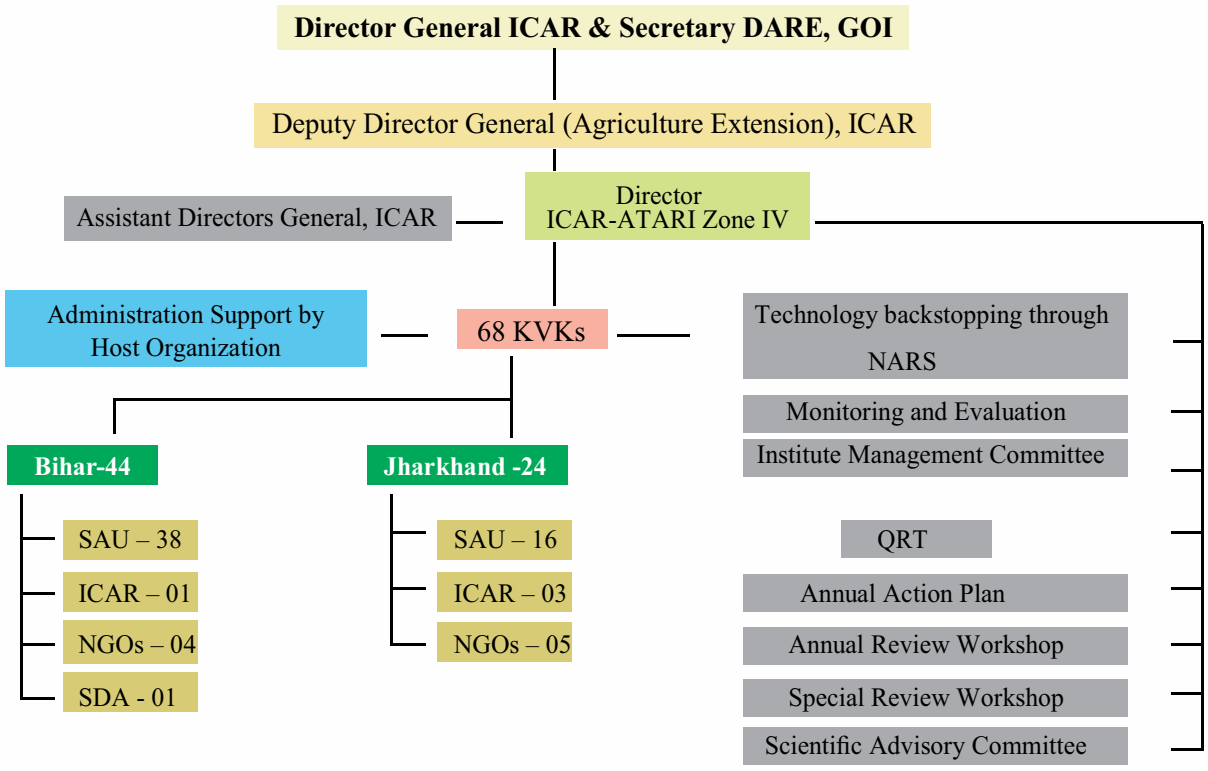
1. ORGANIZATIONAL STRUCTURE AND STAFF POSITION

Division of Agricultural Extension of Indian Council of Agricultural Research (ICAR) is monitoring the activities of 722Krishi Vigyan Kendras spread across the country in different states and union territories. Deputy Director General (AE) looks after the administrative, financial and overall functioning of KVKs. The Division of Agricultural Extension of ICAR is supported by eleven erstwhile Agricultural Technology Application Research Institutes (ATARIs), previously known as Zonal Project Directorates (ZPDs). ATARIs are monitoring theactivities of KVKs in their Zone at State and District level. ICAR–ATARI Patna is among the eleven (11) ATARIs of the country which was established in 2017,for monitoring activities of 68 Krishi Vigyan Kendras (KVKs) of Bihar and Jharkhand. ICAR-ATARI Patna falls under Zone-IV and its office is located in the campus of Central Potato Research Station, P.O. Sahaynagar, Patna, Bihar- 801506,



Organizational Structure of ICAR-ATARI, Patna

1.1 PROFILE:

The Division of Agricultural Extension is headed by Deputy Director General (AE) under Director General, DARE, ICAR, New Delhi and has ICAR-ATARIs and KVKs at Zonal and district level, respectively.

1.2 BUDGET PROVISION:

Among the most important activities of ICAR-ATARI Patna, decision on financial matters is taken based on assessment of the submitted budget requirement, placing demand for fund, receiving funds and subsequent releasing of fund. During the FY 2020-21 a sum of Rs. 8462.31 Lakh was released to this Institute from ICAR HQ. Accordingly, funds were allocated for 68 KVKs and 4 Directorates of Extension Education (DEE) of the SAUs of this Zone. During the year 2020-21, a sum of Rs. 8276.29 Lakh has been provided to the KVKs including DEEs in different states as per detail below (Table 1).

Table 1: Revised Estimate of ICAR-ATAR & KVKs under Zone- IV during 2020-21

DEE/ICAR/ University	Salary	General				Capital				Grand Total
		Main	TSP	SCSP	Total	Main	TSP	SCSP	Total	
ATARI, Patna	60.12	21.52	0.00	0.00	21.52	65.93	0.00	0.00	65.93	147.57
BAU, Sabour	2352.75	246.51	15.95	7.84	270.30	21.00	14.00	5.10	40.10	2663.14
DRPCAU, Pusa	1462.90	163.36	5.15	3.40	171.91	267.91	6.00	2.47	276.38	1911.19
BASU, Patna	115.00	9.27	5.15	0.20	14.62	0.00	6.00	0.20	6.20	135.83
BAU, Ranchi	881.86	126.33	88.15	4.34	218.82	0.00	96.00	2.72	98.72	1199.40
NGO, Bihar	788.93	65.38	0.00	1.48	66.86	0.00	0.00	1.04	1.04	856.83
NGO, Jharkhand	980.60	53.70	27.70	0.74	82.14	0.00	29.00	0.50	29.50	1092.24
ICAR-RCER, Patna	155.43	18.00	5.15	0.70	23.85	65.38	5.75	0.50	71.63	250.90
ICAR-CRRI Cuttack	79.20	7.28	0.00	0.30	7.58	0.00	0.00	0.47	0.47	87.25
ICAR-IINRG, Ranchi	16.12	4.60	2.75	0.00	7.35	48.79	7.25	0.00	56.04	79.51
Grand Total	**6892.91**	**715.95**	**150.00**	**19.00**	**884.95**	**469.00**	**164.00**	**13.00**	**646.00**	**8423.86**
ATARI RE 2020-21	98.52	21.57	0.00	0.00	21.57	65.93	0.00	0.00	65.93	186.02
KVKs RE 2020-21	6832.79	694.43	150.00	19.00	863.43	403.08	164.00	13.00	580.08	8276.29
Total RE 2020-21	**6931.31**	**716.00**	**150.00**	**19.00**	**885.00**	**469.00**	**164.00**	**13.00**	**646.00**	**8462.31**

2. ABOUT KRISHI VIGYAN KENDRA

KVKs, spreading over 741districts of the country, is an organization at district level to organize frontline extension activities. It aims at technology assessment and refinement system,dissemination of technology generated by the Universities/Research Institutes, supply of critical inputs and reaching out to the farmers with solutions of their different farming problems. KVKs also provides technological backstopping to different State and Central Government Agencies

involved in Agricultural Research, Development and Extension, in addition, to implementing several schemes of Central and State Government at district level. Recently, KVKs have been entrusted with implementation of several National Flagship Programs, viz., Cluster Front Line Demonstration (CFLD) on Pulses and Oilseeds, Seed Hub, Soil Health Card, Attracting and Retaining Youth in Agriculture (ARYA), National Innovations in Climate Resilient Agriculture-Technology Demonstration Component (NICRA-TDC), Swachh Bharat Abhiyan, Tribal Sub Plan (TSP), Gramin Krishi Mausam Sewa, Skill Development in Agriculture, New Extension Methodology in Agriculture (NEMA) and many others.

2.1 STATE-WISE DISTRIBUTION OF KVK:

During 2020-21, under ICAR-ATARI, Patna a total 68 KVKs of Bihar (44) and Jharkhand (24) are working in two states of eastern India. Host organization-wise distribution showed 53 KVKs under SAU and CAU; 4 under ICAR; 9 under NGOs; 1 under State Government undertaking, as detailed below in the following Table 2.

Table 2: State wise status of Krishi Vigyan Kendras

Name of states	No. of districts	No of KVKs						Total
		SAU	CAU	ICAR	NGO	SDA	DU	
Bihar	39	22	16	01	04	01	00	44
Jharkhand	24	16	-	03	05	00	00	24
Total	63	38	16	04	09	01	00	68

ICAR – Indian Council of Agricultural Research, SAU – State Agricultural University, CAU- Central Agricultural University, NGO– Non-Governmental Organization, SDA- State Department of Agriculture

Table 3: Host organization wise status of Krishi Vigyan Kendras

Sl. No.	State/UT	Host Institutions	Total
1.	**Bihar (44)**	Dr Rajendra Prasad Central Agricultural University, Pusa, Samastipur	16
		Bihar Agricultural University, Sabour, Bhagalpur	21
		Bihar Animal Science University, Patna	1
		ICAR Research Complex for Eastern Region, Patna (Buxar)	1
		Sone Command Area Development Agency, (SDA) Bhojpur*	1
		Vanavasi Seva Kendra, Bhabhua, Kaimur (NGO)	1
		S.K. Chaudhary Educational Trust, Madhubani (NGO)	1
		Gram Nirman Mandal, Nawada (NGO)	1
		Samata Seva Kendra, Sitamarhi (NGO)	1
	Sub Total (A)		**44**
2	**Jharkhand (24)**	Birsa Agricultural University, Kanke, Ranchi	16
		Central Rice Research Institute, (ICAR) Cuttack, Koderma	1
		Indian Institute of Resins and Gum, Namkum, Ranchi	1
		ICAR Research Complex for Eastern Region, Patna, Ramgarh	1
		Ram Krishna Mission Ashram, Ranchi (NGO)	1
		Holy Cross, Hazaribag (NGO)	1
		Vikas Bharati, Gumla (NGO)	1

		Santhal Paharia, Deoghar (NGO)*	1
		Garmin Vikas Trust, Godda (NGO)	1
	Sub Total (B)		**24**
Total (A+B)			**68**

* Presently under State administration.

2.2 GENESIS OF KRISHI VIGYAN KENDRA:

ICAR in 1973 appointed Dr. Mohan Singh Mehta Committee and on the recommendation of the Committee 1st KVK was established in the year 1974 at Pondicherry under Tamil Nadu Agricultural University. Then on approval of Planning Commission, GoI different KVKs were established during different plans leading to an increase in number of KVKs to 722 at present. During VthFive Year Plan 18 KVKs were established, 12 KVKs opened during 1979, 14 during 1981 and 44 KVKs during VIthFive Year Plan were also started. Thus at the end of VIthPlan 89 KVKs including KVKs of Bihar and Jharkhand started functioning under Zone II, Kolkata. Further, in 2018 reshuffling of zones weremade by ICAR and the new zone (Zone IV, ICAR-ATARI Patna) comprising KVKs of Bihar and Jharkhand was established with a total 63 KVKs of Bihar and Jharkhand. Success of the KVKs in the field of TechnologyAssessment, Demonstration and its Application resulted in declaration of one or more KVK in each district by the Prime Minister's Independence Day Speech on 15thAugust, 2015. Indian Council of Agricultural Research established 722 KVKs across the country till the end of year 2020. Under ICAR- ATARI, Patna jurisdiction of Bihar and Jharkhand, 68 KVKs has been established and are operating.

2.3 MANDATE:

The mandate of KVK is to assess, demonstrate and apply technologies/products to cater the needs of farming community, extension personnel and other stakeholders in the district. In order to accomplish this aim, KVKs carry out the following activities:

ü Conduct on-farm trials (OFTs) to identify the location specific agricultural technologies under various farming systems.

