85**	**26.32**
Coriander (3)	IDM	48	5.00	35.84	31.62	13.35
	INM	21	4.00	34.40	28.75	19.65
	VE	10	1.52	8.08	5.12	57.81
	Total	**79**	**10.52**	**26.11**	**21.83**	**19.59**
Garlic (1)	**IPM**	**10**	**1.08**	**138.60**	**123.30**	**12.41**
Grand Total		**123**	**15.83**	**168.10**	**137.99**	**21.82**

Turmeric: Five KVKs conducted demonstration at 34 farmers' fields in 4.22 ha area resulted yield of 339.60 q/ha against 268.85 q/ha in local check showing an increase of 26.32%. The net return was Rs. 1.45 lakh/ha with benefit cost ratio of 2.91.

Garlic: KVK Etah conducted 10 demonstrations on variety Sashank in 1.08 ha area. Demonstrated field exhibited yield of 138.60 q/ha against local check (123.30 q/ha) showing an increase of 12.41 % in demonstrations. The net return of Rs. 4.43 lakh/ha was reported.

Coriander: Demonstrations on coriander were conducted on 79 farmer's field on an 10.52 ha area by 03 KVKs. The average yield of coriander was obtained by 26.11 q/ ha which was 19.59% higher than local check. The net return from coriander was Rs. 1.22 lakh/ha.

3.7 FLD on Commercial crops

Potato: A total of 190 demonstrations laid out by 14 KVKs with five interventions namely IDM, ICM, INM, IPM, and varietal Evaluation on 52.17 ha area. The average yield of 561.13 q/ha with an increase of 42.90 % over local check (392.67 q/ha) was obtained. The net return of Rs. 1.91 lakh/ha was realized by the farmers.

Sugarcane: The seven KVKs conducted demonstration at 101 farmers' fields with seven interventions namely FM, ICM, INM, IPM, IWM, VE, WM and IDM in an area of 38.0 ha resulted yield of 992.93 q/ha against 863.83 q/ha in local check showing an increase of 14.95%. The net return was Rs. 1.81 lakh/ha. The highest yield of 1475 q/ha obtained under ICM(Trench method of sowing) in district Bijnaur.

Mentha: Four KVKs conducted 50 demonstrations in an area of 12.8 ha with IDM, IPM and VE intervention. The average yield was obtained 130.23 q/ha in comparison to local checks where it was 110.13 q/ha, showing an increase of 18.25% and net return of Rs. 0.92 lakh/ha.

Marigold: Four KVKs conducted demonstration at 60 farmers' fields in an area of 4.30 ha with varietal evaluation and ICM interventions resulted 160.40 q/ ha yield against 128.00 q/ha in local check showing an increase of 25.31%.

Table 3.7: FLD on Commercial crops

Crop/ No. of KVKs	The-matic Area	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase in yield
Potato (14)	IDM	103	30.00	348.05	283.32	22.85
	IPM	55	18.50	429.68	357.03	20.35
	Varietal	15	0.95	227.30	189.50	19.95
	INM	12	2.32	326.40	298.50	9.35
	ICM	5	0.40	1474.23	835.00	76.55
	Total	**190**	**52.17**	**561.13**	**392.67**	**42.90**
Sugar-cane (7)	ICM	50	18.00	1437.38	1093.13	31.49
	IDM	10	2.00	896.00	791.00	13.27
	INM	10	4.00	-	-	-
	IPM	10	4.00	925.00	810.00	14.20
	VE	10	5.00	6.60	5.10	29.41
	WM	10	4.00	956.25	925.00	3.38
	FM	1	1.00	750.00	700.00	7.14
	Total	**101**	**38.00**	**992.93**	**863.83**	**14.95**
Popler (1)	VE	4	0.40	-	-	-
Mentha (4)	VE	20	0.80	-	-	-
	IPM	20	8.00	130.75	117.25	11.51
	IDM	10	4.00	129.70	103.01	25.91
	Total	**50**	**12.80**	**130.23**	**110.13**	**18.25**
Commercial Grand Total		**345**	**103.37**	**561.43**	**455.54**	**23.24**
Flower						
Mari-gold (4)	Varietal	55	3.30	145.79	111.00	31.34
	ICM	5	1.00	175.00	145.00	20.69
	Total	**60**	**4.30**	**160.40**	**128.00**	**25.31**

3.8 FLD on Fodder

Agriculture without livestock is not complete therefore, the feed and fodder requirement is very much essential for nutritional security to the livestock. Therefore, different fodder crops demonstrations advocated at the farmers' fields to feed the animal population in the rural areas as concentrate roughages and green fodder for maintained their good health and enhanced the milk, meat and wool production.

Sorghum: Five KVKs conducted demonstration at 98 farmers' fields in an area of 14 ha resulted average yield of 477.63 q/ha against 391.11 q/ha in local check showing an increase of 22.12%. The net return was Rs. 41579/ha with benefit cost ratio of 3.73. The highest yield of 860.00 q/ha obtained under variety (CSH-24 MF) in district Gorakhpur followed by 719 q/ha in district Auraiya.

Berseem: The seventeen KVKs conducted 323 demonstrations on 26.8 ha area with an average yields of 689.56 q/ha against 538.57q/ha in local check. The yield gain was 28.03 % higher over local check. A net return of Rs. 76101/ha was obtained under demonstrations. The highest yield (1114.0 q/ha) was obtained with cultivar Vardan in district Mahoba followed by Basti (910 q/ha).

Maize: 02 KVKs laid out nine demonstrations on 1.5 ha area on fodder maize. The average yield was obtained by 411.75/ha over local check (155.79 q/ha) which was 164.30% higher.

Oat: Eight KVKs conducted 110 demonstrations in an area of 8.1 ha with an average yield of 253.00 q/ha against 186.40q/ha in local check. The yield gain was 41.79% higher over local check.

Sudan Grass: 41 demonstrations were laid out by two KVKs in an area of 3.15 ha. The average yield was 390.00 q/ ha which was 29.35 % higher than local check (301.5 q/ha).

Cowpea: KVK lalitpur conducted 4 demonstrations in an area of 0.50 ha with an average yield of 250.0 q/ha.

Table 3.8: FLD on fodder crops

Crop/ No. of KVKs	Thematic Area	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase in yield
Sorghum (5)	Varietal	67	7.00	639.50	500.13	27.87
	ICM	31	7.00	315.77	282.09	11.94
	Total	**98**	**14.00**	**477.63**	**391.11**	**22.12**
Berseem (17)	Varietal	286	25.05	635.78	463.15	37.27
	ICM	37	1.75	743.33	614.00	21.06
	Total	**323**	**26.80**	**689.56**	**538.57**	**28.03**
Maize (2)	**Varietal**	**9**	**1.50**	**411.75**	**155.79**	**164.30**
Oat (8)	Varietal	78	7.10	376.00	287.80	30.65
	ICM	22	0.75	573.50	530.00	8.21
	FM	10	0.25	130.00	85.00	52.94
	Total	**110**	**8.10**	**253.00**	**186.40**	**41.79**
Sugerbeat (1)	ICM	**15**	**1.00**	-	-	-
Sudan (2)	Varietal	**41**	**3.15**	**390.00**	**301.50**	**29.35**
Permial Grass (1)	Varietal	**3**	**0.04**	-	-	-
Cowpea(1)	**VE**	**4**	**0.50**	**250.00**	**25.00**	**900.00**
Jower(1)	**FM**	**20**	**0.50**	-	-	-
Lucern(1)	**ICM**	**8**	**0.20**	**260.00**	**240.00**	**8.33**
	Grand Total	**631**	**55.78**	-	-	-

3.9 FLD on livestock & fishery

Demonstrations on different interventions on livestock were carried out. 1870 demonstrations were laid out on enhancing milk yield, disease management, nutritional management & Diary, etc. 21 KVKs have conducted 944 demonstrations on cattle, 28 KVKs on Buffalo with 596 demonstrations, 8 KVK on goat and sheep with 184 demonstrations, 4 KVKs on calf with 72 demonstration, 2 KVKs on vaccination with 33 demonstrations and 3 demonstrations were conducted as composite fish culture.

Table 3.9: FLD conducted on livestock

Category	No. of KVKs	No. of Demonstrations	No. of Units/Area
Buffalo	28	596	935
Cattle	21	944	1661
Sheep & Goat	8	184	2463
Calf	4	72	153
Poultry	3	15	307
Composite fish culture	3	26	26
Vacination	2	33	112
Total	**69**	**1870**	**5657**

3.10 FLD on Hybrid crops

Hybrid Cereals: The sixteen KVKs laid out demonstrations on hybrid varieties of paddy, wheat, maize and bajra at 266 farmers' fields in an area of 104.5 ha. The demonstration yield of paddy (59.62 q/ha), wheat (64.23 q/ha) maize (67.65 q/ha) and bajra (27.08 q/ha) was recorded. The percentage yield increase was 31.62, 22.23, 23.45 and 16.70 % respectively over local check.

Hybrid Vegetables: The twelve KVKs conducted 92 demonstrations on important hybrid vegetable crops in 18.67 ha area. Among the vegetables, cabbage registered yield q/ha (214.00), cauliflower (364.12), chilli (209.93), okra (91.25), capsicum (294.00) and tomato (385.90). The percentage yield increase in yield was 38.10, 54.47, 23.34, 19.44, 17.60 and 25.50 respectively over local check.

Table 3.10: FLD on Hybrid crops

Crop/No. of KVKs	No. of Farmers	Area (ha)	Demo Yield (q/ha)	Check Yield (q/ha)	% Increase in yield
Cereal crop					
Paddy (09)	178	52.90	59.62	45.30	31.62
Bajra (2)	39	16.00	27.08	23.20	16.70
Maize (2)	30	12.00	67.65	54.80	23.45

Wheat (3)	19	23.60	64.23	52.55	22.23
Total (Cereal)	**266**	**104.50**	**54.65**	**43.96**	**24.30**
Vegetable					
Cauliflower (3)	24	4.33	364.12	235.72	54.47
Chilii (2)	18	4.50	209.93	170.20	23.34
Okra (1)	15	3.00	91.25	76.40	19.44
Cabbage (1)	4	1.00	214.00	132.50	38.10
Capsicum (1)	3	0.24	294.00	250.00	17.60
Tomato (4)	28	5.60	385.90	307.50	25.50
Total Veg. Crops	**92**	**18.67**	**259.87**	**195.39**	**33.00**
Fodder					
Napier (1)	10	0.20	18.85	13.05	44.44
Makhan Graas (1)	10	4.00	48.60	33.70	44.21
Total Fodder	**20**	**4.20**	**33.73**	**23.38**	**44.28**
G.Total (Hybrid)	**378**	**127.37**	**116.08**	**87.57**	**32.55**

3.11 FLD on Other Enterprises

Six KVKs demonstrated button and dhingri(oyster) mushroom production at 50 farmers fields covering 90 units and total production was 223.5 kg; whereas 9 KVKs demonstrated value addition covering 130 farmers with 120 units and Vermi compost at 45 farmers' fields covering with the production of 4 q/unit. Eight KVKs demonstrated the Kitchen Gardening covering 90 farmers in 90 units.

Table 3.11: FLD on other enterprises

Category	No. of KVKs	No. of Farmer	No. of units
Value addition	9	130	120
Kitchen Gardening	8	90	90
Button Mushroom	5	40	80
Vermi Compost	4	45	45
Oyster Mushroom	1	10	10
Storage of grain	1	20	20
Total	**28**	**335**	**365**

3.12 FLD on farm implements & machinery

Thirty two KVKs demonstrated implements (ZT Machine, Paddy Drum, Two bottom disc plough, Seed drill, Fertilizer Broadcaster, Laser land leveler, Thresher, Maize Sheller, Boom Sprayer, Potato Planter, Serrated sickle, Soil moisture indicator, Sugarcane stripper, Happy seeder Paddy strow, Weeder and Wheel Hand hoe) covering an area of 436.38 ha by involving 597 farmers.

Table 3.12: FLD on Farm implements & machinery

No. of KVKs	No. of Farmer	Area (ha)
ZT Machine (8)	282	227.32
Paddy Drum (3)	57	32.25
Laser land leveler (2)	41	26.00
paddy strow (1)	41	27.12
Serrated sickle (3)	39	23.50
Thresher (2)	36	14.00
Maize Sheller (2)	26	3.14
Boom Sprayer(2)	25	28.30
Seed drill (3)	10	4.00
Fertilizer Broadcaster (1)	10	27.20
Soil moisture indicator (1)	10	5.00
Potato Planter (2)	5	5.00
Weeder(1)	5	10.30
Two bottom disc plough (1)	5	2.00
Happy seeder (1)	3	0.75
Wheel Hand hoe (1)	2	0.50
Grand Total	**597**	**436.38**

Frontline Demonstraions

Sugercane & Greengram Inter Cropping: KVK Muzaffarnagar

FLD on Chickpea (GNG 1581): KVK Muzaffarnagar

FLD on Greengram (IPM 2-3): KVK Muzaffarnagar

FLD on Pea (IPFD 1012): KVK Sultanpur

FLD-Paddy visit at KVK Hamirpur

FLD on Chickpea (GNG 1581): KVK Auraiya

FLD on Bajra (86 M 90): KVK Mathura

FLD Greengram(Narendra Moong-1): KVK Sitapur-II

FLD on Pigeonpea (NA-2): KVK Jaunpur-II

FLD on ZT wheat showing: KVK Deoria

FLD on Bittergourd Machan: KVK Gorakhpur-II

FLD on Wheat (HD 2967): KVK Amethi

FLD on Women Empowerment: KVK Baghpat

FLD on Kitchen Gardening: KVK Chitrakoot

FLD on Cauliflower: KVK Bahraich-II

FLD on Zero till machine: KVK Jaunpur

Chapter-4

Technology Assessment

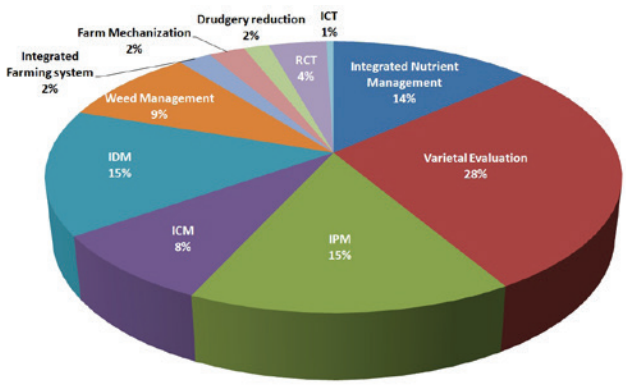
KVKs of Uttar Pradesh are performing on-farm testing to identify the location specificity of agricultural technologies under various micro-farming systems. Host wise performance of technology assessment under three category namely crop (415), livestock (87) and other enterprises (64) are shown in following Table 4.1.

Table 4.1: Host wise physical achievements of technology assessment

Host Organisations	Crop		Livestock		Other Enterprises	
	No. of Technologies	No. of Trials	No. of Technologies	No. of Trials	No. of Technologies	No. of Trials
CSAUAT, Kanpur	63	382	13	174	21	101
NDUAT, Ayodhya	99	144	18	55	8	12
SVPUAT, Meerut	81	238	14	92	9	28
BUAT, Banda	59	346	12	70	1	10
ICAR KVKs	24	129	6	30	3	16
NGO KVKs	69	301	19	115	20	139
Educational KVKs	20	88	5	28	2	25
Total	**415**	**1628**	**87**	**564**	**64**	**331**

4.1 Crop Related Technology Assessment

KVKs of Zone III of Uttar Pradesh conducted on-farm trials in 11 major thematic areas. Total of 415 technologies were tested with involvement of 1628 farmers. Cereals, pulses, oilseeds, vegetables, fruits, cash crops, etc. were assessed under eleven thematic areas



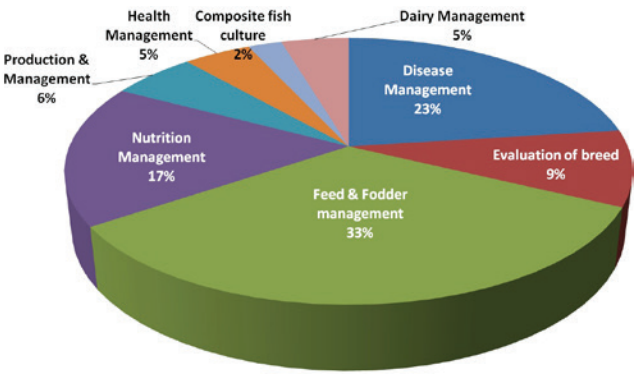
namely integrated nutrient management (56), Varietal Evaluation (116), integrated pest management (64), integrated disease management (62), integrated crop management (35), weed management (38), resource conservation technologies (16), drudgery reduction (7), integrated farming system (9), farm mechanization (10) and information & communication technology (2) etc.

Table 4.2: Crop related technologies assessed by KVKs

Thematic Area	Crop	Technology	Trial
Integrated Nutrient Management	37	56	195
Varietal Evaluation	68	116	402
IPM	40	64	241
ICM	31	35	165
IDM	40	62	280
Weed Management	22	38	122
Integrated Farming system	9	9	36
Farm Mechanization	9	10	42
Drudgery reduction	7	7	52
RCT	12	16	65
ICT	2	2	28
Total	**277**	**415**	**1628**

4.2 Assessment of Livestock Technologies

A total of 87 technologies were assessed under livestock management by KVKs of Zone III Uttar Pradesh with active participation of 564 beneficiaries. The technologies related to different thematic areas like



disease management (20), evaluation of breeds (8), feed and fodder management (29), nutritional management (15), production management (5), health management (4), composite fish culture (2) and dairy management (4) were assessed.

Table 4.3: Assessment of livestock technologies

Thematic Area	Enterprises	Technology	Trial
Disease Management	Cow, Buffalo, goat, calf,	20	115
Evaluation of breed	Cow, Buffalo, goat, calf	8	53
Feed and Fodder management	Cattle, Buffalo , fodder	29	181
Nutrition Management	Cattle, Buffalo and Goat	15	45
Production and Management	Goat	5	39
Health Management	Cow, Buffalo, goat, calf,	4	105
Composite fish culture	Fishery	2	2
Dairy Management	Dairy	4	24
Total		**87**	**564**

4.3 Assessment of Technologies Related to Enterprises

Thematic areas like household food security (4), value addition (6), Agroforestry management (1) and small scale income generation (3) were taken up for assessment. 87 beneficiaries were involved in different enterprises. Kitchen gardening, house hold security, value addition, Agro forestry Management, small scale income generation etc. were considered as an economic activity and to support nutritional security of the farmers.

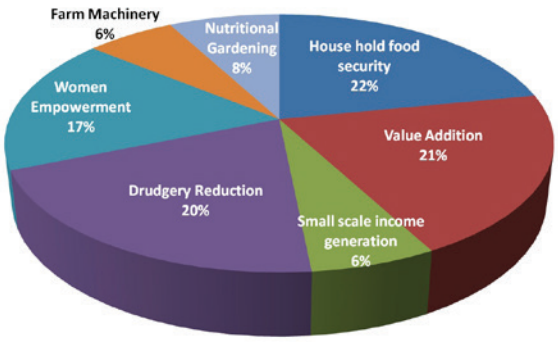


Table 4.4: Assessment of technologies related to enterprises

Thematic Area	Enterprises	Technology	Trial
House hold food security	Vegetables	14	79
Value Addition	Paneer, aonla, Badi, Flour	13	37
Small scale income generation	Honey Production, Composite Fish Culture	4	4
Drudgery Reduction	Drudgery reduction	13	88
Women Empowerment	Women empowerment	11	90
Farm Machinery	Farm Machinery	4	6
Nutritional Gardening	Kitchen Gardening	5	27
Total		**64**	**331**

4.4 Results of Selected on Farm Trials

4.4.1 Technology Assessment Under Various Crops

INTEGRATED NUTRIENT MANAGEMENT

(a) Oilseeds and Pulses

Problem definition: Lower productivity of mustard due to deficiency of sulphur in soil: KVK Barabanki

Technology assessed: Assessment of balanced use of sulphur fertilizers in mustard crop

KVK Haidergarh, Barabanki (U.P.) conducted on farm trial on use of sulphur and fertilizer doses involving soil testing in mustard variety RH-749. The yield attributing characters i.e., no. of effective branching and pods were maximum with sulphur applied in soil (60:20:30) over farmers practice (40:10:0). Grain yield performances were also better with sulphur fertilizer application. The result indicated that the B:C ratio was higher (1:5.57) with sulphur fertilizer application over farmers practices 1:3.27.

Effect of sulphur fertilization in mustard (Variety RH-749)

Technology Option	No. of trials	Yield (qt./ha)	Increase in yield (%)	Gross cost Rs/ha	Gross income Rs/ha	Net Return (Rs./ha)	B:C Ratio
T_1: Farmers' Practice NPK @ 40:10:0	5	12	-	11728	38400	26672	1:3.27
T_2: Use of sulphur with fertilizer (NPKS 60:75:60:30)		22	45.45	12628	70400	57772	1:5.57

Problem definition: Low yield of chickpea due to imbalance use of nutrients: KVK Lalitpur

Technology assessed: INM in chickpea

KVK, Lalitpur conducted on-farm trial to assess Effect of Sea Algae extract along with DAP on yield and net return in chickpea. The 50 % DAP (50 kg/ha)+ Sea Algae extract @ 625 ml/ha/ spray had realized a net return of Rs. 52077/ ha as compared to the recommended practice with net returns of Rs. 40804/ ha (27.6% increase in net return per ha).

Performance of 50 per cent DAP+ Sea Algae extract in chickpea

Technology Option	No. of trials	Yield (t/ha)	Net Returns (Rs. in lakh./ha)
Use of DAP (100 Kg/ha)	3	-	40804
50 per cent DAP+ Sea Algae extract @ 625 ml/ ha/spray-3 spray		16.90	52077

Problem definition: Assessment of use of balance fertilizers in sesamum crop: KVK Jhansi

Technology Assessed : Nutrient management in sesamun

KVK, Bharari, Jhansi in Uttar Pradesh conducted on-farm trial on the application of balance fertlizers (NPKS 30:15:20:25 Kg /ha) in sesamum crop was done on 2 ha area on 4 farmer's field in Badagaon block in Jhansi district. The sowing was done during kharif season in first week of July and harvest in first week of Oct, 2018. The yield obtained from demonstrated plots were recorded 3.12 q/ha and from farmers plot was 2 q ha while, increase in yield percentage in demonstrated plot was recorded 56 % and net return and B:C ratio of Rs. 9437/ha and 1.94, respectively as compare to unbalance use of fertilizer

Assessment of use of balance fertilizers in sesame crop

Treatments	No. of trials	Yield q/h	Increase yield %	Net income	B:C ratio
$T_{1:}$ Farmers Practice (No fertilizer use)	4	2.0	-	3460	1.3
$T_{2:}$ Recommended practice (Apply NPKS 30:15:20:25 Kg /ha)		3.12	56	9437	1.94

(b) Cereal Crops

Problem definition: Lower productivity and profitability of paddy cultivation due to use of imbalance fertilizers and no use of organic manure: KVK Chandauli

Technology assessed: Assessment of organic and inorganic fertilizer in paddy crop on the basis of soil testing.

Krishi Vigyan Kendra, Chandauli in Uttar Pradesh conducted on-farm trial to find out appropriate nutrient management dose to enhance the production and productivity of paddy crop. Application of recommended dose of fertilizers on the basis of soil test value enhance the yield upto 20.28%, however, incorporation of organic manures i.e. *Azotobacter* and PSB further increases the yield upto 28.22% as compared to farmers' practice. Similarly net return and B:C ratio also increase with the use of organic sources.

Effect of bio-fertilizer (Azotobactor & P.S.B.) in the rice crop on the basis of soil testing

Technology Option	No. of trials	Yield (kg/ha)	Increase in Yield (%)	Net Return (Rs/ha)	B:C Ratio
T_1: Imbalance use of inorganic fertilizers and organic compost (Farmers' Practice)	5	3525	-	36178	1.86
T_2: Recommended dose of fertilizers on the basis of soil testing		4240	20.28	44850	2.36
T_3: Less 10% recommended dose of inorganic fertilizers + bio-fertilizers on the basis of soil testing		4520	28.22	47630	2.48

Problem definition: Low yield of paddy due to imbalance use of fertilizers.

Technology assessed or refined: Assessment of nutrient in paddy crop on the basis of soil test

No. of Farmers: 05

KVK, Moradabad - I conducted on-farm trials on different doses of fertilizers on the basis of soil test in paddy.

Performance of paddy.

Technology Option	No.of trials	Yield (q/ha.)	Increase in yield (%)	Net Return (Rs./ha)	B:C Ratio
T_1 – Farmers practice 120:40:0:0 N:P:K & Zn Kg/ha. (PB - 1509)	05	41.80	-	59784	1:2.14
T_2 – Soil test bases 155:70:55:25 N:P:K & Zn Kg/ha.		48.35	15.66	74748	1:2.34
The data showed in table that T_2 (Use of fertilizer on **soil test basis)** in paddy crop is found best for proper nutrient. This treatment is able to increase the crop production as compared to T_1.					
Application of fertilizers on the basis of soil testing increase the yield in paddy crop.					

Problem definition: Low yield of wheat, No use of CSR-bio, Imbalance use of fertilizer: KVK Sultanpur

Technology Assessed: Impact of CSR-bio on productivity of wheat under reclaimed sodic soil

ICAR- KVK-1, Sultanpur U.P conducted OFT on wheat to assess impact of CSR-bio on productivity and profitability. Observation of trial reveald that basal application of CSR-bio 20 kg/ha. + Spraying of CSR-bio liquid 2 percent at penicle initiation stage produced highest grain yield 36.50 q, net return Rs. 40275 and BCR 2.50 followed by basal application of CSR-bio and FP. The percent increase over check was 28.10% and 13.15%.

Impact of CSR-bio on productivity on Wheat

Technology Option	No.of trials	Yield (t/ha)	In-crease in yield (%)	Net Returns (Rs./ ha)	B:C Ratio
T1- Farmer practice (No use of bio agent)	4	28.50	-	28225	2.15
T2- Basal application of CSR-bio @ 20 kg/ ha. (with 400 kg fym)		32.25	13.15	33163	2.25
T3- T2+1 spraying of CSR-bio liquid @2% 20 ml/l at penicle initia-tion stage.		36.50	28.10	40275	2.50

Problem definition: Impact of Liquid Bio-fertilizer in Paddy: KVK Sitapur-II

Technology Assessed: Soil Health management

KVK-II, Sitapur, Uttar Pradesh conducted on-farm trial to find out the impact of Liquid of bio-fertilizer before Paddy crop and to assess the impact on soil health. The data revealed that Halo-PSB and Halo-Azo gives better impact in improvement of soil health as well as on paddy yield 51.8 q/Ha and net return Rs 50,100/ha as compared to control yield 44.4 q/Ha and net return Rs. 39, 090/ha

Problem Definition: Low yield in Paddy due to use of imbalanced dose of fertilizer and no use of biofertilizer: KVK Gorakhpur-II

Technology Assessed: Assessment of zinc sulphate and biofertilizer with application of 20% less fertilizer in paddy for yield maximization.

Paddy (*Oryza sativa*) is one of the most common cereal crop grown in Kharif season under irrigated condition. The yield of paddy is being lowered down due to use of imbalanced dose of chemical fertilizer and no use of zinc sulphate and Azotobacter. MGKVK Gorakhpur has designed On Farm Trial in paddy crop for yield maximization. The assessed technology of 20% less chemical fertilizer (100:40:40::N:P:K kg/ha) + zinc sulphate 33% @ 2% (three foliar application i.e. 15, 30 and 45 DAT) and Azotobacter- $1x10^8$ cfu @200 ml/acre (as soil application @200 mL/acre + 50 kg FYM before 24 hours of transplanting) were comprised in paddy variety Sambha Sab 1. The demonstrated technology yielded 52.83 q/ha yield which was 24.80% higher over farmer's practice (42.33 q/ha). The other traits like number of effective tillers/plant, plant height and number of grains/spike were recorded more i.e. 18, 94 and 258, respectively in demonstrated technology as compared to farmers practices. Farmers accepted and appreciated the demonstrated technology.

Effect of green and brown manuring in Paddy

Technology Option	No.of trials	Pre-soil analysis	Post Soil analysis	Yield (q/Ha)	Cost of cultivation Rs/ha	Gross return Rs/ha	Net Return Rs/ha	B:C Ratio
Normal FYM (Farmers Practice)	15	OC-0.32 N-96.8 P-17.2 K- 117.2	OC-0.29 N-129.3 P-19.3 K-128.3	44.4	27510	66600	39090	2.4:1
T1: Halo PSB, Halo Azo @ 100ml/ Acre+ FYM		OC-0.31 N-99.3 P-17.3 K-148.2	OC-0.44 N-122.3 P-19.7 K-153.4	51.8	27600	77700	50100	2.8:1

***Sale price Paddy @ 1500/q**

Effect of balanced dose of chemical fertilizer with Azotobacter in paddy

Technology Option	No.of trials	No of tillers/ plants	No of grains/ spike	Plant height (cm)	Yield (q/ha)	% increase in yield	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	B:C Ratio
T-1: Farmers Practice (170:40:0::N:P:K)kg/ ha and no use of zinc sulphate & Azotobacter	03	14	212	85	42.33	-	26550	65616	39066	2.47
T-2: Sambha sab 1+ 20% less dose of chemical Fertiliz-er(100:40:40::N:P:K) kg/ha+zinc sulphate33% @2% foliar spra, Azoto-bacter @200ml/acre.		18	258	94	52.83	24.80	29750	81891	52141	2.75

(c) Horticultural crops

Problem definition: Poor yield of onion due to imbalance use of nutrients: KVK Sonbhadra

Technology assessed: Enhancement of onion yield through application of sulphur

The KVKs of Sonbhadra conducted on-farm trial on onion with the application of sulphur as basal and foliar application @ 1.0% at 15, 30, 45 and 60 days after transplanting. It was found that foliar application of sulphur @ 1.0% at different days of transplanting enhanced the yield of onion upto 36.60% as compared to farmers' practice. The basal application of sulphur @ 20 kg/ha also increased the yield upto 22.32, but not upto the level of foliar application which shows that soils are now defiecient of sulphur and needs as fertilizer for the proper growth and yield of crops.

Effect of application of sulphur on yield and economics of onion

Technology Option	No. of trials	Yield (q/ha)	Cost of Culti-vation (Rs/ha)	Gross Return (Rs/ha)	Net Re-turns (Rs/ ha)	B:C Ratio
T_1: No use of sulphur (Farmers' practice)	5	224	74374	224100	149726	3.01
T_2: Soil application of sulphur @ 20kg/ha		274	85210	274700	189490	3.22
T_3: Foliar application of sulphur @ 1.0% at 15, 30, 45 & 60 days after transplanting		306	86716	30600	220284	3.52

Problem definition: Low yield & quality mango production in orchard due to poor management of manure & fertilizer : KVK Saharanpur

Technology Assessed: Evaluation of different nutrient combination in mango orchard

T1- Farmer's practices (only apply DAP))

T2- Soil application of N:P:K 12:32:16 3.0 kg/plant and micro nutrient 2.0 kg/plant(micro food)

Economics of Application of manure & fertilizer in mango orchard

Treatments	No. of trial	Yield (q/ ha)	% change in Yield	Cost of culti-vation (Rs/ ha)	Gross income (Rs/ ha)	Net Income (Rs/ha)	BC Ratio
T1: Only apply DAP (FP)	02	140.1	--	46510	194210	148700	4.2
T2: Soil application of N:P:K 12:32:16 3.0 kg/plant and micro nutrient 2.0 kg/ plant(micro food)		155.2	10.1	48590	215905	167395	4.4

In Saharanpur mango area is about 25000 and most of the farmers applied 1 Kg DAP/tree get 140.1 q/ha. & on the basis of soil testing basis farmers applied the nutrient on the scientific recommendation & get 155.2 q/ha. The yield increased was 10.16% & farmers get the income 167395/ha. & BC ratio also 4.4. Under treatment get the 155.2 q/ha comparison to farmers practices 140.1 q/ha. The fruit quality was much better resulting market price increase.

Problem definition: Severe attack of black tip, Black spot and cracking, small size of fruit and dropping: KVK Pratapgarh

Technology Assessed: Management of black tip of Mango

Mango is the major crop of the district Pratapgarh (Area 10,072 ha Production 1,38,793 MT and Productivity 13.78 MT/ha). The major problem in mango cultivatioun effected by black tips resulting into economic loss of the crop. To overcome the problem KVK Pratapgarh has conducted OFT to assess the efficiency of the technological package Recommended dose of fertilizer and folier spray of Borax @ 6 gm/ltr of water at the time of pea size stage. The result found that the assess technology of Spray of Borax @ 6 gm/ltr of water at the time of pea size stage with recommended dose of fertilizer has recorded increase by 17.28 per cent over farmer practice.