ü Organize frontline demonstrations (FLDs) to establish production potential of various crops and enterprises in the farmers' fields.

ü Organize need based training for farmers to update their knowledge and skills on modern agricultural technologies and provide training to extension personnel to orient them in the frontier areas of technology development.

ü Create awareness about improved agricultural technologies among various clientele groups through appropriate extension programmes.

ü Produce quality seeds, planting materials, livestock breeds, animal products, bio-products etc. as per the demand and supply the same to different clienteles.

Work as knowledge and resource centre of agricultural technologies to support the initiatives of public, private and voluntary sectors for improving the agricultural economy of the district

2.4 MANPOWER:

Each KVK has a sanctioned staff strength of 16 which include 01- Senior Scientist and Head; 06- Subject Matter Specialists; 03- Programme Assistants; 02- Administrative Staff, 02- Drivers and 02- Supporting

Staff. Accordingly, the total sanctioned staff for 68 KVKs of Zone IV is 1088,out of which 612 (56.25per cent) are in position. Details of state wise and category wise staff strength of KVKs are furnished in the following table:

Table 4: Staff position in KVK during 2021-22

Staff Position	Bihar	Jharkhand	Zone IV
Senior Scientist & Head	37	07	68
Subject Matter Specialist	153	97	408
Program Assistant	79	35	204
Others	145	45	408
Total	**414**	**184**	**1088**

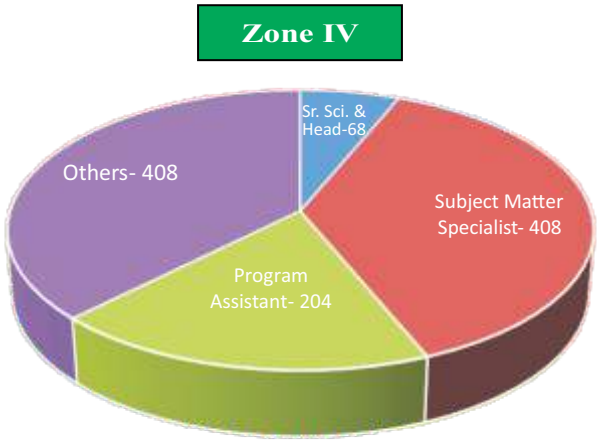
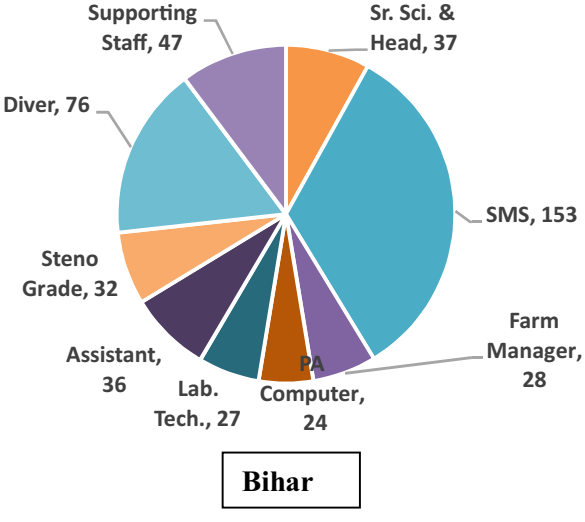


Fig 1: Filled up position in different staff categories in Zone IV



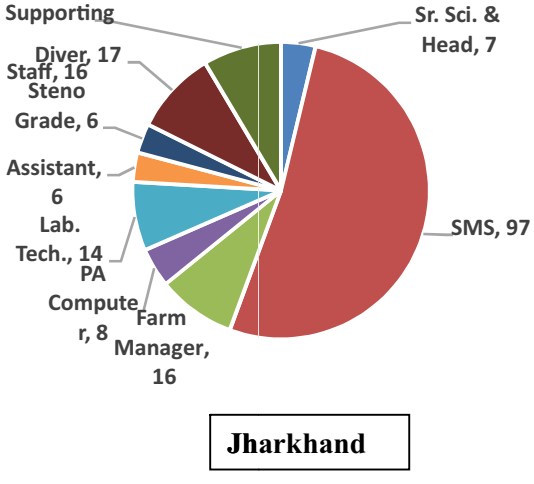


Fig 2&3: Filled up position in different staff categories in Zone IV

Table 5: Filled up position in different staff categories in Zone IV

Type of Category	Bihar			Jharkhand		
	S	P	V	S	P	V
Senior. Scientist. & Head	44	37	07	24	07	17
SMS	264	153	111	144	97	47
Farm Manager	44	28	16	24	16	08
PA Computer	44	24	20	24	08	16
PA(Lab.Technician)	44	27	17	24	14	10
Other	264	191	73	144	45	99
Total	**704**	**460**	**244**	**384**	**187**	**197**

Table 6: CATEGORY WISE STAFF POSITION

Category of Staff	Bihar			Jharkhand		
	S	P	V	S	P	V
Senior. Scientist. & Head	44	37	07	24	07	17
SMS	264	153	111	144	97	47
Farm Manager	44	28	16	24	16	08
PA Computer	44	24	20	24	08	16
PA(Lab.Technician)	44	27	17	24	14	10
Assistant	44	36	08	24	06	18
Steno Grade	44	32	12	24	06	18
Driver	88	76	12	48	17	31
Supporting Staff	88	47	41	48	16	32
Total	**704**	**460**	**244**	**384**	**187**	**197**

2.5 REVOLVING FUND

All the KVKs have been provided revolving fund as one-time seed money for making KVK farm self-sufficient in terms of resource generation through seed/sapling production, use of ponds for fish productionand establishment of horticulture orchards and other income generation activities for improvement of the farm. Revolving fund reported by 68 KVKs of Zone-IV where revolving fund scheme is operating accumulated a net balance was Rs. 952.71 lakh as on 1 January, 2021. In the year 2020, a substantial amount of fund i.e. Rs. 571.19 lakh was generated by the KVKs of Zone IV through revolving fund scheme. As per state distribution, Bihar KVKs generated Rs. 441.89 lakhs and Jharkhand of Rs.129.30 lakhs through this scheme in the year 2020. The detail status of revolving fund of KVKs under Zone IV is presented in Table 7.

Table 7: Status of operating revolving scheme by the KVKs

State	Year	Opening Balance	Income during the year	Expenditure during the year	Closing balance
Bihar	2017-18	649.19	220.90	227.37	642.73
	2018-19	642.73	515.65	385.07	773. 31
	2019-20	773. 31	452.98	410.95	815.34
	2020*	899.88	441.89	483.42	778.05

State	Year	Opening Balance	Income during the year	Expenditure during the year	Closing balance
Jharkhand	2017-18	158. 57	80.91	73.76	165.70
	2018-19	165.70	150.71	110.24	206.17
	2019-20	206.17	143.59	111.97	237.79
	2020*	271.46	129.30	112.11	174.68
Total	**2017-18**	**807.76**	**301.819**	**301.14**	**808.43**
	2018-19	**808.43**	**666.36**	**495.32**	**979.48**
	2019-20	**979.48**	**596.57**	**522.92**	**1053.13**
	2020*	**1053.13**	**571.19**	**595.52**	**952.72**

*Opening balance as on 01.01.2020 and closing balance as on 31.12.2020

2.6 INFRASTRUCTURE FACILITIES

In order to enable theKVKs to accomplish its set objectives, KVKs have been provided with number of infrastructure facilities like administrative building, farmers' hostel, staff quarter, demonstration units, soil and water testing laboratories, rain water harvesting structure with micro-irrigation facilities, portable carp hatchery units, IFS model, E-connectivity, technology information units, vehicles etc. In most of the cases, KVKs utilizes these facilities for skill development and knowledge up-gradation of farmers to demonstrate the benefit of proper management practices. The details of infrastructure facilities available with the KVKs are given in Table 8.

Table 8: State wise details of infrastructure available with KVKs

Infrastructure available	Bihar	Jharkhand	Total
Admin Building	36	19	55
Farmers Hostel	34	21	55
Demo. Units	218	60	278
Staff Quarters	73	14	87
Rain water harvesting structure	03	10	13
Soil water testing labs	26	15	41
Minimal processing facilities	12	03	15
Carp hatchery	03	01	04
Integrated farming system units	16	08	24
e-linkages facilities	21	09	30
Technology formation unit	09	03	12
Micro nutrient Analysis facilities	11	04	15
Solar panel	14	08	22

2.7 THRUST AREA:

Thrust areas are identified based on the prevailing agro-ecological situation, existing cropping pattern and farming systems and expectation of the district economy on agriculture. Accordingly, KVKs are working on the following thrust areas:

2.7 THRUST AREA:

Thrust areas are identified basedon the prevailing agro-ecological situation, existing cropping pattern and farming systems and expectation of the district economy on agriculture. Accordingly, KVKs are focusing on the following thrust areas:

- Productivity enhancement of cereals, pulses and oilseeds
- Production of quality inputs like seed of major crops, planting materials etc. and breeds of livestock
- Capacity building among rural youths towards self-employment
- Integrated nutrient, pest and disease management
- Establishment of farming system in the region
- Crop diversification
- Empowerment of women in terms of improved nutrition, income and drudgery reduction through technological literacy
- Value addition, processing and market facilitation of household and commercial enterprises
- Use of resource conservation technology
- Major initiatives to combat climate change in the region
- Contingency planning for flood/ drought
- Initiative for development of fodder technology including azolla and hydroponic fodder cultivation
- Water harvesting and watershed management
- Small scale mechanization for reducing cost and drudgery
- Use of micro irrigation technology for more cropper drop of water
- Up-gradation of non-descriptive, local cattle by descriptive Indian cattle breeds using AI technology
- Animal health care and management
- Doubling the farmer's income in agriculture and allied fields

3. ABOUT AGRICULTURAL TECHNOLOGY APPLICATION RESEARCH INSTITUTE (ATARI), PATNA

ICAR-ATARI Patna, Zone-IV began its journey from 2017 from the office premises located within the CPRS (ICAR) Campus Sahay Nagar, Patna with the specific objective to plan, monitor and evaluate the programs of KVKs working in Bihar and Jharkhand. Alongside, it is entrusted with the responsibility to monitor and guide the activities of KVKs which are gradually coming up with great future promises as District Level First Line Agricultural Institutions. The Unit goes on widening its service domains creditably in the form of successful implementation of different programs like Cluster Front Line Demonstrations (CFLD) on Pulses and Oilseeds under National Pulse Production Program (NPPP), Seed Hub on Pulses, Cereal Systems Initiative for South Asia (CSISA), Soil Health Card, Attracting and Retaining Youth in Agriculture (ARYA), National Innovations in Climate Resilient Agriculture- Technology Demonstration Component (NICRA-TDC), Swachh Bharat Abhiyan, Tribal Sub Plan (TSP), Skill Development in Agriculture and allied fieldsunder Agriculture Skill Council of India (ASCI), DAMU, Jal Shakti Abhiyan, Plantation Program, NADCP (FMD) and Farmers' FIRST Program which are all being successfully implemented in Zone IV under ATARI-Patna.

3.1 MANDATE:

The mandates of ICAR-ATARI are as follows:

1. Coordination and Monitoring of Technology Assessment, Demonstration and its Application through KVKs.
2. Strengthening Agricultural Extension

Research and Knowledge Management Centre.

The ICAR-ATARI, Patna has executed the following functions to achieve the above mandates.

Ø Formulate,implement, monitor, guide and evaluate the programs and activities of KVKs.

Ø Coordinate the work relating to KVKs and ATICs implemented through various agencies such as SAUs, ICAR institutes, voluntary agencies and development departments.

Ø Coordinatewith State/Central Government organizations, financial institutions and other organizations for successful implementation of Programs.

Ø Partneringwith Directorates of Extension Education of SAUs in assured technological backstopping to KVKs and appropriate overseeing of KVK activities.

Ø Strengtheningthe Directorates of Extension Education of SAUs with financial support.

Ø Serve as feedback mechanism from the projects to research and extension systems.