Effect of Borax on black tips of Mango

Technology Option	No. of trials	Yield (qt./ ha)	Gross Cost (Rs./ ha)	Gross Return (Rs/ ha)	Net Return (Rs./ ha)	Increase in yield (%)	B:C Ratio
T1: Farmer's practice (Irrigation and spray of pesticide (Quinal-phos)	5	162	53500	324000	270500	-	6.05
T2 : Spray of Borax @ 6 gm/ltr of water at the time of pea size stage		190	57000	380000	323000	17.28	6.67

Problem definition: Low Yield of Tomato due to imbalance use of fertilizer: KVK Kaushambi

Technology Assessed (as the case may be): Assessment of balance dose of fertilizer on the basis of soil testing

KVK, Kaushambi in Uttar Pradesh conducted on-farm trial to find out appropriate nutrient management practice to enhance the Tomato productivity. The assessed (as the case may be) practice of Recommended dose of fertilizer on the basis of soil testing –NPK-120:60:80 and application of sulphur 25 kg/ha

Effect of seed soaking of $MnSo_4$ in enhancing germination and yield in black gram

Technology Option	No. of trials	Plant height at flow-ering stage (cm)	No. of fruits / Plant	Yield (kg./ ha)	Increase in Yield (%)	B:C Ratio
No Use of Balance fertilizer (Farmers Practice)	4	50	36	310.28	57.9	1:4.2
Use of Recom-mended dose of fertilizer on the basis of soil testing –NOK- 120: 60: 80 + sulphur 25 kg/ha		65	52	490.22		1:6.7

Soil Test- pH-7.4,EC-0.34, OC-0.46%, Available N-103.50, P-9Kg//ha ,K-246.0, S-11 Kg/ha.

Observation- Application of recommended dose of fertilizer on the basis of soil test with sulphur . Result indicated that, In treatment received 490.22q/ha yield as compared FP that was 310.28q/ha. The higher fruit Yield was observed in NM field in comparison to farm practice. The benefit cost ratio with NM treatment was recorded 6.7 against the benefit cost ratio of 4.2 in farmer Practice plot during the trial.

Problem Definition: Low yield of cabbage due to micronutrient deficiencies: KVK Ghazipur

Technology Assessed: Micronutrient deficiency management in cabbage

Cabbage is the major vegetable crop grown by the farmers in Rabi season. The yield of cabbage was recorded low due to no use of micronutrient nutrients. KVK Ghazipur conducted on farm trial to assess the enhancement of productivity of cabbage var. 'Pride of India' with application of boron and molybdenum. Balanced dose of fertilizer application 120:60:40:: N:P:K kg/ha and use of borax @12kg/ha and molybdenum @2kg/ha were applied as basal dose. The average yield 534.00qt/ha and 52.57% increase in yield was recorded. The B:C ratio of the trial was 4.18 as compared to farmers practice 2.48. The incidence of diseases in trial was low as compared to framers practice. Farmers accepted and appreciated the technology.

Effect of Micro-nutrients in yield of cabbage

Technology Option	No.of trials	Yield (qt/ha)	% of affected plants	% increase in yield	Gross Cost (Rs/ ha)	Gross Return (Rs/ ha)	Net Return (Rs/ha)	B:C ratio
No use of boron and molybdenum as micronutrient (Farmers Practice) Var. local variety	05	350.0	24	-	44560	110550	65990	2.48
Application of 12kg borex and 2kg Ammonium molybdate/ha along with recommended doses (Recommended Practice)		534.0	6	52.57	49000	205000	156000	4.18

VARIETAL EVALUATION

Oilseed and pulses

Problem definition: Low yield of Mustard in salt prone area: KVK Kaushambi

Technology Assessed (as the case may be) : Assessment of salt tolerant variety of mustard in saline soil with CSR -Bio

KVK, Kaushambi in Uttar Pradesh conducted on-farm trial to assess the suitable variety for saline soil in Mustard Variety (CS-58 with seed treated by CSR –Bio -30 ml/kg seed.

Performance salt tolerant variety of Mustard (CS-58)

Technology Option	No.of trials	Yield (Q/ha)	Cost of culti-vation (Rs/ha)	Gross Income (Rs/ ha)	Net Income (Rs/ ha)	B:C Ratio
T1-Farmers practice-Varuna	04	16.9	21580	70980	49400	1:3.28
T2-Use of Salt tolerant variety CS-58 with CSR-Bio		18.58	22264	78960	56696	1:3.54

Observation: Comparative studied were conducted between Mustard (Varuna T-59) and salt tolerance variety (CS-58 with seed treatment CSR-Bio) under OFT during Rabi- 2018-19, result indicated that salt tolerance variety CS-58 with seed treatment CSR-Bio of Mustard gives higher yield over than variety Varuna (T-59).

Problem definition: Low production and low return due to use of local variety of mustard: KVK Aligarh

Technology Assessed: Assessment of high yielding varieties of mustard.

KVK, Aligarh in UP conducted on-farm trial to for assessment of high yielding appropriate variety of mustard. Variety Pusa Mustard 30 is a suitable for timely sown irrigated condition and maturity period (Days) 119 to 160. Farmers got net return of Rs 45500/ha in Pusa mustard 30.

Assessment of high yielding varieties of mustard

Technology Option	No. of trials	Yield t/ha	Increase in Yield (%)	Gross Return (Rs/ha)	Net Return (Rs/ ha)	B:C Ratio
T1: Farmers practice (to use of local variety)	09	16.8	-	50400	25400	1:2.01
T2: Variety - Pusa Mustard -30		23.5	28.50	70500	45500	1:2.82

Problem definition: Lower productivity of pigeon pea due to use of old varieties having low yield potential: KVK Amethi

Technology assessed: Evaluation of high yielding pigeon pea variety Narendra Arhar 2

KVK Amethi conducted an OFT on pigeon pea to assess the performance of high yielding variety Narendra Arhar 2 in climatic condition of Amethi district, predominately occupied by Rice-Wheat cropping system. Results revealed that variety NA 2 gave 38.62 % higher yield than existing variety Bahar (F.P).

Performance of high yielding variety of pigeon pea NA 2

Techno-logy Option	No. of trials	Yield (q/ ha)	% incre-ase over FP	Cost of cultivation (Rs/ha)	Gross return (Rs/ ha)	Net Return (Rs/ ha)	B:C Ratio
T_1: Old Arhar variety (Bahar)	05	9.45	-	25000	53629	28629	2.15
T_2: HYV Narendra Arhar 2 (Recom-mended Practice)		13.10	38.62	25300	74342	49042	2.94

Problem definition: The production potential of various mustard varieties at farmers' fields is unknown to everyone: KVK Azamgarh

Technology assessed: Assessment of newly released mustard variety (Giriraj) from DMR, Bharatpur (Rajasthan)

The results under trials were exhibits that Giriraj mustard variety was found second runner than overall performance of T 59 mustard. Both tested mustard varieties are observed to be more superior in terms of their performance & economics.

Effect of newly released varieties of mustard on yield and economics

Technology Option	No. of Trials	No. of pods/ plant	Grain weight (m^2)	Yield (q/ha)	% change	Net Return (Rs/ ha)	BCR
T_1: Farmer practice (Pusa Bold)	01	159.8	161.9	14.6	-	45920	3.98
T_2: HYV T-59		194.3	213.6	19.3	32.2	63060	4.50
T_3: HYV Giriraj		178.5	201.1	17.7	21.2	56140	4.08

(b) Cereals

Problem definition: Late sowing of Rabi crop due to late cutting of paddy crop: KVK Sitapur-II

Technology Assessed or Refined (as the case may be): Early and drought resistance variety Swarna Shreya of Paddy

KVK-II, Sitapur, Uttar Pradesh conducted on-farm trial to assess Swarna Shreya variety on net return in Paddy. The varietal shifting along with Integrated Pest Management practices trialed gives net return of Rs 51510/ha and B:C ratio 3:1 as compared to the recommended practice with net returns of Rs. 43410/ha and B:C ratio 2.7:1.

Varietal Performance of Paddy Variety

Technology Option	No. of trials	Yield (q/ ha)	% change in Yield	No.of effective tillers / hill	Cost of Cultivation (Rs/ ha)	Gross return (Rs/ ha)	Net income (Rs/ ha)	B:C ratio
Sarju 52 (Farmers Practice)	5	45.52	12.8	9	24830	68240	43410	2.7:1
Swarna Shreya + Nursery bed and Seedling treatment + IPM (Recommended Practice)		51.34		14	25500	77010	51510	3:1

Problem definition: Low yield of rice due to unsuitable varieties for usar soils: KVK Kanpur Dehat

Technology Assessed or Refined: Evaluation of suitable varieties of rice for Reclaimed Usar Soils.

Technology Option	No. of trials	No. of tillers /m^2	Yield (q/ha)	Gross Cost (Rs./ ha)	Gross Return (Rs./ ha)	Net Return (Rs./ ha)	BC Ratio
T_1-Farmer Practice (usar dhan-1)	6	219	38	29500	64600	35100	1:2.19
T_2- CSR-36		292	44	30000	74800	44800	1:2.49
T_3- CSR-43		273	42	30000	71400	41400	1:2.38

Interpretation of Result: it is revealed from the table given above that rice variety CSR-36 was proved to be the best variety under usar soil condition as it resulted into highest gross return, net return as well as BC ratio followed by CSR-43. Although CSR-43 was matured 10 to 15 days early then CSR-36.

Problem definition: Low Yield of aromatic rice (Kala Namak) due to use of local variety: KVK Basti

Technology assessed: Assessment of high yielding variety of Kala Namak rice in Tarai region

KVK Basti conducted OFT in tarai region to find out suitable variety of aromatic rice. Variety Kala Namak local and Kala Namak improved were tested on farmers' field and found that Kala namak local plant hight was 165 cm and yielded poor of 32.25q/ha as compared to Kala Namak improved 101, which yielded higher than local (12.70%) and plant height was also less, ie. only 115 cm.

Effect of improved variety of Kala Namak (KN 101) on yield and economics

Technology option	No. of Trials	Days of Maturity	Plant height (cm)	Yield q/ha	Cost of cultivation Rs/ha	Gross Return Rs/ ha	Net Return Rs/ha	Increase in yield (%)	B.C.
T_1: Kala Namak local (FP)	3	165	165	32.25	50500	119875	69375	-	2.37
T_2: Kala Namak Improved 101		145	115	38.60	51750	138960	87210	12.70	2.68

Problem definition: Poor yield of rice

Technology assessed: Evaluation of rice varieties under rainfed condition: KVK Sonbhadra.

Krishi Vigyan Kendra Sonbhadra conducted on farm trial to evaluate rice varieties under rain fed condition of Sonbhadra district and found that variety Shusk Samrat was better than farmers' local cultivar. The variety NDR 97 also found better but not upto level of Shusk Samrat.

Performance of rice varieties under rainfed condition of Sonbhadra district

Technology Option	No. of trials	Yield (q/ha)	Cost of cultivation (Rs/ha)	Gross Return (Rs/ha)	Net Returns (Rs/ha)	B:C Ratio
T_1: Farmers' Practice (local)	5	17.72	22000	26846	7326	1.33
T_2: Shusk Samrat		24.84	23068	42089	19021	1.82
T_3: NDR-97		23.10	22600	40230	18210	1.69

Problem definition: Low yield of wheat due to old varieties: KVK Basti

Technology assessed: Assessment of HYV of wheat

KVK Basti conducted OFT to find out suitable HYV variety of wheat, HD 3086, NW-5054. The yield was obtained 46.80 & 45.37 q/ha, respectively. Wheat variety HD 3086 yielded higher than PBW-343 (22.51%), plant height less (98 cm) and less lodging and having B.C. ratio of 2.36.

Assessment of high yielding variety of wheat in Basti district

Technology option	No. of Trials	Yield q/ha	Cost of cultivation (Rs/ha)	Gross Return (Rs/ ha)	Net Return (Rs/ ha)	Increase in Yield (%)	B:C ratio
T_1: PBW-343 (F.P.)	3	38.20	35300	70288	34988	-	1.99
T_2: HD 3086		46.80	36400	86112	48712	22.51	2.36
T_3: HD- 2967		45.37	36400	83480	47080	18.76	2.29

Problem definition: Low Productivity of Rice : KVK Bijnor

Technology Assessed: Evaluation of newly released high yielding rice varieties against disease resistance.

The KVK Bijnor conducted OFT to find out suitable high yielding rice varieties for better yield with disease resistance, crop duration and lodging also at farmer's field situation. The varieties tested were PD-24, PR-126 and PR-113 as check. The transplanting dates of these varieties are 20 to 30 June2018 with 1 to 15 October 2018 harvesting dates also. The results revealed that yield increase of rice varieties ranged between 4.23 to 9.74 percent over farmers practice. The variety PR-126 gave highest yield of 64.75 qt. per ha with net return of Rs. 105907.50 and BCR of 3.39. The others technical data as given below:

i) Variety PR-126 takes less crop duration as comparison PD-24 and PR-113

ii) The lodging in PR-126 is less (2-6) in comparison PD-24 (4-7) and PR-113 (7-11%)

iii) Disease incidence in PR-126 is none while it is about 5-11% in PR-113.

Evaluation of newly released high yielding variety

Technology Option	No. of trials	Yield (q/ha)	Increase in yield (%)	Lodging (%)	Disease incidence (%)	Net Return (Rs./ ha)	B:C Ratio
T_1- Local (PR-113)	01 (05 farmers field)	59.00	--	7-11	5-11	91085.00	3.01
T_2- PR-126		64.75	9.74	2-6	0-2	105907.50	3.39
T_3- PD-24		61,50	4.23	4-7	2-5	96685.00	3.10

Problem definition: Low yield of old scented rice variety: KVK GB Nagar

Technology Assessed: Evaluation of newly released basmati varieties

Newer varieties Pusa Basmati 2511 and Pusa Basmati 1509 were introduced among farmers by conducting an on farm trial in comparison of traditional sowing of Pusa 1121 as farmes practice. It was observed that both newly introduced variety proved better in terms of net returns and cost benefit ratio. Results are as under.

Performance of Basmati Rice Varieties

Technology Option	No. of trials	Yield (qt./ha)	Increase in yield (%)	Net Return (Rs./ha)	B:C Ratio
T_1 - Farmers Practice (Variety- Pusa 1121)	05	42.5	-	39000.00	1.41
T_2 – Pusa Basmati 2511		47.4	11.53	44220.00	1.46
T_3 - Pusa Basmati 1509		44.5	4.70	36100.00	1.38

Rice variety Pusa Basmati 2511 is superior over the Pusa Basmati 1509 and farmer's practice (Pusa Basmati-1121).

Problem definition : Low yield and use of old variety: KVK Moradabad

Technology assessed : Evaluation of high yielding variety of paddy under rice-wheat system of cultivation.

KVK, Moradabad - I conducted on-farm trial on high yielding variety of paddy under rice-wheat system of cultivation. The result showed that PD - 26 gave higher yield 56.25 q/ha. with net return (Rs. 51228/- per ha.).

Technology Option	No.of trials	Yield (Kg/ha)	Increase in yield (%)	Net Return (Rs./ha)	B:C Ratio
T_1 – Farmers practice Sharbati	05	41.75	-	36500	1:1.78
T_2 – PD - 26		56.25	34.73	51228	1:2.09

Problem identifinition: Lower productivity and profitability in late sown Wheat variety PBW 509: KVK Muzaffarnagar

Technology Assessed : Introduction of late sown HYV variety of Wheat DBW 90

About 70% of wheat area in the district is late sown which results in poor productivity. Some of the farmers sow the crop till end of January. PBW 509 covers about 25% area under late sown but this variety is highly susceptible to yellow rust. An On farm trial was conducted to assess the suitability of newly released variety DBW 90 under late sown condition after Sugarcane crop in irrigated situation. The variety DBW 90 gave highest yield of 38.80 qt/ha with maximum net income of Rs.43296.00 /ha followed by PBW 509.The incidence of yellow rust was recorded 4 % in PBW 509 while DBW 90 did not show any symptom. The 1000 grain weight of DBW 90 was highest i.e 38.40 gm, while it was 30.10 gm only in farmers practice.

Evaluation of high yielding variety of Wheat

Technology Option	Yield (q/ha)	Gross Return (Rs/ ha)	Net income (Rs/ ha)	B:C Ratio
T1- Farmers practice (PBW 509)	34.40	63296.00	43296.00	3.16:1
T2- DBW 90	38.80	71392.00	52392.00	3.75:1

Observation Recorded

Technology Option	Tillers/ m^2	Spike length (cm)	No of grains/ spike	1000 grain weight (gm)	Maturity duration (days)	Yellow rust incidence (%)	Lodging %
T1- Farmers practice (PBW 509)	205	8.1	33.3	32.10	130	2-3	3
T2- HD 3059	211	9.6	38.6	38.60	130	Nil	Nil

DBW 90 variety gave maximum yield 38.80 and net return Rs.52392.0 /ha and also proved resistent against yellow rust.There were no lodging seen during the crop period. Variety DBW 90 gave 12.79 % more yield in comparision to PBW 509

Problem definition: Low yield and income of paddy due to use of old varieties: KVK Saharanpur

Technology Assessed: Evaluation of disease resistance & high yielding varieties of paddy in Saharanpur district.

On-farm trial was conducted to find out suitable high yielding paddy variety for better yield and income.

Performance of high yielding paddy varieties.

Treatments	No. of trial	Yield (q/ ha)	% change in Yield	No of tillers/ plant	No. of plant effected/ 10sqm	Cost of cultivation (Rs./ ha)	Gross income (Rs./ ha)	Net Income (Rs./ ha)	BC Ratio
T1: FP (PB-1)	05	41.2	--	6	17	36200	111240	75040	3.07
T2: PB-1637		54.6	24.5	8	06	37500	147420	109920	3.93
Rs. 2700/q									

In district Saharanpur kvk promoted paddy PB-1637 & farmers get yield 54.6 q/ha. in comparison to PB 1 yield 41.2 q/ha. yield was 24.6% higher in comparison to PB -1. Due to good yield, farmers much like PB-1637 variety.

Problem definition: Long duration variety of rice and wheat: KVK Chitrakoot

Technology Assessed: Introduction of rain fed short duration variety of rice followed by timely sown wheat variety.

KVK, Ganivan, Chitrakoot U.P. conducted on farm trail to assess the yield and income from a piece of land to doubling the farmer income. Change in cropping patern through short duration rice variety Sahbhagi and wheat HD-2932. The result shows that the gross income of rice variety Sahbhagi and wheat HD-2932 Rs.145490 more than long duration rice variety of Bejhari and wheat WH-147. The income was 3.24 time higher than farmers practice.

of wheat for late sown condition under Tarhar region. The late sown variety of wheat K-424 (Golden Halna) & K- 9162 (Gangotri) were sown under same condition. The variety K-9162 was found better in all aspects i.e. total yield is (40.25 q/ha) & net return Rs 22170/ha.

Problem definition: Low yield of wheat as compared to newly released wheat variety DBW 187: Gorakhpur-II

Technology Assessed: Assessment of high yielding wheat variety DBW 187 under timely sown irrigated condition.

Wheat (Triticum aestivum L.) is one of the most common cereal crop grown in rabi season under irrigated condition. Wheat variety HD 2967 is most popular among the farmers of district Gorakhpur but lower productivity has been identified due to continuous use of this variety and also as compared to newly released wheat variety DBW 187. The MGKVK Gorakhpur conducted on farm trial to assess the HYV of wheat DBW 187 to enhance the

Performance of short duration rice and wheat

Treatment	No. of Trial	Date of harvest	Prod. (q/ha)	Total cost Rs/ha	Total income Rs/ha	Net income Rs/ha	Additional cost Rs/ha	Additional Return Rs./ha	BCR
Farmers practice – Rice- Bejhri and Wheat –WH 147	05	21.11.18	35.46	22500	62055	39555	-	-	2.75
		05.04.19	35.50	24000	63900	39900	-	-	2.66
Rice- Sahbhagi and Wheat –HD 2932		29.10.18	41.48	20900	72590	51690	-1600	8690	3.47
		31.3.19	40.50	24000	72900	48900	-	9000	3.03
Total T-1				46500	125955	79455	-	-	2.70
Total T-2				44900	145490	100590	-1600	19535	3.24

Problem definition: Low yield of wheat due to unavailability of suitable variety in late sown condition: KVK Gonda

Technology Assessed: To assess the suitable variety of wheat for late sown condition.

KVK, Gonda conducted on-farm trial to assess the variety productivity and profitability of farmers. Higher grain yield 59.71 q/ha was recorded in demonstrated plots which was 25.70 per cent more over farmers practice (47.50 q/ha) and net return Rs.56065.50/ha received under assessed trial while under existing practices was Rs. 37750.00/ha.

Performance of the suitable varieties of wheat for late sown condition.

Technology Option	No. of trials	Yield (Q./ ha)	Increase in yield (%)	Parameter	Observations	Net Return (Rs.)	B:C Ratio
Farmer practice- Sowing of wheat variety HD-2285	10	33.5		No. of Spike/sqm No. of grain/ Spike	268 46	11707	1.29
Recommended practice- Sowing of wheat variety K- 9162		40.25	20.00	No. of Spike/sqm No. of grain/ Spike	299 51	22170	1.55
Recommended practice- Sowing of wheat variety K- 424		39.14	16.80	No. of Spike/sqm No. of grain/ Spike	296 49	20449	1.50

Performance of HYV wheat varieties HD-2967 under timely sown irrigated condition

Technology Option	No. of Trials	No of tillers/hill	Plant height (cm)	No of Grain /spike	Grain Yield q/ha	% Increase in Yield	Gross Cost (Rs/ ha)	Gross Returns (Rs/ha)	Net Returns (Rs/ha)	B:C Ratio
Wheat Variety HD-2967 (FP)	05	12	98.00	79	47.50	-	33500	71250 @15.00/kg	37750	2.12
DBW 187		21	100.00	88	59.71	25.70	33500	89565 @15.00/kg	56065	2.67

Problem definition: Low productivity of late sown wheat crop: KVK Bareilly

Technology assessed : Assessment of HD-3059 late sown wheat variety

KVK, Bareilly conducted on-farm trial to assess the performance of HD-3059 variety of wheat under late sown conditions. Wheat is a major crop of the district having 2,00,000 ha area out of which a major part is late sown after harvesting of Basmati Rice/Sugarcane. The productivity of wheat adversely affected due to cultivation of older varieties such as PBW-373. Therefore, HD-3059 variety developed by ICAR-IARI, Pusa, New Delhi assessed under late sown conditions. The recommended variety resulted in 46.25 q/ha yield against local check yield i.e. 38.50 q/ha with an increase of 20.12% over local check. The cultivation of HD-3059 had realized a net return of Rs. 42,456 /ha as compared to the local variety with net returns of Rs. 30,362/ha (39.83% increase in net return per ha).

Production Details:

Treatments	Production (q/ha)				% increase over Local Check
	No. Of Replications	Maximum Yield (q/ha)	Minimum Yield (q/ha)	Average Yield (q/ha)	
T-1: Farmers Practice (PBW-373)	09	*41.70*	*34.30*	*38.50*	*20.12*
T-2: Recommended Variety (HD-3059)		*48.25*	*42.60*	*46.25*	

Economic Details:

Treatments	No. of Replications	Production (q/ha)	Cost of Cultivation (Rs./ha)	Gross Income (Rs.)	Net Income (Rs./ha)	B:C Ratio
T-1: Farmers Practice (PBW-373)	09	38.50	42200.00	72562.50	30362.50	1.71
T-2: Recommended Variety (HD-3059)		46.25	42700.00	85156.25	42456.25	1.99

The variety HD-3059 (46.25 q/ha) performed better than PBW-PBW-373 (36.50q/ha) and resulted in 20.12% increase in yield. The farmers also reported that HD-3059 variety has more tillers, longer spike and better grain filling than the local check. The seed is kept for next year sowing.

(c) Cash crops

Problem definition: Low productivity & poor quality of growing onion: KVK Badaun

Technology Assessed: Varietal assessment of HYV "Bhima Shakti".

An On Farm Trial was conducted in sandy loam soil under irrigated conditions for the assessment of high yielding variety "Bhima Shakti" at three locations in Pearl Millet – Potato-Onion cropping system during Summer 2018. Maximum yield (349 q/ha) were recorded with the variety "Bhima Shakti" while in Farmer Pracice (A.D.R.) 288 q/ha. Uniform neckfall were also recorded in "Bhima Shakti"

Assessment of high yielding variety of Onion

Technology assessed/ Refined	No. of trials	Production (q/ha)	Net return Rs./ha	BC ratio
T_1F P (Agrifound Dark Red)	03	288.00	226300.00	3.50
T_2 (Bhima Shakti)		349.00	298056.00	4.27

The "Bhima Shakti" variety gave maximum yield (349 q/ha) followed by farmer practice (ADR) 288 q/ha. Highest net return (Rs. 298056) was recorded with Bhima Shakti. Uniform neck fall was also observed in Bhima Shakti. Only 115-120 days taken to attain bulb maturity. Bulbs attains immediate attractive red colour after harvest. Very less double bulbs and bolters were recorded in Bhima Shakti. Fetches good market price due to attractive bulb colour purple flesh colour. Very good bulb storability (upto 6 months)

Problem definition: Low yield due to old variety Chili: KVK Baghpat

Technology Assessed (as the case may be) : Introduction of improved varieties of chilli.

A varietal evaluation trial to assess the yield potential of new varieties Pusa Jawala and Pusa Sadabahar in comparison of existing local variety has been conducted by KVK, Baghpat, with three treatment including farmer's practice on four locations in 0.4 ha.The crop was sown on 25 to 28 Oct., 2018 and the same has been harvested on 15 to 20 March., 2019.

Performance various varieties of Chilli

Technology Option	No. of trials	Yield (qtl/ ha)	% increase in Yield	Cost of culti-vation	Gross Return (Rs / ha)	Net return (Rs/ ha)	BC ratio
T_1 - Use of local variety (Farmers Practice)	4	70	-	52500	105000	72500	2.0
T_2 - Pusa Jawala		85	21.4	42800	127500	84700	2.9
T_3- Pusa Sadabahar		95	35.7	45500	142500	97000	3.1

Problem definition: Low production of tomato due to use of local varieties: GB Nagar

Technology Assessed: Evaluation of newly hybrid variety of tomato.

An on farm trial under Horticulture discipline entitled "Evaluation of newly hybrid variety of tomato" has been conducted by introducing new tomato variety US-2853 in comparison of local variety HS-1 as farmers practice.

Technology Option	No. of trials	Yield (qt./ ha)	In-crease in yield (%)	Net Re-turn (Rs./ha)	B:C Ratio
T_1 - Farmer's practice (Local variety- HS-1)	03	350	-	361500.00	7.17
T_2 - SIRI-255		405	15.71	425200.00	7.99
T_3 - US-2853		435	24.28	459500.00	8.35

Tomato at farmers field

Tomato at farmers field

Tomato variety (US-2853) were superior over the farmer practice (Local variety – HS-1)

Problem definition: Low productivity of marigold due to use of local variety: KVK Shahjahanpur

Technology Assessed: Use of high yielding varieties of marigold.

KVK, Shahjahanpur conducted on-farm trial to assess the use of high yielding varietiesPusaNarangi and Pusa Basanti of marigold to compare with local variety Hawai Orange.

Table: Production of local and high yielding varieties of marigold

Technology Option	No. of trials	Yield (t/ha)	Net Returns (Rs in lakh/ha)
T1-Hawai Orange (Local)	03	12.34	1.31
T2-Pusa Narangi		18.74	2.30
T3- PusaBasanti		17.81	2.12

d) Fodder crops

Problem definition: Choice of few fodder crops during rabi season: KVK Mau

Technology assessed: Evaluation of newly introduced rabi fodder Makkhan grass – an annual ryegrass

KVK Pilkhi, Mau conducted an on-farm trial on rabi fodder Makkhan Grass (a rye grass) on the farmer's field to evaluate the fodder yield among cattle under rabi season. The results indicated that the crop Makkhan Grass gave 56.8 t/ha green forage yield which much higher than oat (37.5 t/ha) and berseem (42.0 t/ha). Makkhan Grass is highly nutritional multicut (upto 6 cut), highly succulent and the highly palatable grass among cattle.

Evaluation of newly introduced fodder Makkhan Grass in the district

Technology Option	No. of trials	Green forage yield (t/ha)	% Increase over FP	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net Returns (Rs/ha)	B:C Ratio
T_1: Oat var. OL 9 (Farmers' Practice)	5	37.5	-	11250	18750	7500	1.67
T_2: Berseem var. Mescavi		42.0	12.00	12500	21000	8500	1.68
T_3: Makkhan Grass		56.8	51.47	13750	28400	14650	2.06

INTEGRATED PEST MANAGEMENT

(a) Oilseeds and Pulses

Problem definition: Decrease in pigeon pea yield due to infestation of pod borer: KVK Chandauli

Technology assessed: Management of pod borer in pigeon pea

Pigeon pea is an important pulse crop of the district. However, there is high infestation of pod borer resulting in loss of yield. Pesticide Indoxacarb was found more effective to control the pod borer infestation in pigeon pea along with yield increase upto 59.41%.

Effect of organic and insecticide for the management of pod borer in pigeon pea

Technology Option	No. of trials	Incidence of pod borer (%)	Yield (q/ha)	% increase in yield
T_1: Spray of Monocrotophos @ 1.5 lit/ha (FP)	05	26	10.84	-
T_2: Spray of Organic extract @ 250 ml/ha		07	13.26	22.33
T_3: Spray of Indoxacarb @ 250 ml/ha		04	16.20	49.50

Problem definition: Injudicious use of insecticide in chickpea resulted increase in infestation of pod borer beyond ETL (2 larvae m^{-2}): KVK Azamgarh

Technology assessed: Evaluation of IPM module against pod borer in chickpea

Usually pod borer damage the chick pea and some time it cause almost 100% damage, hence there is an urgent need to manage this pest sustainably, keeping this in consideration the KVK has tried to evaluate the efficiency of pheromone trap and emamectin benzoate against this serious pest. IPM module recorded lowest number of damage pods with 47.4 per cent increase yield over farmer practice.

Effect of IPM module in chick pea for the management of pod borer

Technology Option	No. of trials	No. of affected pods/ plant	No. of pods/ plant	Yield (q/ ha)	% increase in yield	Net return (Rs/ ha)	B:C ratio
T_1: Farmer's practice (injudicious and repetitive use of insecticides beyond ETL)	01	3.02	71.8	15.6	--	46072	2.77
T_2: Pheromone trap @ 6-7/ha (4-5 male moth per trap ETL) + spraying of Ha NPV@ 250-300 LE/ha at 50% poding stage and spray of Emamectin Benzoate 5% SG @ 11g/ha at ETL		0.50	72.1	23.0	47.4	77810	3.73

Problem definition: Low yield of mustard due to incidence of aphid: KVK Gorakhpur

Technology assessed: Aphid management in mustard crop

Mustard is the major rabi oil seed crop in U.P. However, there is high incidence of aphid resulting low in yield. K.V.K. Gorakhpur conducted on farm trial to assess the management of aphid through IPM technology.

Critical Input- Neem oil 1500 PPM @ 3.0 ml/lit of water & Imidacloprid 17.8 SL @ 0.5 ml/lit of water spraying.

Effect of Imidacloprid for the management of aphid in mustard

Technology Option	No. of trials	Yield (q/ha)	Incidence of aphid (%)		Increase in yield (%)	Gross cost (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	B:C Ratio
			Leaf	Stem					
T_1: Indiscriminate use of pesticide/fungicide (Farmers' practice)	5	10.45	23.05	16.75	-	22600	37620	15020	1.66
T_2: Use neem oil 1500 PPM @ 3.0 ml/lit of water & Imidacloprid 17.8 SL @ 0.5 ml/lit of water spraying in 60, 75 & 105 DAS		14.50	4.2	2.85	38.75	24200	52200	28000	2.15

Problem definition: High infestation of white fly resulting mosaic disease in Black Gram (PU-31): KVK Meerut

Technology assessed: Assessment of insecticides to control white fly in Black Gram.

KVK Hastinapur (Meerut) has conducted OFT for assessment of insecticides to control white fly in Black Gram (PU-31) by comparing newer insecticide Imidachlorprid 17.8% S.L @ 200 m.l./ ha with Monocrotophos @ 1000 m.l./ha 15 days interval as farmer practice along with Difenthuron @ 500 g/ ha. at 15 days interval up to flowering stage. An appraisal of data collected, Difenthuron has quite edge over the chemical insecticides in terms of insect incidence, yield potential and economic returns.

Effectiveness, yield and economic parameters of different treatments for the management of white fly in Black Gram

Technology Option	No. of trials	Insect incidence (%)	Yield q./ ha	% age increased	Cost of Cultivation	Gross Return (Rs)	Net Return (Rs)	B:C Ratio
T_1- Spraying of Monocrotophos @ 1000 m.l./ha 15 days interval	06	11.4	8.12	-	20932	43848	22916	2.09
T_2- Spraying of Imidacloprid 17.8 % S.L @ 200 m.l./ ha at 15 days interval		4.12	9.15	12.68	21732	49410	27678	2.27
T_3- Spraying of Difenthuron @ 500 g./ ha. at 15 days interval		3.13	10.13	24.75	21835	54702	32867	2.50

Difenthuron is easly available in local markets. It is highly effective to manage white fly in Black Gram crop.

(b) Cereal Crops

Problem definition: More than 20% loss due to stem borer in maize: KVK Bahraich

Technology assessed: Application of the IPM modules in maize at appropriate stage to avoid the loses and eco friendly pest management.

KVK Bahraich conducted on farm trial to reduce the pest pressure in maize against maize stem borer (*Chilo partelous*). Results indicate that yield q/ha was 41.85 observed in farmers practice where as IPM technology the yield was 58.4 q/ha. Significant increase in yield of 39.5% observed in applied practice. As per B:C ratio concern, 1.55 is in farmers practice but in applied technology it is 2.10. Based on observations it was concluded that IPM technology against maize stem borer is highly effective in respect of yield and eco friendly pest management.

Effect IPM technology in maize against pod borer

Technology Option	No. of trials	Yield (q/ha)	Increase in yield (%)	Net Return (Rs/ha)	B:C ratio
T_1: Indiscriminate use of insecticide (Farmers' Practice)	5	41.85	-	36050	1.55
T_2: Seed treatment with Trichoderma, use of pheromone trap @ 15 trap/ha with specific lure, use of bio pesticide neem oil at ETL (Recommended Practice)		58.4	39.5	49040	2.10

Problem definition: Low yield due to severe infestation of Sheath blight in Paddy (Pusa-1121): KVK Meerut

Technology assessed: Assessment of fungicide to control sheath blight in Paddy.

KVK Hastinapur (Meerut) has conducted "On Farm Trial" for Assessment of fungicide to control sheath blight in Paddy (Pusa-1121) by comparing fungicides Propeconazole @ 1000 ml/ha and Validamycin @ 1000 ml/ha 15 days interval with Carbendazim @ 1000 g/ha as farmer practice, two sprays at 15 days interval. An appraisal of data collected, Propeconazole has quite edge over other fungicide the being used as farmer's practice in terms of insect incidence, yield potential and economic returns.

Effectiveness, yield and economic parameters of different treatments for the management of Sheath blight in Paddy

Technology Option	No. of trials	Insect incidence (%)	Yield q./ha	% age increased	Cost of Cultivation (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	B:C Ratio
T_1- Two Spray of Carbendazim @ 500 g/ha 15 days interval	06	18.21	36.72	-	37400	117504	80104	3.14
T_2- Two Spray of Propeconazole @ 500 ml/ha 15 days interval		11.64	43.14	17.50	37900	138048	100148	3.64
T3- Two Spray of Validamycin @ 1000 ml/ha 15 days interval		14.23	39.63	7.92	37650	126816	89166	3.37

(c) Horticultural Crops

Problem definition: Low yield of tomato due to sever infestation of fruit borer: KVK Sidharthnagar

Technology assessed: Management of fruit borer in tomato

An on farm trial conducted for management of fruit borer in tomato during rabi 2018-19 at Siddhartnagar. Spray of neemarin @ 5 ml/lit at 15 days interval and spray of Emamectin benzoate 5% SG @ 0.40 g/lt recorded higher fruit yield by 33.17 percent higher over farmers' practice with a markable reduction in % fruit infected.

Integrated pest management for the management of tomato fruit borer

Technology Option	No. of trials	% fruit infested	Yield (q/ha)	% increase over FP	Gross cost (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	B:C ratio
T_1:Farmers' practice (Injudicious use of insecticide)	05	24	320.5	-	72000	256400	184400	2.56
T_2: Spray of neemarin @ 5 ml/lit at 15 days interval and spray of Emamectin benzoate 5% SG @ 0.40g		07	426.8	33.17	80000	341440	261440	3.27

Problem definition: Low production and poor quality of brinjal due to attack of fruit and shoot borer: KVK Gonda-II

Technology assessed: Use of neem oil and imidacloprid as insecticide to avoid the problem.

KVK Gonda-2 conducted on farm trial for pest management techniques in brinjal safer for environment and human health. The details of the results are summarized in the table as given bellow.

Effect of insecticides for management of fruit & shoot borer in brinjal

Technology Option	No. of trials	Yield (q/ha)	Increase in yield (%)	Net Return (Rs/ha)	B:C Ratio
T_1: Indis-criminate use of insecticide Mala-thion (Far-mers' prac-tice)	5	205.85	-	114452	2.89
T_2: Spraying of neem oil @ 3ml/lit water		230.23	11.84	129863	2.97
T_3: Spra-ying of imidacloprid @ 1.0 ml/3.0 lit water		233.50	13.43	132270	3.00

(d) Cash Crops

Problem definition: Lower productivity in Sugarcane due to high infestation of Top Borer: KVK Muzaffarnagar

Technology Assessed: Top borer Management in Sugarcane through Bio-pesticide (Trichocards & Chemical (Cartap hydrochloride 4G)

Sugarcane is one of the main commercial crop of distt. Muzaffarnagar. It is grown on 201436 ha area out of total 296153 ha area of the distt under 100% irrigated farming situation.The productivity of sugarcane in district is 753.35 q/ha. Approx. 35-40% crop affected by top borer. This is major pests responsible for reduction in yield.The Krishi Vigyan Kendra, Muzaffarnagar conducted On Farm Trial (OFT) during march 2018 to assess the efficacy of various pesticides for management top borer in sugarcane in comparison to farmer's practice (Chloropyriphos 20EC @ 3.5 lt/ha and Phorate @ 25Kg/ha).

Management of Top borer

Technology Option	Top borer Incidence	Yield (qt/ha)	% Increase in yield over farmer's practice	BC Ratio
T1-(Farmers practice) Use of Phorate @ 25 Kg/ha in July Chloropyriphos 20 EC@ 3.5 lit/ha(During Oct)	16%	780.00	--	3.62:1
T-2 Cartap hydrochloride 4G@25Kg/ha (July) and Trichocards @20cards/ha 4 times at interval of 15 days in during Sept. and onwards (Variety – Co-0238)	04%	920.00	17.94%	4.53:1

The result indicated that application of Cartap hydrochloride 4G@ 25Kg/ha in the month of july and Trichocards 20 cards/ha(05 cards each 04 times) during September & October was most effective in controlling top borer infestation which resulted in maximum yield of 920.0 qt/ha. 17.94% increase in yield over farmers practice. Application of chemical and bio pesticide together was more effective in controlling of top borer in comparison to chemical alone. Top borer management by trichocards is very economical & eco-friendly. Saving of Rs. 3500-4000/-(50 Kg/ha granular insecticides). Productivity of sugarcane may be increased by 140 qt/ha. Approximately 9870364 qt production in district can be increased with above assessed technology.

Problem definition: Injudicious use of fertilizer and pesticides: KVK Lucknow

Technology Assessed: Effect of CSIR-Bio in potato crop.

Farmer's of Lucknow district uses inorganic fertilizers in excess quantity in potato crops, due to which plants become esculent, lush green. On that crop heavy incidence of insects and diseases may be seen. So, for their management farmers used much number of pesticides that's shows hazardous effect on biotic factors. So, keeping the facts, an OFT has conducted to assess the effect of CSIR-Bio (an microbial consortia) against insects and diseases as compared to chemical pesticides. Details are given below:

Technology Option	No. of trials	% incidence		Av. Yield of Potato (Q/ha)
		Leaf curl mosaic	Late blight	
T_1-Farmers Practices – Excess use of chemical fertilizer & pesticides	3	19.6	12.5	265.5
T_2 - CSHRI Bio(an microbial consortia)		4.6	4.7	312.6

Economics:

Technology Option	Cost Of Cultivation	Gross Income	Net Income	B:C
T_1- Farmers Practices – Excess use of chemical fertilizer & pesticides	110500.0	265500.0	155000.0	2.40
T_2 - CSHRI Bio Product	99500.00	312600.0	213100.0	3.14

INTEGRATED DISEASE MANAGEMENT

(a) Pulse & Cereal Crops

Problem definition: Low yield and poor quality seed due to pod borer infestation in Chickpea: VKV Mahoba

Technology assessed or refined (as the case may be): Integrated Pest Management in chickpea.

KVK, Belatal, Mahoba conducted on-farm trial to find out the appropriate insect management practice to enhance the chickpea productivity. The assessed technology of Summer ploughing + seed treatment with Imidachloprid @ 2 g/kg seed followed by foliar spray of NPV 250 LE/ha + 5% jiggery solution reduced the percentage of insect incidence from 24.6 to 3.67 and yield was increased by 39.7 per cent.

Effect of treatment in enhancing the yield of chickpea

Technology Option	No. of trials	Per cent infestation plants / m^2	Yield (q/ha)	% increase	Net income (Rs/ha)	B:C Ratio
T_1-Farmers practice (No use of insecticide)	4	24.6	14.6	38155	2.8	2.8
T_2 - Summer ploughing + seed treatment with Imidachloprid @ 2g/kg seed followed by foliar spray of NPV 250 LE/ha + 5% jaggery solution		3.67	20.4	69633	3.8	3.8

Problem definition: Heavy loss due to of bacterial leaf blight of rice, effecting in a yield loss of upto 50 % and income loss of Rs.20000 to 40000/ha: KVK Aligarh

Technology Assessed: Management of bacterial leaf blight (BLB) (variety sugandh-05)

Rice is an important crop of India. However, there is high incidence bacterial leaf blight (BLB) resulting in yield losses upto 50 %. KVK Aligarh conducted on-farm trial to assess the control measure of this diseases. The Spraying of streptocyclin @ 16 gm + Copper Oxichloride 500 gm twice at 15 days interval, reduced the percentage of disease incidence from 33.5 (Farmer practice) to 8.4 and yield was increased by 22.86 per cent.

Management of bacterial leaf blight (BLB)

Technology Option	No .of trials	Disease Incidence (%)	Yield qt/ha)	Increase in yield (%)	Net Return (Rs./ha)	B:C Ratio
T1: Farmers practice (Spray of carbendazim @ 1.0 Kg./ h after disease appearance)	09	39.6	33.1		54850	1:2.38
T2: Spraying of Agrimycin @ 75 gm + Copper Oxichloride 500 gm twice at 15 days interval		7.25	47.3	30.10	95305	1:3.41

Problem definition: Low yield due to Yellow Mosaic disease of Urd: KVK Firozabad

Technology Assessed: Management of Yellow Mosaic disease of Urdbean.

Trail was conducted in 3 farmers field of KVK Firozabad. The result indicates that the use of Thiomethozim @ 1 lt./ha yield increase 56.41% over T_1 and control Yellow Mosaic disease in Urdbean. The disease infestation % minimize in T_2 treatment 10% however the control is more overT_1 (52%).

Effect of Insecticide in Yellow mosaic disease in Urdbean

Technology Option	No. of trials	Yield qt/ha	Yield increase %	Disease infestation %	Cost of cultivation (Rs/ha)	Goss cost (Rs/ha)	Net Return (Rs/ha)	B:C Ratio
T_1 : No use of Insecticide	03	3.90	-	52	16800	17160	360	1.02
T_2 : Spray of Thiomethozim @ 1lt./ha spray of 25 days after sowing second spray 45 days after sowing.		6.10	56.41	10	17600	26840	57500	1.525

Problem definition: Bacterial leaf blight infestation in paddy is severe problem: KVK Azamgarh

Technology assessed: Evaluation of Agrimycin against BLB in paddy (Var. BPT-5204)

Rice crop severely suffered with the incidence of bacterial leaf blight (BLB) during its growth period. Seed treatment is a best option to protect the crop against the seed born diseases as well as several bacterial diseases. Use of Agrimycin @ 1.0 g/kg paddy seed recorded lesser incidence of BLB and 11.8 per cent more yield than non treated paddy. It can be concluded that a low cost technology should be adopted by the all rice grower of eastern UP for better returns.

Effect of Agrimycin against BLB in paddy

Technology Option	No. of trials	BLB (% on visual basis)	Yield (q/ha)	% increase in yield	Net Return (Rs/ha)	BCR Ratio
T_1: Farmers' practice (No seed treatment)	01	80	37.2	-	29550	2.13
T_2: Seed treatment with Agrimycin @ 1g/kg of seed		20	41.6	11.8	35600	2.33

Problem definition: Low yield of paddy due to severe infection of blast disease: KVK Basti

Technology assessed: Assessment of suitable bactericide to control blast disease in paddy

KVK Basti conducted OFT to find out suitable bactericide for control of blast. Spraying of tricyclazole @ 300-400 gm/ha. Result found 93% blast control. BC ratio 2.21 is suitable for control of blast.

Effect of suitable bactericide for the management of blast in paddy

Technology option	No. of trials	Control of blast/ m^2	Yield (q/ha)	Cost of cultivation (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	Increase in yield (%)	B:C ratio
T_1: Spraying of mancozeb @ 1.5kg/ha	3	68	36.0	31150	63000	31850	-	2.02
T_2: Spraying of tricyclazole @ 300-400 gm/ha		93	41.0	32350	71750	39400	14.28	2.21

Problem definition: Heavy infestation of Brown Plant hopper in paddy effecting in a yield loss of 12 to 18% : KVK Pilibhit

Technology Assessed: Brown Planthopper Management in paddy (PR-113).

Paddy is an important cereal crop of Pilibhit. However, there is high incidence of Brown Planthopper pest resulting in yield loss. An on farm trial was conducted to **assess** the control measure.

Effect of different methods in control of Brown Planthopper in paddy

Technology Option	No. of trials	Infestation of Brown Planthopper (%)	Yield (q/ha)	% Increase in yield	Cost of Input/ha (Rs.)	Total return per ha (Rs.)	Net Return (Profit)/ha (Rs.)	CB Ratio
Application of Ethiprole+ imidacloprid @425g/ha (Farmers Practice)	05	16.62	47.71	--	54213	76336.0	22123.0	1.40

Application of Burprofezin 25 SC @ 1 lt/ha (Recommended Practice)		9.65	54.36	13.93	55672	86976.0	31304.0	1.56
Application of triflumezopyrim @ 100 ml/ha		4.41	56.87	19.19	56871	90992.0	34121.0	1.59

The assessed technology of Application of pymetrozine 50 WG @ 0.33 kg/ha reduced the percentage of Insect infestation from 16.62 to 4.41 and yield was increased by 19.19 per cent. Farmers appreciated the technology, application of Pymetrozine 50 WG @ 0.33kg/ha to manage the brown plant hopper in paddy as it reduced the insect infestation effectively and significantly increased the yield of paddy.

Problem definition: Low yield due to insect infestation (White grub and termite) in Groundnut: KVK Mahoba

Technology Assessed or Refined (as the case may be): Assessment the effect of Integrated Pest Management on yield of Kharif groundnut

KVK, Belatal, Mahoba of Uttar Pradesh conducted on-farm trial to find out the appropriate insect management practice to enhance the groundnut productivity. The assessed technology of Summer ploughing + seed treatment with FIR + Beauveria bassiana @ 2.5 Kg/ha as soil application before sowing reduced the percentage of insect incidence from 16.7 to 3.2 and yield was increased by 35.48 per cent.

Effect of IPM Practices on yield of Kharif Ground nut

Technology Option	No. of trials	Per cent infestation plants /m2	Yield (q/ha)	% increase overFP	Net income (Rs.)	B:C Ratio
T_1- Farmers practice (No use of proper insecticide)	4	16.7	12.4	-	26116	1.76
T_2 - Summer ploughing + seed treatment with FIR + Beauveria bassiana @ 2.5 Kg/ha as soil application before sowing .			16.8	35.48	41675	2.03

Problem definition: Heavy incidence of false smut of paddy: KVK Pratapgarh

Technology Assessed : Management of Smut Disease in Paddy

District Pratapgarh is having rice-wheat cropping system (88%) and rice is major crop 98976 ha. The heavy (8-10%)incidence of false smut in paddy crop has been recorded in past few year resulting in less yield and mrket price. To overcome this problem KVK pratapgarh has conducted On Farm Trial. The data indicate that the Foliar spray of Copper Oxcicloride @ 3 gm/ltr of water recorded 2-3 per cent of disease incidence and 4.22 per cent increase in yield over farmer practice followed by Foliar spray of Copper Oxcicloride @ 2.5 gm/ltr + Streptomycine sulphate @ 0.20 gm/ltr of water has reduces disease incidence 0-1 per cent as compare farmer practice and get 12.9 per cent increase in yield over farmers practice.

Management of Smut Disease in Paddy

Technology Option	No. of trials	Yield (qt./ha)	Gross Cost (Rs./ha)	Gross Return (Rs/ha)	Net Return (Rs./ha)	Increase in yield (%)	B:C Ratio	Disease Incidence (%)
Seed treatment (Carbendazim @ 0.2%) (Farmers Practice)	5	40.3	26530	68510	41980	-	2.6	10
T2 : Foliar spray of Copper Oxcicloride @ 3 gm/ltr of water		42.00	27320	71400	44080	4.22	2.6	2-3
T3 : Foliar spray of Copper Oxcicloride @ 2.5 gm/ltr + Streptomycine sulphate @ 0.20 gm/ltr of water		45.50	27860	77350	49490	12.9	2.8	1.0

Problem definition: Heavy infestation of Pod borer in Chickpea: KVK Auraiya

Technology Assessed or Refined (as the case may be): Pod borer Management in Chickpea

Chickpea an important crop of Auraiya, Uttar Pradesh. However, there is high incidence of Pod Borer insect resulting in yield loss. KVK Auraiya conducted on-farm trial to **assessment of Pod borer in Chickpea** the control measure. The refined technology of spray of Emamectin Banzoate @300 g/ha and yield increased 7.46 per cent.

Effect of imidacloprid in control of Pod borer in Chick pea

Technology Option	No.of trials	Incidence of pod borer (%)	Yield (kg/ ha)	% In-crease in yield	BCR
Spray of Imidacloprid (Farmers Practice)	05	4.20	23.58	-	3.28
Spray of Emamectin Baenzoate @ 300gm/ha. (Recommended Practice)		2.40	25.28	7.46	3.48

Problem definition: False smuts have recently become an important disease in paddy and causes both quantitative and qualitative losses: KVK Ghazipur

Technology Assessed: Assessment of false smut management in paddy.

The disease can occur in areas with high relative humidity (>90%) and temperature ranging from 25−35 ºC. Rain and high humidity and soils with high nitrogen content also favors disease development. The pathogen also survives through alternate host viz., barnyard grass (Echinochloa crusgalli) and common rice weed Digitaria marginata. Wind can spread the fungal spores from plant to plant. False smut symptoms produced are visible after flowering only. The integrated approaches i.e. recommended dose of nitrogen (120kg/ha), weed management with Bispyribac-sodium10% EC @ 250ml/ ha at 20 days after transplanting and Propiconazole 25%EC @ 500ml/ha at panicle initiation were comprised under on farm trial. The incidence of false smut in paddy was recorded 4.76% in demonstration plot while it was 10.71% in farmers practice. The average yield of 55.53q/ ha was obtained from the demonstration plot whereas 43.42 q/ha from farmer practices and yield was increased by 27.89 per cent. Farmers accepted and appreciated technology.

Performance of integrated approach

Technology Option	No. of Trials	Avg. infected panicle/hill	Avg. infected panicle/m²	Yield (q/ ha)	% increase in yield	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Re-turns (Rs/ha)	B:C Ratio
1	2	3	4	5	6	7	8	9	10
Farmers practice (No control mea-sure adopted/ improper use of fungicides) (FP)	04	2.25	21	43.42	-	21490	60216	38726	2.80
Use of integrat-ed approach		1.00	8	55.53	27.89	24850	84390	59540	3.40

Problem definition: Low yield of rice due to attack of sheath blight: KVK Gonda

Technology Assessed: To assess the suitable and economical control measure of sheath blight in rice.

KVK Gonda conducted on farm trail to control the sheath blight in rice, due to low market rate of such type of rice in the market. It was observed that foliar spray of *trichoderma viridi + psudomonas phloriserce* is very effective to control.

Effect of *trichoderma viridi + psudomonas phloriserce* to control the sheath blight in rice.

Technology Option	No. of trials	Incidence of the disease	Yield	Net In-come (Rs/ha)	B:C Ratio
Farmer practice- Use of mancozeb	5	55-60	31.25	4974	1.15
Recommended practice- Spraying of trichoderma viride 1.15% wp @ 3gm + Pseudomonas fluo-rescens 0.5 wp @1gm / lit water.		10-12	40.56	15535	1.42

Problem definition: Low yield of Chickpea due to severe infestation of pod borer and it accounting for 75% pod damage in crop: KVK Gorakhpur-II

Technology Assessed: Assessment of IPM strategies for pod borer management in chick pea

Chick Pea is a major pulse crop of Rabi season. The low yield of chick pea was recorded due to severe infestation of pod borer (Helicoverpa armigera Hubner). The problem was identified with concerned village persons during survey and KVK conducted on farm trial to assess the control measures. The different IPM strategies i.e. proper tillage, line sowing and inter cropping with coriander/linseed, HYV GNG 1581, seed treatment with Carbendazim @ 2gm/kg of seed for management of collar rot and spray of Emamectin Benzoate 5% SG @ 0.4 gm/liter water at 50% flowering and at 50% pod filling stage were comprised under on farm trial. There was less infestation of plants/m² and pod/plant with application of IPM strategies. The average yield of 15.83 q/ha was obtained from the demonstration plot whereas 11.75 q/ha from farmers practice and yield was increased by 34.72 per cent.

Performance of management strategies of Pod borer in Chick Pea

Technology Option	No. of Trials	% of Affected plants/m²	% of damaged pod/plant	Yield (q/ha)	%increase in yield over farmers practice	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	B:C Ratio
1	2	3	4	5	6	7	8	9	10
Indiscriminate use of pesticide	04	18.00	14.50	11.75	-	16895	47000	30105	2.78
Use of IPM strategies		10.00	8.00	15.83	34.72	20195	63320	43125	3.14

(c) Horticultural Crops

Problem – Low yield of tomato due to mosaic (leaf curling): KVK Fatehpur

Technology accessed – Assessment of tomato yield by using fungicide + insecticide

In Fatehpurdistrict there are several farmers, being cultivation of tomato due to mosaic without knowing the proper technique of tomato for neat, clean and more production of tomato.

Assessment of tomato yield by using fungicide + insecticide for reducing mosaic

Technology assessed	No. of trials	Yields (q/ha)	Increase in yield	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	B:C Ratio
T_1- Farmers practice (Use of fungicide and insecticide separately)	04	280	-	26000	185000	159000	7.10
T_2- Use of Insecticde + fungicide both @ 3-5 ml/lt		355	26.78	32000	245000	213000	7.60

Due to proper use of fungicide with insecticide in tomato mosaic infestation was controlled resulting in B:C ratio of 7.60

Problem definition: Low yield and poor quality of potato due to black scurf disease. Incidence of this disease is very high. Blackish and charcoal like appearance due to fungus colonies reduce the quality of potato and results lesser market prices: KVK Kannauj

Technology Assessed: Assessment of fungicides for management of Black scurf disease of potato**:**

Performance of fungicides on yield and disease management of potato.

Technology Option	No. of trials	Plant Emergence % at 15 DAS	Infected tubers (%)	Yield (q/ha)	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	B:C Ratio
Farmers Practices (carbendazim)	15	22.75	29.37	290.15	82500	174090	2.11
Seed treatment with Azoxystrobin 23 SC @ 100 ml /ha.		32.65	10.56	325.42	84000	203125	2.41
Seed treatment with Thifluzamide (Pulsor) @ 1.25 lt. per ha seed		3685	17.25	310.21	83700	193881	2.31

* Market value of produce is Rs. 600/q for infected tubers and Rs.625 /q for fresh tubers.

To manage the black scurf, two fungicides i.e. Azoxystrobin 23 SC @ 100 ml /ha and Thifluzamide(Pulsor) @ 1.25 lt. per ha seed were applied to treat the seeds separately against Carbendazim @ 500 g/ha as farmers practice. Seed treated with Azoxystrobin 23 SC @ 100 ml /ha gave the highest germination of seeds, tuber yields and net returns and the lowest infected tubers 32.65 %, 325.42 q/ha and Rs. 203125.00/ha and 10.56 %, respectively. These results were followed by Thifluzamide(Pulsor). The lowest germination, tuber yield and net returnand the highest infected tubers were recorded under Carbendazim treated seed I.e. 22.75 %, 290.15 q/ha and Rs. 174090 /ha and 29.37 %, respectively.

Problem definition: Low yield, quality and higher cultivation cost of Okra due to severe incidence of fruit and shoot borer: KVK Kanpur Dehat

Technology Assessed: Assessment of suitable control measure of fruit and shoot borer of okra.

Technology Option	No. of trials	No. of Fruit/Shoot affected by larvae/m²	Yield (q/ha)	Gross Cost (Rs./ha)	Gross Return (Rs./ha)	Net Return (Rs./ha)	BC Ratio
T_1-Farmer Practice (use of 8-10 spray of cypermethrin 0.1% at heavy infestation)	3	3	106	45000	212000	167000	1:4.71
T_2-4 spray of NSKE @5% after infestation		5	104	37000	208000	169000	1:5.33
T_3- 2 spray of indoxacarb @ 0.025% after infestation		3	107	40000	214000	174000	1:5.35

Application of 2 sprays of indoxacarb @ 0.025% with 15 days interval found most effective treatment in controlling the fruit and shoot borer of okra. 4 spray of NSKE @5% in 10 days interval also best treatment in terms of net return in per ha. Area and it is eco-friendly also.

Problem definition: Low productivity of potato due to late blight: KVK Mau

Technology assessed: Assessment of newly released chemicals for the management of late blight of potato

Potato is one of the important commercial crop of eastern Uttar Pradesh. However, there is high incidence of late blight disease resulting in yield loss. KVK Mau conducted on-farm trial to assess the control measure. The fungicide control of late blight of potato with first spraying of Propineb 70% WP @ 1.25 kg/ha at 45 DAS + second spraying of Iprovalicrub 5.5% + Propineb 61.25% WP @ 1.5 kg/ha at 65 DAS reduced the percentage of disease incidence from 18 to 5 and yield was increased by 12.50 per cent.

Effect of newer fungicides for the management of late blight of potato

Technology Option	No. of trials	Incidence of late blight (%)	Yield (q/ha)	% increase over FP	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio
T_1: Injudicious use of fungicide Mancozeb 75% WP @ 2.5kg/ha (Farmers' practice)	5	18	178.4	-	55175	89200	34025	1.62
T_2: First spraying of Propineb 70% WP @ 1.25 kg/ha at 45 DAS + Second spraying of Iprovalicrub 5.5% + Propineb 61.25% WP @ 1.5 kg/ha at 65 DAS (Recommended practice)		5	200.7	12.50	57000	100350	43350	1.76

Problem definition: Poor yield due to occurrence of end rot disease in chilli: KVK Varanasi

Technology assessed: Management of leaf curl disease in chilli

The KVK Varanasi conducted on-farm trial on management of leaf curl disease in chilli caused by virus and spread widely through white fly. Crop was badly damaged by this disease. Application of bio insecticide Nembecidine and Bio-wonder to manage of leaf curl disease and yield enhanced by 28% in along with net profit of Rs.94840 per hectare.

Effect of bio agent for the management of leaf curl disease of chilli

Technology Option	No. of trials	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
T_1: Heavy use of chemical insecticide (Farmers' practice)	05	69.87	65250	1.4
T_2: Use of nembecidine with bio-wonder @ 4 ml/lt of water (time of fruit setting stage) and IInd application after 15 day spray if fly visible		98.78	94840	2.9

Problem definition: Low yield of vegetable pea due to root rot disease: KVK Rampur

Technology Assessed or Refined : Biological control of root rot disease in vegetable pea.

Vegetable pea is an important rabi crop of U.P. However, there is high incidence of root rot disease in vegetable pea resulting in yield loss. Therefore, On Farm Trails at farmers field on five locations were conducted to control the root rot disease . The technology of soil application of Trichoderma powder @ 2.5kg/ha and Pseudomonas powder @ 2.5 kg/ha mixed with FYM reduced the percentage of disease incidence from 21.5 to 6.0 as well as 5.2 percent and yield was increased by 30.6 as well as 33.1 per cent respectively.

Effect of Trichoderma powder and Pseudomonas powder in control of root rot disease in Vegetable pea (Variety- Arkel)

Technology Option	No.of trials	Pest Incidence (%)	Yield (q/ha)	% Increase in yield	C:B Ratio
T1 = Farmers Practice (Use of Carbofuran 3G @ 25 Kg/ Ha)	05	21.5	62.4	-	1:1.65
T2 = soil application of Trichoderma powder @ 2.5kg/ha		6.0	81.5	30.6	1:2.36
T3 = soil application of Pseudomonas powder @ 2.5 kg/ha		5.2	83.1	33.1	1:2.42

Problem definition: Yield loss of 25% and income loss of Rs.70000/ha due to heavy incidence of shoot gall maker insect in mango orchard: KVK Saharanpur

Technology Assesse: Management of shoot gall maker (*Psyllia sp*) insect in mango orchard

Mango is an important cash crop of WesternUP. However, there is high incidence of shoot gall maker (*Psyllia sp*) insect in mango orchardresulting in yield loss. KVK Saharanpur conducted on-farm trial to assess the control measure. The assess technology of Thaiomethoxam@1gm/lit.+Profenophos@2gm/lit. water , two spray 2& 14 August reduced the percentage of insect infestation from 36 to 05 and yield awaited.

Effect of Thaiomethoxam+Profenophosin control of ffshoot gall maker (Psylliasp) insect in mango orchard

Technology Option	No.of trials	Incidence of shoot gall (%)	Yield (q/ha)	% Increase in yield over farmer's practice
Application of Imida 0.5 ml/ lit. (Farmers practice)	03	21	119.8	--
Thaiomethoxam@1gm/lit.+-Profenophos@2gm/lit. water, two spray 2& 14 August.		7	151.4	31.6

Problem definition: Heavy infestation of fruit and shoot borer in Okra crop: KVK Banda

Technology Assessed or Refined (as the case may be): Assessment of IPM practice for shoot and fruit borer in Okra

Okra is highly remunerative vegetable crop but fruit and shoot borer affect the yield and profitability of this crop. KVK, Banda conducted on farm trial to assess the best possible measures to manage this insect (crop losses -14 per cent). Treatment includes Pheromones trap's installation to 25-30 DAT@20/ha as a monitoring trap and application of one spray of azadirchtin (1500ppm) @ 5ml/lit after removal of the infested plants in the field and two spray of Trizophos 35%+ Delta methrin 1%EC @2ml/lit with use of wetting sticker @2ml/lit of water at flowering and fruiting time and second spray after infestation at 15 days interval, found more effective in managing the fruit and shoot borer in okra and 16.1% yield was increased with net return of Rs. 51300 over farmers practice.

Effect of IPM practice for shoot and fruit borer in Okra

Technology Option	No. of trials	Yield (q/ha)	Yield increase %)	Net Return (Rs./ha)	B:C Ratio
Farmer's practice (spray of improper chemical and conc. Of insecticide)	04	62.8	-	37200	2.45
T2_ (Pheromone trap's installation to 25-30 DAT@20 traps/ha, foliar spray of Azadirachtin(1500PPM) @5ml/ lit, spray of Trizophos 35%+Delta methrin 1%EC@2ml/litre +2ml sticker/litre of water at flowering and fruiting phase)		78.9	16.1	51300	2.85

Problem definition: Heavy Infestation of mosaic virus in cucumber caused yield loss of more than 30% : KVK Jhansi

Technology Assessed: Evaluation of insecticide to control of viral disease (mosaic) vector in cucumber.

Cucumber is a major zaid crop in few villages of district Jhansi. A number of farmers are moving from cereals and pulses to cucumber and gaining high yield and income with hybrid cultivars (malni, Seminis). Cucumber mosaic disease is an important disease of cucumber caused more than 20% yield losses. The disease transfer and spread with sucking insect-pest (aphid) for this an insecticide mixture (Profenofos + Cypermethrin) was evaluated against the sucking pest in zaid season 2018-2019. The crop was sown on third week February and harvested going on. It was observed that mosaic disease incidence decreased up to 5% with application of Insecticide. However, in farmers practices disease incidence was noticed 30%.