Ø Implementing projects of ICAR like CFLD, Seed Hub, CSISA, NICRA- TDC, ARYA, TSP, ASCI, PPV & FRA, Farmers' FIRST Program, NEMA, NADCP (FMD), PKVY, DAMU, Jal Skakti Abhiyanand others.

Ø Maintain close liaison with ICAR headquarter particularly with Division of Agricultural Extension for preparing reports, write ups and other important documents.

3.2 STAFF:

ICAR-ATARI, Patna is having totalsanctioned staff strength of 4, out of which only twopost has been filled up to December 2020.

Table 9: Staff strength of Agricultural Technology Application Research Institute, Patna

Category	Sanctioned	Filled	Vacant
Director (RMP)	01	01	-
Principal Scientist (Agril. Extension)	01	0	01
Scientist (Horticulture)	01	01	-
Scientist (Agril. Extension)	01	0	01

3.5 NEW INITIATIVES of ATARI, PATNA

ICAR-ATARI, Patna, besides performing its regular monitoring activities, also encourage the KVKs of this zone to get them involved in a number of programs depending on the farmers need of the district and technical capability of the KVKs to contribute towards growth of agriculture and allied sectors. Some of the flagship Programs which were undertaken by KVKs during 2018-19 and some newly conceived Programs are enlisted as under: -

- ✓ Tribal Sub Plan (TSP)
- ✓ Attracting and Retaining Youth in Agriculture(ARYA)
- ✓ Farmer FIRST Programme
- ✓ CSISA-ICAR Collaborative Project Phase-III
- ✓ Climate Resilient Agriculture-Technology Demonstration Component (NICRA-TDC)
- ✓ Cluster Front Line Demonstration (CFLD) on Pulses and Oilseeds
- ✓ Skill Development in Agriculture and allied fields under Agriculture Skill Council of India (ASCI)
- ✓ Seed Hub
- ✓ KVK Knowledge Network/ KVK Portal/ KRISHI Portal
- ✓ Management Information System including Financial Management System (MIS-FMS) under ICAR-ERP Online reporting by KVKs
- ✓ Celebration of Swachhta Pakhwada 2020
- ✓ Celebration of Mahila Kishan Diwas 2020
- ✓ Celebration of World Soil Health Day 2020
- ✓ Gramin Krishi Mausam Sewa
- ✓ District Agro Meteorological Unit
- ✓ Jal Skakti Abhiyan
- ✓ NEMA
- ✓ Mera Gaon Mera Gaurav

4.0 ACHIEVEMENTS

4.1 TECHNOLOGY ASSESSMENT AND REFINMENT

ON-FARM TRIAL

The most important mandate of KVKs is OFT for refinement and Assessment of technologies in farmer's field and all the 68 KVKs of this Zone worked towards successful application and implementable technologies in the field of agriculture and allied sectors. In technology application front, the KVKs were assessing and demonstrating various agricultural technologies as well as imparting training on different crops, livestock, fishery related technologies extending their practical aspects for betterment of the farming community and other stakeholders.During 2020, a total of 384 on-farm trials were conducted by the 68 KVKs of the Zone IV with an objective to assess the technologies developed by different institutions in agriculture and allied sectors. The technologies, which were assessed, included those in the areas of crop production, insect-pest and disease management, nutrient management, feed and fodder management, livestock production and health management, fisheries, drudgery reduction, value addition and other areas. About 24 thematic areas were identified by the KVKs for assessment and refinement of technologies and are presented in Table 10.

Improved technologies related to crop production, livestock production, fish production, drudgery reduction and value addition etc. have been assessed to provide technological solution to the farming community pertaining to various aspects of agriculture and allied areas and in year2020, the KVKs conducted 384 on-farm trials at 2688 locations to assess various technologies. In crop sector under various thematic areas, technologies total 288 OFTs at 2016 locations were tested among them in integrated nutrient management (INM) through 70 on-farm trials in 490 locations, followed by Integrated Pest Management (IPM) through 42 on-farm trials in 294 locations, Weed Management (WM) through 34 on-farm trials, Integrated Crop

Management (31 OFT), integrated Disease Management (IDM) through 27 OFTs and Farm Implement and machineries (25 OFT).

In livestock sector, total 96 on-farm trials at 672 locations were conducted during 2020 covering 22on-farm trials both in Disease Management and Feed and fodder (18 OFTs), value addition (17 OFTs). In fishery Science08 on-farm trials on 56 locations were conducted during this year.

State-wise analysis of on-farm trials conducted showed that KVKs of Bihar conducted a total of 259 on-farm trials at1813 different locations, the corresponding values for Jharkhand were 125 OFTs at 875 locations. The feedback on the performance of the technologies has also been brought to the notice of research and extension wing for their effective dissemination in the entire zone. Some of the on-farm trials conducted by the KVKs are presented below with table, photographs and relevant information.

Table 10: State wise details of On Farm Trial (OFTs) conducted by KVKs under Zone IV

Thematic Area	Bihar		Jharkhand		Total	
	No. of OFT	No. of Location	No. of OFT	No. of Location	OFTs	Locations
A. Crop Sector						
Integrated Crop management (ICM)	26	182	5	35	31	217
Integrated Disease management (IDM)	17	119	10	70	27	189
Integrated Pest management (IPM)	27	189	15	105	42	294
Integrated Nutrient management (INM)	47	329	23	161	70	490
Varietal Evaluation (VE)	14	98	4	28	18	126
Weed management (WM)	27	189	7	49	34	238
Water management	3	21	8	56	11	77
Storage Technology (ST)	1	7	1	7	2	14
Resource Conservation Technology (RCT)	8	56	4	28	12	84
Farm implements & machineries (FIM)	20	140	5	35	25	175
Evaluation of Sowing time	2	14	0	0	2	14
Crop production	6	42	5	35	11	77
Protected Cultivation	1	7	2	14	3	21
Nursery Raising	0	0	0	0	0	0
Sub Total (A)	**199**	**1393**	**89**	**623**	**288**	**2016**
B. Live Stock Sector						
Production & Management (P & M)	1	7	1	7	2	14
Nutrient Management (NM)	5	35	2	14	7	49
Fishery	8	56	0	0	8	56
Feed & Fodder	9	63	9	63	18	126

Thematic Area	Bihar		Jharkhand		Total	
	No. of OFT	No. of Location	No. of OFT	No. of Location	OFTs	Locations
Breed Evaluation (BE)	0	0	1	7	1	7
Disease management	14	98	8	56	22	154
Food & Nutrition (F & N)	9	63	5	35	14	98
Value Addition (VA)	7	49	10	70	17	119
Drudgery Reduction (DR)	7	49	0	0	7	49
Sub Total (B)	**60**	**420**	**36**	**252**	**96**	**672**
Enterprise	2	14	0	0	2	14
Grand Total (A+B)	**259**	**1813**	**125**	**875**	**384**	**2688**

AGRONOMY

KVK JEHANABAD

THEMATIC AREA: Integrated Nutrient Management (INM)

Assessment of integrated nutrient management in chickpea

RESULTS: To assess the impact of INM on yield of chickpea in Jehanabad district an OFT was conducted with two technological option i.e. TO1: NPK@18:46:0 kg/ha + seed inoculation with PSB @ 20g/kg seed +Rhizobium @20g/kg seed; TO2: Rhizobium @20g/kg seed +PSB @ 20g/kg seed as seed inoculation were tested along with farmer's Practice. Results revealed that use of bio-fertilizers along with normal recommended dose of fertilizers gaveyield 13.9q/ha, yield increase by 11.25% and highestBC ratio(1.69)in TO1 followed by farmers practice (Table 11).

Table1 : Assessment of INM and seed inoculant on yield and economi cs in chickpea

Technological option	Yield (q/ha)	Percent increase	Gross Cost (Rs./ha)	Gross Return (Rs/ha)	BC ratio
FP : NPK@18:46:0 kg/ha	12.5	-	30600	75000.	1.45
TO_1: FP + seed inoculation with PSB and Rhizobium @ 20g/kg seed each	13.9	11.25%	30920	83400	1.69
TO_2: Seed inoculation with Rhizobium +PSB @20g/kg seed	8.4	-32.8%	25880	50400	0.94

KVK MUNGER

THEMATIC AREA: Resource Conservation Technology(RCT)

Assessment of Productivity and Profitability of Paddy under different method of Direct Seeded Paddy.

RESULTS: In district of Mungerlow yield of rice is primarily due to delay in arrival of monsoon and thus delay in conventional transplanting. In order to reduce the climate aberration an On Farm Trial was conducted to assess the different crop establishment

method on crop yield and economics of paddy cultivation with two technological option i.e.TO1: DSRLine sowing of seed followed by irrigation and then dust mulching and TO2:DSR Line sowing of seed along with broadcasting of sesbania seed and application of 2, 4-D@500ga.i. /ha at 30 DAS (brown manuring) and compared with Farmer's Practice i.e. DSR by Broadcasting of seed. Results indicates that maximum yield (44.74q/ha) with net return of Rs. 66466/-and BC ratio 1.81 were obtained in DSR Line sowing of seed along with broadcasting of sesbania seed and application of 2,4, D@500ga.i. /ha at 30 DAS (brown manuring)Table 12

Table 12: Effect of method of DSR on growth, yield and economics

Technology option	No. of tillers/m^2	Yield (q/ha)	Straw yield (q/ha)	Gross Cost Rs./ha)	Net return (Rs./ha)	BC ratio
FP:	174	31.64	52.29	32120	38391	1.20
TO_1: DSRLine sowing, irrigation,	205	38.14	59.21	36080	47431	1.32
dust mulching						
TO_2: DSR (Line sowing + sesbania (intercrop) + 2,4,D @500g a.i./ha at 30 DAS	260	44.74	65.29	34510	62466	1.81
CD@5%	28.11	5.835	5.886			
SEm (±)	9.023	1.735	1.889			

KVK PURNEA

THEMATIC AREA: Weed Management(WM)

To access the effect of new molecules of herbicide for controlling weeds in Rabi Maize

RESULTS: Light textured soil and high water table inPurnea district is the main cause for high weed flora during the crop vegetative stage and more particular at 25-30 DAS in Rabi maize. Higher weed infestation resulted in crop competition for nutrients uptake and results into reduction in yield of rabi maize. Manual weeding involves higher cost in cultivation and observing this problem an OFT was designed and conducted involving weedicides application with two technological options viz. TO1: Tembotrine 34.4 % SC @ 120 g a.i./ha at 25-30 DAS; TO1: Topramezone 33.6 % SC @ 25 ga.i./ha at 25-30 DAS and compared with manual weeding as farmers practice, results revealed that lowest weed population at 45 DAS (28.20/m2) of which monocots (10.40), dicots (9.10) and grasses and sedges (8.70) were recorded in TO1 followed by TO2: 38.00 and low weed dry weight8.10 g/m2 in TO1(Table 13).

Table 13: Effect of herbicides on Weed Flora and Weed Dry Weight in Rabi Maize

Technological options	Weed count / m^2		Weeds flora count						Weed dry weight ($g/m^{2)}$	
	25 DAS	45 DAS	25 DAS			45 DAS			25 DAS	45 DAS
			Monocots	Dicots	Grasses & Sedges	Monocots	Dicots	Grasses& Sedges		
FP	155.30	65.30	37.90	61.10	56.30	20.10	16.90	28.30	11.90	16.30
TO_1	150.90	28.20	36.80	58.30	55.80	10.40	9.10	8.70	10.40	8.10
TO_2	143.60	38.00	35.00	55.20	53.40	12.90	10.50	14.60	10.28	10.25

FP: Atrazine 50% WP @ 1.25 kg a.i./ha at 25-30 DAS + Hand weeding, TO_1: Tembotrine 34.4 % SC @ 120 g a.i./ha at 25-30 DAS and TO_2: Topramezone 33.6 % SC @ 25 g a.i./ha at 25-30 DAS.