The yield of treatment field was 472 q/ha and it was 95% higher than farmers practices field (242 q/ha). The treatment also has maximum net return (Rs.367000/ha) and 4.49 B:C ratio as compared to farmers practices (Rs. 142000).

Effect of Profenofos + Cypermethrin insecticides on mosaic disease of cucumber

Technology Option	No. of trials	Incidence of mosaic disease %	Yield (q/ha)	% Yield Increase	Net Return (Rs./ha)	B:C Ration
T_1: Farmers practices	5	30	242		142000	2.42
T_2: Spray of Profenofos + Cypermethrin (Recommended practice)		05	472	95	367000	4.49

Problem definition : Low yield and quality in banana crop due to attack of banana beetle insect: Sitapur-I

Technology assessed: Integrated management of banana beetle (*Colaspis hypochlora*) in banana crop.

KVK Sitapur has conducted on farm trial to assess the integrated management of banana beetle insect in banana crop during Kharif season, 2018 in three villages viz; Vijwamau, Ramnagar and Tadai khurd. The trials comprised **T1-** Farmer's practice (Injudicious use of hazardous pesticides) **T2-** IPM package: Management of weeds and alternate host plants. Need based two-three spray of Chlorpyriphos 20 EC @ 2.0 ml/liter of water solution at 10 days interval. The details of the result are given below in table

Table Performance of management practice of banana beetle

Technology Option	No.of trials	Yield (Q./ha)	Increase in yield (%)	Cost of cultivation (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C Ratio
T1- Farmer's practice (Injudicious use of hazardous pesticides)	6.0	750	-	231250	600000	368750	2.59
T2- IPM package		795	6.00	232000	715500	483500	3.08

Problem definition : Low yield in mango crop due to attack of shoot gall psylla insect: Sitapur-I

Technology assessed : Integrated management of shoot gall psylla insect in mango crop.

KVK Sitapur has conducted on farm trial to assess the integrated management of shoot gall psylla insect in mango crop during 2017-18 in two villages viz; Ramnagar and Mishni. The trials comprised **T1-** Farmers Practices (No control measure). **T2-** IPM package

Leaves having eggs in month of March and shoot galls in month of September were collected and destructed. Three spray of Dimethoate 30 EC @ 2.0 ml/liter of water solution at the interval of 15 days from second week of August and one spray of Profenophos 50 EC @ 2.0 ml/liter of water solution in the month of March were done in mango orchard having attack of shoot gall psylla insect. The mango orchard taken under trail was found free from shoot galls due to Shoot gall psylla insect at completion of trail. The details of result are given below in table:

Performance of management practice of shoot gall psylla insect in mango crop:

Technology Option	No.of trials	Yield (Q./ha)	Increase in yield (%)	Cost of cultivation (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C Ratio
T1- Farmers Practices (No control measure)	6.0	170	-	40500	170000	129500	4.19
T2- IPM package		220	29.41	50780	220000	169220	4.33

INTEGRATED CROP MANAGEMENT

Problem definition: Low yield and poor quality of Shimla Mirch due to traditional cultivation: KVK Firozabad

Technology Assessed: Comparison study of shimla mirch in traditional and protected cultivation under poly house

KVK, Firozabad conducted on-farm trial to performance of traditional cultivation and protected cultivation of shimla mirch under poly house. In the poly house transplanting of seedlings on the ridge the production is 585 q/ha (98.3 % increase in yield) with the net return of Rs. 144000 as compared to farmer's practice the yield is 295 q/ha with the net return Rs. 697000

Performance of traditional cultivation and protected cultivation of shimlamirch under poly house

Technology Option	No. of trials	Yield (q/ha)	Yield increase %	Cost of cultivation (Rs/ha)	Gross Cost (Rs/ha)	Net Return (Rs/ha)	B:C ratio
Direct transplanting of seedling in the flat filed (Farmers Practice)	3	295	-	88000	88500	697000	3.71

Transplanting of seedling on the ridge in the poly house		585	98.3	315000	1755000	144000	5.57

Problem definition: Low yield of sugarcane due to late sowing: KVK Bijnour

Technology Assessed: Impact of nursery plantation under late sown condition on sugarcane yield.

Sugarcane is a major crop of Bijnor district and most of the farmers follow sugarcane – wheat cropping system. Due to adoption of sugarcane – wheat cropping system the sowing of both crops are depend on harvesting of subsequent crop consequently sowing of both crops are delayed and productivity affected directly and same situation are coming in autumn sowing, because sowing of sugarcane are done after harvesting of paddy crop so low temperature affected germination percent and tillering. To short out the problem KVK scientist designed this trial. The details are given below:

Technology Option	No. of trials		Yield (qt./ha)	Increase in yield (%)	Cost of cultivation (Rs./ha)	Net Return (Rs./ha)	B:C Ratio
T_1- FP (Normal sowing)	01 (03 farmers field)	12.2	937.50	--	1,18,749.00	1,85,938.00	2.57
T_2- (Nursery planting)		14.8	1131.25	20.66	1,05,249.00	2,62,407.00	3.49

Problem definition: low yield in pigeon pea due low moisture during pod filling: KVK Deoria

Technology assessed: Irrigation management in pigeon pea at pod formation stage

KVK, Deoria in Uttar Pradesh on-farm trial to assess on irrigation management in pigeon pea at pod Formation Stage at 6 deference locations . The results indicated that the application of irrigation at pod formation stage in raised bed sown pigeon pea crop gave 101.88 per cent increase in yield over no irrigation at pod formation stage and 43.6 percent increase in yield over irrigation at pod formation stage in broadcasted sown of pigeon pea crop.

Effect of irrigation at pod formation stage in pigeon pea

Crop	Thematic Area	Technology Option	No. of trials	Yield (q/ha)	% Increase in yield
Pigeon pea	Yield loses due to lack of moisture at pod formation stage	T1-No irrigation at pod formation stage	06	10.60	-
		T2-Irrigation at pod formation stage in broadcast sown		15.23	43.6
		T3-Irrigation at pod formation stage in raised bed sown		21.40	101.88

Problem definition: Low income from rice-wheat cropping system: KVK Bhadoi

Technology Assessed: Assessment of cropping system of farmers with new intervention.

Mostly farmers of the district follow rice-wheat cropping system. New intervention in a trial was formulated at 5 farmers` field with Urdbean + Vegetable Pea + Wheat (late sown) against farmer practices rice wheat. In trials Urd + Vegetable Pea + Wheat (late sown) gave an yield of 12.80, 12.20 & 16.35 q/ha. as against farmers practice Rice + Wheat 48.8 & 44.2 q/ha respectively. However, the total net income (Rs. 170954.00 / ha.) and B.C ratio (2.41) from new intervention as against farmers practices (Rs. 121435 / ha.) and 2.35 respectively. Hence it may concluded that in the trial Rs. 49519.00 per ha was obtained extra income against farmer practices.

Assessment of cropping system with New intervention

Technology	No. of trials	Yield q/ha	Cost of Cultivation	Gross Income	Net Income	B.C. Ratio
T1- Farmers Practice (Rice-Wheat)	5	Rice- 48.8, Wheat-44.2	90160	185328	95168	2.05
T2- (Urd-Vegetable Pea-Wheat late)		Urd- 12.8, Veg. Pea-122.0, Wheat-16.35	121275	292229	170954	2.41

INTEGRATED WEED MANAGEMENT

Problem diagnosed: Low productivity and profitability in paddy cultivation due to non adoption of weed management technology: KVK Hardoi

Technology Assessed: Assessment herbicide for weed management in transplanted rice.

KVK, Hardoi conducted on-farm trial to assess the use of weedicides for management of weeds in paddy. The spray of Pretilachlor had realized a net return of Rs. 46220/ha as compared to the farmer's practice (Use of Bispyribac sodium) with net returns of Rs.41100/ha (9% increase in yield per ha).

Performance of Herbicides on weed intensity and grain yield of paddy

Technology Option	No. of trails	Parameter recorded		Grain yield (q/ha)	Increase in yield in %	Gross Cost (Rs/ ha)	Gross Return (Rs/ha)	Net Re-turn (Rs/ ha)	B:C Ratio
		Weed inten-sity/sq.mt.	No. off tillers per mt.^{2})						
T_1 Farmers Practice (Use of Bispyribac Sodium 10 5 SC @ 80 ml/ acre)	5	10	10.6	38.8	-	26800	67900	41100	2.53
T_2 :Pretilachlor 50 EC @ 600 ml /acre		7	13.0	42.4	9	27980	74200	46220	2.65
T_2: Post em herbicide Pinoxaden 40 g + Carfentra-zone 25 g at 30 DAS (Recom-mended practice)		8	41.05	7.60	32000	75532	43532	2.36	

Problem definition: Poor economic returns in maize: KVK Kannauj

Technology assessed: Assessment of proper herbicide for kharif season Maize covering 0.8 hectare area.

The results indicated that the use of Atrazine (1.5 kg/ ha)+ Tambotrine @115 ml/acre with Kaveri seeds Post Emergence at 20-25 DAS gave 13.01 per cent increase in yield over farmers` practice.

Grain yield and Economics of Maize

Technology Option	No.of trials	Yield (qt./ha)	In-crease in yield (%)	Net Return (Rs./ha)	B:C Ratio
FP (Use of Atrazine1.5 kg/ha)	5	37.72	-	13903	1.38
Tambotrine @115 ml/acre with Kaveri seeds Post Emergence at 20-25 DAS		38.41	7%	16674	1.44
T2+ Atrazine (1.5 kg/ha)		40.37	13.01%	18881	1.50

Problem definition: Heavy infestation of complex weed flora in wheat: KVK Amethi

Technology assessed: Complex weed flora management in wheat through newer herbicide Pinoxaden + Carfentrazone

KVK Amethi took up on-farm trial on chemical weed management for management of complex weed flora in wheat crop. The results indicated that the use of Post em herbicide Pinoxaden 40 g + Carfentrazone 25 g at 30 DAS gave 7.60 per cent increase in yield over farmers' practice (Sulfosulfuran). Weed control per m^2 also better in recommended practice as compared to farmers' practice.

Effect of newer herbicide combination on complex weed flora and yield in wheat

Technolo-gy Option	No. of trials	Weed infes-tation (m^2)	Yield (q/ha)	In-crease in yield (%)	Cost of culti-vation (Rs/ha)	Gross re-turn (Rs/ ha)	Net Re-turn (Rs/ ha)	B:C Ra-tio
T_1: Sulfos-ulfuran @ 33 g ai/ha (Farmers' Practice)	05	24	38.15	-	31500	70196	38696	2.23

Problem definition: Low yield of pigeonpea due to severe weed infestation and increased cost of production: KVK Azamgarh

Technology assessed: Assessment of efficacy of herbicide on weeds, yield & economics of pigeonpea

Result reveals that both herbicides are effectively controlled mixed weed flora of kharif season & enable to escape crop weed competition by eliminating weed density during entire growth period. Spraying of imazethapyr (10 SL) @ 100 g ai/ha found to be more profitable in enhancing grain yield to the tune of 67.5% over check. Imezathapyr 35% + Imazamox 35% @ 70 g/ ha adversely affect overall plant growth, no. of branches, plant height, no. pods/plant and finally pigeonpea yield. The cumulative effect of all these parameters are drastically reduced yield and economics of crop in comparison to Imezathpyr 10 SL @ 100 g/ha. On the basis of two year experimentations, it can be concluded that T_2 was found more effective in terms of timely weed control and enhancing farmers' income to the many folds.

Effect of herbicides on weed density, yield and economics of pigeonpea

Technology Option	No. of tri-als	No. of weeds/ m^2 at 45 DAS	Grain yield/ Plant (g)	Yield (q/ ha)	In-crease in yield (%)	Net Return (Rs/ha)	B:C Ratio
T_1: Occasionally manual weeding	01	473.8	71.2	15.1	-	70693	4.71
T_2: Spraying of Imazethapyr @ 100 g ai/ha at DAS		9.15	144.9	25.3	67.5	123577	6.12
T_3: Imazethapyr 35% + Imazamox 35% @ 70 g/ha at 30 DAS		5.82	89.4	19.7	30.5	917975	4.58

Problem definition: Heavy infestation of weed in paddy: KVK Pilibhit

Technology Assessed : Weed control measures on paddy yield in Pilibhit.

KVK Pilibhit took up on-farm trial on chemical weed management in paddy.

Effect of Butachlor and Pretilachlor on weed control and yield at paddy

Technology Option	No .of trials	No. of weeds /m²	Yield (qt./ ha)	Increase in yield (%)	Cost of Input/ ha (Rs/ ha)	Total return per ha (Rs/ha)	Net Return (Rs./ha)	B:C Ratio
Older weed control measure (Farmers Practice, Butachlor)	05	124	48.12	--	54231.0	76992.0	22761.0	1.41
Pyrazosulfuron @ 250 g/ ha as pre-emergent spray (Recommended Practice)		58	53.45	11.07	55671.0	85520.0	29849.0	1.53
Pretilachlor 50 EC @ 1.25 l/ha prior to transplanting		37	57.21	18.89	55845.0	91536.0	35682.0	1.63

The results indicated that the use of Pretilachlor @ 1.25 l/ha gave 18.89 per cent increase in yield over farmers practice of no use of chemical weed control.

Farmers liked the technology, use of Pretilachlor 50 EC @ 1.25 for the management of weeds as it increased the yield of paddy significantly by reducing the weeds population.

Problem definition: Low productivity due to highly weed infestation in Urd bean: KVK Sitapur-I

Technology Assessed: Control of weed infestation in Urd bean

KVK Sitapur has conducted on farm trial to assess the management of weed infestation in Urd bean during 2018-19 in three villages. The trials comprised **T1-** Farmers Practices (Manual weeding). **T2-** Application of Imazethapyr 10%SL @ 750ml/ ha at 20-25 DAS/2-3 leaf stage. The performance of technology was highly significant.

Performance of Imazethapyr in urd bean crop

Technology Option	No.of trials	Yield (Q./ha)	Increase in yield (%)	Cost of cultivation (Rs/ ha)	Gross income (Rs/ ha)	Net income (Rs/ ha)	B:C Ratio
T1- Farmers Practices (Mannual weeding)	6.0	7.15	-	14710	40040	25330	2.72
T2- Application of Imazethapyr 10%SL @ 750ml/ ha at 20-25DAS/2-3 leaf stage		8.20	14.68	13385	49280	35895	3.68

Problem definition: Heavy infestation of weed in Mustard: KVK Auraiya

Technology Assessed: Weed control measures on Mustard

KVK Auraiya of Uttar Pradesh took up on-farm trial on chemical weed management in Mustard . The results indicated that the use of Quizalofop 2 lit/ha gave 6.12 per cent increase in yield over hand weeding.

Effect of quizalofop on weed control and yield at Mustard

Technology Option	No.of trials	Yield (qt./ha)	Increase in yield (%)	Net Return (Rs./ha)	B:C Ratio
Three times hand weeding (Farmers Practice)	05	2.382	-	59061	3.32
Quizalofop @ 2 lit/ha spray (Recommended Practice)		2.528	6.12	63244	3.39

RESOURCE CONSERVATION

Problem definition: Lower productivity and profitability in paddy cultivation: Ambedkar Nagar

Technology assessed: Assessment of paddy productivity through direct sowing by Drum Seeder.

The KVK Panti, Ambedkar Nagar conducted on-farm trial on direct sowing of paddy variety NDR-3112 by drum seeder at different seed rates and found that 20 kg / ha seed rate. Direct sowing of paddy by drum seeder at 20 kg / ha seed rate increased yield 13.21per cent.

Effect of seed rate on yield and income of paddy sown by drum seeder

Technology Option	No. of trials	Yield (q/ha)	% increase in yield	Net Returns (Rs/ha)	B:C Ratio
T_1: Scattered transplanting (Farmers Practice)	6	42.37	-	29193.5	1:1.80
T_2: Direct seeding of germinated paddy sown by drum seeder @ 20 kg /ha seed rate (Recommended Practice)		49.24	16.21	43822.0	1:2.35

Problem definition: Lower productivity and profitability in rice cultivation under RW cropping system: KVK Mau

Technology assessed: Establishment method of direct seeded of rice through drum seeder or ZT machine

KVK Pilkhi, Mau conducted on-farm trial on various establishment methods in rice under direct seeded rice condition through drum seeder or through ZT machine. High cost of production and labour scarcity during peak hours under transplanted rice lower the profitable margin in the existing farmers practice. Direct seeding of rice through drum seeder resulted in highest BC ratio of 2.08 and net return (Rs. 36,035/-) because of lowest cost of production with marginal yield increase of 5.18 percent as compared with farmers' practice i.e. transplanted rice.

Effect of various establishment methods under direct seeded rice

Technology Option	No. of trials	Yield (q/ha)	% Increase over FP	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net Returns (Rs/ha)	BC Ratio
T_1: Transplanted rice (Farmers Practice)	05	42.50	-	36,000	65875	29875	1.83
T_2: Direct seeded rice through drum seeder (Recommended Practice)		44.70	5.18	33,250	69285	36035	2.08
T_3: Direct seeded rice through ZT machine (Recommended Practice)		43.10	1.41	34,050	66805	32755	1.96

Problem definition: Lower productivity and profitability in wheat cultivation: Ambedkar Nagar

Technology assessed: Assessment of wheat productivity and profitability through zero till cum ferti drill machine

The KVK Panti, Ambedkar Nagar conducted on-farm trial on wheat sowing by zero till cum ferti drill machine at different depth of sowing. Wheat sowing by zero till cum ferti drill machine at different depth of sowing found that 3 cm depth was suitable for maximum productivity and increased yield 8.18 per cent.

Effect of sowing depth on yield and income of wheat sown by zero till cum ferti drill machine.

Technology Option	No. of trials	Yield (q/ha)	% increased yield	Net Returns (Rs/ha)	B:C Ratio
T_1: Scattered sowing (Farmers' practice)	6	47.33	-	51827.2	1:2.47
T_2: Sowing of wheat by Zero till cum ferti drill at sowing depth of 3cm		51.20	8.18	61688.0	1:2.90

Problem definition: Low productivity and profitability under sugarcane wheat cropping system: KVK Amroha

Technology Assessed: To assess the intercrops in sugarcane for increasing the system productivity and profitability.

Sugarcane is a major crop of Amroha. Due to continuous follow of sugarcane - wheat cropping system and delayed sowing of both crops the productivity of these crops are very low. During the year farmers feel financial crises, due to improper cash payment of sugarcane by sugar factories, long duration of sugarcane crop, etc. Keeping in mind those facts KVK, Amroha is testing three intercropping system i.e. Sugarcane + Potato, Sugarcane + Cauliflower, Sugarcane + Mustard and sugarcane sole as check. The results of intercrops are given as below :

Technology Option	No. of trials	Intercrop yield (qt./ha)	Cane Yield (qt./ha)	CEY (qt./ha)	Cost of cultivation (Rs./ha)	Net Return (Rs./ha)	B:C Ratio
T_1= Farmers Practice	01 (03 farmers field)	-	-	-	-	-	-
T_2= Sugarcane+Potato		162.00	-	-	72,600.00	40,800.00	1.56
T_3 = Sugarcane+ Cauliflower		121.00	-	-	38,900.00	45,800.00	2.18
T_3 = Sugarcane + Mustard		11.40	-	-	18,200.00	25,120.00	2.38

Problem diagnosed: Low yield of Wheat: KVK Meerut

Technology Assessed: The crop residue of paddy incorporated in the field to enhance the productivity of wheat

To assess the performance of sowing of wheat after incorporation of crop residue by mulcher . On Farm Trial was conducted with 04 treatments under field condition. Data was collected 4.4 % more yields was obtained whereas about 4000 extra income was obtained.

Sowing of wheat after incorporation of crop residue

Technology Option	No. of trials	Yield (q/ha)	Increase in yield (%)	Cost of cultivation (Rs)	Gross cost (Rs/ha)	Net return (Rs/ha)	B:C ratio
T_1: Farmer practice – Sowing of without incorporation of crop residue	04	47.7	-	24500	87768	63268	3.58
T_2: Sowing of wheat after incorporation of crop residue by mulcher		49.8	4.4	25400	91632	65932	3.61

In treatment no, T2 recorded maximum yield as 49.8 q/ha which is more than 4.4% as T1 therefore farmers are happy to incorporation of crop residue.

Problem definition: Low yield due to conventional planting method of sugarcane in spring season: KVK Saharanpur

Technology Assessed : Improved trench method planting of sugarcane

To increase yield and income of sugarcane growers KVK, Saharanpur conducted on-farm trial on different methods of sugarcane planting. The improved trench planting methods of sugarcane row to row at 120 cm spacing with two row parallel in one furrow and place between two row use as inter crop of mung bean results are given bellow

Performance Trench method planting inter crop in sugarcane

Treatments	No. of trial	Yield (q/ha)		% change in Yield	No. of meal-able cane ($x10^3$ /ha)	Cost of cultivation (Rs./ha)	Gross income (Rs./ha)	Net Income (Rs. in lakh/ ha)	BC Ratio
		Sugarcane	Mung						
T1:Planting sugarcane at 75 cm row spacing (FP)	05	725.00	-	-	105	88900.00	232600.00	143700.00	2.6
T2: Trench method 120 cm		1210.00	5.9	40.5	129	95800.00	397400+ 28900= 426300.00	330500.00	4.4
Sugarcane Rs. 325/q, Mung- Rs. 5000/q									

Farmers got sugarcane yield 725 q/ha. in conventional method and in improved trench method get 1210 q/ha. yield. Yield increased 40.5% in improved trench method in compression to farmers practices. The net income was 3.3 lac/ha in trench method. In trench method crop was not lodged hence in farmers practice crop was lodged 22-25%. Farmers get the good income in compression to conventional method so farmers like this technology.

Problem definition: High mortality of newly planted fruit plants in rain fed Vindhyan zone: KVK–Mirzapur

Technology Assessed: Enhancement in survival of newly planted fruit plants by mulching in rainfed Vindhyan zone of Mirzapur

The KVKs of Mirzapur in Uttar Pradesh conducted on-farm trial on mulching in newly planted fruit plants. Mulching during lean summer period (March-June) through thatching material (paddy straw/polythene sheet) after life-saving irrigation had enhanced the survival of newly planted fruit plants by 15.38% with the irrigation saving of 33% alongwith net profit of Rs.20250 per hectare.

Effect of mulching on survival of newly planted fruit plants

Technology Option	No.of trials	Yield (t/ ha) Plants sur-vived out of 500	Net Re-turns (Rs./ ha)	BC Ratio
No mulching for new-ly planted fruit plants. At least 15 irrigations to ensure survival in summers (Farmers Practice)	03	390	2550	1.17
Mulching during lean summer period (March-June) through thatching material (paddy straw/poly-thene sheet) after life-saving irrigation (total 10 irrigations).		450	8250	1.69

INTEGRATED FARMING SYSTEM

Problem definition: Low and less profitability of paddy-wheat based cropping system of small farmers: KVK Balrampur

Technology assessed: To assess income of small farmers through suitable cropping system

K.V.K., Balrampur conducted On Farm trial to assess income of small farmers through suitable cropping system. The results showed that maximum yield of paddy (26.36 q/ha) & wheat (33.50 q/ha) were found in T_2 over farmers' practice. When farmers grow short duration variety of paddy, they are also grow the Radish crop as a rotational crop and obtained net profit of Rs. 28550/ ha as a additional income. It is recommended that farmers should grow short duration paddy variety (NDR-97), Radish (Japani safed) & wheat as a cropping system & they obtained more yield and profit in per unit area.

Assessment of suitable cropping system in R-W rotation

Technology option	No. of trials	Crops	No. of Plant/ m^2	Av. Yield (q/ha)	Net profit (Rs/ha)	B:C Ratio
T_1: Farmer's Practice (Sowing of medium duration (135-140 days) variety of paddy-wheat)	3	Paddy	250	22.66	14091	1.8
		Wheat	270	24.16	23364	2.4
T_2: Short duration paddy variety (NDR-97) - Radish (Japani safed)-wheat		Paddy	275	26.36	17736	1.9
		Radish	08	2.32	28550	2.5
		Wheat	290	33.50	37425	3.09

Problem definition: Low yield of Mango orchard: KVK Meerut

Technology Assessed: Inter cropping of turmeric production with Mango orchard.

KVK Hastinapur in Meerut district conducted on-farm trial to assess or refined (as the case may be) effect of intercropping on net return in Mango orchard. The intercrop system of under planting of Mango at 12 mitre planting distance and with growing turmeric between spaceof Mango area had realized a net return of Rs. 394000.00 as compare to the recommended practice with net return of Rs. 202000.00

Production performance and economic parameters of different varieties of Turmeric

Technology Option	No. of trials	Yield Eqi. (q./ha)	Cost of Cultivation	Gross Return (Rs/ha)	Net Returns (Rs./ha)	B:C Ratio
T_1-Use of Mango orchard ,Var. Dushahri (Farmer Practice)	09	135.40	68930.00	270800.00	201870.00	3.92
T_2- Use of Mango + Turmeric (Pant Pritabh)		253.5	113000.00	507000.00	394000.00	4.48
T_3- Use of Mango + Turmeric (Rajendra Sonia)		234.37	113000.00	468750.00	355750.00	4.14

To get more /additional income farmers are appreciating cultivating turmeric with mango as intercropping. The mango orchard was also found free from termite attack in the system and farmers got extra income without any adverse effect on mango crop..

Problem definition: Poor profitability due to single enterprise: KVK Chitrakoot

Technology Assessed: cultivation of vegetables/ fruit plants with fish farming.

Integrated farming is the need of the farmer to minimize risk, utilize all resources and keeping clean and green environment. The problem was identified that the fishery or vegetables and fruits alone gives low profitability due to single enterprises. The KVK, assessed IFFS technology at 02 farmers field on different locations. The fish pond integrated with fruits and vegetables on pond embankments and compared to farmers practice with single enterprise. It was observed that farmers are able to get income up to Rs. 35667/- from integrated system, whereas Rs. 30400/- income obtained from farmers practice that is 17.32 % higher than farmers practice. The IFS system also able to generate employment 124 man days more than control.

Performance of Technology-

Technology option	Weight at stocking	Average Yield		Cost (Rs)	Gross income (Rs/ha)	Net Income (Rs/ha)	Increase in income %	Man days	B:C ratio
		Fish (Kg)	Vegetables (Kg)						
FP (T-1)	Less than 1 gm	1250	-	32100	62500	30400		40	1.95
IFFS (T-2)	2.65 gm	1300	429	34056	69723	35667	17.32	164	2.05

For maximum use of available land, resources and to generate employment opportunity, pond bund could be utilized and farmer will be able to earn 17.32 % more income.

VALUE ADDITION

Problem definition: Low income due to low price of potato and no value added products & wastage due to surplus production: KVK Baghpat

Technology Assessed : Potato chips making

Potato is the perishable commodity. There have been frequent gluts in the market causing substantial economic loss to farmers and wastage also. One of the solution to this is the diversification of potato utilization KVK, Baghpat conducted a trial on value addition on potato chips making to assess the enhanced income and shelf life of potato by making potato chips in comparison to direct selling of raw potato. The observation was made with the respect of economy of chips and shelf life of the product.

Chips making versus Raw/direct selling of potatoes

Technology Option	No. of trials	Parameter observed	Data	CB Ratio	Result
T_1 - Selling Raw potatoes commercially. (Farmers Practice)	3	Yield of potatoes Gross cost (Rs.) Gross return (Rs.) Net return (Rs.) Shelf life	350 qtl/hac 110000/ 350000/ 240000/ 10-15 days in normal condition storage	1:3.1	T2 is beneficial as compared to T1as CB ratio is much higher and Shelf life of the value added product i.e. potato chips is enhanced.
T_2 - Selling of value added product i.e. potato chips. (Recommended Practice)		Chips prepared Gross cost (Rs.) Gross return (Rs.) Net return (Rs.) Shelf life	120 qt/hac 475000/ 4800000/ 4325000/ Stayed at best quality for about 2-3 months after date of pouching	1:1.1	

Selling price of raw potato (Chipsosna variety) Rs10/kg
Selling price of value added of potato chips (Chipsosna variety) Rs 400/kg

Problem definition: Low income of farm women due to preservation and value addition: KVK Bijnor

Technology Assessed: Value addition in mango squash increase prices as well as it shelf life.

The KVK Bijnor conducted OFT on Assessment of mango squash making and its marketing for addition income. Farm women provided with elaborative and view of making mango squash found to be safe for about four months. In demonstration the amount of potassium meta bi sulphate and sugar was taken in accurate amount the attack of mould get reasoned. It was also found that the farm women while making the mango squash con not take the chemical substance sugar in right proportion a result. They approved to problem & mould attack.

Crop	No. of Demon.	Parameter	Storage Period (Month)			
			I	II	III	IV
Mango squash	05	Potassium meta bi sulphate	Safe	Safe	Safe	Safe

Problem definition: Lack of income generation activities: KVK Bulandshahar

Technology assessed: Assessment of nutritional Badis as income generation activities.

Performance of nutritional Badis.

Technology Option	No. of trials	Cost Rs/kg	Cost Rs/kg	Other parameters
T1:- Use as perishable cooked items .	05	Demonstration	Market	Shelf life
T2- Nutritional Badis		80.00	250.00	100%

Nutritional Badis are 100% save for storage and have high self life. Taste is quite palatable and marketing of moong dal badis was more than urd dal badis.

Problem definition: Low income of farm women due to no value addition of mango commercially: KVK Shahjahanpur

Technology Assessed: Assessment of mango squash, mango papad and amchour making and its marketing for gradational income. Women in rural areas knew only to prepare pickle and chatani from mango. The do not knew how to prepare squash, aampapad and amchour. An OFT

on no value addition of mango was design and conducted. The performance of OFT revealed that the value addition of mango can double the family income of rural women.

Assessment of value addition of mango

Technology Option	No. of trials	Product Kg/qt	Gross Cost Rs.	Gross Return Rs.	Net Returns Rs.	% increase in net return	B:C Ratio
T1-Farmers Practices (Mango pickle only)	05	138	3864	4830	966	-	1.25
T2-							
a. Preparation of mango squash		192	9216	17280	8064	735	1.88
b. AamPapad		19	2736	4720	1984	105	1.73
c. Amchour		19	1428	3522	2094	117	2.47

FARM MACHINERIES

Problem diagnosed: Low yield of Sugarcane: KVK Meerut

Technology Assessed: Trench Planter was tested in field to enhance the productivity of Sugarcane

To assess the yield performance of Sugarcane Trench planter yield of Trench method of planting method gave 976 Q/ha, Whereas the ridge method of planting technique yield was recorded 825 q/ha. The net return was enhanced from 163825 to 205440 Rs. and B:C ratio was also recorded which was increased 1:2.7 to 1:3.01.

Performance of different method of planting of Sugarcane.

Technology Option	No. of trials	Yield (q/ha)	Increase in yield (%)	Cost of cultivation (Rs/ha)	Gross income (Rs/ha)	Net return (Rs/ ha)	BC ratio (Rs)
T_1: Farmer practice – Planting of Sugarcane by raiser	04	825	-	96156	259825	163669	2.7
T_2: Trench method		976	18.30	102000	307440	205440	3.01

Sale price of Sugarcane: Rs 315/qt.

The method of Trench planting was found better and given 50 thousand additional income/ ha

Problem definition: Low water productivity of paddy due to improper puddling: KVK GB Nagar

Technology Assessed: Puddling through Rotavator and Harrow

Improper puddling is a major cause of low water productivity in paddy in the district. An on farm trial under Agriculture Engineering discipline was conducted with recommendation of rotavator and harrow for puddling in comparision of farmers practice i.e. transplanting by contract labourer. As per recorded data both rotavator and harrow resulted increased yield 11.94 and 9.35 respectively.

Effect of various sowing methods on yield of rice.

Technology Option	No. of trials	Yield (qt./ha)	Increase in yield (%)	Net Return (Rs./ha)	B:C Ratio
T_1 - Farmer's practice - transplanting by contract laborer	05	38.5	-	27000.00	1.29:1
T_2 – Puddling through Rotavator		43.1	11.94	40800.00	1.43:1
T_3 – Puddling through harrow		42.5	9.35	39000.00	1.41:1

B:C Ratio of the Rotavator as well as the puddling through harrow is greater than the check. Hence both the technologies are beneficial.