KVK SAHARSA

THEMATIC AREA: Weed Management (WM)

Assessment of effect of herbicides application to control weeds in lentil

RESULTS: Koshi region is one of potential belt of Pulses particularly lentil and this crop has very high potential in the district. Weed infestation is a serious problem in pulses particularly in lentil and for weed management through use of herbicides an On farm trial was conducted by KVK, Saharsain farmers' fieldwith two technological options viz. TO1: Pre-emergence Pendimethalin @1.0kg a.i./ha; TO2: Pre-emergence Pendimethalin @1.0 kg a.i./ha) +Post-emergence Imizathyper @40 g a.i./ha at 15-20 DAS and compared with farmer's practices of no weeding in pulses field. In lentil significantly lowest weed density 14.36 and 18.71/m2 at 40 DAS and at harvest stage respectively were recorded in TO2followed by TO1 along with higher yield (10.23q/ha) and higher BC ratio 2.41 were obtained in TO2 followed by TO1(Table 14).

Table14:Performance of Effect of Herbicides Application to Control Weeds in L entil

Technology option	Yield Components			Weed density (m^2 area)		yield (q/ha)	CoC (Rs./ha)	Gross return (Rs/ha)	B:C ratio
	Plant/m^2 (no)	Branches/ plant (no)	Pod/ plant (no)	40 DAS	At harvest				
FP	33.6	4.3	31.42	46.78	58.12	5.80	16571	34800	1.10
TO_1	47.3	7.1	43.98	28.30	32.10	8.32	17393	49920	1.87
TO_2	52.2	8.3	48.50	14.36	18.72	10.23	17984	61380	1.41
CD 5%	1.11	0.26	1.67	3.39	4.35				

TO_1: PEPendimethalin @1.0kg a.i./ha; TO_2: PEPendimethalin @1.0 kg a.i./ha)+PoEImizathyper @40 g a.i./ha at 15-20 DAS and compared with farmers practices no weeding

KVK KATIHAR

THEMATIC AREA:Integrated Crop Management(ICM)

Effect of different rows spacing on fibre yield of Jute

RESULTS: Theyield of all most all crops depend on the crop geometry occupied by individual plants. If any plant gets sufficient space, may give more yield as compared to plants getting less space. So, to know the actual effect of plant spacing on jute yield OFT were conducted with two technological options viz. TO1:Row spacing at 20cm andTO2:Row spacing at 30cm and compared with farmers practices. Results revealed that jute seeds sown at 20 cm row spacing perform bettergrowth performance and yield parameter like plant height (294.5 cm), diameter of base (1.86 cm), yield of green plants (375.41 q/ha) and fiber yield was 26.24 q/ha. Fibre recovery recorded 18.51 % more than the farmers practic(Table 15). The cost of cultivation was minimum in farmer's practice (Rs. 3185/ha) while gross return 41%, net return 82.30% and B:C ratio was 37.43% higher as compare to farmer's practices (Table 16).

Table 15:Effect of different Treatments on Yield A ttributes and Yields of Jute

Technological option	Disease/ insect pest incidence (%)	Plant Height (cm)	Basal diameter (cm)	Green plant wt. (qt ha^{-1})	Fiber yield (qha^{-1})
FP:	10.0	287	1.39	285.43	22.14
TO_1: Row spacing at 20cm	6.0	294	1.86	375.41	31.27
TO_2: Row spacing at 30cm	5.0	271	1.71	342.37	29.68
CD (p=0.05)	0.86	19	0.05	10.98	2.11

Table 16: Effect of different treatments on Economics of Jute Production

Treatment	Gross Cost (Rs./ha)	Gross Return (Rs./ha)	Net Return (Rs./ha)	B:C Ratio
FP	31850	61992	30145	1.95
TO_1	32600	87556	54956	2.68
TO_2	32750	83104	50354	2.54

HORTICULTURE

KVK MADHEPURA

THEMATIC AREA:Integrated Nutrient Management

Assessment of PGR on Growth, Yield and Economics of Chili (Capsicum annuum L.)

RESULTS: In Madhepura district large areas are under vegetables cultivation and is considered as the main source of farmer's income. In order to double their income an OFT on performance of some newer molecules of PGRon growth and yield of chilies was conducted involving 8 farmers. The results indicated that significantly 53.12% higher fruit set, fruit yield (83.11q/ha) and BC Ratio (2.19)were recorded in TO2(Triacontanol@5 ppm at 46, 82 and 157 DAT) followed TO1(Table 17).

Table17:Effect of different Growth Regulator on Fruit Setting and Yield increase in Chilies

Technological Option (TO)	Fruit Setting %	Fruit Yield (q/ha)	Gross Cost (Rs.)	Gross Return (Rs.)	Net Return (Rs)	B:C Ratio
FP: No use of growth regulator	46.75	72.91	56315	160402	104087	1.84
TO_1: NAA@40 ppm at 46, 82 and 157 DAT	50.87	80.11	57515	176242	118727	2.06
TO_2:Triacontanol@5 ppm at 46, 82 and 157 DAT	53.12	83.11	57215	182842	125627	2.19
C.D.	0.22	1.15				

KVK,TURKI, MUZAFFARPUR (Additional)

THEMATIC AREA: Varietal Evaluation Trial

Assessment of Bottle Gourd Variety for higher Productivity

RESULT: To assess the productivity potential of recently released variety of bottle gourd an OFT was conducted with three technological options viz. NDBG-4, Rajendrachamtkar and Local variety. The result showed that variety NDBG-4 hadhigher fruit yield (195 q/ha) along with higher BC ratio (2.08) in comparison to other technological options (Table 18).

Table 18:Assessment of recently released Bottle Gourd variety for higher Productivity

Technological Option	Fruit Weight (kg)	Fruit Size (cm)	Yield (q/ha)	Cost of Cultivation (Rs./ha)	Gross return (Rs./ha)	BC Ratio
FP: Local variety	1.05	36.00	118	44840	89980	1.01
TO_1: NDBG-4	1.26	44.05	195	49456	152200	2.08
TO_2: RajendraChamtkar	1.18	42.43	140	45750	110800	1.42

Field visit of OFT on Bottle guard

KVK KISHANGANJ

THEMATIC AREA: Integrated Nutrient Management (INM)

Assessment of effect of Micronutrients on Yield and Quality of Pineapple

RESULT: Pineapple is a commercial crop of Kishanganj district of Bihar with average productivity of 40T/ha. The Farmers rarely apply micronutrients in pineapple fieldsthough it has vital roles in improvement of quality and yield of fruit. An OFT to assess the effect of micronutrients on yield and quality of pineapple cv. Kew was conducted during Rabi 2019-20 on farmer's field with 10 replications with three technological options. The result showed that the application of NPK (12:4:12g/plant/year) + ZnSO4@5 kg/ha (basal) + 02 spray 0.5% ZnSO4at 6 monthand 9 month after planting + foliar spray of boron@0.25% at flowering resulted in maximum yield of 488.86 q/ha in comparison to other. BC ratio (1.18) was recorded inTO3which was higher than the other treatments.

Table 19: Effect of micronutrients on yield and quality of pineapple

Technological Option	Plant height (cm)	Fruit yield (q/ha)	Gross cost (Rs.)	Gross return (Rs.)	Net Profit (Rs.)	BCR
FP: (No use of micronutrients)	109.11	398.20	267000	497750	230750	0.86
TO_1: RDF (NPK 12:04:12 g/plant/year) + ZnSO4 @ 25 kg/ha as basal	111.23	426.80	275000	533500	258500	0.94
TO_2:RDF (NPK 12:04:12 g/plant/year)	114.86	464.62	279000	580775	301775	1.08
+ boron @ 0.25% spray at flowering						
TO_3: RDF (NPK 12:04:12 g/plant/year) + ZnSO4 @ 5 kg/ha (basal) and 02 spray of 0.5% ZnSO4 at 06 and 09 months + boron @ 0.25% spray at flowering	116.78	488.86	280000	611075	331075	1.18


KVK SARAN

THEMATIC AREA:Crop Production

Assessment of Mulch material and Boron on Yield, Quality and Shelf life of Litchi (Litchi chinensisSonn)

RESULTS: An OFT for enhancing the fruit quality and controlling fruit drop in litchi was conducted with 02 technological options viz.TO1:Black polyethylene sheet (100 micron) and TO2:02 spray ofBorax @ 0.2% at 15 after fruit set in Saran district of Bihar. Resultfrom (Table 20)indicated that TO2 was found better in respect of reduction in fruit drop, fruit cracking, TSS and yield as compared to TO1and farmer's practices.

Table 20: Effect of Mulch material and Boron on Yield, Quality and Shelf life of Litchi

Technological Option	Fruit drop (%)	Fruit Cracking (%)	Fruit yield (kg/plant)	TSS (°Brix)	Acidity (%)	Ascorbic acid (mg/100g)	Shelf life (days)	B: C ratio
FP: No use	83.31	17.50	91.00	17.40	0.87	30.1	3	1:2.96
TO_1: Black polyethylene sheet (100 micron)	81.90	15.32	101.00	19.65	0.67	30.3	4	1:3.20
TO_2: 02 spray ofBorax @ 0.2% at 15 after fruit set	75.55	11.54	109.00	20.20	0.64	33.5	5	1:3.85
CD at 5%	4.35	3.21	11.94	0.81	0.18	NS	0.61	0.40

KVK SHEOHAR

THEMATIC AREA: Crop Protection

Assessment of Sowing Time to Escape Late Blight Disease in Potato.

RESULTS: An OFTwas conducted in Sheohar district to assess the best sowing period to escape from late blight of potato disease with three sowing period as technological option. Results revealed that TO1(sowing by 20-25October) recorded significantly higher yield (395.60q/ha) in comparison to other sowing date. The disease incidence (2%) and disease intensity (Scale-1) were also less in comparison respectively in comparison to existing farmers practice (Table 21).

Table 21: Assessment of Sowing Time to escape Late Blight Disease in Potato.

Technological Option	Disease Intensity (Scale 0-10)	Disease Incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net Return (Rs./ha)	BC Ratio
FP: No specific period	1	-	319.80	84000	319800	23580	3.8
TO_1: Sowing by 20-25 Oct.	1	2	395.60	84000	395600	311600	4.7

Technological Option	Disease Intensity (Scale 0-10)	Disease Incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net Return (Rs./ha)	BC Ratio
TO_2: Sowing by 1-5 Nov.	5	37.00	195.40	84000	195400	111400	2.3
TO_3: Sowing by 15-20 Nov.	7	67.40	103.20	84000	103200	19200	1.3
CD at 5%		5.204	27.832				

SOIL SCIENCE

KVK AURANGABAD

THEMATIC AREA: Integrated Nutrient Management Assessment of different tool for Nutrient Application in Transplanted Paddy

RESULTS: An On farm trial for assessing different tools for calculating different nutrient requirement of Paddy was conducted in 8 different locations in Aurangabad district of Bihar which is a major rice growing belt of Bihar state. Different tools assessed were nutrient application based on general recommendation prescribed for that area depending upon the soil fertility status assessed by Agriculture department of Bihar, nitrogen application on the basis of using Leaf Colour Chart developed by IRRI, Philipines and fertilizer application obtained by using crop manager software a farmers friendly Web application which takes an account of resource available to the farmer, soil test value, availability of fertilizer in that locality etc. and these tools were tested against the yield obtained by the farmer in their own practice.

Among the different major indicators of crop performance highest yield of 46.2 q/ha was recorded under the plot received nutrient application based on crop manager followed by nitrogen application based on Leaf Colour Chart (LCC) and recommended dose of fertilizer (Table 22). Highest straw yield (56.3q/ha) was found in TO3where nutrient was applied on the basis of RDF. Highest benefit cost ratio of 2.7 was observed in the nutrient applied on the basis of crop manager (TO2). Thus, it may be concluded that crop manager tool may be a good option for nutrient application in paddy.

Table 22: Yield and Economics obtained under different Nutrient Management tools.

Treatment	Yield (q/ha)	Straw yield(q/ha)	Gross Cost (Rs.)	Gross Income(Rs.)	Net Income (Rs.)	B:C
FP	41.0	55.1	30125	69700	39575	2.3
TO_1:Nitrogen on basis of leaf colour chart(LCC)	45.8	52.3	29628	77860	48232	2.6
TO_2:Fertilizer on basis of crop manager software	46.2	54.4	29325	78540	49215	2.7
TO_3: RDF (120:60:40kgNPK/ha)	43.5	56.3	29837	73950	44113	2.4

KVK, PARSAUNI, EAST CHAMPARAN 2

THEMATIC AREA: Integrated Nutrient Management Response of Bentonite Sulphur on Mustard Yield

RESULTS: An On farm trial was conducted in Khirwa village of East Champaran to assess the response of Bentonite Sulphur on crop yield and oil content of mustard crop with technological options

viz. TO1:RDF+ graded dose of Sulphur @40 and TO2: RDF and S@60kg/hawere tested against the recommended dose of fertilizer (80:40:40: N: P2O5:K2OKg/ha) as farmers practice. Among the different yield contributing character highest leaf area index (LAI) was found in technological option (TO2) where RDF along with 60 Kg S/ha was applied. Similarly,Siliqua length, grain yield, oil content and benefit cost ratio were higher in TO2 where 60Kg/ha S was applied (Table 23).

Table 23. Effect of Sulphur on growth parameters and yield of mustard

Technological Option	Siliqua length (cm)	Test weight (g)	Yield (q/ha)	Oil content (%)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	B:C ratio
FP:RDF (80:40:40 kg/ha)	3.97	3.22	7.58	31.22	15980	22740	6760	1.42
TO_1: RDF+ Sulphur @40 kg/ha (Bentonite)	4.78	3.98	13.60	38.45	16980	40800	23820	2.40
TO_2: RDF+ Sulphur @60 kg/ha (Bentonite)	4.95	4.15	14.5	39.84	17480	43500	26020	2.48

KVK KATIHAR

THEMATIC AREA: Integrated Nutrient management Sub-thematic area: Micronutrient deficiency in crops Assessment of Boron and Molybdenum on Growth, Yield and Quality of Cauliflower (Brassica oleracea L. var. botrytis)

RESULTS: Katihar district is the hub for Cauliflower cultivation during early Rabi season but the farmers face the problem of hollow heart disease in this crop. To overcome this problem an OFT was designed &conducted on 10 farmers field using RDF+ 20 ton/ha FYM (TO1) and RDF+ 20 ton/ha FYM + 20 kg/ha B and 2 kg/ha Mo (TO2). Results revealed that varied response of different technological options and higher marketable yield (127.78q/ha) was recorded in TO2 with 15.77 and 5.71 per cent increasein marketable yield respectively in TO2 and TO1over FP (Table 24). In respect to economics the benefit cost ratio is also increase 2.39 and 3.44 in comparison to farmer's practice (Table 24).

Table 24: Effect of different Treatments on Growth attributes and Yields of Cauliflower

Technological Option	Plant height(cm)	Curd weight (g)	Curd length(cm)	Curd diameter(cm)	Yield of marketable curd(q/ ha)	B C ratio
FP: (180:40:20 :: N:P:K	52.48	298	10.52	13.27	110.37	4.36
TO_1: 120:60:60 :: N:P:K) + 20 t/ha FYM	56.18	328	11.46	14.17	121.48	4.75
TO_2: 120:60:60 :: N:P:K) + 20 t/ha FYM + 20 kg/ha Borax + 2 kg/ha Mo	58.75	345	11.87	14.85	127.78	4.90
CD@5%	0.4	21	0.9	0.07	1.06	ND

KVK KATIHAR

THEMATIC AREA: Integrated nutrient management Sub Thematic area: Production and Use of Organic Input Assessment the Liquid and Carrier based Bio-Fertilizers on Performance of Transplanted Rice and on Soil Properties

RESULTS: An On farm trial was conducted on 10 farmer's field to assess the performance of liquid and carrier based bio-fertilizer in rice in Katihar district. Data presented in Table 25 revealed that slight improvement in organic carbon and average K over their initial value were observed with application of TO2: RDF [120:60:40] (80% N +80 %P + 100% K) + soil application of liquid bio-fertilizer (azotobactor @750 ml/ha + PSB @750 ml/ha) and TO3: RDF [120:60:40] (80% of N +80 % of P + 100% of K) + Soil application of bio-fertilizer (Azotobactor@5kg/ha + PSB5@ kg/ha). Better effect of liquid and carries based bio fertilizer was observed in case of number of tiller/plant, number of kernels /panicle,number of ear bearing tillers/ plant and number of effective tillers (m-2) in TO2(Table 26). Significantly higher grain yield (43.77q/ha) alongwith BC ratio of 2.01 were recorded in TO2(Table 27)

Table 25:Effect of Liquid and Carrier based Bio-Fertilizers onPhysico-Chemical Properties of Soil

Technological Option	Soil pH		ECe(dSm^{-1})		OC(%)		Available Nutrients ($kg\ ha^{-1}$)					
							N		P		K	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
FP	5.8	5.9	0.16	0.17	0.60	0.60	258	244	33	29	231	229
TO_1	5.9	5.9	0.17	0.19	0.60	0.61	261	248	34	31	239	248
TO_2	5.8	5.9	0.17	0.20	0.60	0.62	259	252	34	33	238	249
CD@5%	0.09	NS	NS	0.02	NS	0.15	NS	3.02	0.8	1.18	1.21	0.85

Table 26: Effect of Liquid and Carrier based Bio-Fertilizers on Growth Attributes of Rice

Technological Option	Plant height (cm)	No of tiller/plant	Ear bearing tillers/ plant	Panicle length (cm)	Kernels /panicle	Filled Kernels/ panicle	Effective tillers (m^{-2})	Test weight (g)
FP	117.84	11.15	9.28	21.03	156.35	124.07	171.05	14.17
TO_1	121.24	12.88	11.35	25.87	178.05	136.00	214.00	15.04
TO_2	121.02	12.36	10.87	25.02	172.05	135.04	211.74	15.02
CD@5%	0.34	0.02	0.14	0.05	1.26	0.81	4.29	NS

Table 27: Effect of liquid and carrier based bio-fertilizers on yield and economics of rice

Technological Option	Grain yield (q/ ha)	Straw yield (q/ ha)	Harvest Index (%)	Cost of cultivation (Rs./ha)	Gross Return (Rs./ha)	Net Return (Rs./ha)	BC ratio
FP	30.07	42.56	41.40	30500	71637	41137	1.35
TO_1	43.77	52.14	45.64	32000	96427	64427	2.01
TO_2	42.95	50.07	46.17	31400	93740	62340	1.99
CD@5%	0.24	0.09	0.82	--	--	--	--

KVK NALANDA

THEMATIC AREA: Integrated Nutrient Management Sub Thematic Area: Soil Fertility Management Assessment of Sulphur, Zinc and Boron on Yield and Quality of Onion

RESULTS: Nalanda district is hub for vegetable cultivations where onion is cultivated potato. The productivity of the onion crop is almost stagnant from last five years. Keeping these points into account On Farm Trial was conducted on 8 farmer's field to assess the role of secondary and micro nutrients on crop production to increase the productivity of onion with 03 technological options viz. TO1:RDF (N: P: K-100:60:90 kg/ha); TO2: RDF + 20 kg S + 5 kg Zn + 2 kg B/ha along with farmers practices (N:P:K-120:60:60 kg/ha).Highest average bulb weight (52.2gm), bulb yield (322.6 q/ha) was recoreded in technological option 2 followed by others (Table 28).

Table 28: Effect of Sulphur, Zinc and Boron on yield and quality of Onion .

Technological Option	Av. bulb weight (g)	Disease/ insect pest incidence (%)	Yield(q/ha)	Cost of cultivation(Rs./ha)	Gross return(Rs/ha)	Net return(Rs./ha)	BC ratio
FP:(N:P:K-120:60:60 kg/ha)	47.32	35	285.4	72500	171240	98740	2.36
TO_1: RDF (N:P:K-100:60:90 kg/ha)	48.52	27	298.5	73800	179100	105300	2.43
TO_2: RDF + 20 kg S + 5 kg Zn + 2 kg B/ha	52.20	18	322.6	74700	193560	118860	2.59
C.D (P=0.05)			**13.45**				


PLANT PROTECTION

KVK ARWAL

THEMATIC AREA: Integrated Pest Management Ecofriendly management of borer of Okra

RESULTS: Farmers facing economic loss in Okra production due to severe infestation of fruit borer in Arwal district and considering this problem an On Farm Trial was conducted to minimize the borer infestation with three technological option viz. (TO1: 4 spray of Azadirachtin 300 ppm @ 5ml/L +Verticiliumlecani @1000ml a.i./ha at 10 days interval, TO2: 4 spray of Emamectin benzoate @ 12g a.i./ha at 10 days interval, and TO3: 4 Spray of Indoxacarb 14.5 SC @50 g a.i./ha at 10 days interval, along with farmers practice during Kharif season 2020. Results revealed that minimum fruit damage 24.35% was recorded in TO3 followed by TO2 (27.90) and the maximum fruit damage was recorded in FP (43.76%). Highest BC ratio of 2.43 was recorded in TO3 followed by TO2(2.31) Table 29.

Table29: Efficacy of D ifferen t Insectides for Management of Borer in Okra

Technological options	Fruit Damage Per cent	Yield (Q/ha)	Cost of Cultivation (Rs.)	Gross Return (Rs.)	Net Return (Rs.)	BC Ratio
FP: Dusting of Fenvelrate 5%	43.76[a]	184	94560	276000	181440	1.92
TO_1: 4 Spray at 10 days interval, of Azadirachtin 300 ppm @ 5ml/L+ Verticiliumlecani @1000ml ai/ha	35.44[b]	198	96270	297000	200730	2.09
TO_2:4 Spray at 10 days interval, of Emamectin benzoate @ 12g ai/ha	27.9[c]	212	96055	318000	221945	2.31
TO_3:4 Spray at 10 days interval, of Indoxacarb 14.5 SC @50 g ai/ha	24.35[d]	224	97890	336000	238110	2.43
CD(0.05)	2.289					

KVK BHAGALPUR

THEMATIC AREA: Integrated Pest Management Management of Gram Pod Borer (Helicoverpaarmigera) in Chickpea

RESULTS: In chickpea cultivationpod borer (Helicoverpaarmigera) is one of the most dreaded insect-pest associated with its cultivation and causes losses upto 60-70% and sometimes their infestation level became so high that farmers don't get return whatever they spend on seed. Considering problem of that area an OFT was conducted in 13 farmers field to evaluate the efficacy of different approaches for managing the pod borer infestation in Chickpea. Different technological option tested were TO1: Erection of pheromone trap @ 10 traps/ha at 45DAS(TO1), Spray of Ha NPV @ 250 l.e./ha (TO2),Erection of pheromone trap @ 10 traps/ha at 45 DAS followed by Spray of Ha NPV @ 250 l.e. /ha(TO3) and where no use of insecticide (Farmers practice).

On the basis of two years data (2018-19 and 2019-20), result showed that TO3viz. Erection of pheromone trap @10 traps/ha at 45 DAS followed by spray of Ha NPV @ 250 i.e. /ha recorded lowest pod damage percentage (7.2%), highest yield (15.70 q/ha) along with B:C ratio of 1.77in comparison to other TO and FP where no management practices was adopted for control of pod borer was adopted had the highest infestation coupled with least yield Table 30.

Table30: Performance of the Technology with performance indicators (Pooled Data)

Technological option	Pod damage (%)	Seed Yield(q/ha)	Straw yield (q/ha)	Cost of cultivation(Rs./ha)	Gross return (Rs./ha)	Net return(Rs./ha)	BC ratio
FP	36.7	9.43	15.28	26385	46318	19933	0.76
TO_1: Erection of pheromone trap @ 10 traps/ha at 45DAS	8.4	14.31	15.61	27357	71025	43668	1.60
TO_2: Spray of Ha NPV @ 250 l.e./ha	10.3	13.47	14.74	26838	66537	39699	1.48
TO_3: Erection of pheromone trap @ 10 traps/ha at 45 DAS +Spray of Ha NPV @ 250 l.e. /ha	7.2	15.70	15.81	27746	76853	49107	1.77
CD (at 5%)	1.43	1.06	1.21				

KVK EAST SINGHBHUM

THEMATIC AREA: Integrated Pest Management (IPM) Assessment of bio-intensive management of wilt disease in Tomato

RESULTS: Wilt disease in Tomato is the severe problem faced by vegetable growers of Jharkhand. Keeping these points into consideration an OFT was conducted involving 7 farmers field to evaluate different management practices for wilt management with Two technological option.Results

revealed that lowest percent wilt incidence (5.1%), highest fruit yield (280.5q/ha) and maximum B: C ratio (3.21) was recordedin TO(Table 31).