Problem definition: Low work efficiency, injury and high drudgery in sugarcane stripping: KVK Muzaffarnagar

Technology Assessed:Assessment of increase in efficiency & reduction in drudgery through sugarcane stripper

Women are a vital part of their family, district as well as Indian economy. Over the years, there is a gradual realization of the key role of women in agricultural development and their vital contribution in the field of agriculture, Aside from raising children, women are expected to work in kitchen, maintain the homestead and assist in crop and animal production, 48 per cent of India's self-employed farmers are women, Drudgery can be defined by its time-consuming,repetitive and arduous nature,.Sugarcane is the main crop of western Uttar Pradesh,especially Muzaffarnagar.Sugarcane harvesting is done mainly by frarm women,which is a tedious work CIAE Bhopal developed a tool for stripping sugarcane. keeping in mind the thought that reducing drudgery in difficult activities is more important than saving time.

Technology Option	No of trials	Per cent acceptability
T1- Farmers practice (Use of hand knife for cutting and strtipping sugarcane)	--	Cutting and stripping of 100 canes per hour
T2-Use of Sugarcane Striper for striping of Sugarcane	5	Cutting and stripping of 110 canes per hour

Farmers Reaction :

> 20 percent Woman liked Sugarcane Striper for striping of Sugarcane,there were two reasons for not accepting the new tool.

> Two tools needed, one for cutting the cane and another for stripping

> Farm women are not habitual to handle new tool so they took longer time in striping the cane

The percent increase in output was 10 for the Sugarcane Striper

LIVESTOCK

a) Disease Management

Problem definition: Diarrhoea in goats due to infection of worms in goats: KVK Raebareili

Technology assessed or refined (as the case may be): Use of different wormicides in deworming of goats.

Table: Performance of Distodin and Benminth as dewormer in deworming of goats**.**

Technology Option	No.of trials	No. of Goats De-wormed	Goats dead due to Diar-rhoea	Mortal-ity per cent
Farmers practice/ 1 g. $CuSo_4$ per goat	4	70	8	11.43
Use of Benminth 1. Tab./Goat		70	5	7.15
Use of Distodin 1 tab. Per goat		70	3	4.29

KVK, Dariyapur, Raebareli conducted **on-farm trial** on assessment of relative performance of different wormicides in deworming of goats. The mortality rate was 4.29 by use of Ddistodin 1 tab. per goat followed by 7.15 by use of Benminth 1tab./goat. The farmers were advised to use Ddistodin as dewormer for deworming of goats.

Problem definition: Low milk yield of dairy animal due to post calving anoestrous: KVK Sidharthnagar

Technology assessed: Assessment of GTH hormone in dairy animals to get higher conceive rate in dairy animals

Krishi Vigyan Kendra Sohna, Siddharthnagar conducted on farm trial to find out the suitable technology for getting higher conception rate for increase the milk production. Assessed technology GTH 2ml after 75 days from calving, mineral mixture 50 g/day up to 90 days from calving and deworming of animals at 40 days after calving gave 31.03 % higher milk production over farmers practice. Technology recorded 100 percent conceived rate in buffaloes while in farmers practice it was only 20 percent.

Effect of treatments on milk yield and conceive rate.

Technology	No. of trials	No. of con-ceived ani-mals	Milk pro-duc-tion /day	%in-crease in gain over FP	Av-erage cost / day/ ani-mal	Gross return (Rs/ day)	Net re-turn (Rs/ day)	B:C Ratio
T_1: No use of GTH & mineral mixture (FP)	5	1	5.80	-	155	236	81	1.52
T_2: GTH 2ml after 75 days from calving, mineral mixture 50 g/day up to 90 days from calving and deworming	5	5	8.00	31.03	170	320	150	1.88

Problem definition: Higher incidences of repeat breeding in Buffaloes: KVK Badaun

Technology Assessed: UMMB feeding to control repeat breeding in buffaloes.

The trials were conducted during May 2018 (03 trials in Kharif Season) and January 2019 (03 trials in Rabi Season) on 06 repeat breeders buffaloes (buffaloes show oestrus but not conceive even after 4-5 oestrous) at 06 locations village wise, to evaluate the remedial measures for curing repeat breeding. In treatment one i.e.T1 which is farmers practice (as usual feeding of choker & common salt normally), In the treatment T2 i.e. feeding of UMMB (feeding/licking of UMMB @ 2 Kg Block for 7-8 days/ animal up to 90 days). Each and every animals should be free from ecto and endo parasites using ivermectin injection @ 01 ml for 50 kg body weight.

Effect of UMMB feeding / licking in cure/minimize the incidence of repeat breeding (KHARIF 2018)

Technology Option	No.of trials	Repeat Breeding (Buffaloes)	
		Num-ber	%
T_1 -Farmer's practice (Use of choker and common salt)	3	03	100
T_2- Use of Dewormer (Ivermectin inj.) + UMMB feeding (Licking)@2 kg each- 4 brick/ month/animal for three month feeding		01	33 (Rate of Success is 67%)

Effect of UMMB feeding / licking in cure/minimize the incidence of repeat breeding (RABI 2018-19)

Technology Option	No. of trials	Repeat Breeding (Buffaloes)	
		Num-ber	%
T_1 -Farmer's practice (Use of choker and common salt)	3	03	100
T_2- Use of Dewormer (Ivermectin inj.) + UMMB feeding (Licking)@2 kg each- 4 brick/ month/animal for three month feeding		02	67 (Rate of Success is 33%)

The A.H. Deptt. should organize regular camps in the villages to tackle repeat breeding problem. The mineral deficiency and poor nutrition is a major problem among animals due to imbalance nutrition/feeding application

in buffaloes. The repeat breeding problem is also due to lack of diversity in feed &fodder and lack of pasture.

b) Production and management

Problem definition: High disease incidence, high feed cost and required better management in poultry farming: KVK Ambedkar Nagar

Technology assessed: To assess the performance of Back Yard Poultry Farming in traditional system of farming

Broiler rearing is costly required well managed housing system, required hygienic condition along with costly industrial made feed and not fit for Back yard poultry system. KVK Ambedkar Nagar conducted trial on assessment of Croiler birds in Back Yard Poultry Farming in traditional system of farming. In back yard poultry farming system Croiler poultry birds gain better body weight with locally available feed ingredients prepared feed with fewer incidences of infectious diseases and give more profit than broiler poultry birds.

Performance of Back Yard Poultry Farming in traditional system of farming

Technology Option	No. of trials/ farmers	Av. body weight gain in 45 days (kg)	Diseases incidence	Feed cost/ weight gain ratio per kg	Gross cost (Feed + medicine)/ bird	Gross Return/Bird (Rs)	B:C Ratio
T_1: Rear Broiler on Back yard poultry farming system along with costly industrial made feed (FP)	3 (100Croiler poultry birds/ farmer)	2.10 kg	Incidence of Gombhoro & Coccidiosis diseases	Rs. 79/kg	Rs.144.9	189	1.30
T_2: Rear Croiler back yard poultry farming system with locally available feed ingredients prepared feed- by wheat grain, yellow maize, Rice bran, til cake, fishmeal Calcium grit etc.		2.34 kg	Coccidiosis in very less extent	Rs. 67/kg	Rs.156.78	327.6	2.1

Av. sale price of broiler birds Rs. 90/Kg. and Croiler birds Rs.140 / Kg.

Problem definition: Higher incidences of post-calving anoestrous: KVK Badaun

Technology Assessed: Evaluation of clinical and non-clinical treatment for post-calving anoestrous in Buffaloes.

The trials were conducted during May 2018 (03 trials in Kharif Season) and January 2019 (03 trials in Rabi Season) on 06 repeat breeders buffaloes (buffaloes did not show oestrus between second to fourth lactation after 3-4 months of calving) at six locations village wise, to evaluate the remedial measures for curing post calving anoestrus. In treatment one i.e.T1 which is farmers practice (feeding of choker & common salt), Even single buffalo did not responded or conceived. In the treatment T2 i.e. nonclinical remedies (Vetmate (Gonadotrophic hormone) inj 2 ml (72 hrs before AI) and feeding of minerals mixture@ 50gm/day/animal up to 45 days) six buffalo responded. Each and every animals should be free from ecto and endo parasites using ivermectin injection @ 01 ml for 50 kg body weight.

Effect of minerals mixture+ Vetmate cure/minimize the post-calving anestrous (KHARIF 2018)

Technology Option	No.of trials	Post calving anoestrous (Buffaloes)	
		Number	%
T 1 -Farmer's practice (Use of choker and common salt)	3	03	100
T2- Use of Vetmate (Gonadotrophic hormone) inj 2 ml (72 hrs before AI) after 45 days of calving + Mineral mixture supplementation @ 50 g/day /animal for 45 days		-	(Rate of Success is 100%)

Effect of minerals mixture+ Vetmate cure/minimize the post-calving anoestrous (RABI 2018-19)

Technology Option	No.of trials	Post calving anoestrous (Buffaloes)	
		Number	%
T 1 -Farmer's practice (Use of choker and common salt)	3	03	100
T2- Use of Vetmate (Gonadotrophic hormone) inj 2 ml (72 hrs before AI) after 45 days of calving + Mineral mixture supplementation @ 50 g/day / animal for 45 days		01	(Rate of Success is 67%)

Present trial revealed that in T1 the conception rate was 0%, in T2 (clinical) 100% and 67 % respectively responded & conceived. The A.H. Deptt. should organize regular camps in the villages to tackle anoestrous problem. The mineral deficiency and poor nutrition is a major problem among animals due to imbalance nutrition/ feeding application in buffaloes. The anoestrous problem is also due to lack of diversity in feed &fodder and lack of pasture.

c) Feed and fodder management

Problem definition: Mortality of buffalo calves due to endo-parasites and improper feeding of colostrums: KVK Firozabad

Technology Assessed: effect of dewormer and proper feeding of colostrums in newly born calves.

Mortality of newly born buffalo calves is major problem occurred in district Firozabad. regarding this problem KVK Firozabad was conducted a trial on 10 newly born buffalo calves. The result indicate that the use of dewormerAlbendazole @ 1.0 ml per kg body weight given in 4 dose at the time 5, 25, 60 and 90 days and proper feeding of colostrums gave no mortality over farmers practices.

Effect of dewormer and proper feeding of colostrums in newly born calves

Technology Option	No.of trials	Per cent incidence of mastitis
No use of dewormer and improper feeding of colostrums (farmer's practice)	5	12
Albendazole @ 1.0 ml per kg body weight given in 4 dose at the time 5, 25, 60 and 90 days and proper feeding of colostrums		Nil

Problem definition: Low milk production due to attack of mastitis disease in buffaloes: KVK Hardoi

Technology assessed or Refined: Assessment of proper measure for Management of mastitis disease in buffaloes.

KVK, Hardoi conducted on-farm trial on washing udder with $KMnO_4$ before and after milking followed by Dry cow therapy (Streptopenicillin) administration by intra mammary was found to be the best measure for Management of mastitis disease in buffaloes

Effect of treatment of udder to control mastitis disease in buffaloes

Technology Option	No. of trial	Milk Yield (l/ day)	Number of animals tested	Effectiveness of the treatment
T_1- Farmers practice (washing udder with water before milking)	8	4.30	20	-
T_2- Washing udder with $KMnO_4$before & after Milking +Dry cow therapy(Streptopenicillin) administration by intra mammary		8.50	20	84.5%

Problem definition: Low milk production due to attack of mastitis disease in buffaloes: KVK Kanpur Dehat

Technology assessed: Assessment of proper measure for Management of mastitisdisease in buffaloes.

Technology Option	No. of trials	Milk Yield (l/day)	Number of animals tested	Effectiveness of the treatment
T_1- Farmers practice (washing udder with water before milking)	3	4.00	20	-
T_2- Washing udder with $KMnO_4$before& after milking		6.00	20	50.00%
T_3- T_2+Dry cow therapy (Streptopenicillin) administration by intra mammary		7.00	20	75.00%

Washing udder with $KMnO_4$before and after milking followed by Dry cow therapy (Streptopenicillin) administration by intra mammary was found to be the best measure for Management of mastitisdisease in buffaloes

Problem definition: Higher incidences of repeat breeding in Buffaloes: KVK Muzaffarnagar

Technology Assessed: UMMB feeding to control repeat breeding in buffaloes.

The trial was conducted during March 2018 on 10 repeat breeder buffaloes (buffaloes show oestrus but not conceive even after 6-7oestrous.) at six location village wise, to evaluate the remedial measures for curing repeat breeding.

Table: Effect of UMMB feeding / licking + Exinot in cure/minimize the incidence of repeat breeding.

Technology Option	No.of Animals	Per cent Responded & conceived
T1- Farmers practice (Use of choker and common salt)	-	-
T2- Feeding of UMMB (feeding/ licking of UMMB @ 2 Kg Block for 15 days/animal up to 90 days)	5	40% buffaloes conceived
T3- T2+ Exinot syp. (before UMMB feeding) in five buffaloes.	5	60% buffaloes conceived

In treatment one i.e.T1 which is farmers practice (as usual feeding of choker & common salt normally) each buffalo responded but no one conceived. In the treatment T2 i.e. feeding of UMMB (feeding/licking of UMMB @ 2 Kg Block for 15 days/animal up to 90 days) five buffaloes. only 40% buffaloes vonceived (as per PD result). In the treatment T3 i.e. T2+ Exinot syp. (before UMMB feeding) in five buffaloes. 60% buffaloes conceived (as per PD result). Besides above results.A 25% gained in milk production also observed.

d) Nutrition management

Problem definition: Low milk yield due to deficiency of nutrients: KVK Balrampur

Technology assessed: To assess the performance of urea-molasses – mineral block (UMMB) for enhancing milk production in buffaloes

K.V.K., Balrampur conducted On Farm trial on to assess the performance of urea-molasses – mineral block (UMMB) for enhancing milk production in buffaloes assess. The results showed that Buffaloes fed urea-molasses – mineral block (UMMB) 400gm/ day / buffalo increase in milk production (700gm) and conceived %age (100%) with high benefit- cost ratio 1.14 (T_2) in comparsion of farmer practice. Live-stock farmers are satisfied with performance of feeding of urea-molasses – mineral block (UMMB) in buffalos (T2) due to increase in milk production, conceived percentage and improvement in health.

Performance of balance concentrates in Buffaloes

Technology option	No. of trials	Av. Milk yield (lit/day/ animal)	Conceive per-cent	Net return (Rs/day/ animal)	B:C Ratio
T_1: No use of urea-molasses mineral block, occasionally use 35 gm Common salt (Farmers' practice)	3	4.5	34	135	1.09
T_2: Urea –molasses-mineral block (UMMB) (Recommended practice)		5.2	100	156	1.24

Problem definition: Low milk yield and infertility due to imbalance nutrients: KVK Rampur

Technology Assessed: Assessment of urea molasses Minerals block supplementation on milk production and Reproductive performance in lactating buffalo.

KVK, Rampur conducted trial to assess the supplementation of urea molasses Minerals block on milk production and Reproductive performance in lactating buffalo. The UMMB is a high protein concentrated feed containing necessary amount of minerals and vitamins. It provides non protein nitrogen to the rumen microbes without risk. Supplementation of UMMB with straw based diet increase daily milk yield, longer lactation period and fertility in lactating animals.

Urea molasses Minerals block supplementation on milk production and Reproductive performance.

Technology Option	No.of trials	Average milk yield lit/ day	% increase	Gross cost (Rs)	Gross Return (Rs)	B:C Ratio	Conception Rate (%)
T1- Use of choker and common salt (Farmers practice)	5	4.8	-	121.0	168.0	1.39	20
T2- UMMB supplementation (Licking) @ 300 g/day/ animal		6.76	20.71	130.0	236.60	1.82	80

Problem definition: High incidence of infertility in cows: KVK Saharanpur

Technology: Assessment of UMMB animal feed supplementation to control the infertility

KVK, Saharanpur conducted trial to find out suitable remedies for improving heat synchronization and conception rate. In this trial UMMB and farmer practice assessed for thi problem. UMMB shows better result and more effective than other remedies.

Assessment of different mineral & feed supplements

Technology Option	No.of trials	No. of animals	Cost in Rs./ Animal for 120 days	No. of heat animals	No. of serviced animals	No. of pregnant animals	Conception rate %
Farmer's practice (salt)	01	10	390	1	1	1	10
Mi Use of UMMB@ 1 brick for 7 days/animal neral mixture with Receptol injection		10	605	8	8	6	60

Milch animals health & yield affected poor management study were taken to introduce the mineral mixture UMMB in this system. No. of pregnant animal was 6 in comparison to farmer practice 1. The conception rate increased 60%. Farmer like the technology with spend Rs. 605/animal/120 day

Problem definition: Poor growth rate, Low Body weight, low FCR, Mineral deficiency, Low milk yield: KVK Hamirpur

Technology Assessed): Assessment of feeding of pelleted concentrate and minerals mixture on goats.

KVK, Hamirpur conducted on-farm trial to assess the feeding of pelleted concentrate and minerals mixture on goats by 100 gm concentrate feed plus 20 gm agromin forte M.M given / day/ animal. The analysis of data revealed that percentage change in yield was obtained in improved practices (32.94 %). The analysis for B: C ratio (2.30 & 1.73). This observation showed that supplementation of 100 gm concentrate feed + 20 gm Agromin forte M.M given / day/ animal) increase the milk yield and overall performance in Bundelkhand goats.

Assessment of concentrate and minerals mixture feeding in goat farming

Technology option	No. of trials	Milk Yield (gm/ day)	% change in Yield	Cost of Intervention (Rs.)	Gross return (Rs.)	Av. Net Income (Rs.)	B:C Ratio
T_1 – Farmers practice (No supplementation)	10	438.1	32.94	288	788	500	1.73
T_2 – 100 gm concentrate feed + 20 gm Agromin forte M.M given / day/ animal)		628.6		324	1130	788	2.30

Problem definition: Performance of milk production through bypass protein supplementation to lactating cows: KVK Lucknow

Technology Assessed (as the case may be): For enhancing the milk production in Luck now district, there is need to provide extra source of nutrients to lactating animals. So, an OFT was conducted to see the performance of bypass protein and by pass fat supplementation. The result revealed that feeding of formaldehyde treated by pass protein increase 15.2 percent milk production in milch animal.

Technology Option	No. of trials	Avg milk yield (lit/day/ animal)	Cost Of Cultivation (Rs.)	Gross Income (Rs.)	Net Income (Rs.)	B:C
T_1-FarmersPractices-Mixture of wheat straw with concentrate and green fodder	10	6.7	200	234.5	34.5	1.17
T_2- Mixture of wheat straw with concentrate and green fodder + Formaldehyde treated by pass protein and by pass fat @ 100 gm/animal/day		7.9	218	276.5	58.5	1.27

Problem definition: Poor quality & low quantity of sheep wool/hair from non descript breed: KVK Bhadoi

Technology Assessed or Refined (as the case may be): Qualitative & quantitative improvement in production of sheep wool/hair

In trial 15 sheep farmers were selected and given male sheep cross breed Nali X Marino brought from Sheep Breeding Farm, Naugarh before distribution, all the male sheep were dewormed with broad spectrum anthelmintic drugs. The lamb born by cross bred male sheep have better wool quality, survivability and diseases incidences were also lowered like abortion in herd against the farmers practices.

Effect of UMMMB and Dewormer on milking and fertility

No. of Farmers	No. of Trials/Animals	No. of Lamb born per sheep/year	Quality of wool	Incidence of disease
15	15	2	Good	No

COMPOSITE FISH CULTURE

Problem definition: Low fish production due to no use of micro nutrients in supplementary fish feed: KVK Balrampur

Technology assessed: To assess the effectiveness of micro-nutrients in fish feed

K.V.K., Balrampur conducted On Farm trial on to assess the effectiveness of micro-nutrients in fish feed. The results indicated that maximum body weight gain (0.89kg/year), yield (19.98qt/ha), net profit (Rs. 99504) and benefit cost ratio (1.23) were observed in use of micro-nutrients in fish feed @ 2% over farmer practice.

The fish farmers are much interested to use of micro-nutrients in fish feed due to it provides maximum yield and profit.

Effect of micro-nutrients in fish feed

Technology option	No. of trials	Av. body weight gain (kg)	Av. Yield (q/ha)	Net profit (Rs)	B:C Ratio
T_1: No use of micro-nutrients in fish feed (Farmers' practice)	3	0.58	18.35	81734	0.96
T_2: Use of mineral mixture @ 2% in fish feed (Recommended practice)		0.89	19.98	99504	1.23

KITCHEN GARDENING

Problem definition: Poor health & economic status of farm families: KVK Barabanki

Technology assessed: Use of improved variety seeds/ seedlings of vegetables and fruits whole the year in nutritional garden

Poor health of farmers due to less intake of vegetables in diet. Farmers were unaware about total intake of vegetables per person per day. They purchased vegetable according to their economic condition & market price. Total intake vegetables were 143 gm per person per day. After establishing their Nutritional Garden, they became aware about adequate intake of green leafy vegetables, roots & tubers & other vegetables per person per day. The total intake of vegetables increased from143 gm to 227 gms there by increase of 45.4 % vegetable intake requesting in their improvement of health.

Effect of intake of vegetables and fruits among farm families

Technology option	No. of farmers	Total intake (g)	%age Intake Percent
T_1: Green leafy vegetables – 76 g + Roots & Tubers - 50 g + Other veg - 24 g, total - 150 g per person per day (Farmers' practice)	5	143	28.6
T_2: Nutritional Garden - Green leafy vegetables - 80 g + Roots &Tubers - 75g + other veg. - 60g, total - 215g per person per day (Recommended practice)	5	227	45.4

HEALTH & NUTRITION MANAGMENT

Problem definition: low nutritional status of rural elderly women: KVK Hardoi

Technology assessed: Improvement of health status of elderly women through blended wheat flour.

KVK hathras assess or refined (as the case may be) the technology of nutrient supply by the different food items like blended flour Laddoo Chapati etc, consumption/ intake effect of blended wheat flour (65% wheat+15% gram+10% Jowar+5% Soyabean+5% Bajra) per person @ 150 g/day of elderly women as balanced nutrient found that the same had increased good health status by compared to farm women practices wheat flour and increased the health status of elderly women.

Technology Option	No.of trials	Intake	Net Returns (Rs)	B:C Ratio
T1-Traditional practices-Farm women practices wheat flour	05	100 g	2.5	1
T2- blended wheat flour (65% wheat+15% gram+10% Jwar+5% Soyabean+5% Bajra)		150 g	06	2.4

Problem definition: Low daily vegetable intakes and low health status of rural family: KVK Raebareili

Technology assessed: To find out suitability of different modules of kitchen garden in full filling daily vegetable requirement of 766.5kg for medium sized rural family.

Suitability of different modules of kitchen garden for medium size rural family (having more than seven members)

Technology Option	No. of trials	Annual Average yield (Kg)	Annual vegetable requirement of medium size family (Kg)	Percent requirements full fill	Cost of production (Rs.)	Gross income (Rs.)	Net income (Rs.)
Kitchen module of 100 m^2 area	5	500	766.5	65.23	2400.00	8020.00	6420.00
Kitchen module of 150 m^2 area	5	700	766.5	91.32	3325.00	12580.00	9255.00
Kitchen module of 200 m^2 area	5	850	766.5	110.89	2925.00	14850.00	10925.00

KVK, Dariyapur, Raebareli conducted **on-farm trial** on different kitchen gardening modules. Among all kitchen modules 200 m2 area was found most suitable to medium sized rural family because the yield of 200 m^2 area was found more than the annual vegetable requirement of medium sized rural family.

Problem definition: Lack of knowledge of Paneer making: KVK Jalaun

Technology Assessed: Use of lemon juice & Use of citric acid (1%)

Value addition of milk (paneer making) was undertaken by KVK Jalaun to assess the performance of two coagulants viz. Lemon juice and citric acid in manufacturing of paneer. The results indicate that the Paneer prepared from T1- Citric acid (1%) was found very good in terms of percentage increase in yield 2.04 %, colour, flavor, taste, and texture as compared to T2- Use of lemon juice (farmers practice)

S. No.	Trial	Yield (g/L)	Yield increase (%)	BCR
1	T1 Use of lemon juice	245	-	-
2	T2 Use of citric acid (1%)	250	2.04	1:1.3
Farmers Reaction	Like extremely when citric acid is used for paneer making			

DRUDGERY REDUCTION

Problem definition: Low efficiency & high drudgery of farm women during Paddy weeding: KVK Barabanki

Technology assessed: Assessment of cono weeder for drudgery reduction of farm women during Paddy weeding

KVKs of Haidergarh, Barabanki of Uttar Pradesh took up on form trial on use of Cono weeder for drudgery reduction of Farm Women during paddy weeding. The result indicated that the use of cono weeder 30.9 kg/ha gave11 percent increase in yield over weeding with indigenous sickle on hand weeding.

Effect of Conoweeder on weed control & yield at paddy.

Technology Option	No. of trials	Yield (q/ha)	Increase in yield (%)	Net Return (Rs/ha)	B:C Ratio
T_1: Weeding with indigenous sickle or khurpi (Farmers' practice)	05	27.50	-	22875	1.01
T_2: Weeding with improved tool (cono weeder)		30.9	11.00	28035	1.22

Problem definition: High level of drudgery among farm women, consumption of time and labour cost in peeling of groundnut: KVK Hamirpur

Technology Assessed: Assessment of groundnut decorticator for drudgery reduction among farm women

Groundnut is one of the most important crops in district. To obtain grain from groundnut manually lot of labour and time required. To minimize drudgery and also to save time manually operated groundnut decorticator was assessed which was very effective and less time taking. For decortication of one quintal groundnut only 1.45 hr. required this was very less in comparison of manual decortication 90hrs.

Drudgery Reduction among Farm Women

Technology Option	No. of trials	Damaged seed yield (%)	Heart rate (beats/min)	Time consumed (hr/q)	Labour cost (Rs.)	% less over farmers practice
T1 – Farmers practice (manually)	5	3.0	110	90	@ Rs. 31.22/hr. = 2810.00	-
T2 – Groundnut decorticator		4.6	123	1.45	@ Rs. 113.93/hr. = 165.00	94.1 %

Problem definition: Evaluation of efficiency and reduction of drudgery of farm women in weed management: KVK Lucknow

Technology Assessed: Farm women do many difficult tasks and weeding of the crops is among them. It is a maindrudgery prone activity which is mostly performed by farm women and do solve this problem Krishi Vigyan Kendra, ICAR-IISR, KVK, Lucknow has conducted on farm trial on Evaluation of efficiency and reduction of drudgery of farm women in weed management using hand wheel hoe at farmers field. The result revealed that, use of hand wheel hoe reduced the drudgery in weeding (79.37%) as compared to farmer practice viz. use of hoe (39.45%). Practice of hand wheel hoe for weeding save 2137.5 per ha as compared to farmer practice.

Comparisons health hazards during weeding by hand wheel hoe and hoe.

S. No.	Body part	Pain and discomfort	
		Hoe (%)	Hand wheel hoe (%)
1.	Head	40	-
2.	Palm pain	36	90
3.	Shoulder / neck	80	40
4.	Wrist	100	50
5.	Fore and upper arm	60	40
6.	Back (lower lumber)	80	10
7.	Back (upper lumber)	40	8
8.	Calf	80	-
9.	Knee	70	-
10.	Foot	60	-
11.	Heel	20	-
	Average	**60.55**	**21.63**
	Drudgery reduction (%)	**39.45**	**79.73**

Economics of farm mechanization through hand wheel hoe in weed management.

S. No.	Parameters	Weeding by hoe	Weeding by hand wheel hoe
1.	Area covered (m^2/hrs)	72.2	142.3
2.	Area covered (m^2/day)	577	1138.4
3.	Labour (man days /ha)	17.33	8.78
4.	Wages (Rs 250/ man day)	4332.5	2195.0
5.	Saving (Rs/ha)	-	2137.5

Problem definition: Low efficiency and high drudgery in groundnut decortication through hands: Sitapur-II

Technology Assessed: Assessment of increase in efficiency & reduction in drudgery in groundnut processing through Groundnut Decorticator

KVK-II, sitapur conducted on-farm trial on Assessment of increase in efficiency & reduction in drudgery through Use of Sitting Type Groundnut Decorticator in Kharif, 2018-19. The observation recorded reveals that use of hanging Sitting Type Groundnut Decorticator increase work efficiency upto 32kg/Hr, reduces 13.8 Man days and saves Rs. 2227.2 on Labor cost in comparison to Hand decortication of groundnut.

Enhancement of work efficacy and drudgery reduction through Groundnut Decorticator

Technology Option	No. of trials	Work efficiency (output in kg/ hr)	Work in one Man days	Saving in Man days	Economics (276 kg groundnut decortication)
T_1: Farmers' Practice	5	2.5 Kg/hr	20 Kg/ Day	-	Rs. 2401.20
T_2: Use of Sitting Type Groundnut Decorticator		34.5 Kg/hr	276 Kg/ Day	13.8 Days	Rs. 174

Problem definition: Low efficiency and high drudgery in sowing of maize by hand: Sitapur-II

Technology Assessed: Assessment of increase in efficiency & reduction in drudgery in sowing of maize by Naveen Dibbler

KVK-II, sitapur conducted on-farm trial on Assessment of increase in efficiency & reduction in drudgery through Use of Naveen Dibbler in Kharif, 2018-19. The observation recorded reveals that use of Naveen dibbler increases work efficiency upto 500 sq mt/hr, with increase in work efficiency by 17.64%. Though increase in work efficiency is low but participants reported reduction in drudgery with work is completed in very less time and sowing through naveen dibbler did not put strain to their upper body parts which is hurting when sowing is done by hands.

Enhancement of work efficacy and drudgery reduction through Naveen Dibbler

Technology Option	No. of trials	Work efficiency (output in / hr)	% change	Feed back of farmers
T_1: Farmers' Practice	5	425 sq mt/hr	-	• Sowing is done in bending posture which strains the shoulders, neck and back. • Seed sowing could not be uniform • More seed required
T_2: Use of Naveen Dibbler		500 sq mt/hr	17.64	• Sowing is done in standing position • Dibbler dibs seeds uniformly • Less seed is required per unit area • Experienced very low strain on body parts

Problem definition: Low work efficiency, injury and higher drudgery in sugarcane striping: KVK Baghpat

Technology Assessed: Use of sugarcane dethrasher.

Sugarcane is the main crop of district Baghpat. Women are actively involved in dethrasing of sugarcane. This task is done by traditional sickle hence, it is time and energy consuming along with causing drudgery to them. In order to enhance the efficiency and reducing drudgery, KVK, Baghpat conducted a trial by introducing sugarcane dethrasher as T2 for dethrashing of sugarcane leaves in comparison to traditional sickle as farmer practice T1 on five locations.

Result revealed that Drudgery is minimized as its been reduced from very exhausted to mild and very painful to pain lesspainfull (moderate pain) activity.34 man days and Rs 10200 /is saved in dethrashing of sugarcane done by T2 as compared toT1. 37.5% time is saved in dethrashing of sugarcane by using sugarcane dethrasher as compare to traditional sickle.

Performance of traditional sickle versus sugarcane dethrasher/ha.

Technology Option	No. of trials	Parameter observed	Data	Results Saving of time (man days)	Saving of expenses (Rs/ha)
T_1 -Traditional sickle (Farmers Practice)	05	• Time (mandays) • Quantity of sugarcane dethrashed • Exertion perceived • Difficulty perceived • Yield (q/ha)	= 90 man-days = 900 qtl. = Very exhausted = Very painful =900qtl	34 (37.77 %)	10200/
T_2 -Sugarcane dethrasher (Recommended Practice)		• Time (mandays) • Quantity of sugarcane dethrashed • Exertion perceived • Difficulty perceived • Yield(q/ha)	= 56man-days = 900 qtl = mildly exhausted =moderate pain =900qtl		

8 hour= one man day.

sugarcane dethrasher

Farm women dethrashing sugarcane by using sugarcane dethrasher

Problem definition: Increased work load on farm women in paddy threshing: KVK Pilibhit

Technology Assessed: Enhancing work efficiency and reducing drudgery of farm women in paddy threshing with the use of improved paddy thresher.

Work efficiency and drudgery is an identified problem of women in the area. Among many activities traditional paddy threshing (beating the paddy stalks on a drum) is one of the most drudgery prone activity.

Drudgery reduction in paddy threshing

Technology Option	No. of trials	Quantity of paddy threshed/ day	% Increase in quantity over farmer's practice	Remark
Farmers Practice (Traditional method)	05	3.12	--	With the use of improved technology, the quantity threshed manifold with enhanced time efficiency and decreased work load resulted in reduced drudgery. With improved body posture in using paddle paddy thresher reduction in physical stress is observed resulting in saving of human energy.
Use of paddle paddy thresher		10.34	231.41	

Farmers Reactions & Recommendations: The improved paddle thresher for threshing of paddy designed by department of farm and machinery, College of Technology, GBPUA&T, Pantnagar was demonstrated to the farm women. The aim of the OFT is to improve work efficiency and reducing the drudgery level of the farm women in paddy threshing.