Table 31: Yield, Yield attributing characters and Economics

Technology Option	Disease incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP: Use chemicals only after the appearance of disease	11.6	226.5	60000	226500	166500	2.77
TO_1: Soil solarization + application of *P. fluorescens as* seed treatment @ 10g/kg seed, Nursery bed treatment @ 20g/sq.m and soil application @5kg/ha mixed with 500 kg vermi-compost/ha at 30 days of transplanting	7.3	257.5	65000	257500	192500	2.96
TO_2: Soil soloization + application of *Trichodermaveridei*as seed treatment @ 10g/kg seed, Nursery bed treatment @ 50g/sqm and soil application @5kg/ha mixed with 500kg vermi-compost/ha at 30 days of transplanting	5.1	280.5	66500	280500	214000	3.21
CD	2.69	15.04				



KVK KHAGARIA

THEMATIC AREA: Integrated Pest Management Efficacy of Chemical Pesticides and Bio Pesticides against FAW in Maize Crops

RESULTS: In recent years Fall Army Worm (FAW) became a major threat to farmers involved in maize cultivation and Khagaria district is known for maize cultivation in Bihar. After visualizing the severity of the FAW an OFT was conducted involving 8 farmers field with two technological option viz. TO1: spray of Azadiractin 1500 ppm@ 4-5ml/Lof water and TO2:spray of Lambda cyhalothrin @1ml/Lof water along with Farmer's Practice (Profenofos 50 EC@1ml/L of water). Results revealed that lowest pest incidence (1.79) of insect pest was observed in plot received TO2followed by TO1 where pest incidence was (3.68%) and highest infestation5.57% was observed in farmers practice (Table 32).

Table 32: Efficacy of Chemical Pesticides and Bio pesticides against FAW in Maize

Technological Options	Yield q/ha	% Increase in yield	Insect Incidence %	Gross Cost Rs/ha	Gross Return Rs/ha	Net Return Rs/ha	B:C Ratio
FP	42.17	-	5.57	40624.00	65785.00	25161.00	1.61
TO_1	45.39	7.63	3.68	38920.00	70808.00	31888.00	1.81
TO_2	49.09	16.40	1.79	39856.00	76580.00	36724.00	1.92
TO_1: spray of Azadiractin 1500 ppm@ 4-5ml/Lof water and TO_2:spray of Lambda cyhalothrin @ 1ml/Lof water along with Farmer's Practice (Profenofos 50 EC@ 1ml/L of water)							

KVK MADHEPURA

THEMATIC AREA: Integrated Pest Management Integrated Disease Management of Root and Stem rot of Cucurbits

RESULTS: Vegetable growers of the Madhepura district facing problem of root and stem rot of cucurbits lowering their income and to address the issue an On Farm Trial was conducted in 6 farmers field to assess the different technological options such as TO1: spray of Copper oxychloride @3gm/L +validamycin @2ml/L (Soil drenching) and TO2: spray of Kasugamycin @2ml/l + (Mancozeb + carbendazim @2g/LPoison painting and spray) at 20 days interval) + Trichodermaviridie @ 5ml/L (soil drenching) along with farmers practice where spray of Indofil M-45@ 3g/L at 20 days interval.Result revealed that lowest root rot and stem rot infestation (%) was observed in TO2 plot i.e. 21.53 & 12% respectively. Highest yield was observed in TO2 plot i.e. 370.57 q/ha (Table 33).

Table 33: Mean per cent infestation and Per cent Reduction in Disease incidence of Root & Stem rot of bottle gourd plant

Technological option	(%) Root Rot infestation	(%) Reduction of Root Rot infestation	(%) Stem Rot infestation	(%) Reduction of Stem Rot infestation	Yield (q/ha)	B:C Ratio
FP: Spray of Indofil M-45@3g/L	44.66	0.00	19.50	0.00	271.72	-
TO_1: Copper oxy chloride @3g/L + validamycin @2ml/L (soil drenching)	31.54	29.37	15.90	18.46	347.75	8.50
TO_2: Kashgamycin @ 2ml/L+ (Mancozeb + Carbendazim @ 2g/L as Poison painting & spray at 20 days interval) + *Trichoderma* as soil drenching	21.53	51.79	12.10	37.95	370.57	10.62
C.D.	1.208	-	0.478	-	9.208	

KVK RANCHI

THEMATIC AREA: Integrated Desease Management (IDM) Assessment Seedling Dip for Management of Fusarium Wilt in Tomato.

Results: Wilt is serious disease of tomato with 70 to 80 percent mortality during the vegetative growth stages and causing heavy loss if uncontrolled to grower. In order control the wilt disease incidence an OFT was conducted with 03 technological options i.e. TO1: Seedling treatment with Beejamrit, TO2: Seedling treatment with local formulation containing 10g each of turmeric and asafoetida dissolved in one litre of water, TO3: Seedling treatment with Trichodermaviride @ 5gm/litre and compared with farmers practices (Seedling treatment with 0.2% Carbendazim 50% WP). The result showed that TO2 significantly reduces transplanting mortality, wilt incidence percentage and higher yield followed by TO3(seedling treatment with Trichodermaviride) (Table 34). It was also observed that seedling treatment with turmeric and asafoetida is easy doing technology and easily available at village level.

Table34: Observations Recorded

Technology option	Transplant mortality (%)	Wilt incidence (%) 60 DAP	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP: Seedling treatment with 0.2% Carbendazim 50% WP	19	21	395	259655	790000	530345	3.04
TO_1: Seedling treatment with Beejamrit (5kg cow dung + 5 lit cow urine + 20 lit water + 50 gm lime for calcium source)	12	17	440	259600	880000	620400	3.39
TO_2: Seedling treatment with solution containing 10g each of turmeric and asafoetida dissolved in one litre of water.	8	12	505	261150	1010000	748850	3.87
TO_3: Seedling treatment with *Trichodermaviride* @ 5gm/litre.	9.5	14.5	470	259690	940000	680310	3.62
CD @ 5%	**1.48**	**1.66**	**1.96**				




HOME SCIENCE

KVK ARWAL

THEMATIC AREA: Food and Nutrition (F&N)

Assessment of quality protein Maize (QPM) based weaning/enriched food for child health

RESULTS: Poor health issue of children of farm families in rural areas of Bihar is matter of great concern. This problem leads to malnutrition and sometimes become grievous resulting in child mortality. To solve the problem an OFT was conducted by changing in the dietary pattern of children entitled "Assessment of quality protein Maize (QPM) based weaning/enriched food for child health" with three technological options viz. TO1: Roasted maize flour 60g + Roasted Bengal gram flour 20g + sugar 20g + ½ cup of milk and TO2:QPM (malted roasted) 50g + sprouted & roasted green gram 25g + Sesame/groundnut roasted 10g + sugar 15gm+ ½ cup milk and normal farmers practices (General dietary pattern with common practices) among the 6-18months old children with frequency of three times in a day with 10 replications involving 30 child.

Results revealed that there is marked changes in anthropometric measurement in selected child and maximum percent changes were recorded in the TO2 (QPM (malted roasted) 50g, sprouts & roasted green gram 25g +sesame/groundnut roasted 10g + sugar 15g with ½ cup milk(Table 35). The similar results in organoleptic acceptability by the children were also noted (Table 36).

Table 35: Effect of QPM based food on Anthropometric Measurement in Selected Child

Technological Option	Anthropometric measurements in selected children								
	Initial			After 3 months			% changes		
	Weight (kg)	Height (cm)	Chest cir.(cm)	Weight (kg)	Height (cm)	Chest cir.(cm)	Weight	Height	Chest
FP: General dietary pattern with common practices	7.01	66.4	42.95	7.12	67.2	43.05	1.56	1.2	0.23
TO_1: Roasted maize flour 60g + roasted Bengal gram flour 20g + sugar 20 g + ½ cup of milk.	6.96	68.3	43.76	7.12	69.7	43.91	2.29	2.04	0.34
TO_2: QPM (malted roasted) 50g + sprouted & roasted green gram 25g + sesame/groundnut roasted 10g + sugar 15g + ½ cup milk.	6.91	64.9	42.73	7.19	66.8	42.9	4.05	2.92	0.39

Table 36: Organoleptic Assessment of QPM based Food for Children (5 points acceptability)

Technological Option	Organoleptic assessment on 5 points acceptability			
	Taste	Colour	Odour	Texture
FP: General dietary pattern with common practices	Good (50%)	Average (90%)	Average (90%)	Soft (100%)
TO_1: Roasted maize flour 60g + roasted Bengal gram flour 20g + sugar 20 g + ½ cup of milk.	Very good (80%)	Good (80%)	Good (90%)	Soft (100%)
TO_2: QPM (malted roasted) 50g + sprouted & roasted green gram 25g + sesame/groundnut roasted 10g + sugar 15g + ½ cup milk.	Very good (100%)	Very good (100%)	Very good (100%)	Soft (100%)

KVK BHAGALPUR

THEMATIC AREA: Food and Nutrition (F&N)

Assessment of Mushroom Nuggets and fortified Mushroom Nuggets with local Nuggets

RESULTS: During the rainy season in flood prone area availability of fresh vegetable is major constraints. To overcome the scarcity of fresh vegetable people, prepare nuggets during the spring and summer season. The traditional nuggets are not very nutritious and insufficient consumption of vegetable leads to malnutrition particularly in lactating mother and children. To overcomes this an OFT was conducted in Bhagalpur districts for preparation of nuggets by mixing mushroom powder and fortified with spinach powder with two technological options and local practices. People's aacceptability of mushroom based nutritious nuggets fortified with locally available resources was tested on 10 different locations. Results revealed that after 3-month storage mushroom nugget was most accepted (3.96) followed by mushroom palak nugget (3.94) over traditional nugget (Table 37). However, after 6-month storage acceptability of mushroom nugget was still better than traditional nugget butfortified nuggets of mushroom and palak deteriorated in quality. No marketable changes in performance indicator on 5-point scale were observed. The higher BC ratio (1.05)was obtained in TO2 was followed by TO1(Table 38).

Table 37: Evaluation of the Technology with Performance Indicators

Technological option	Colour		Taste		Smell		Appearance		Texture	
	3 M	6 M	3 M	6 M	3 M	6 M	3 M	6 M	3 M	6 M
FP: Traditional Nugget	4.3	4.3	4.3	4.2	3.8	3.7	3.2	3.1	4.0	3.8
TO_1: Mushroom Nugget	4.6	4.6	4.4	4.1	3.0	3.0	3.3	3.3	4.5	4.2
TO_2: Fortified mushroom nugget	3.4	3.4	4.9	4.0	3.6	3.2	3.3	3.3	4.5	3.7
M: months										

Table 38: Performance of the Technology with Performance Indicators

Technological option	Acceptability		Keeping quality		CoC	Gross	Net	BC
	3 M	6 M	3 M	6 M	(Rs/kg)	Retrun (Rs/kg)	Profit (Rs/kg)	ratio
FP: Traditional Nugget	3.92	3.82	Good	Good	109	200	91	0.83
TO_1: Mushroom Nugget	3.96	3.84	Good	Good	198	400	202	1.02
TO_2: Fortified mushroom nugget	3.94	3.52	Good	Not Good	195	400	205	1.05
M: months; CoC: Cost of cultivations								

KVK NALANDA

THEMATIC AREA: Food and Nutrition (F&N)

Assessment of Mushroom based value Added Products (Laddoo)

RESULTS: Nalanda district is producing large quantities of Button and Oyster (Pleurotusostreatus) or paddy straw mushroom and sometimes farmers are not getting the premier price. In order to increase the demand there is need to develop and assess several value added products in the local market. Keeping these ideas an OFT on Assessment of mushroom based value added products (Laddoo)was conducted with fortification of mushrrom powder in the besanladdoo with three technological options. The trial was tested in 10 sets along with traditional laddoo viz. Farmers practice: Traditional recipes of ladoo followed by gram flour + suji + ghee + sugar, TO1: FP+ addition of 15% mushroom powder and TO2: FP+ addition of 20% mushroom powder and TO3:FP+ addition of 25% mushroom powder. The result depicted that product developed from 20% addition of dehydrated mushroom powder was most acceptable with score (4.5) in 5-point Hedonic scale and provided maximum protein (13.66g) per 100g laddoo (Table 39).