Chapter-5

EXTENSION PROGRAMMES

5.1 Extension programmes at a glance

Extension programmes are one of the important mandated activities to be carried out by the KVKs of Uttar Pradesh. In all 43675 extension activities with 9.85 lakh beneficiaries, 66622 mass communication extension activities, 28082 mobile advisories though text and voice for 69. 68 lakh farmers, 37870 soil samples covering 62317 farmers, 4486 technology week celebrations with 2.84 lakh beneficiaries, 36335 publications by KVKs and 34 by ATARI, 21 HRD activities by KVK and 5 by ATARI, 43 trainings and demonstrations under rain water harvesting & micro irrigation system with 2828 beneficiaries have been reported.

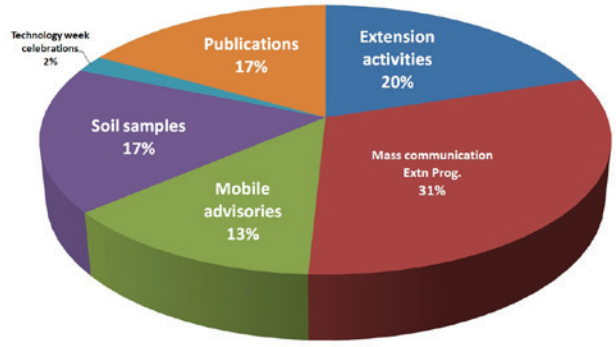
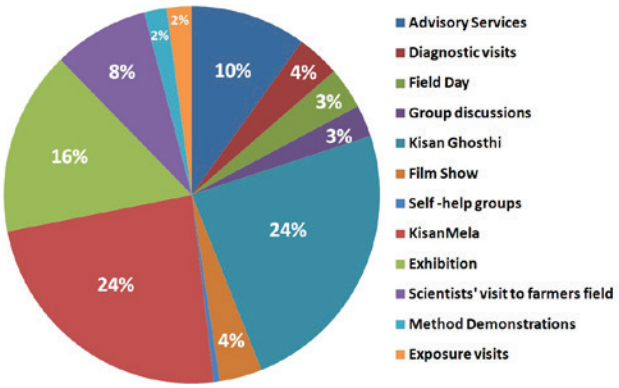


Table 6.1: Physical achievement of extension programmes

S.No.	Programmes	Number	Beneficiaries
1	Extension activities	43675	985317
2	Other extension programmes (mass communication)	66622	mass
3	Mobile advisories	28082	6968358
4	Soil samples	37870	62317
5	Technology week celebrations	4486	284665
6	Publications	36335 (KVK) 34 (ATARI)	-
7	HRD activities	21 (KVK) 5 (ATARI)	901 (KVK) 8 (ATARI)
8	Rain water harvesting & micro irrigation system	43	2828

5.2 Extension activities

A large number of extension activities (43675) were organized by KVKs of Uttar Pradesh. The major activities like advisory service (13615), diagnostic visits (6255), field days (800), group discussions (1139), kisangosthies (1750) film shows (708), self help groups (176), kisan mela (308), exhibitions (586), scientist visit (12275),



plant/animal health camps (86), farm science clubs (100), ex-trainees meet (140), farmers' seminars (119), method demonstrations (626), celebrations of important days (335), special days celebration (192), exposure visits (587) with the participation of 947336 farmers and 37981 extension personnel were benefitted.

Table 5.2: Extension activities conducted in KVKs of Uttar Pradesh

Activities	No. of pro-grammes	No. of farmers	No. of Extension Personnel	Total
Advisory Services	13615	74894	5409	80303
Diagnostic visits	6255	28374	1545	29919
Field Day	800	27837	1046	28883
Group discussions	1139	20582	1477	22059
Kisan Ghosthi	1750	185834	8209	194043
Film Show	708	27918	1587	29505
Self -help groups	176	3980	186	4166
KisanMela	308	186498	5273	191771
Exhibition	586	124601	3209	127810
Scientists' visit to farmers field	12275	64870	1595	66465
Plant/animal health camps	86	7197	320	7517

Farm Science Club	100	3085	120	3205
Ex-trainees Sammelan	140	5172	168	5340
Farmers' seminar/ workshop	119	10438	641	11079
Method Demonstrations	626	15007	621	15628
Celebration of important days	335	33228	1855	35083
Special day celebration	192	26334	1276	27610
Exposure visits	587	16613	707	17320
Others	3878	84874	2737	87611
Total	**43675**	**947336**	**37981**	**985317**

5.3 Other Extension activities

KVK of Uttar Pradesh have also organized other extension activities (66622) also. The major activities like electronic media (6147), extension literature (47234), news paper coverage (4358), popular articles (725), radio talks (848), animals treated under health camps (6271) were performed.

Table 5.3: Other extension activities conducted in KVKs of Uttar Pradesh

Activities	Number	No. of KVKs
Electronic Media (CD./DVD)	6147	33
Extension Literature	47234	70
News paper coverage	4358	80
Popular articles	725	66
Radio Talks	609	59
TV Talks	848	59
Animal health camps (Animals Treated	6271	40
Others	929	28
Total	**66622**	**-**

5.4 Mobile Advisory Services

Kisan Mobile advisory services were given by KVKs with 18556 Voice calls and 9526 text messages to 6968358 farmers. Advisories under different type of messages were delivered to all registered farmers. By sending text and voice messages by mobile has enabled the KVKs to reach the unreached farmers in distant and remotely located areas.

Table 5.4: Mobile Advisory Services

No. of Calls (Voice)	No. of Messages (Text)	No. of farmers Covered	Type of messages					
			Crop	Livestock	Weather	Marketing	Awareness	Other Enterprise
18556	9526	6968358	11872	2928	1041	1877	7107	5787

6.5 Other extension programmes

6.5.1 Soil samples analysis

In all, 37870 samples of soils, water plant, manures and others were analyzed by 72 KVKs. Those samples were collected from 1599 villages and 62317 farmers'fields in Uttar Pradesh.

6.5.2 Scientific Advisory Committee Meetings (SACs)

Scientific Advisory Committee meetings were organized by all KVKs in U.P. It is one of the important platform to obtain the suggestions from different stakeholders towards designing realistic action plan of KVKs. Participatory planning is the main feature of KVK system for enhancing crop production and productivity towards fulfilling the needs of the farmers.

6.5.3 Technology week celebrations

In Uttar Pradesh, 4486 activities were organized by KVKs by benefiting 284665 farmers. The main activities involved in this program are distribution seeds, bio-fertilizers and bio-products to farmers and other activities like gosthies, lectures, exhibition, film show, Fair, farm visits, diagnostic practicals, distribution of literature, distribution of planting materials, distribution of fingerlings and distribution of livestock specimen.

6.5.4 Publications

By KVKs : In all 36335 publications were developed by all KVKs of Uttar Pradesh. In total 119 books, 6144 training manual, 95 book chapter, 297 research papers, 116 seminar papers, 26108 technical bulletins, 783 technical reports, 2654 abstracts and 23 newsletters (19 by KVKs and 4 by ICAR-ATARI, Kanpur) were developed in this zone during the period.

By ICAR-ATARI, Kanpur: A total 34 publications have been developed by the ICAR-ATARI, Kanpur including lead papers (7), books (6), technical reports (4), technical bulletin (1), abstracts (12) and newsletter (4)

6.5.5 HRD activities organized by Directorate of Extension and ICAR-ATARI

Under HRD, 42 KVKs of different SAUs have organised 21 programmes for 901 scientists. Such programmes were organized at the University level to provide technological backstopping in frontier areas of the technologies. Similarly, ICAR-ATARI, Kanpur organized 5 training programmes and 12 workshop/meetings at zonal level. All 83 KVKs have benefitted by these programmes. KVKs may take technological support from ICAR research institutes for experimenting new technologies at field level.

6.5.6 Rain water harvesting & micro irrigation system

In total, 24 trainings and 19 demonstrations were conducted and 2723 farmers and 105 officials visited the system also 25800 plant material produced under the zone in context to rain water harvesting and micro irrigation system.

Extension Activities by KVKs

Distribution of SHC: KVK Jhansi

SAC Meeting: KVK Chitrakoot

Visit of Hon'ble Minister of Agriculture, UP: KVK Fatehpur

Farmers exposure visit: KVK Lalitpur

Clebration of world environment Day: KVK Bareilly

Farmers visit: KVK Mirzapur

Animal Health Camp: KVK Banda

Kisan Gosthi: KVK Hamirpur

Celebration of Krishi Mahila Diwas: KVK Mirzapur

Kisan Mela: KVK Amethi

Advisory services: Sitapur-II

Purvanchal Krishi Mela: KVK Gorakhpur

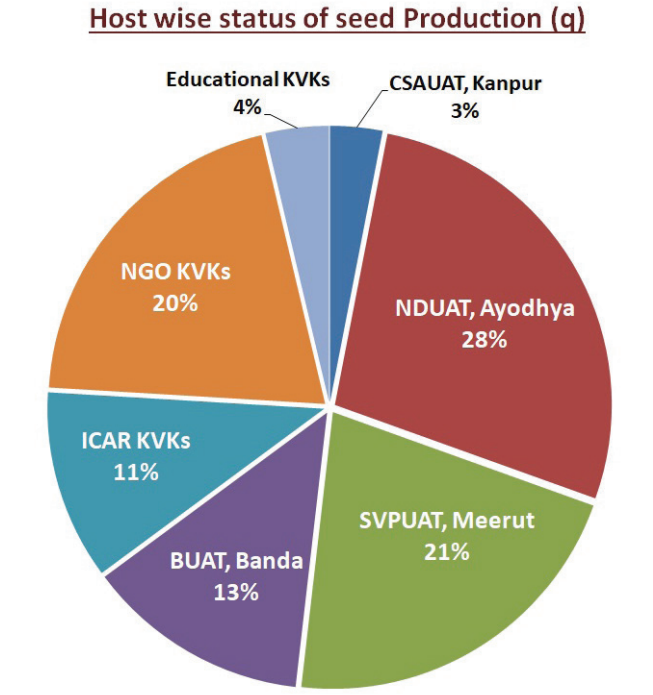
Diagnostic visit: KVK Gonda

Swacchata activities: KVK Mathura

Chapter-6

SEED & PLANTING MATERIAL PRODUCTION

KVKs of Uttar Pradesh has given emphasis on production of seeds/seedlings/livestock strains/ bio products etc, which are important and suitable for the district by ensuring quality of technological products produced at their instructional farm using revolving fund and supplier to the farmers for large scale promotion of quality seed/ planting material. Host wise total production of seed (19056.23 q), planting material (35.40 lakh) and bio-product (2632.70 q) are shown as below.



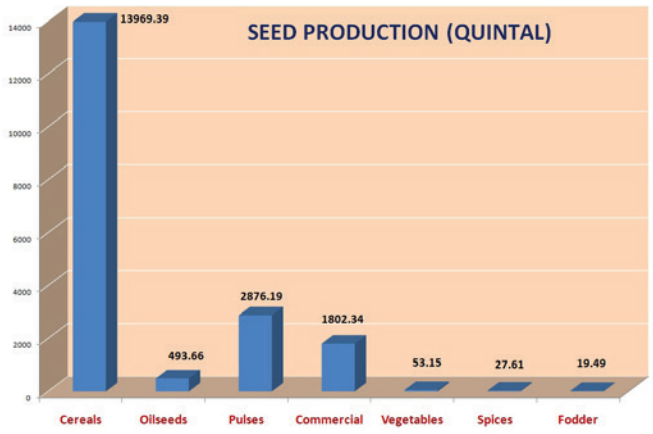


Table 6.1: Physical achievement of seed, planting and bio-products production

Host organization	Seed Production (q)	Planting materials (Number)	Bio-production (Kg)
CSAUAT, Kanpur	586.24	167875	6097.00
NDUAT, Ayodhya	5281.26	493084	27324.53
SVPUAT, Meerut	4103.78	192134	114918.00
BUAT, Banda	2509.74	506106	17235.00
ICAR KVKs	2133.22	47360	8649.50
NGO KVKs	3915.19	2060112	85750.00
Educational KVKs	712.40	73809	3296.00
Total	**19241.83**	**3540480**	**263270.03**

6.1 Seed Production

Seed production is one of the important activity of KVKs. They undertake quality seed production which may play a greater role in enhancing production and productivity of different crops. During the year 2018-19, KVKs of Uttar Pradesh produced 19241.83 q seed of cereals (13969.39 q), oilseeds (493.66 q), pulses (2876.19 q), vegetables (53.15 q), commercial crops (1802.34 q), spices (27.61 q) and fodder (19.49 q).

Table 6.2: Physical achievement of seed production (U.P.)

Enterprise	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Cereals	13969.39	229.61	6102
Oilseeds	493.66	24.86	2752
Pulses	2876.19	99.13	2085
Commercial	1802.34	6.21	37
Vegetables	53.15	4.10	137
Spices	27.61	0.76	88
Fodder	19.49	0.69	63
Total	**19241.83**	**365.36**	**11264**

6.2.1 Cereals

The seed (q) of important cereal crops produced included the crop like paddy (5483.21), wheat (7867.10), barley (70.48), maize (360.00), jower (185.60), etc. The important wheat varieties included HD-3086, HD-2967, DBW-39, K-1006, PBW 107, K-402, Raj 4120, K-7903,

K 1317, H.D-3090, Mandakini, PBW 502, HD-2643, PBW 343, PBW 154, HUW-234, DBW 17, PBW 550, UP 2382, NW-2036, KRL-210, Mahi, Unnat Halna-(K-9423) etc. Important varieties of paddy in seed production programme included JKRH-401, Sava – 127, JKRH-401, PR 113, NDR-359, BPT 5204, PB-1509, NDR-2065, Pusa Basmati-1121, Pant Ballabh Dhan -1, HUR-917, HUR-105, Sahbhagi, HUBR 2-14, Shusk Samrat, HUBR 4-3, Sarju-52, Damnni, Mahsuri, Old Kalanamak, DRR 44, DRH-775, Sambha Sub 1, CSR-46, CSR-36, Pusa-2511, Pusa-1509, PR-113, NDR-3112, AZ 6444 Gold, BH – 21, PB-1121, BH -21, PB 1637 etc. The other crop varieties included; Barley- Mahamana-113 (HUB-113), Maize - DKC-9144, Azad Uttam, African tall, Bio 9544, HQPM-1. The detailed crop wise data is given in table 6.2.1.

Table 6.2.1: Seed production of cereal crops (U.P.)

Enterprise	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Wheat	7867.10	128.03	3719
Paddy	5483.21	97.66	2202
Maize	360.00	0.07	22
Jower	185.60	2.12	-
Barley	70.48	1.12	159
Others	3.00	0.57	-
Total	**13969.39**	**229.57**	**6102**

6.1.2 Oilseeds

The KVKs of the zone produced seed 493.67 quintals of oilseeds. The important oilseed crops like Mustard (396.89 q), toria (1.98 q), linseed (8.36 q), groundnut (39.00 q) and Sesame (45.87 q) etc were taken up under seed production programme. The important varieties of mustard selected for seed production were Pitambari, RH-749, RH 406, Pusa Tarak, Varuna, PM 30, Pusa Vijay, CS 56, Bayer Mustard 5210, RH 406, NRCHB-101, YSH-0401, PYS-1 etc; Toria- Bhawani, Tapeswari, Uttara, etc; Til- Pragati, Mau Azad-1, R.T-351, SHEKHAR, RT351, Tarun etc; linseed- Padmini, LMS 9-2 etc.

Table 6.1.2: Seed production of oilseed crops (U.P.)

Oilseeds	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Mustard	396.89	15.86	1773
Toria	1.98	0.16	20
Linseed	8.36	0.88	118
Seasum	45.87	5.04	746
Groundnut	39.00	2.80	95
Other	1.57	0.13	-
Total	**493.67**	**24.87**	**2752**

6.1.3 Pulses

The total quantity of pulses seed production was 2876.19 q. The important pulse crops like pigeon pea (211.84 q), lentil (331.14 q), moongbean (63.85 q), fieldpea (976.76 q), chickpea (925.08), cowpea (25.00 q) and urdbean (341.00 q) etc were taken up under seed production programme. The important varieties of pulses selected for seed production were chick pea JG-14, RVG-202, GNG-1581, RVG-203, Ujjwal, Udai, DCP 92-3, Avarodhi, Radhey, Pant Chana -1; pigeon pea TJT – 501, Prakash (IPA 203), N.A-2, Bahar, Mal 13, IPA-203, Pant-291; field pea - Prakash, Aman, IPFD 10-12, Rachna, Pusa Prabhat, IPFD 4-9, Aman; lentil - KLB 320, IPL-316, IPL-81, HUL-57, PL 406, DPL 62, K-75, PL 406, PL-08, , Pusa Masoor Ageti; urd bean - Shekhar-2 & 3, IPU 2-43, PU-40, PU 35; mungbean Virat, IPM 2-3, IPM 2-14, HUM-16, PU 36, Narendra Moong-1. Details are given in Table 6.1.3.

Table 6.1.3: Seed production of pulse crops (U.P.)

Pulses	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Pigeon pea	211.84	10.37	499
Lentil	331.14	16.53	421
Moongbean	63.85	5.07	592
Field pea	976.76	22.51	109
Chick pea	925.08	36.87	127
Cowpea	25.00	0.00	00
Urdbean	341.00	7.55	301
Rajmash	1.00	0.15	22
Other	0.52	0.08	14
Total	**2876.19**	**99.13**	**2085**

6.1.4 Vegetables

The KVKs produced 53.15 q of seeds of vegetables. KVKs tried to help the farmers by producing seeds of important varieties of different vegetables. The important crops were viz. vegetable pea (Arkil, AP 3, Kashi Uday), okra (VRO-6, Ankur-41, VNR 999, Kashi-kranti, Shitla Uphar, Parbhani Kranti, Arka Anamika), Suran (G-1, Gajendra), onion (Pusa red, ADR, N 53, Funsungi, NHRDF Red 3), . The details of vegetable wise data is given in table 6.1.4.

Table 6.1.4: Seed production of vegetable crops (U.P.)

Vegetables	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Vegetable Pea	16.54	2.42	84
Okra	0.51	0.09	12
Suran	4.00	0.04	-
French bean	0.02	0.00	-
Onion	5.00	0.30	-
Other	27.08	1.24	41
Total	**53.15**	**4.09**	**137**

6.1.5 Spices

The total quantity of spicesseeds produced was 27.61. The seeds of different spices were produced viz. turmeric (Megha Haldi 1), fenugreek (AFR- 2) and coriander

(ACR-1). The detail spice wise data is given in table 6.1.5.

Table 6.1.5: Seed production of spices crops (U.P.)

Spices	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Turmeric	26.75	0.62	44
Coriander	0.48	0.10	14
Fenugreek	0.38	0.04	30
Total	**27.61**	**0.76**	**88**

6.1.6 Fodder and fibre crops

The seed of fodder and fibre crops to the tune of 19.49 q was produced. In Uttar Pradesh Berseem (Vardan, JB-2, Shipra), Dhaincha and other fodder crops produced seed of 0.25, 5.89 and 13.35 q respectively.

Table 6.1.6: Seed production of fodder & fibre crops (U.P.)

fodder & fibre crops	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Dhaincha	5.89	0.36	2
Berseem	0.25	0.02	-
Other	13.35	0.30	61
Total	**19.49**	**0.68**	**63**

6.1.7 Commercial crops

Mainly two commercial crops potato and sugarcane were taken by KVKs of Uttar Pradesh. The seed production of potato (148.53 q) and sugarcane (1647.42 q) was recorded. The important varieties i.e. Kufari Bahar, Kufri Sutlaj, K. Sinduri, Kashi Kanchan, Kufri Chipsona-3, Kufrikhyati, Chipsona-1 of potato selected for seed production and sugarcane varieties were COS-238, Cos-88230 etc.

Table 6.1.7: Seed production of commercial crops (U.P.)

Commercial	Quantity (q)	Value (Rs. in lakh)	Distributed to farmers
Sugarcane	1647.42	5.35	16
Potato	148.53	0.70	21
Other	6.37	0.15	-
Total	**1802.34**	**6.21**	**37**

6.2. Planting Material Production

The planting material/sapling production of vegetables, fruits, ornamentals, forestry, medicinal & fodder plants developed by KVKs. During this year KVKs produced 3540529 planting materials including vegetable seedlings (3202642), fruit saplings (70110) & ornamental (117743), medicinal & aromatic (8036), forestry (22617) and fodder plants (119381). The details of planting material production is given in table 6.2.

Table 6.2: Physical achievement of planting material production (U.P.)

Enterprise	Quantity (No)	Value (Rs. in lakh)	Distributed to farmers
Vegetable	3202642	8.023	10667
Fruits	70110	5.76	4523
Ornamental	117743	0.838	2732
Medicinal & Aromatic	8036	0.231	493
Forestry/plantation	22617	1.435	789
Fodder	119381	0.567	1960
Total	**3540529**	**16.854**	**21164**

6.2.1 Production of vegetables seedlings

KVKs produced large number of vegetable seedlings (3202642) of brinjal (Pusa Kranti, Neelam, Pusa Syamla, NavKiran, Nishant, Pusa Hybrid-6, Pusa purple round , Pusa Shyamala , Pant Rituraj, PPC , Kashi Taru,Kashi Uttam, Kashi Arun, Kashi Sandesh, Mahi Rubi, Kalyanpur Long, Karan, Sapna, Ramnagari), chilli (Tycon, Shola, K-2, Pari hot/ Indum , Mahabharta, Arka Meghana, Kashi Anmol, Arkameghna , Akanksha, Kullu, S-78, G-4, Azad Mirch-1, PusaJwala, VNR 200, Kashianmol, , Kasi Tez), tomato (Avinash-3,Kashisharad, ArkaSamrath, PusaGaurav, Shivalik, Selection 22, Pusa Hybrid-8, SolanLalima/Roma, Kashi-Aman, Vaishnavi, NP7715, Azad T-6, KashiAbhiman, Arka Rakshak, Arka Vishal,Hy –Deo, Namdhari, Mahavir, Himsona, Pusa Ruby, PusaRasmi , Rohini, NDT-60), cabbage (Cabbage GA, Pusa Drumhead, NHCB-505, KGMR-1, Diamond Express, BC-90, Snowball, Sankar Tej, Pride of India, Golden Acre, Ajanta/S-92, Kaveri, G Ball 65), cauliflower (Pusa Posija, Pusa Early kuwari, GS—75/ Girija, PSBKT-25, Girza, Madhav, Snowball, Pusa Kunwari, Pusa Deepali, Hy Empire, Early Winter, Madhuri, SB. 16, PusaDeepali, Sabour Agrim, Ketaki, Poosi, Maghi), broccoli (Green Mazic , KTS 1, Quistro, Dynasty, Green Hut), capsicum, onion (Bheema Kiran, Bhima Sakti , AFLR, Gauran, Pusared, Agri found light red, Nasik Red , Nasik 53, NHRDF Red-3,), cucumber (Green slam, Kamini), bottle guard (Varuna, Sharad, Narendra Rashmi, Nova, Pusanaveen) and sponge guard (Kashi Divya, Alok) etc. Quality seedlings made available to the farmers for enhancing their profitability and livelihood. The detail of vegetable crops with quantity of seedlings produced are given in table 6.2.1.

Table 6.2.1: Produciton of vegetables seedlings in (U.P.)

Vegetable seedings	Quantity (No)	Value (Rs. in lakh)	Distributed to farmers
Brinjal	205675	1.55	1691
Chilli	262471	1.13	1744
Tomato	419155	1.89	2158
Cabbage	67476	0.30	543
Cauliflower	160347	0.63	1485

Broccoli	31810	0.10	187
Capsicum	12124	0.31	84
Onion	2025476	1.82	946
Cucumber	2757	0.00	57
Bottle gourd	9765	0.16	637
Bitter gourd	725	0.00	224
Sponge gourd	1626	0.03	349
Pumpkin	880	0.01	214
Knolkhole	1100	0.003	43
Mushroom	68	0.06	80
Others	1187	0.03	225
Total	**3202642**	**8.023**	**10667**

6.2.2 Production of Fruit Saplings

The total fruit saplings were 70110 produced by the KVKs of Uttar Prades. Different fruit varieties have taken for different crops i.e. mango (Chausa, Kapoori, Gaurjeet, Dushari, Lungra, Amrapali); aonla (Chakaiya, NA-6, 7, 10); guava (Lalit, Sweta, L-49); lemon (Kagzhi Lime, Eureka, Rangpur Lime, Pant Lemon); papaya (Ranchi selection, Sinta-1, Mayuri, Red lady, Madhu, Lalpari, Coorg Honey Due, Pusa Dwarf, Pusa Delicious); lichi (Shahi, China, Rose scented); bael (NB-4, 5, 7, 9, CISH B-1, CISH B-2,); pomegranate (Bhagwa); karonda (Gulabi); The detail of fruit saplings produced is given in table 6.2.2.

Table 6.2.2: Production of fruit seedlings in (U.P.)

Fruit seedlings	Quantity (No)	Value (Rs. in lakh)	Distributed to farmers
Aonla	3136	0.38	524
Litchi	432	0.21	83
Mango	6038	2.30	1224
Papaya	32382	1.76	1335
Guava	1180	0.21	269
Jack fruit	915	0.14	179
Bael	461	0.06	89
Citrus	62	0.003	17
Lemon	1356	0.24	289
Mausammi	8	0.004	3
Karonda	1463	0.09	90
Pomegranate	305	0.06	112
Custard apple	330	-	-
Apple	50	-	-
Jamun	181	0.03	69
Others	21811	0.27	240
Total	**70110**	**5.757**	**4523**

6.2.3 Production of ornamental, forestry medicinal & other plant saplings

KVKs of this zone produced ornamental (117743), medicinal and aromatic (8036), forestry plants (22617) and fodder plants (119381). Forestry saplings included Shisham (Deshi), teak (local), poplar (S7-Series pp-5, ph-1, ph-2, G-48, Bareilly clones, G-48, L-Series), neem (Deshi), eucalyptus (local), Cajurina, etc. Ornamental plants such as rose (Grief template), marigold (African Mariuld, Pusa Narangi, Pusa Basanti, Pusa Narangi,), rajnigandha, calendula, crotan, poppy, harshingaretc. This zone also produced lemon grass (Pragati) and alovera (Jafarabad). The details are given in table 6.2.3.

Table 6.2.3: Production of ornamental, medicinal & aromatic, forestry and fodder plants

Category & plants	Quantity (No)	Value (Rs. in lakh)	Distributed to farmers
Ornamental			
Marigold	42411	0.17	388
Rajnigandha	500	-	-
Chrysanthmum	11469	0.003	40
Rose	2759	0.09	263
Gudhal	100	0.10	35
Crotan	73	0.03	55
Calandula	3500	0.004	12
Vervina	1000	-	-
Pendula	1700	-	-
Baugain villia	355	0.03	2
Durenta Golden	50	0.005	9
Harshingar	6677	0.33	1456
Glardia	4505	0.008	37
Poppy	2200	0.001	2
Sweet William	250	-	-
Chirayata	2500	-	-
Other ornamental	20995	0.005	234
Ashok	146	0.06	50
Others	16553	0.002	149
Total	**117743**	**0.838**	**2732**
Medicinal & aromatic			
Lemon Grass	200	0.001	50
Others	7836	0.23	443
Total	**8036**	**0.231**	**493**
Forestry/plantation			
Poplar	950	0.02	-
Arjun	115	-	11
Neem	6712	0.11	59
Teak	11520	1.22	545
Eucalyptus	2215	0.03	47
Saguan	839	0.05	100
Seasum	169	0	11
Cajurina	69	0	7
Other forestry	28	0.005	9
Total	**22617**	**1.435**	**789**
Fodder			
Napier	114676	0.56	1404
Para	2500	0.00	543
Others	2205	0.007	13
Total	**119381**	**0.567**	**1960**

6.2.4 Production of Bio-Products

The KVKs of Uttar Pradesh produced **263270.03** kg of bio-products. It included vermi compost (186998.50 kg), NADEP compost (71120.00 kg). Besides, KVKs also produced 419.00 kg bio pesticides, 166.00 bio-fungicide

and 485.00 kg other bio- products. The details are given in table 6.2.4.

Table 6.2.4: Production of bio-products in U.P.

Bio-product category	Bio-product	Quantity (Kg)	Value (Rs in lakh)	No. of farmers
Bio-fertilizer	Vermicompost	186998.50	5.86	1205
	Nadep compost	71120.00	0.91	621
	Rhizobium	100.00	0.08	180
	Other	3981.53	0.26	546
	Total	**262200.03**	**7.12**	**2552**
Bio-pesticide	Trichoderma Viridi	250.00	0.30	200
	Beauveria bassiana	13.00	0.02	13
	Metarrhizium anisoplae	6.00	0.007	6
	Botanicals	100.00	0.00	50
	Other	50.00	0.00	21
	Total	**419.00**	**0.327**	**290**
Bio-fungicide	Trichoderma harzianum	166.00	0.14	136
	Total	**166.00**	**0.14**	**136**
Other bio-product	Honey	144.50	0.32	71
	Lemon pickle	55.00	0.08	65
	Vermiculture	29.00	0.06	9
	Worms	256.00	0.62	96
	Verms	0.50	0.001	1
	Total	**485.00**	**1.08**	**242**
	Grand Total	**263270.03**	**8.65**	**3220**

6.2.5 Livestock & Fingerling Production

KVKs of Uttar Pradesh also produced 227 dairy animals including cows, buffaloes, calves, goat etc; poultry (2321) including broilers, layers, duals, ducks etc; piglets (148) and fisheries (52.72 lakh). The amount of Rs 38.58 lakh was collected from the produce. The details are given in table 6.2.5.

Table 6.2.5: Production of livestock & fingerlings (U.P.)

Livestock category	Livestock	Number	Value (Rs in lakh)	No. of farmers
Dairy animals	Cows	24	5.30	4
	Buffaloes	17	5.60	4
	Calves	23	1.11	-
	Goat	135	5.10	43
	Others	28	1.40	2
	Total	**227**	**18.51**	**53**
Poultry	Broilers	1693.1	3.03	1222
	Layers	220	0.49	19
	Duals (broiler & layer)	381	3.20	180
	Ducks	14	0.07	-
	Others	13	0.00	-
	Total	**2321.1**	**6.79**	**1421**
Piggery	Piglets	148	6.29	75
	Total	**148**	**6.29**	**75**
Fisheries	Indian carp	5271375	4.06	143
	Others	698	2.94	325
	Total	**5272073**	**7.00**	**468**
	Grand Total	**5274769**	**38.59**	**2017**

Seed / Sapling Production

Marigold production: KVK Mirzapur

Seed Hub: KVK Hamirpur

Plant sapling production: KVK Lalitpur

Distribution of plant sapling: KVK Bareilly

Goat rearing: KVK Bhadoi

Lentil seed production: KVK Deoria

Wheat production: KVK

Distribution of seed to farmers: KVK Badaun

Vermicompost production: KVK Baghpat

Broiler production: KVK Badaun

Planting Material production: KVK GB Nagar

Broiler production: KVK Muzaffarnagar

Chapter-7

CASE STUDIES / SUCCESS STORIES

7.1 Popularization of Integrated Disease Management of False Smut in Rice: KVK Kaushambi

Introduction - Total area under paddy crop is about 55000 ha. with average production 50-60 q./ha (hybrid rice) . This crop is affected by several fungal diseases from seedling stage to maturity stage. Now a days, false smut, become major problem in all major rice growing area of countries . In India, the disease has been observed in severe form since 2001 in major rice-growing states. Productivity of the Rice become low due to heavy incidence of false smut during last two-three years in the district. The false smut is major disease because the fungi affect during reproductive stage and directly reduce the yield. Keeping these views KVK conducted field demonstration on integrated disease Management of False Smut in Rice

KVK intervention - Demonstrations on paddy(Var. DRH-775) were conducted at 13 farmer field in an area of 6 ha, during *kharif*, 2018-19 to promote the "Adoption of Integrated disease Management of False Smut in Rice (Seed Treatment with corbendazim 2g/kg seed and Spray of Propiconazole @ 1.5 ml/lit of water after 55 DAT for the management of the false smut).

Output - An attempt was made to study the economic gain of this effective disease management approach up-scaling and the results/benefits accrued at farmer's field. The averaged incidence of false smut on rice i.e. 2.5 percent was recorded in demonstration plot while it was 31.5 percent in farmer practice. On an average disease reduction was 78.7 with the use of IDM approach over farmer practice. Percent reduction in No of Infected grains/penicle 0.40 was observed in demonstration plot and 4.40 number of Infected grains/penicle in farmer practice. The yield enhancement was 9.6%.