Table 39:**Evaluation of the Technological option with Performance Indicators**

Technology Options	Colour	Taste	Flavour	Texture	Acceptability (over all)	Protein content/ (100g)	Av. consumption frequency /week
FP: SujibesanLaddoo	4	4	3	3	3.5	12.27	3
TO_1: FP+15% mushroom powder	4	5	4	4	4.25	13.19	7
TO_2: FP+20% mushroom powder	5	4	4	5	4.5	13.45	7
TO_3: FP+25% mushroom powder	3	2	2	3	2.5	13.68	2
Result Compared at 5 point Hedonic Scale. :							

1.dislike extreme; **2**.dislike slightly; **3.**neither like nor dislike; **4.**like slightly; **5**.like very extreme

Fig: Preparation of *mushroom based value added products (Laddoo)*

ANIMAL SCIENCE

KVK BANKA

THEMATIC AREA: Feed Management

Assessment of Urea mineral molasses block (UMMB) feeding to pregnant cow on feed intake, milk production and quality of Non-descript dairy animals

RESULTS: An On farm trial was conducted in Banka district of Bihar to evaluate the efficacy of UMMB on performance of Non- descript cattleof the tribal farmers. 18 pregnant cows with similar breed, age andbody weight were selected and divided into three equal groups of 6 animals in each group with comprising 02 technological options and compare with farmer's practices viz. FP (feed 3 kg dry paddy straw and 10 kg local grass with maize 1.5 kg and Mahua 0.5kg); TO1 (FP+ UMMB @500g for60days post-partum period) and TO2 (UMMB@500g started at7.5-month pregnancy to 60 days post-partum period). The result revealed that average milk yield of 3.80± 0.20, 4.50 ± 0.10 and 5.5 ± 0.10 Kg/day in FP, TO1 and TO2 groups, respectively (Table40). The significantly ($p<0.05$) increase in the milk yield by 48.6 per cent and decrease in first post-partum estrus by 69 days in TO2 group indicated that the supplementation of UMMB since last trimester improved the productive and reproductive performance of animals.

Table40: Effect of feeding UMMB on Milk production and Economics

Technology option	FP	TO_1:(FP+ UMMB 500g/day Post partum)	TO_2:(FP+ UMMB 500g/day Pre and Post partum)
Calf birth weight	14.3^{b} ±0.4	14.2^{b} ±0.7	17.1^{a}±0.5
Calf weight (1 month)	17.1^{b} ±0.5	18.5^{b} ±0.9	24.7^{a}±0.8
Milk yield/day (Kg)	3.7^{c}±0.2	4.5^{b}±0.1	5.5^{a}±0.1
FCM yield	3.8^{c}±0.2	4.7^{b}±0.1	6.0^{a}±0.1
Fat%	4.21 ±0.1	4.26±0.1	4.59±0.8
DMI /100Kg B.Wt.	2.5±0.1	2.6±0.2	2.1±0.1
Daily feed cost (Rs)	44^{b}±0.1	75^{a}±0.2	75^{a}±0.1
Cost (Rs)/kg MY	12.6^{a}±0.5	16.8^{b}±0.5	13.7^{a}±0.4
Net profit	103.5^{b} ±7.6	106.2^{b}±4.3	146^{a}±5.8
Days of 1st post-partum estrus	141.83^{a} ±10.82	97.43^{b}±1.45	72.7^{b}±3.5
B:C	2.35	1.41	1.94

$^{a,.b}$Values with different superscripts in arrow differ ($p<0.05$)

KVK BANKA (Calf weight measurement)

THEMATIC AREA: Feed Management Feeding of UUMB Effect of feeding different hydroponic fodder on reproductive performance of Does

THEMATIC AREA: FEED MANAGEMENT

Effect of feeding different hydroponic fodder on reproductive performance of Does

RESULTS: An On Farm Trial was conducted in Banka district of Bihar to know the effect of feeding hydroponic fodder on reproductive performance of Black Bengal goat during the year 2020-21. 40 early kidding goats with similar breed, age andbody weight were selected and divided into four equal groups of 10 goat in each group with comprising 03 technological options and compare with farmer's practices viz. FP (Feed Maize 300g, Wheat flour-50g and paddy straw ad lib- 500-800g); TO1 (FP+ Hydroponic fodder of replacing 50g Maize), TO2 (FP+ Hydroponic fodder replacing 50g Wheat) and TO3 (FP+ Hydroponic fodder of 25g Maize & 25g Wheat).The result revealed that the first Post kidding estrus(PKE) and inter-kidding period was37.5, 23.3, 22.3 and 23.0 days: 225, 201, 202, 200 in FP, TO1, TO2 and TO3 groups, respectively (Table35). The significantly ($p<0.05$) decrease in Post kidding estrus, inter-kidding periodandcost of feeding (Rs/kid)in treatment group indicated that the supplementation of hydroponic fodder replacing 50g grains economically improved the reproductive performance of does.

Table 35: Effect Hydroponic Fodder on Reproductive Performance and Economics

Technology option	FP	TO_1 (HFM)	TO_2 (HFW)	TO_3 (HFM+HFW)	SEM
Body Weight (Kg)	23.4	23.6	24.1	23.8	0.37
DMI (% B.Wt.)	4.05	4.254	4.27	4.26	4.05
DCPI (g)	21.6	22.5	22.2	22.3	21.6
Days of First PKE (days)	37.5^{b}	23.3^{a}	22.3^{a}	23.0^{a}	1.10
Service/Conception (No.)	1.80	1.30	1.40	1.30	0.87
Inter kidding Period (Days)	225^{b}	201^{a}	202^{a}	200^{a}	2.44
Kid Birth Body weight (Kg)	1.30	1.26	1.28	1.27	0.02
Total litter production (no.)	2.10	2.60	2.50	2.60	0.94
Kids mortality % (0-3 months)	0.50	0.30	0.30	0.20	0.08
Cost of feeding (Rs/Inter-kidding period)	1978^{b}	1809^{a}	1870^{a}	1825^{a}	21.86
Cost of feeding (Rs/kid)	1026^{b}	740^{a}	778^{a}	727^{a}	42.61
Cost of feeding (Rs/Kg kid wt)	799^{b}	590^{a}	610^{a}	579^{a}	34.05

$^{a,.b}$Values with different superscripts in arrow differ ($p<0.05$)

*HFM-Hydropnic fodder of Maize; HFW-Hydroponic fodder of wheat


Growing different hydroponic fodder


Feeding of hydroponic

KVK PIPRAKOTHI, EAST CHAMPARAN

THEMATIC AREA:Feed Management

Assessment of self-made balanced concentrate mixture, readymade and locally available concentrate mixture feeding on milk production in crossbred milch animal

RESULTS: An On Farm Trial of 60 days was conducted in East champaran district of Bihar to assess the effect of homemade concentrate mixture feeding on milk production in crossbred cows. Total 24 early lactating animals with similar breed, age and body weight were selected and divided into three groups consisting of 8 animals in each group for the comparison of 02 technological options with farmer's practices viz. FP (Wheat bran and Grains or oil cake feeding@ 1kg/3litre of milk); TO1 (Market formulated concentrate mixture feeding@ 1kg/3 litre of milk) and TO2 (Self-made balanced concentrate mixture feeding i.e Grains: 30-40% + oil cake: 25-30% + Bran: 20-30% + M. Mixture: 2% + salt 1 %, @ 1kg/3 litre of milk). The result revealed that average milk yield was 6.30, 7.20 and 7.60 L/day in FP, TO1and TO2 groups, respectively (Table 36). During the study period TO2was recorded highest percentage increase in milk yield(20.63%) and B:C Ratio(2.96) among the treatment groups, which indicated that the supplementation of self made concentrate mixture in early lactation improved the milk production and net profit.

Table 36: Effect of Feeding Different Concentrate Mixture on Milk P roduction

Treatment	Av. Milk yield (L)	% increase in Milk yield	Cost of feeding (Rs)	Gross return (Rs.)	Net Return (Rs.)	B:C
FP: Wheat bran and Grains or oil cake feeding	6.30	-	4410	9828	5418	2.22
TO_1: Market formulated concentrate mixture	7.20	14.28	4935	12960	8025	2.62
TO_2: Self-made concentrate mixture (Grains: 30-40% + oil cake: 25-30% + Bran: 20-30% + M. Mixture: 2% + salt 1%)	7.60	20.63	4620	13680	9060	2.96


Preparation of home -made concentrate mixture

KVK MADHEPURA

THEMATIC AREA: Disease Mangement

Validation of Ovysynch and Heatsynch protocols in post partumanoestrus in cow

RESULTS: An On Farm Trial was conducted in Madhepura district to evaluate the efficacy of Ovysynch and Heatsynch protocols in post partumanoestrus in cow. 30 Anestrus cross bred cows in 2-4 partum with similar breed, age, body weight were divided into three equal groups of 10 animals in each group with comprising 02 technological options viz,TO1:[{D0 -GnRH (Buserelin) @10µg}; {D7- PGF2α@500µg}; {D9-GnRH (Buserelin)@10µg} and {D10- Fix time AI (Ovysynch)}]; TO2:[{D0 -GnRH (Buserelin) @10µg}; {D7 - PGF2α@500µg}; {D8-Oestradiol@1mg}; {D10 - Fixed Time AI (Heatsynch)] and compare with farmer's practices viz.FPDewormer (Fenbendazole @3g + Phosphorous 80mg IM+ multi-minerals bolus @1bolus orally for 7 days. Results revealed that the highest conception rate was 90 per cent found in TO1 than 80 percent and 30 percent in TO2and FP (Table 37) indicated that Oxysynch protocol was superior for post-partum anestrus animal.

Table 37: Effect of different Treatments on Conception Rate in Crossbred Cows

Technological Option	No. of cow shows heat	No. of cow Repeated	No. of cow conceptive	Conception rate (%)
FP: Deworming (Fenbendazole 3 gm + phosphorous 80 mg I/M + Multi mineral bolus@1bolus daily for 7 days	5	2	3	30%
TO_1:[{D_0 -GnRH (Buserelin) @10µg}, {D_7 - PGF2α@500µg}, {D_9-GnRH (Buserelin)@10µg} and {D_{10}- Fix time AI (Ovysynch)}]	9	-	9	90%
TO_2:[{D_0 -GnRH (Buserelin) @10µg}; {D_7 - PGF2α@500µg}; {D_8-Oestradiol @1mg}; {D_{10} - Fixed Time AI (Heatsynch)]	9	1	8	80%

KVK ROHTAS

THEMATIC AREA: Composite Fish Culture & Fish DiseaseAssessment of different Prophylactic and Ccurative techniques for Red Spot/Fin & Tail Rot/ Pop Eye Parasitic Diseases in Fish Fingerling Rearing

RESULTS: An On Farm Trial was conducted in Rohtas district addressing the issues ofred spot/fin & tail rot/ pop eye parasitic diseases by combination of different preventive and treatment medicines and 21

ponds of similar culture practices were divided into 3 groups with 7 ponds in each group with comprising 02 technological options and compared with farmer's practices viz. FP (Preventive-Lime @ 250 kg/ha& Treatment- Tetracycline @ 1% of fish feed); TO1 (Lime @ 250 kg/ha + water sanitizer (Ammonium chloride @ 1 L/acre) & Treatment - SokrenaWS @ 2 L/acre m water + Enrofloxacine @ 1% of fish feed) and TO2(Lime @ 250 kg/ha + Water sanitizer Ammonium chloride @ 1 L/Acre) + Soil & water probiotic @ 2kg/acre).Result indicated that the use of lime @250 kg/ha (quarterly) and ammonium chloride @1.0 L/acre/m(quarterly) along with water and soil probiotic were beneficial for the polyculture fish farming system for managing this disease (Table 38).