Outcome - Integrated disease Management of False Smut in Rice (Seed Treatment with corbendazim 2g/kg seed and Spray of Propiconazole @ 1.5 ml/lit of water after 55 DAT) was popularized further by awareness about the IDM practices from time to time to the farmers by KVK scientist.

Impact - With the adoption of Integrated disease management practice, yield gain was obtained 9.6 % higher as compared to local check. This technology is spread in neighboring five villages and 45 farmers adopted. Innovative Farmers Groups have been developed with the participation of the farmers who are helping each other for cultivation of crop at their own level.

7.2 Development of KWG gloves to reduce the drudgery & increase work efficiency for harvesting okra: KVK Pratapgarh

This study begins with Kiran Maurya , Village Ainthu, Kalakankar Pratapgarh use first trial of KWG gloves because she indulge with okra production but while harvesting she faced too much difficulties because okra fruits have an almost hair like bristles and prickly surface exposure to which is uncomfortable to the hands of the harvester. In extreme cases, person with sensitive skin have developed sores or allergic reactions after a prolonged period of exposure to the pods during a harvest. Therefore, to minimize above mentioned problems KVK Pratapgarh developed a suitable low cost tool (KWG gloves) for okra harvesting which is made by Krishi Vigyan Kendra in collaboration with (KWG) Kalakankar Womens Interest Group.

Plan, implement and support

Harvesting of okra is laborious process the hair on the

fruit causes irritation to the fingers and now a days, labour availability is one issue. To reduce the drudgery in harvesting okra, KVK pratapgarh evaluated the efficiency of KWG gloves. Using of KWG gloves increased the work output and reduced operating cost per quintal (Rs. 20/g) of okra harvested. Due to the convenience provided by the KWG gloves okra harvested per day per person increased to 128.24 kg/ day from 110.08 kg/day when harvested without gloves.

Output: Mrs Kiran Devi has used KWG gloves in .05 ha land. Without using gloves harvesting capacity of okra was 1.25 q(40 %) along with injuries. And after as per suggestion of KVK this drudgery reduction technology used and harvesting capacity increased 1.57 q. (50.24%) without any injuries. Kiran devi is selling 75 kg okra / day @ Rs 40.

Outcome: okra crop is one of the major crop in summer and rainy season. KVK pratapgarh conducted 100 demonstration in on KWG GLOVES in nearby villages of the district and This tool has been disseminated in more 25 villages of the district in area of approximately 50 ha. farmers are demanding this gloves for picking okra because of increase efficiency and protection to the skin, saves from the cuts, wounds, and injuries, and cost effective too. The outcome of this trial is that harvesting capacity of the okra per hour is increased than other methods of harvesting.

Impact: The technology adopted by Kiran has played a vital role to disseminate in nearby villages and now she has been able to saves Rs 4500/ha in okra harvesting operation apart from cuts, wounds, and skin injuries. Considering the result of the technology, the area of adoption has Increased in 25 villages covering the 50 ha in okra production, resulting in to saving of Rs. 2,25,000 only in harvesting operation in adopted area. She motivated the farming communities not for only adoption a part from that she made a vegetables growers female group too for the selling of vegetables in the market together and this group is stitching KWG gloves and selling in Rs.50 to other farmers. Kiran is the one who adopted and now selling to the gloves to the others farmers. She has set one example in her village. She is one of the progressive farmer after a becoming a part of KVK activities and get their effectiveness for her own development.

7.3 Kashi Anmol becoming popular among vegetable farmers': KVK Bhadohi

Situation Analysis:- Shri Arvind Maurya, S/o Shri Mulchand Maurya ,Village- Ghatampur, Post- Pali, block- Gyanpur, district-Bhadohi, a farmer who was selected for this demonstration of Chilli in his field. Earlier, he was using local variety which produces low yield.

Plan, Implement and Support:- KVK Bhadohi tried to popularizes the Chilli varities Kashi Anmol from IIVR, Varanasi under the FLD programme. This variety was demonstrated among the different farmer fields in the district. The scientist from the KVK were fully involved from land preparation to harvesting. From the selected field the soil sample were collected, analyzed and recommend for the balanced dose of fertilizer. The variety was demonstrated at 32 farmer's fields in an area of 2.0 ha @ 0.5 kg seed /ha.

Output:- With application of balanced dose of fertilizer (N:P:K: 120:80:60) kg/ha in chilli the neighboring farmers were reported the yield of Var. Pusa Sadabhar was 124.7 q/ha where as the yield of Kashi Anmol was 153.6 q/ha with increase 23.18%. The economical gain in terms of gross income, net return and BCR were recorded as Rs 2.45 lakh, Rs. 1.76 lakh and 3.57 lakh, respectively.

Outcome:- Chilli is a major crop in Bhadohi district. The KVK has conducted field demonstrations in an area of 2.0 ha in 22 villages during 2018-19 at farmers' field with using leaf curl resistant variety with balanced dose of fertilizer. This variety has better performance regarding yield, size of fruits, attractive dark color and hardness for transportation. Shri Arvind Maurya is convinced with high yield, no incidences of leaf curl and higher income. He motivated the farming communities to replace old varieties with new variety.



Different stages of chilli crop at farmers field

7.4 Reduction in Cost of Cultivation of Paddy by using Drum Seeder: KVK Allahabad

Introduction - Mr. Shiv Sagar Kushwah is a progressive farmer in Champatpur village in Chaka block of Allahabad district cultivating paddy for past twenty years. He was doing traditional method of raising paddy i.e. he used to prepare nursery for paddy and transplanted it manually with the help of labours. During peak crop season scarcity of labour, delayed monsoon and scanty rainfall. This affected the yield and more cost of cultivation. The problem can be solved with minimum water and labour.

KVK intervention - Looking into the problem of labour scarcity during peak season and high cost of transplanting KVK scientists suggested for mechanized paddy cultivation viz., accurate leveling of field, drum seeder usage (wet condition) for direct sowing of seeds. Drum seeder has been designed and fabricated for 8 row sowing of pregerminated paddy seeds. This equipment has come as a boon to the small and marginal rice farmers because of its low cost, easy to handle, adaptability and easy to fabricate by the local artisans. The device help to maintain plant to plant spacing and row to row spacing this in turn help to do the intercultural operations by using cono-weeder. It helps to save 95% of labour requirement in transplanting and 25% of water. In case of delayed monsoon, water stress and labour scarce areas this equipment is of great help to the rice farmers. There is no yield decrease is noticed by using drum seeder when compared with manual and mechanical transplanting methods. Since it is cost is only Rs.5000/- Rs.7000/- the small and marginal farmers can afford to buy this equipment. By applying above technologies he reduced the cost of cultivation and gained more yield & income.


Output – As a result of using the above technology for three years continuously Sh. Shiv Sagar saved average Rs 900/- per hectare by using drumseeder as compared to manual transplanting. The yield also increased by 5%. The B:C ratio 5.50 by drum seeder as compared to 3.5 by manual transplanting

Outcome - The direct sown paddy through drum seeder has attracted all categories of farmers due to easy operation, less weight, line sowing with less seed rate (9-12 kg / ha) more tillers, early maturity etc., apart from savings in transplanting cost. The line sowing of paddy has also helped the farmers to utilise conoweeder for weeding. The drum seeder available at KVK is also used by farmers of Yamuna par region of Allahabad district districts.

Impact - The direct sown paddy has spread in and around his neighboring villages too after seeing the results of this technology.

7.5 Self Help Group approach for income enhanced: KVK Muzaffarnagar

Situation analysis/Problem statements : Village Haidernagar is situated about 2 KM from Block Baghra. Population of village Haidernagar consists of all the caste and category. The village has two Primary Schools and two Anganwadi Centers. People belonging to Backward class ,Jogi. they have no land holding and work as a labor in others fields. Women of this community also do their household work or work as a labor .Hence these community people belongs to economically weaker section.

Plan, Implementation and Support: Home Scientist from KVK Muzaffarnagar conducted Practicing farm women training in their locality and came to know the condition, and felt the need to form a SHG for their empowerment. Meetings were organized one after another among them and focus of those meetings was to make them aware of advantage of Self Help Groups, NABARD schemes, credit linkages as well as other Government schemes. Other local concerns of those

women were also discussed .The discussion in three meetings with them helped in motivating them in setting up the Self Help Group.

Out Put: Sixteen women of that village got motivated with the idea of startng Self Help Group and they elected Smt Ravita W/Sh Nempal as their President and Durga Women Self Help Group was formed. The Bank Account in the name of Durga Women Self Help Group was opened in Punjab National Bank, Baghra on 24 April 2014.Each member of the group decided to deposite Rs 200 per month.

Out Come: Today the group has saving of Rs.2.52 lakh and also has an internal loaning of Rs 2.38 lakh. After formation of SHG the group members started a small cottage industry with the help of a NGO. They got the raw material for making brooms from NGO, Financial assistance was provided by NABARD. All the group members got the training and started making brooms with Rs 12 per broom making charge. In 2018 District Magistrate of Muzaffarnagar , Sh Rajeev Sharma passed an order to all the Primary and Junior high School of the district regarding school uniforms to be given to the students will be stitched and supplied by SHG members. Durga Women Self Help Group got the order and supplied uniform in both the schools of village Haidernagar. In this order the group members earned good profit up to Rs 20000/-

Impact: They earned good income which helped them in meeting their daily needs as well as education and medical service to their children. I feel worth mentioning here, Mrs Ravita ,president of the group belongs to a very poor family has a five years old daughter suffering from Muscular Dystrophy disease, she was not able to give her enough medical care due to financial crisis but now she is getting her daughters treated at Dehradun.

After being linked with Self Help Group the women have developed a better understanding on a wide range of issues which has brought about a positive change in their thinking and behavior . They have become stronger both socially as well as economically .as a result of growth of these women other women of their community also got motivated and four more Self Help Groups have formed in last five years.

7.6 Organic farming: A boon for Bundelkhand (KVK, Banda)

Situation analysis/ Problem statements:- Mr. Vigyan Sukha, village Attara Gramin, Post: Atarra block: Naraini, district: Banda, was given training on different aspect of organic farming.. He was earlier involved with traditional; agriculture. He was growing paddy-wheat/ Gram/ Lentil in his 1.5 hac. Land. He was hardly getting net profit of 1.00 lakh Rs. Per year.

Plan, Implement and Support:- Scientist of a KVK Banda given training on different aspect of organic farming like preparation of vermicomposting, NADEP compost, bio-fertilzers, bio-pesticide, mushroom etc. This KVK has encouraged the farmer for preparation and marketing of organic products.

Output:- Mr. Vigyan Sukla adopted the different aspect of organic farming as per suggestion of KVK's scientist for his 1.5 ha land. He has also opened a commercial dairy with 62 indigenous cows and 4 Murrah Buffaloes. Currently he is producing 220 litres milk per day and 5000 qt. vermicompost per year. The economical gain in terms of per unit expenditure gross income, net return and BCR are recorded. Rs 2.63 lakh, Rs. 15.82 lakh, Rs. 13.19 lakh and 6.01 respectively.

Outcome:- The outcome in terms of quality and price of produce motivated the other farmers to produce organic products. He is very happy on improvement in their income, livelihood and set forth example for others. He also promoted by Line department of Banda. He got sanction of opening Jaivik outlet centre under RKVY scheme.

Impact:- He is becoming one of the progressive and learned farmers for others with regards to popularization of organic farming in Bundelkhand region. This technology helps him for livelihood, empowerment and make him enthusiastic regards organic farming. He is one of the progressive farmer after a becoming a part of KVK activities and get their effectiveness for his own development. Now he is very happy with this improved production and management technology and set forth example for other farmers of the district.

Farmer with Hon'ble MP, Banda and Chitrakoot and KVK's scientist

KVK, Scientists inspecting vermicompost unit

7.7 Poultry cum fish farming - A good source of income and employment: KVK Ambedkar Nagar

Introduction:- Mr. Anand Singh S/O Ram Keval Singh, Vill.-Sangrampur, Post-Chanaipur, Block- Akbarpur, District-Ambedkar Nagar, age-29 years, education-Graduate level, size of land holding 1 ha. His income ranged from 1.5-2.0 lakhs annually from rice-wheat –cropping system and was not sufficient for their 10 members family needs.

KVK intervention:- In year 2015-16, he participated in trainings organized on Scientific poultry farming by Krishi vigyan Kendra, Ambedkar Nagar & KVK organized demonstration on poultry farming of 500 birds on his farm. After that of he created awareness to start lard scale poultry farming as an enterprise and in guidance of KVK Animal Scientist he established 3000 capacity well developed poultry farm and his net income from poultry increased up to Rs. 30-40 lakh/annum. KVK Scientists organized training on composite fish farming in 2016-17 and created awareness to poultry farmers to start fish farming with poultry farm and utilize the 60 % poultry manure instead of animal dung/manure for fertilization fish ponds. In this training Mr. Anand Singh also participated and in year 2017 he established a fish pond in 1 acre area beside the poultry farm and started 3000 composite fish farming with 4 fish species Katla, Rohu, Nain and Common Carp in ratio of 30:25:20:25 along with poultry farming. Poultry farming of 3000 broiler birds integrated along with fish farming made better utilization of resources, substantially with proper nutrition, diseases control and management provides more profitable income.

Output: Total annual cost of 15000 poultry birds (3000 birds/ batch of 5 batch/year) to gain av. wt 2 kg./bird @ Rs.140/birds =Rs.21 lakh /-

Av. Income by selling of 14700 bird (2% mortality) @ av.Rs.170/bird of 2kg =Rs. 24.99 lakh

Av. Profit / year of 5 batch from selling of 14700 ready poultry birds = 3.99 lakh

Income by poultry manure of 15Q.@ Rs.1500= Rs. 22,500/-

Total annual income from poultry farm=Rs. 4.21 lakh /-

Total annual cost of fish farming in one acre ponds of 3500 fish /year) to gain av. wt 1.15 kg./fish @Rs.100/fish =Rs.3.50 lakh

Av.Income by selling of 3430 fish (2% mortality) @ Rs.160/kg. =Rs 6.31 lakh

Av. Profit / year of from selling of 3430 fish = 2.81 lakh

Outcome-Annually profitable income-

Total annual income from poultry farm=Rs. 4.21 lakh

Av. Profit / year of from selling of 3430 fish = 2.81 lakh

Total annual profitable income =Rs. 4.21 lakh+2.81 lakh = Rs. 7.02 lakh /year

View of Mr. Anand Singh Integrated poultry cum fish farming

Impact- Mr. Anand Singh is becoming one of the progressive and learned farmers to others with regards to popularization of Poultry cum fish farming. This technology helps him for livelihood, empowerment. Now this technology is adopted by 5 farmers by seeing

and believing in nearby villages.

Integrated poultry farming of broiler birds along with fish production made better utilization of resources, substantially with proper nutrition and feeding, diseases control and management, provides more profit. Mr. Anand Singh's income increased three times which improved his livelihood and its example for others farmers to adopt this practice.

7.8 Popularization of onion seed production: KVK Ballia

Introduction:- The seed of onion is costly and farmers generally do not produce it, they know the fact that if it is grown at their field they will become capable of gaining a lot. Sri Ajay Kumar Pandey is a enthusiastic farmer and is always try to do something extra ordinary. He started to popularize the profit gain from the onion crop production as well as seed production. Some times their seed are not good quality but they have sown.. The fluctuation in the price of onion is very drastic. Once, Sri Ajay Kumar Pandey visited KVK, Sohaon, Ballia and met the scientist. They gave the idea about crop production as well as seed production of onion. Pandey got net cultivated 1.25 ha area and 3-5 ha on lease.

Intervention :- The scientists suggested to him for soil testing analysis first and contact to responsible organization for quality seed with full package of practices. He got profit in first year but faced labour problem for the cultivation. Further, he thought why not direct seeding. He directly seeded onion in the field and saved labour cost. The profit gained is very enormous as compared to other crop. The scientist suggested him to make a calendar related to agriculture for whole year. The scientist given him technique about inter cropping of onion with bottle guard.

Output:- Sri Pandey produce onion crop and seed production in the farm of direct seeded of onion and inter cropping of bottle guard from the year 2011 to till date. In this way he got more profit 3.63 lakh from a 1.125 ha area and their socio-economic status are increasing among the farmers. The technique direct seeded of onion with inter cropping are well popularized among the farmers of different villages of blocks of the district Ballia Uttar Pradesh.

Outcome:-. This technology in spared about 250 ha. in 70 Villages with managing good agronomical practices. Sri Pandy is very happy on improvement with their income livelihood and is a role model for other farmers.

Impact:- He and his family is very happy due to additional gain by the onion crop, seed production and intercrop provides him additional income also.

7.9 High density of banana cultivation: KVK Barabanki

Situation analysis/ Problem statements:- Mr. Navneet Verma, village Tajwapur, Post: Tajwapur block: Trivedigaj Haidergarh, district: Barabnki, a farmer who was selected for this demonstration. He was earlier involved with the high density of banana this method no of plant are increase. After that Adoption of technology No. of plant increase and production are increased.

Plan, Implement and Support:- KVK Barabanki tries to make them aware regarding high density of banana cultivation . That starts from land preparation to harvesting. The scientists has encouraged to the farmer for soil testing and on the basis of that farmer was advised for high density plantation. The banna was planted on lines in the month of July, 2016.

Output:- Mr. Navneet Verma adopted the high density of banana used 3200 plants /ha, in high density of banana in 1 ha land. His local yield was 30-35 kg /plant. His yield increased 50.02% as compared to traditional planting. The economical yield in terms of per unit expenditure gross income, net return and BCR are recorded. Rs 9.25 lakh, Rs. 6.48 lakh and 2.30 correspondingly.

Outcome:- Banana crop is the minor fruit crop of the district. KVK Barabanki conducted 50 demonstrations in 4 villages during 2015-16 to 2016-17 in an area of 150 ha at farmers' field with using HYV G-9, and balanced dose of chemical fertilizer (N200: P600 :K300) g/Plant. This variety has been disseminated in 4 villages of the district in an area of 350 ha. The outcome of this demonstration motivated the farming communities to replace their varieties, non-descriptive varieties. Mr. Navneet Verma is very happy on improvement in their income, livelihood and set forth example for others.

Impact:- He is the role model to other farmers for popularization of G-9. This technology helps him for livelihood, empowerment. Mr. Navneet Verma is very happy with this improved production and management technology and set example for other farmers of the district.

7.10 Integrated Farming System (Fisheries+Duckries+Crops): KVK Basti

Situation analysis/Problem statement: Radhey Shyam Yadav S/O Sri Dinai Yadav is a Farmer belongs to Vill-Vashawa Rai, Block-Parashrampur, Distt.-Basti (U.P.). His Aged 52 Years old and Qualification has M.A. The Vashawa Rai village located in 30Km away from District Headquarter and 8Km from Vikramjot on NH-28.

Plan, Implement and support: He has 10Acre Land and a small Kachacha House with one Milking Cow initially he adopted simple traditional crop rotation Paddy-Wheat-Sugarcane. Sri Yadav Participated in vocational Training Programme during 2008-09 at Krishi Vigyan Kendra. He emphasized in this training and requests to scientist visit his farm. Scientist advised him to reduce sugarcane area and prepare a fish ponds with duck Farming. The area is situated near his residence.

Output: Sri Yadav starting integrated fish farming after achieving technical knowledge. He has 3 ponds area 1 ha. and .4 ha as a nursery pond. 250 layer Ducks, 3 Cows, 2 Buffalos, 1 Gobergas Plant, 35 Papaya Plants, 45 Banana Plants, 4 Anola Plants, 25 Mango Plants and .2 ha Vegetables through out the Year, 1 Motercycle, 1 Diesel Pumping set and 1 Electric Tube well Etc.

Outcome: Income from fish ponds 85 q fish and 73000 eggs annually. He getting Rupees 45000 per month additional income from Fish and duck farming. His socio economic status is recognized as a Progressive Farmers. He builds a new house and better education of Son and daughter.

Impact: 37 Farmers are impressed and adopt integrated farming system after viewing the result demonstration of Integrated Fish Farming.

7.11 Bee Keeping opens new avenues for additional income: KVK Hardoi

Situation analysis/ Problem statements: - Mr. Rabindra Singh a resident of village-Ratnapur, block -Bharkhani, district-Hardoi is a young unemployed person with no earning earlier but presently having good earning with role model for farmers to get additional income by Bee keeping.

Plan, Implement and Support: Mr. Rabindra came in contact with the scientists of Krishi Vigyan Kendra during the rural youth training programs and showed his keen interest in bee keeping. By taking the technical knowledge of bee keeping from KVK scientists. He started bee keeping with 20 bee boxes which costs approximately Rs 40,000 / -.

Output: Today Mr. Ravindra Singh has a total of 400 bee boxes with earning of eight to ten lakh per annum. He is giving training to the other farmers also.

Outcome: Encouraging results of Bee Keeping promotes him to set up a brand of honey of its own.

Impact: Mr. Rabindra Singh is becoming a trainer among rural youths regarding bee keeping start up. Bee keeping helps him for uplifting their livelihood standards. He is involving in most of KVK extension activities for rural youths regarding bee keeping. Mr. Rabindra is very happy with his success and he is becoming an example for other rural youths of the district by getting more income. He is role model to other farmers of the district. The bees also help in the pollination therefore, the crop yield also increased to the tune of 20.25 %.

Mr. Rabindra Singh with his bee boxes in their field

Chapter-8

HRD, PUBLICATIONS & LINKAGES

ICAR-ATARI, Kanpur organized 11 trainings for KVK officials and also deputed their officials for 5 trainings under HRD; 16 workshops and involvement in 3 conferences; 12 review meetings and 21 different events. In additional to this ATARI also published 7 technical books/bulletins, 14 research papers, 4 lead papers, 2 book chapters, 4 newsletters, 4 technical reports and one popular article. In this zone three innovative farmers have been awarded, two for Pandit Deendayal Upadhyay Antyodaya Krishi Puraskar (National and Zonal) and one National Award - Jagjivan Ram Abhinave Kisan Puraskar.

This zone also made the linkages among various institutions like IFGRI, Jhansi; CRIDA & MANAGE, Hyderabad; IIVR Varanasi; line depatartments and SAUs of Uttar Pradesh for collaborative programmes, better convergence-linkage, knowledge upgradation and technological backstopping to KVKs.

8.1. Trainings

- One day Training cum Workshop on PFMS was organized at ICAR-ATARI Kanpur on 10 January 2018.
- Two days training workshop on CSISA-KVK Diagnostic Survey Training Workshop at NDUAT Faizabad during 7-8 May.
- One-day training programme on Open Data Kitwas organized at ICAR-ATARI Kanpur during 12 September 2018.
- Three days training programme on Administrative and Financial Rules awareness at IIPR, Kanpur during 26-28 September 2018.
- KVK Bareilly organized Four days training on Management of Straw/Crop residue during 3-6 July 2018.
- CSAUAT, Kanpur organized training programme for IAS Probationers during 8-10 August 2018.
- Three days training BUAT Banda organized Skill Training Programme During 15-17 October 2018.
- Coordinated and organized three days training of trainer programme under Skill Training Programme during 17-19 Dec., 2018 and PMFS (17.12.2018) at ICAR-ATARI, Kanpur
- MDP for Newly Recruited Programme Coordinators of KVKs. III Phase (05 days) training during 04-08 January 2019 at ICAR-ATARI, Kanpur
- Capacity Bulding of KVK Professionals for Sustainable Dev. on 11.12.2018 at ICAR-ATARI, Kanpur organized by CSAUAT, Kanpur
- Organized PFMS Training for the KVK Staff on 14th & 15th Feb., 2019 at IIVR, Varanasi

Trainings for ATARI officials under HRD

Category	Name of employee	Discipline	Details of Training
Scientist	Dr Atar Singh	Principal Scientist (Agron.)	i) Training on Administrative & Financial rules awareness at IIPR, Kanpur ii) Training on Vigilance awareness at IIPR, Kanpur
	Dr Shantanu Kumar Dubey	Principal Scientist (Agril Extn.)	MDP for Nodal Officers of HRD at NAARM, Hyderabad
Technical	S.N. Yemul	Chief Technical Officer (Computer)	Nodal Officer workshop on Krishi Portal at NASC Complex, New Delhi
Administrative & Finance	Kanta Prasad	AF & AO	Training on Administrative & Financial rules awareness at IIPR, Kanpur
	R.B. Verma	AAO	-do
	Raman Tripathi	Assistant	-do-
	Ms. Kratika Sharma	Assistant	-do-

8.2 Workshop

- One day Workshop on CSISA projectwas organized at ICAR-ATARI Kanpur on 16 February 2018.
- One-day review workshop of NICRA KVKswas organized at ICAR-ATARI, Kanpur on 8 June 2018.
- One-day workshop on TSP (Tribal Sub-Plan)was organized at ICAR-ATARI, Kanpur on 26 May 2018.
- Two day 25th Annual Zonal Workshop of KVKs U.P. organized at SVPUAT, Meerut during 23-24 August 2018.

- Two days' workshop on CFLDwas organized at BUAT, Banda during 9-10 Oct. 2018.
- Workshop on CFLD Pulses/Oilseed & Pulses Seed Hub Organized at BUAT Banda & ICAR-ATARI, Kanpur
- Participated in two days Nodal Officer workshop on Krishi Portal at NASC Complex, New Delhi.
- One-day workshop on "VATICA"was organized at ICAR-ATARI Kanpur on 27 December 2018.
- Review Workshop on Farmer FIRST Project at ICAR-ATARI, Kanpur on 18-19 January 2019.
- The Workshop on "JaivikCorridore" was organized 2nd February 2019 at KVK Hamirpur in collaboration with BAUAT, Banda.
- Participation in the 13th International Conference on Development of Drylands Converting Dryland Areas from Grey into Green (13 ICDD-2019 to be held on February 11-14, 2019 at Hotel Indana Palace, Jodhpur by ICAR-Central Arid Zone Res. Institue, Jodhpur.
- Mid Term Review Workshop under jurisdiction KVKs of CSAUAT, Kanpur & BUAT, Banda on 20th & 21st Nov., 2018 at ICAR-ATARI, Kanpur
- Mid Term Reivew Workshop under jurisdiction KVKs of SVPUAT, Meerut & Bareilly on 22nd & 23rd Nov., 2018 at DOE, SVBPUAT, Meerut)
- Mid Term Reivew Workshop under jurisdiction KVKs of NDUAT on 30th Nov. & 1st Dec., 2018 at DOE, NDUAT, Faizabad
- Workshop on Doubling Farmers' Income through Innovative Technology, Diversification and Reduction in Cost of Cultivation on Dec. 15, 2018 at CSAUAT, Kanpur
- Workshop on Project Impact of CFLD for KVKs (UP, Maharashtra & MP) held at ICAR-ATARI, Kanpur on 19th Feb., 2019

8.3 International/National Conference

- Three days International Conference on "Sustainability of Smallholder Agriculture in Developing Countries under Changing Climatic Scenario" was organized at CSAUAT Kanpur during 14-17 February 2018.
- National Conference on KVK and Krishi Unnati Mela was organized at ICAR-IARI Campus New Delhi during 16-18 March 2018.
- All India VC Conference was organized at CSAUAT, Kanpur on 2ndAugust, 2018.

8.4 Review meetings

- Two days Review meeting of CFLD Pulses-Oilseeds and other projects was organized ICAR-ATARI Kanpur during 7-8 February 2018.
- One day Institute Management Committee meetingwas held on 26 March 2018 at ICAR-ATARI Kanpur.
- One day Meeting on Aspirational District Programme held on 26 May 2018 at ICAR-ATARI, Kanpur.
- New programme NARI (Nutrition-sensitive Agricultural Resources and Innovation)
- One day meeting of VATIKA (Value Addition and Technology Incubation Centre in Agriculture) was organized at ICAR-ATARI Kanpur during 25 September 2018.
- One day meeting on various issues mainly on replacement of vehicles was organized at CSAUAT, Kanpur on 20 August 2018.
- Meeting on CSISA was organized at Gorakhpur on 29 September 2018.
- A Meeting with Hona'ble Agriculture Minister was held at KVK Gonda.
- A Meeting on Agri clinics and Agribusiness Centers was held at MANAGE, Hyderabad on 04 August 2018.
- Meeting on Crop Residue Management was held at Chandigarh on 20 September 2018.
- XXV ICAR regional Committee No. IV meeting (RCM-IV) at Ranchi, Bihar on 24 September 2018.
- KVK Portal Interaction Meeting organized by ICAR-ATARI, Kanpur on 17 December 2018.

8.5 Events

- Celebration of 69th Republic Day ICAR-ATARI, Kanpur.
- One-Day Live Interaction of Hon'ble Prime Minister with Framers of District KVKs during 20 June 2018.
- Monitoring of U.P. 26 KVKs by Cabinet Ministers
- Celebration of 4thInternational day of Yogawas organized at ICAR-ATARI, Kanpur on 21 June 2018.
- Major activities under Akanksha District Program under eight KVKs at ICAR New Delhi.
- Celebration of 72nd Independent day 15 August 2018

- Monitoring of KVKs of Uttar Pradesh by Cabinet Ministers
- Organize PashuMela in Gorakhpur and Shahjahanpur, two meetings held at ICAR-ATARI, Kanpur on 18 September 2018.
- SwachhtaDiwas ICAR_ATARI, Kanpur 15-25 September 2018.
- Hindi fortnight celebrations during 14-29 September.
- World Soil Health Day Programme organized at KVK of U.P. on 05 December 2018.
- Participation in Agri-Conclave under IISFwas organized at Lucknow on 5 October 2018.
- Participation in North Zone Sports eventwas organized at HAU, Hisar during 14-16 November 2018.
- DG, ICAR inaugurated seed processing unit at Tulsi KVK, Ganivan, Chitrakoot on 9th December 2018.
- Organized SwachhtaPakhwada at ICAR-ATARI and KVKs on 2 October 2014.
- International Women Daywas celebrated on 8 March 2019 at ICAR-ATARI Kanpur.
- Institute establishment day celebrationon 19 March 2019 at ICAR-ATARI Kanpur.
- KVK Gorakhpur –II in collaboration with ICAR-ATARI Kanpur on 2-3 March 2019, organized Two days "PurwanchalKisanMela and KrishiPradarshini".
- TheSchemePMKisanSammanNidhiProgrammewas launched on 24 February 2019.
- KVK Kanpur Dehat organized Pre Rabi KisanSammelan on 18 January 2019 at campus.
- Celebration of 70th Republic day, 26 January 2019

8.6 Publications

8.6.1 Technical Bulletins/books:

- Gautam U.S., Atar Singh, S.K. Dubey, S.N. Yemul, Rajeev Singh,2018, Adaptation of Climate Resilient Technologies in Uttar Pradesh (2018), published by ICAR-ATARI, Kanpur, P:46.
- Gautam U.S., Atar Singh, S.K. Dubey, S.N. Yemul, Rajeev Singh,2018, Technology Intervention for Pulses Demonstration (2018), published by ICAR-ATARI, Kanpur, P:80.
- Gautam U.S., Atar Singh, S.K. Dubey, Sadhna Pandey, S.N. Yemul, Rajeev Singh, 2018, Cluster Frontline demonstrations on Oilseeds in UP (2017-18), published by ICAR-ATARI, Kanpur, P:36.
- Gautam U.S., Atar Singh, S.K. Dubey, Sadhna Pandey, S.N. Yemul, Rajeev Singh,2019, Impact of NICRA Activities during 2015-16 to 2017-18, published by ICAR-ATARI, Kanpur, P:44.
- Gautam U.S., Atar Singh, S.K. Dubey, Sadhna Pandey, S.N. Yemul, Rajeev Singh, Maneesh Singh, 2018, Performance of pulses demonstrations in Uttar Pradesh-Application of technology by KVKs under NFSM. published by ICAR-ATARI, Kanpur, P:40.
- AK Singh, VP Chahal, Atar Singh, Gautam U.S., S.K. Dubey, S.N. Yemul. 2019. Realizing higher productivity and profitability from Pulses demonstrations-Cluster frontline demonstrations 2017-18. Published by Div., of Agril. Extension, ICAR, New Delhi, P:126.
- JP Sharma, Ambarish Sharma,JPS dabas, BK Singh, SK Dubey, Nishi Sharma, Nafees Ahmad, S Chakrabort, Pritabha Joshi and NV Kumbhare (2019. Synergizing the institutional partnership for enhanced technology outreach and production system' efficiency: Experiences of collaborative extension programmes. Technical Bulletin, CATAT, ICAR-IARI, New Delhi, P:44

8.6.2 Research Paper's

- J P S Dabas, Nishi Sharma, S K Dubey, Ambrish Sharma, Lakhan Singh and A V Dubey. 2018. Utilizing cow dung and slurry for energy sufficiency of farms and households: Experiences of field studies across three Indian states, *Indian Journal of Agricultural Sciences* 88 (8): 1208–13.
- Shantanu Kumar Dubey, U S Gautam, AK Singh, Atar Singh, V P Chahal, Avnish Kumar Singh, Chandan Singh and Ajit Srivastava. 2018. Quantifying the yield gap minimization in lentil (Lens culinaris) under Cluster Frontline Demonstrations (CFLD) conducted in Uttar Pradesh, *Indian Journal of Agricultural Sciences* 88 (6): 851–9.
- B.K. Singh, Nishi Sharma, S.K. Dubey, J.P. Sharma, Ambrish Sharma, V.R. Sagar, Kishan Singh and Nand Kishore. 2018. Vegetable varieties with multiple attributes spread at faster rate - A case study in popularizing carrot variety Pusa Rudhira in NCR Region. *Indian J. Hort.* 75(3),: 482-485.
- Anuradha Ranjan Kumari, Kamlesh Meena, S. K. Dubey, Ajay Pundir and U.S. Gautam. 2018. Know-hows of Zero Tillage Technology and the Associated Constraints Experienced by the Farmers in Rice-Wheat Cropping System of Eastern Uttar Pradesh. *Indian Journal of Extension Education*, Vol. 54, No. 3, 2018 (1-7).

- Saurabh, Anjana, Swati, Anand Singh, S.K. Dubey and U.S. Gautam. 2018. How to Increase Utilization and Dissemination of Evaluation Research Findings. *Int.J.Curr.Microbiol.App.Sci* 7(9): 2484-2489.
- Saurabh, Anand Singh, S.K. Dubey, U.S. Gautam and Razia Parvez. 2018. Farm Women's Drudgery and Gender Gap Profile: A Participatory Diagnostic Study in District –sitapur. *Int.J.Curr.Microbiol. App.Sci* (2018)7(8):3984-3993.
- Jagriti Rohit, S.K Dubey, Premlata Singh, B.K Singh and N V Kumbhare. 2018. Preferences of the Farmers towards Peri-Urban Agricultural Practice. *Indian Journal of Extension Education*, Vol. 54, No. 1, 2018 (171-175).
- J P S Dabas, Nishi Sharma, S K Dubey, Ambrish Sharma, Lakhan Singh and A V Dubey. 2018. Utilizing cow dung and slurry for energy sufficiency of farms and households: experiences of field studies across three Indian states. *Indian Journal of Agricultural Sciences* 88 (8): 1208–13.
- Kirti M. Tripathi, J.P. Sharma, S.K. Dubey, U.S. Gautam, Razia Parvez and SavitaArya. 2018. Participatory Diagnosis of Drudgery Perceived by the Women Farmers: A Micro level Analysis. *Journal of Community Mobilization and Sustainable Development* Vol. 13(2), 301-307.
- Jagriti Rohit, Premlata Singh, S.K. Dubey, B.K. Singh and N.V. Kumbhare. 2018. An Analysis of Support System Facilitating Peri-Urban Vegetable Cultivation. *Journal of Community Mobilization and Sustainable Development* Vol. 13(2), 347-353.
- Poonam Singh, Shantanu K. Dubey, Sadhna Pandey and U.S. Gautam. 2018. Participation of Farm Women in Agricultural Operations: A trans-section of Kannauj district of Uttar Pradesh. *Journal of Community Mobilization and Sustainable Development* Vol. 13(3), Sept. – Dec., 466-470.
- Shantanu Kumar Dubey, U.S. Gautam, Atar Singh, Anand Singh & Anand Singh. 2018. Empowering cattle keepers for on-farm production & utilization of green fodder and planting materials: Hybrid (HB) Napier (*Pennisetum Purpureum*) in Sitapur district of Uttar Pradesh. *Indian Journal of Extension Education*, Vol 54, No.2, 2018. (P. 126-132).
- Uma Sah, Narendra Kumar, Hem Saxena, S.K. Dubey, M.A. Iquebal, Shripad Bhat and S.K. Singh. 2018. Validation of farmer to farmer extension model for dissemination of quality seeds of pulse crops: experiences from Bundelkhand Region of Uttar Pradesh. Indian Journal of Extension Education Vol. 54, No.2, 176-182.
- Sarita Joshi, Savita Arya, K.M. Tripathi, Vinita Singh and S.K. Dubey. 2018. Nutrition Education and its Impact-A Study of Western Uttar Pradesh. *Journal of Community Mobilization and Sustainable Development*, Vol. 13(3), 466-470

8.6.3 Lead Papers:

- U.S. Gautam, S.K. Dubey, Atar Singh, Rajeev Singh & Maneesh Singh. 2018. Information exchange & knowledge sharing in Agricultural Researches & Extension Education. Lead paper in International Seminar on "Global Partnership in Agricultural Education & Research, Held at BHU, Varanasi, December 22-24, 2018. (P. 27-32)
- Atar Singh, Shantanu Kumar Dubey & S.N. Yemul. 2018. Researchable issues and challenges for doubling the farmers' income in Uttar Pradesh. Lead Paper in *National Workshop on "Doubling farmers' income through innovative technology, diversification and reduction in cost of cultivation" Jointly organised by U.P. Chapter Soi conservation society of India, New Delhi & Alumni Association & dept. of soil conservation and water management, CSAUAT, Kanpur. 2018. (P35-38).*
- US Gautam, SK Dubey, Atar Singh, Rajeev Singh and Maneesh Singh. 2018. Appropriate IFS module for various agro-ecological zones of Uttar Pradesh. Lead Paper presented in the ISEE National Seminar held from December, 5-7 at Kolkota, P:25-30. *Patna Dec. lead paper*
- Atar Singh, U.S. Gautam, Atar Singh, S.K. Dubey, Rajbir Singh, S.S. Singh, A.K. Tripathi, Shrinath Dixit, Anupam Mishra, Y.G. Prasad, Lakhan Singh, S.K. Singh, V.P. Chahal, B.C. Deka & Avanish Kumar Singh. 2018. Lead Paper on Extension strategy for enhancing pulses production and nutritional security in India. 1st Indo-Asian Conference on "Innovative Approaches in Applied Sciences & Technologies" organized by Nong Lam University, Hochi Minh City – Vietnam. June 13-17, 2018 (P. 94-95).

8.6.4 Book Chapters

- Dubey, SK; RR Burman; JP Sharma; K Vijayaraghvan;V. Sangeetha; Sujit Sarkar and Ishwari Singh. 2019. Institute-Post office Linkage as an Alternate Technology Dissemination Model for Indian Farmers. In: Extension Approaches for Agricultural Development by YD Mishra, Shobhna Gupta and MM Patel, Biotech Publisher, New Delhi, 31-57.
- Malik, Netrapal, SK Dubey and YD Mishra. 2019. Community wall magazine: A participatory

mechanism for establishing dialogue at grass root level. In: Extension Approaches for Agricultural Development by YD Mishra, Shobhna Gupta and MM Patel, Biotech Publisher, New Delhi, 93-106.

8.6.5 Popular Article

- Atar Singh, SK Dubey, Shankar Singh and SN Yemul. 2019. *Neem coated Urea ne badli kheti ki disha*. Prasar Doot, March, P:10-14.
- साधना पाण्डेय, अतर सिंह, एस.के. दुबे एवं मनीश कुमार सिंह, 2019. गाय एवं भैस के नवजात बच्चों की उचित देखभाल कैसे करें, कृषक दूत, मार्च 19–25, 2019 पृष्ठ 10.
- साधना पाण्डेय, अतर सिंह, एस.के. दुबे एवं राजीव सिंह. 2019. मूंगफली डिकोरटिकेटरः ग्रामीण महिलाओं हेतु एक उन्नत यन्त्र, कृषक दूत, मार्च 26 – अप्रैल 1, 2018 पृष्ठ 6 एवं 13ण

8.6.6 News letter

- U.S. Gautam, Atar Siingh, S.K. Dubey & S.N. Yemul (2018). News Letter ICAR-ATARI, Kanpur published by ICAR-ATARI, Zone-III, Kanpur (U.P.). Volume-XI, pp 1-8.
- U.S. Gautam, Atar Siingh, S.K. Dubey, Sadhna Pandey & S.N. Yemul (2018). News Letter ICAR-ATARI, Kanpur published by ICAR-ATARI, Zone-III, Kanpur (U.P.). Volume-XII, pp 1-12.
- Atar Siingh, S.K. Dubey, Sadhna Pandey & S.N. Yemul (2019). News Letter ICAR-ATARI, Kanpur published by ICAR-ATARI, Zone-III, Kanpur (U.P.). Volume-XIII, pp 1-12.
- Atar Siingh, S.K. Dubey, Sadhna Pandey & S.N. Yemul (2019). News Letter ICAR-ATARI, Kanpur published by ICAR-ATARI, Zone-III, Kanpur (U.P.). Volume-XIV, pp 1-12.

8.6.7 Technical Reports

- U.S. Gautam, Atar Singh, S.K. Dubey and S.N. Yemul (2017-18). Annual Progress Report of KVKs Published by ICAR-ATARI, Kanpur.
- Proceedings of Annual Zonal Workshop of KVKs (1), Mid-Term Review Workshop (3).
- Annual Action Plan 2019-20 of KVKs of Uttar Pradesh.
- U. S. Gautam, Atar Singh, S. K. Dubey and Rajeev Singh (2017-18). Annual Progress Report – 2017-18 on NICRA.

8.7 Awards & Recognition

- Innovative farmer Shri Raghupat Singh, District Moradabad (U.P.) awarded Pandit Deendayal Upadhyay Antyodaya Krishi Puraskar 2017 (National award)
- Shri Agya Ram Verma, District Basti (U.P.) awarded Jagjivan Ram Abhinave Kisan Puraskar-2017 (National award)
- Shri Ramesh Verma, District Lucknow (U.P.) awarded Pandit Deendayal Upadhyay Antyodaya Krishi Puraskar 2017 (Zonal award)

8.8 Linkages and Coordination

- Fodder development programme initiated in collaboration with IGFRI, Jhansi.
- Linkage with CRIDA, Hyderabad for promoting climate resilient technologies in 11 districts of U.P.
- IIVR, Varanasi for providing suitable technologies for vegetable production.
- Senior level interactions and meetings organized with line department officials for better convergence & linkage.
- Linkage with National Rain fed Area Authority for development of Bundelkhand region.
- Linkage with MANAGE Hyderabad for Agri-business &Agri Clinic Scheme & also knowledge up gradation of KVK staff in ICT.
- Interface on KVK-ATMA linkage held at State level with Principal Secretary Agriculture & Director Agriculture for effective linkage.
- SAUs (SVBPUAT, CSAUAT, NDUAT& BUAT) linked for technological backstopping to KVKs of Uttar Pradesh

Chapter-9

SPECIAL PROGRAMMES, PROJECTS & ATARI EVENTS

9.1 Special Programmes

Pre Rabi and Pre Kharif Meetings:

61 KrishiVigyanKendras have been selected for this program under ICAR- ATARI, Kanpur, Zone -3, In pre kharif and pre rabi meetings, information about the seeds of new varieties and improved technologiesspecially recommended for the farmers of that district is provided by the scientists.This meeting is organized in the presence of the regional representative honorable Member of Parliament. Improved seeds and other inputs are provided to the farmers in the program and participation of a large number of farmers is ensured.

Pradhanmantri Fasal Beema Yojna

This scheme aims to provide financial assistance to the farmers by making insurance coverage on the natural damage of notified crops. For the purpose of stabilizing the income of the farmers, 61 Krishi Vigyan Kendras of zones -3 have been selected. In this programme, awareness regarding this insurance scheme is created among large number of farmers through the exhibition in the presence of local regional MPs, MLAs and other public representatives. Online program of 68 Krishi Vigyan Kendras was seen and heard

Participants participating in the program

Item	Number
Female	2503
Male	9643
Total	12146

NICRA Project (13 KVKs)

Climate change, untimely rain, drought, hot winds, other natural calamities, technologies developed for hilly areas at village level,

custom hiring facility of agricultural implements for farmers' groups, better use of natural resources, providing green fodder through round the year fodder production for making animal husbandry beneficial,

promotion and dissemination of improved technologies and to improve farmers' livelihood by making the crop production beneficial.

Programme	Number/Area	Beneficiaries
NRM (Demo)	168.55	266
Crop production	638.96	2502
Livestock	816	2767
Training	-	2775
Extension Activities	128	4963

ARYA project (09 KVKs)

This is an ambitious scheme for youth of 35 years of age to attract them in agriculture and make them employable and to prevent migrations from villages to cities.

Selected district	Target	Business
Muzaffarnagar, Varanasi, Gorakhpur, Kaushambi, Pratapgarh, Saharanpur, Deoria, Basti, Ghajipur	750 Training of rural youth	Vermi compost, nursery production, goat farming, mushrooms, beekeeping, broiler rearing, quality seed production, plating material, farm machinery bank
59 Unit established	59 Families benefited	
Capacity Building	4 Programmes	
Exposure visits	4 Programmes	

Farmer First

In order to improve agricultural productivity and livelihood of small and marginal farmers, ICAR has started the scheme in its selected research institutes. Under this scheme, work is done in the risk prone areas to increase production and productivity and reduce the losses in agriculture with the help of agricultural scientists.

Item	Demon. (Nos.)	Beneficiaries
Natural Resource Conservation / Crop Production	14996	30400
Horticulture based model	1015	9780
Animal husbandry based model	4265	Animals No.: 54711, Families: 13303
Integrated agricultural system model	427	1876
Extension Activities	553	30700

National Initiatives for Fodder Technology Demonstration

In this project, in order to ensure the availability of green fodder and concentrateto provide nutritious and balanced ration for the livestock, technologies related to fodder production, conservation, storage and use of fodder are being disseminated at village level and farmers are being assisted to make animal husbandry a profitable venture.

Cereal System Initiative for South Asia

This project was started in the year 2009. The scheme aims to benefit 8 crore farmers.By 2020, this project is being operated by International Corn and Wheat Improvement Centre and joint efforts of International Food Policy and International Rice Research Institute.Kushinagar, Ghazipur, Gorakhpur, Deoria, Ballia, Maharajganj, Mau and Siddharthnagar districts of Atari Kanpur, zone -3 have been selected.

Programme	Area/Number	Selected District
Plantation by paddy unpulling	164	Kushinagar Deoria Gorakhpur Siddharth Nagar Maharajganj Mau Gazipur Ballia
D.S.R	128	
Laser leveler	58	
Training		
KisanMela	30	
Seminar	50	
Seed prodn. (PBW 550Wheat)	23	

Mera Gaon Mera Gaurav

Under this scheme, every scientist / scientist group has to select 1 village and transfer all the agricultural technologies to the farmer. Under ICAR-ATARI, Kanpur, Zone-3, ICAR-IISR Lucknow, CISH Lucknow, CS.S.R. Lucknow, SHIATS Allahabad, B.H.U. Varanasi, PDDSR Mau, I.I.P.R. Kanpur, CAFRI Jhansi, I.G.F.R.I. Jhansi, BPKS Almora, IISWCRT Agra, CARI Bareilly, IVRI Bareilly, DCRAV Bhimtal, IISWC Dehradun and NBAIM Maunath Bhanjanare participating in the said scheme

Total Visits	18560
Internal meeting	17750
Consultancy	4505
Linkage with other organizations	255
Information about new Varieties	476
Distribution of bio products and pesticides	650

TSP

This scheme is being run for tribal upliftment in Tribal dominated districts, in which under zones – 3, 4 districts have been selected. In order to create awareness among farmers, various programme like Frontline demonstrations, on farm trails, farmers' training, seed production, planting material production, capacity building and extension activities are being organised by KVKs. Major goal of this programme is to improve the livelihood of tribal farmers.

Item	Contribution
Experimental farm	22
Frontline demonstrations	70
Farmers' training	455
Extension functionaries' training	15
Extension Activities	95
Seed production (q)	278
Planting Material	4700

Sankalp Se Siddhi Karyakrm: (Organized at all KrishiVigyan Kendra)

This programme is for doubling farmers' income by 2022 is being implemented in all Krishi Vigyan Kendras for making attempts in the direction of creating awareness, technology dissemination and doubling farmers' income. Keeping this in view, further various programmes will be implemented.

Participants	Number
Farmer	45901
Service workers	1941
M.P. (Member of Parliament)	39
Minister of State (center)	13
Minister of State (state)	7
M.L.A. (Member of Legislative Assembly)	39
District Panchayat President	11
District Magistrate	6
Bank officer	107
State officer	1778
Television coverage	41

Seed hub Programme (08 KVKs)

For the purpose of maintaining self-sufficiency in seeds, ICAR has initiated for preparation of seed hubs of pulses and oilseeds, so that seed of novel varieties may be produced at agricultural farm and farmers field and processed under the supervision of scientists and will be made available at the appropriate cost. This scheme is very much beneficial in providing prices to the farmers more than market price or MSP along with bonus on the purchase of their seeds and making it available after processing. Each KVK has been provided with revolving fund of Rs. One crore and funds for establishing seed processing plant by the Central Government. Under this scheme, KVKs of Deoria, Banaras, Jalaun, Chitrakoot, Lalitpur, Mahoba, Fatehpur and Mirzapur districts have been selected.

Season	Crop	Quantity of seed (Q)
Kharif	Green gram	10.50
	Black gram	258.20
	Pigeon pea	40.00

Rabi	Gram	477.50
	Field pea	720
	Lentil	190.55
Zaid	Black gram	178.65
	Total	**1875.90**

Swachchh Bharat abhiyaan (23 KVK)

Swachh Bharat Abhiyan is being organised every Saturday in all KVKs and ICAR-ATARI, Kanpur,under which awareness regarding cleanliness is being created among common publicso that they can understand their responsibility towards cleanliness.

Items	No of Programmes	Participation
Toilet Maintenance	14	61
Road, drain, cleaning	43	19
Garbage disposal	13	4
Door to door Awareness	15	43
Awareness campaign	27	57
Nookkad Drama	2	5
School Rally	7	5
Writing painting slogans	10	5
Composting	13	32

Crop Residue Management (23 KVKs)

Under this scheme, to protect the environment from pollution, microbial flora and fauna of the soil and carbon deterioration by burning paddy, straw and husk especially in paddy and wheat growing areas, the residues are suppressed with the help of high-tech agricultural equipments and mixed in the field so that productivity of farm land may be improved and environment may be protected from the pollution. Under this programme improved farm machineries like Happy Seeder (20), Chopper (40), Sub Master (20), M B Plough (30), Zero Till(20) were purchased. Also demonstrations (500), trainings (67), kisan melas (5), farmer scientist interactions (62), Adopted village (27) were organized by 23 KVKs.

Programme and Number

Happy seeder(20), Chopper (40), Sub Master (20), M B Plough (30), Zero Till(20), Demonstration (500), Training (67), KisanMela(5), Farmer Scientist Interaction (62), Adopted village (27)

Inspirational District Scheme

Some districts have been selected under zone-3 to promote organic farming by promoting vermi and nadep units on large scale. Sufficient budget has been allotted to KVKs for providing trainings, seeds and plants of vegetables and fruits to enhance their income. Under this project, a total of 8 KVKs, Sonbhadra, Fatehpur, Chitrakoot, Siddhartha nagar, Balrampur, Chandauli, Bahraich and Shravasti have been selected.

Training	Session No.: 332, Number of Farmers: 23418, Officers / Staff: 515
Seed and Plant Distribution	Program Number: 125, Seed Distribution: 11672.5 q, Plant No.: 0.63, Biological Products: 16700, Number of Farmers: 18000, Officer / Staff: 510, Program Number: 125
Animal husbandry & fish Distribution programme	Vaccination: 64395, medicine for control of parasite: 1331, Distribution of Mineral mixture15728, Number of Farmers: 39050, Officers / Employees: (296)

NARI Programme (Nutrition-sensitive Agricultural Resources and Innovation)

ICAR-ATARI has started NARI programme in all KVKs for empowerment of women farmers. Under this project, various programs to encourage women farmers to make significant contributions to agriculture will be conducted.

VATICA Programme (Value Addition and Technology Incubation Center in Agriculture)

The major objective of *VATICA* is to provide a sustainable model to promote post-harvest management of farm produce so that farm level losses may be minimized, farmers may be saved from huge economic losses and agriculture may become a profitable venture. Presently the prpgramme is being implementednted by 3 KVKs ie. KVK Varanasi, Bareilly and Shahjahanpur.

KSHAMTA (Knowledge Systems and Home Based Agricultural Management in Tribal Areas)

In the year 2019-20, this programme will be implemented by KVKS in 125 districts where tribal population is more than 25%. livelihood resources will be developed in these areas. Demonstrations and trainings will be organised in aspects like livestock and fisheries. The indigenous knowledge system, sustainable production system and eco friendly scientific technologies will be developed .

ASCI Programme (Agriculture Skill Council of India) (36 KVK)

Under this program, skill based training is being provided to farmers by registered trainers of KVKs. So that they can establish and set up their own business. This is an ambitious plan, is being run by ICAR-ATARI Zone -3 to prevent the migration from the villages to the cities and to provide employment opportunities.

Related Business: Vermicompost, Dairy farming, Mushroomfarming,Beekeeping,Poultrymmechanization, Forest nursery, Quality seed production etc.

DAMU Project

This project is being implemented by setting up of weather stations in 17 KVKs, a scientist will be separately

appointed for running this station. Farmers of the district will get appropriate information, so that they will take care about their crops accordingly. This will enhance their income and protect their crops from severe losses.

KVKs under DAMU project

Host	Name of KVKs
ICAR (2)	Bhadoi, Kushinagar
NDUAT (7)	Sonbhadra, Gorakhpur, Jaunpur, Azamgarh, Sidharthnagar, Balrampur, Chandauli
CSAU&T (3)	Kannauj, Fatehpur, Mainpuri
SVPUAT (3)	Bulandshahr, Shahjahanpur, Baghpat
NGO(2)	Chitrakoot, Ghazipur

Cluster Frontline Demonstrations

Under Zone-3, cluster frontline demonstrations are being conducted by all the KVKs in rabi, kharif and zaid.

The purpose of demonstrations is to attain self-sufficiency in the production of pulses and oilseeds, to increase the yield of pulses and oilseeds, 1 demonstration is of 04 ha area and Rs 8000- 9000/ ha is being provided to each farmer for upto 8 ha land to invest on pulses and oilseed production. Varieties of more than 10 years will not be used in the demonstrations. One cluster should not be less than 10 ha. 10 percent funds have been allocated for monitoring purposes. Demonstrations of improved varieties are being organized with the help of field days and farmers' training. The results of previous years are very encouraging. A significant improvement in the production of pulses and oilseeds has been recorded from this scheme in the whole country.

Cluster Frontline Demonstrations Pulses and oilseeds

Name of demonstrations	Demonstrations Number	Area (ha)
Pulses	9977	3302.26
Oilseeds	5895	2209.00

9.3 ATARI's Events

Live interaction of Hon'ble PM with farmers on 20.06.2018

Visit of Hon'ble Sushri Uma Bharati, Minister of Drinking Water and Sanitation at KVK Lalitpur

Celebration of 4th International Day of Yoga at ICAR-ATARI, Kanpur on 21.06.2018

Organised Annual Zonal workshop of KVKs during 23-24 August, 2018.

Celebration of Independent Day on 15.08.2018

Organised one day training programme on Open Data Kit (ODK) on 12.09.2018

Monitoring of cabinet minister Shri V.K. Singh at KVK Muzaffarnagar on 28.07.2018

Training on Administrative & Financial Rules awareness at IIPR, Kanpur during 26-28 September, 2018 at ICAR-IIPR, Kanpur

Swachhta Hi Sewa (SHS) Diwas during *15-25 September, 2018.*

Workshop on CFLD Pulses/Oilseed & Pulses Seed Hub organized at BUAT, Banda During 9-10 October 2018

Mid Term Workshop organized at NDUAT, Ayodhya during 30 Nov-1 Dec., 2018

Mrs. Kratika Sharma, Asstt. Transferred to ICAR-SBI, Coimbatore

Capacity Building of KVK Professionals for Sustainable Development" organized at ICAR-ATARI, Kanpur during 11-12 December 2018

Programme on Training of Trainers (TOT) held during 17-19 Dec., 2018, jointly organized by ICAR-ATARI, Kanpur & ASCI, New Delhi

KVK Portal Interaction Meeting organized by ICAR-ATARI, Kanpur on 17 December 2018

Participation of ATARI staff in North Zone Sports Event at HAU, Hisar during 14-16 Nov., 2018

Shri S.N. Yemul, CTO participated in two days Nodal Officer workshop on Krishi Portal at, New Delhi

Organised workshop on "VATICA" on 27.12.2018

ZPMC organized the zonal level review Workshop of Farmer FIRST project during 18-19, January 2019

Organized International Women Day on 8.3.2019

Celebrated Institute Foundation Day on 19.03.2019

Purvanchal Krishi Mela and Pradarshani organized at KVK Gorakhpur-II during 2-3 March, 2019

PM Kisan Samman Nidhi Program organised at ICAR-IISR, Lucknow on 24.02.2019

Organized Workshop on "Jaivik Corridor" at KVK Hamirpur on 2.2.2019

Organized Pre Rabi Kisan Sammelan at KVK Kanpur Dehat on 18 January, 2019

Training on PFMS organized at ICAR-IIVR Varanasi during 14-15 February, 2019.

Launching workshop of project Impact Assessment of CFLD of Pulses on 19.02.2019

Celebration of 70th Republic Day

Chapter-10

INFRASTRUCTURE, STATUS OF STAFF & BUDGET

10.1 Instructure facilities

Most of KVKs are having their own infrastructure facilities, in Uttar Pradesh availability of infrastrucre are admin building (66), farmers hostel (59), staff quarters (59), soil testing labs (47), rain water harvesting structure (4), demo unit-1 (59), demo unit-2 (34), demo unit-3 (47) and others jeep (68), motor cycle (41), tractor (66). Physical status of infrastructure facilities at a glance are shown in following Table 10.1.

Table 10.1: Physical status of infrastructure at a glance

Insfra-structure	Name of Host and their KVKs							
	CSA-UAT, Kan-pur (13)	BUAT, Ban-da (6)	NDU-AT, Ayod-hya (23)	SVP UAT, Mee-rut (19)	ICAR KVKs (6)	NGO KVKs (13)	Edu. KVKs (3)	To-tal (83)
Admn. building	12	6	16	12	5	12	3	**66**
Farmers Hostel	10	2	16	13	4	11	3	**59**
Staff Quarter	11	5	16	13	3	9	2	**59**
Soil Testing Lab.	5	2	16	10	2	9	3	**47**
Rain Water Har-vesting Structure	0	0	0	1	0	3	0	**4**
Demo Unit-1 (Live-stock related)	12	3	15	2	3	22	2	**59**
Demo Unit-2 (Horti-culture/ Poly House Related)	2	3	6	9	1	11	2	**34**
Demo Unit-3 (Vermi Comp./ Mush-room U./ Others)	9	5	12	12	2	5	2	**47**
Jeep	11	6	23	11	4	10	3	**68**
Motor Cycle	3	1	10	12	2	10	3	**41**
Tractor	12	5	17	12	5	12	3	**66**

10.2 Status of staff position in ICAR-ATARI, Kanpur

ICAR-ATARI, Kanpur have filled up 12 staff personnel out of total 21 vacancies. There are still 5 positions of Scientific (1 PS, 2 Sr. Scientist, 2 Scientist), 3 positions of administrative and 1 supporting staff are lying vacant. Position wise details are given in following Table 10.2.

Table 10.2: Status of staff position in ICAR-ATARI, Kanpur

Sr. No.	Positions	Filled	Vacant
1	RMP	0	1
2	Principal Scientist	3	1
3	Sr. Scientist	0	1
4	Scientist	0	1
5	Technical	2	0
6	Administrative	5	4
7	Supporting	1	1
	Total	**11**	**9**

Details of ICAR-ATARI, Kanpur staff

Scientific Staff	1. Dr. Atar Singh, Director (Acting) 2. Dr. Shantanu Kumar Dubey, Principal Scientist (AgrilExtn.)
Technical Staff	1. Mr. Yemul Sanjeev N., Chief Technical Officer 2. Mr. Pramod Kumar Rai, Sr. Technical Asstt. (Driver)
Administrative Staff	1. Mr. Kanta Prasad, Asstt. Finance & Accounts Officer 2. Mr. Ram Bodh Verma, Asstt. Administrative Officer 3. Mr. S.N. Singh, Personal Assistant 4. Mr. Raman Tripathi, U.D.C. 5. Mr. Sunil Kumar Singh, L.D.C. 6. Mr. Shravan Kumar Yadav, L.D.C.
Supporting Staff	1. Mr. BalKishun, Skill Supporting Staff

10.3 Status of staff position in KVKs of Uttar Pradesh

Out of total sanctioned post (1329), KVKs have filled 904 posts including Head (60),Scientist(343), Programme Asstt. (160), Administrative (112), Auxiliary(108), Supporting (121). Filled positions are 68.02 % and vacant

post lying as 31.97 %. Category wise staff positions are given in Table 10.3 and host wise status of staff position is given in Table 10.4.

Table 10.3: KVK staff Position at a glance

Category	Sanctioned	Filled	Vacant
Head	83	60	23
Scientist	498	343	155
Programme Asstt	249	160	89
Administrative	167	112	55
Auxiliary	166	108	58
Supporing	166	121	45
Total	**1329**	**904**	**425**
	Total % filled	**68.02 %**	**31.97 %**

Table 10.4: Host wise status of staff position in KVKs

Host Institutions	TOTAL			%
	Sanctioned	Filled	Vacant	of filled
NDUAT, Faizbad	368	223	145	60.60
CSAUAT, Kanpur	209	154	55	73.68
BAUT, Banda	96	78	18	81.25
SVBPUAT, Meerut	304	166	138	54.61
ICAR KVKs	96	53	43	55.21
NGO KVKs	208	187	21	89.90
Educational KVKs	48	43	5	89.58
Total	**1329**	**904**	**425**	**72.12 %**

10.5 Status of Budget

During the financial year 2018-19, an amount of Rs. 10302.77 lakh was utilized/released against the allotted budget of Rs.10304.64 lakh.

Table 10.5.1 : Head wise allocation funds for ICAR-ATARI and KVKs of Uttar Pradesh (Zone-III) for 2018-19

(Rs in lakh)

S.No.	Heads	ATARI	KVK	DE	Total
A	**Revenue**				
i)	Pay & Allowances	175.00	8228.57	0.00	8403.57
ii)	Pension	27.50	0.00	0.00	27.50
iii)	T.A.	8.90	78.60	2.10	89.60
iv)	H.R.D.	5.00	23.60	3.50	32.10
v)	Contingency	70.00	379.53	19.90	469.43
	Total (A)	**286.40**	**8710.30**	**25.50**	**9022.20**
B	**Capital**				
i)	Furniture/Equipment	20.00	64.60	0.00	84.60
ii)	Works	0.00	362.84	0.00	362.84
iii)	Library	0.00	0.00	0.00	0.00
iv)	Vehicle	0.00	192.00	0.00	192.00
	Total (B)	**20.00**	**619.44**	**0.00**	**639.44**
C	**Revolving Fund**	0.00	39.00	0.00	39.00
D	**TSP - Capital**	0.00	110.10	0.00	110.10
	TSP - General	0.00	39.90	0.00	39.90
E	**SCSP - Capital**	0.00	206.00	0.00	206.00
	SCSP - General	0.00	248.00	0.00	248.00
	Total (A+B+C+D)	**306.40**	**9972.74**	**25.50**	**10304.64**

Table 10.5.2: Actual Expenditure/Release for 2018-19

(Rs in lakh)

S.No.	Heads	ATARI	KVK	DE	Total
A	**Revenue**				
i)	Pay & Allowances	173.82	8228.57	0.00	8402.39
ii)	Pension	25.55	0.00	0.00	25.55
iii)	T.A.	8.90	78.60	2.10	89.60
iv)	H.R.D.	4.49	23.60	3.50	31.59
v)	Contingency	76.59	376.53	19.90	473.02
	Total (A)	**289.35**	**8707.30**	**25.50**	**9022.15**
B	**Capital**				
i)	Furniture/Equip-ment	18.18	64.60	0.00	82.78
ii)	Works	0.00	362.84	0.00	362.84
iii)	Library	0.00	0.00	0.00	0.00
iv)	Vehicle	0.00	192.00	0.00	192.00
	Total (B)	**18.18**	**619.44**	**0.00**	**637.62**
C	**Revolving Fund**	0.00	39.00	0.00	39.00
D	**TSP - Capital**	0.00	110.10	0.00	110.10
	TSP - General	0.00	39.90	0.00	39.90
E	**SCSP - Capital**	0.00	206.00	0.00	206.00
	SCSP - General	0.00	248.00	0.00	248.00
	Total (A+B+C+D)	**307.53**	**9969.74**	**25.50**	**10302.77**

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