Table38: Effect of Different Preventive and Treatment Medicines on Disease I ncidence

Technology option	Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	B:C
FP: Preventive (Lime @ 250 kg/ha) & Treatment (Tetracycline @ 1% of fish feed)	13.95	143.17	945500	1396000	0.47
TO_1: Lime @ 250 kg/ha + Water sanitizer (Ammonium chloride @ 1 L/Acre)) & Treatment (Sokrena WS @ 2 L/Acre m water + Enrofloxacin @ 1% of fish feed)	7.71	162.66	935050	1586000	0.69
TO_2: Preventive (Lime @ 250 kg/ha + Water sanitizer (Ammonium chloride @ 1L/Acre) + Soil & water probiotic @ 2 kg/acre).	4.14	186.95	926000	1822800	0.96

KVK BIRAULI, SAMASTIPUR

THEMATIC AREA:Disease Management

Effect of Double Injection of Buserelin (GnRH) for Improving the Pregnancy Rate in Repeat Breeding Crossbred Cows

RESULTS: An On Farm Trial was conducted in Samstipur district of Bihar to evaluate the efficacy of Buserelin (GnRH) on different time combination in repeat breeding crossbred cows. 21 repeat breeding cross bred cows of similar partum stage (2-5) were divided into 3 groups of 7 animals each with comprising 02 technological options and compare with farmer's practices viz. FP (Fenbendazole 3g and Mineral mixture- 50g/day); TO1(FP+ Injection buserelin 5 ml (20µg) (single dose) 6 hrs before A.I) and TO2 (FP+ Injection of buserelin(6 hrs before A.I. and 12thdays after A.I.). Increase in conception rate by 43% in TO2groups indicates that the double dose of buserelin injection one at 6 hrs before A.I. and 2nd at 12th day after A.I. improved the reproductive performance of repeat breeder crossbred cows (Table 39).

Table 39: Effect of Buserelin (GnRH) on Conception Rate of Animals

Technological Options	Conceived animals (no.)	Conception rate (%)
FP: Fenbendazole 3g and Mineral mixture- 50g/day	**1**	0
TO_1: FP+ Injection buserelin 5 ml (20µg) (single dose) 6 hrs before A.I)	**2**	28.6
TO_2: FP+ Inj. of buserelin(6 hrs before A.I. and 12thdays after A.I.)	**3**	43


OFT inputs distribution


Pregnancy detection

KVK SUPAUL

THEMATIC AREA: Composite Fish Culture & Fish Disease Assessment of Fish production with right combination of IMC and common carp under polyculture system

RESULTS: An On Farm Trial was conducted in Supaul district to assess the different combination of fish species on pond productivity. 21 ponds of same culture practices were divided into 3 group of 7 ponds in each with comprising 02 technological options and compare with farmer's practices viz. FP (improper species combination in poly culture system); TO1 (Catla, Rohu& Common Carp in 4:3:3 ratio) and TO2Combination of Catla, Rohu and Mrigal in 4:3:3 ratios under polyculture system). The result revealed that the average fish production (q/ha) was 12.9, 13.7 and 18.5 in FP, TO1 and TO2 groups, respectively (Table 40). The highest yield and minimum disease incidence in TO2 groups indicated that combination of catla, Rohu and Mrigal in 4:3:3 ratios under composite fish poly culture are beneficial.

Table 40: Performance of Fish under different Species Combination in Polyculture System

Technological option	Survival (%)	Disease/ insect pest incidence (%)	Yield (q/ha)	Gross CostRs./ha	Gross ReturnRs/ha	B:C ratio
FP: Improper species combination in polyculture system.	80.1	42%	12.9	70000	206400	1.94
TO_1:Combination of Catla, Rohu& Common Carp in 4:3:3 ratio under polyculture system	85.9	30%	13.7	66000	219200	2.32
TO_2: Combination of Catla, Rohu and Mrigal in 4:3:3 ratio under polyculture system	91	19%	18.5	65000	296000	3.55

KVK VAISHALI

THEMATIC AREA: Feed Management Effect of Shatavari (Asparagus Recemosus) as Root Powder and Mineral Mixture feeding on Milk Production in Dairy Cow

RESULTS: An60 days On Farm Trial was conducted to assess the effect of herbal galactogogues (Shatavari) and mineral mixture on performance of cross bred cow. 30crossbred early lactating cows with similar breed, age andbody weight were selected and divided into three equal groups of 10 animals in each group with comprising 02 technological options and compare with farmer's practices viz. FP[wheat bran (400g), maize (1.5kg), sudha dana (1kg/3.5kg milk) and wheat straw adlib], TO1: [FP+ 50gShatavari root powder+50g mineral mixture /day/cow] TO2: [FP+ 100g Shatavari root powder + 50gmineral mixture per day/cow]. The result revealed that average milk yield of8.14, 8.82 and 9.01 Kg/day in FP, TO1 and TO2 groups, respectively(Table 41).The highest increase in the milk yield and net return/day/animal by 10.68per cent and Rs. 220 in TO2 group indicated that the supplementation of shatavari @100gday improved the productive performance of animals.

Table 41: Effect of Satavari Feeding on Milk Production

Technological option	Milk yield (L/day)	Increase in milk yield L/day	% increase in Milk production	Cost of daily Shatavari feeding @300Rs/kg	Gross return per day per animal@ Rs 40/Kg	BC ratio
FP	8.14	-	-	-	325.60	2.71
TO_1	8.82	0.68	8.35	15	352.80	2.94
TO_2	9.01	0.87	10.68	30	360.40	3.00

FP: (wheat bran 400g, maize 1.5kg, sudha dana-1kg/3.5kg milk and wheat straw adlib), TO_1: (FP+ 50 gm Shatavari root powder +50g mineral mixture /day/cow) TO_2: (FP+ 100 gm Shatavari root powder + 50g mineral mixture per day/cow)

Rs 120.00/day was the average cost incurred in feeding of one animal (inclusive of labourhrs per animal)

Demonstration of OFT, KVK, Vaishali

KVK RANCHI

THEMATIC AREA: Disease Management

Assessment of the Performance of Herbal Low Cost Dewormer on Goats.

Results: An On Farm Trial was conducted at Angara block, Ranchi, Jharkhand to assess the performance of herbal low cost dewormer (Neem leaves) on black Bengal goats during the year of 2020-21. 18 goats of the same breed and body weight were selectedand divided in to three equal groups of six animals in each group with comprising two technical options and compare with present farmers' practice, viz. FP (Grazing without deworming), TO1:(FP + Fenbendazole and Praziquantel @6-8mg/kg body weight, orally in morning) and TO2:(FP + Neem leaves powder @ 0.50g/kg body weight with 25g jaggery, orally in morning for 3 days). As per observations recorded (Table 42)TO1 and TO2were found equally effective in terms of weight gain during 90 days, net return (Rs. 846.44 and 866.80) and B:C ratio (2.84 & 2.91), respectively,indicated that the supplementation of neem leaves is a cost effective dewormer for goat.

Table 42: Performance of Herbal Low Cost Dewormer on Goats

Technology option	Av. wt. of experimental animals			Cost of dewormer (Rs./animal)	Other expenditure Rs.	Gross return @ Rs 400/kg	Net return (Rs./goat)	B:C
	Av. wt. before deworming	After deworming (Kg)	Wt. gain (Kg)					
FP	14.42	16.69	2.27	00	450	908	.458	1.9
TO_1	14.68	17.94	3.26	7.56	450	1304	846	2.8
TO_2	14.28	17.58	3.30	3	450	1320	867	2.9
SE(m)	0.78	0.74						
CD 5%	NS	NS						

FP (Grazing without deworming), TO_1:(FP + Fenbendazole and Praziquantel @ 6-8mg/kg body weight, orally in morning) and TO_2: (FP + Neem leaves powder @ 0.50g/kg body weight with 25g jaggery, orally in morning for 3 days)

*Other expenditure- man days

Mixing of neem leaf powder in feed and feeding

KVK-KODERMA

THEMATIC AREA: Disease Management

Management of Subclinical Mastitis in Dairy cow

Result: An OFT was conducted in Koderma district of Jharkhand during the year 2020with an objective to reduce the incidence of subclinical mastitis, increase in milk yield and improve the quality of milk in dairy cow. A total 60 cross breed lactating cows were selected those found positive in

California mastitis test and divided into 3 groups containing 20 animalsand 3 technological options were FP: washing of udder with clean water after milking and moping with dry cloth; TO1: FP and oral supplement of Vit. E and Selenium @ 20 ml/ day for 5 days and TO2: F.P and oral Levamisole HCl @ 2.5 mg/kg once for three consecutive days.The result of the trial indicated that higher recovery percentage 70 recorded in subclinical mastitis was seen in cows orally supplemented withVitamin E and Selenium. The milk yield, fat (%), protein (%), lactose, SNF and Total solid were also high cow in TO1 group as compared to cows of TO2 and FP group (Table 43). The pH, TBC andSomatic cell count were low in cows of group TO1 as compared to cows of group TO2 and FP. Thus it can be concluded that Vit. E and Selenium@ 20 ml/ day for 5 days has been produced beneficial effect on udder immunity and lower the incidence of subclinical mastitis.

Table 43: Effect of different treatments on quality and quantity of mil k

Technology Option	Milk pH	Somatic cell count	TBC	Fat %	Protein %	Lactose	SNF	Total solid	Milk yield	Recovery %
FP	6.7	5.02	4.78	2.6	3.9	4.2	7.8	10.91	3.5	50
TO_1	6.4	1.77	1.04	3.2	4.1	4.7	8.8	12.2	4.8	70
TO_2	6.8	1.82	1.07	3.1	4.2	4.6	8.62	11.7	4.5	65

F.P : Washing of udder + moping with dry cloth; TO_1: F.P. + Vit. E and Selenium orally @ 20ml/ day for 5 days and TO_2: F.P.+ Levamisole HCl @ 2.5 mg/kg orally once for three consecutive days


Sub clinical mastitis positive quarters


Collection of milk sample for CMT


Gel formation in CMT


Change the pH of milk

FRONTLINE DEMONSTRATIONS (FLD)

3.2 Frontline Demonstrations (FLD)

Front Line Demonstration (FLD) is a unique extension approach for dissemination of recent technology and its management practices to provide direct interface/linkages between technology developers and end users of the technology to study the constraints of production, factors contributing for higher production and thereby generate production data and feedback information. FLDs are also conducted in allied fields like Animal Science, Home Science etc. It is a form of applied research on latest released varieties along with component or full package of practices on identified farmers' fields to exhibit the potentiality of the

Table 44: State wise details of Frontline Demonstration Conducted during 2020.

State	Oilseed		Pulses		Cereals		Vegetables		Fruits		Other Hort Crops		Others		Total	
	No. of Farmer	Area (ha)	No. of Farmer	Area (ha)	No. of Farmer	Area (ha)	No. of Farmer	Area (ha)	No. of Farmer	Area (ha)	No. of Farmer	Area (ha)	No. of Farmer	Area (ha)	No. of Farmer	Area (ha)
Bihar	848	320	879	306.56	2368	867.83	1689	211.9	95	10.12	449	111.35	194	62.06	6522	1890
Jharkhand	817	302	358	121.00	793	272.25	428	60.14	57	78.00	48	2.60	61	7.00	2562	843
Total	**1665**	**622**	**1237**	**427.56**	**3161**	**1140.08**	**2117**	**272.04**	**152**	**88.12**	**497**	**113.95**	**255**	**69.06**	**9084**	**2733**

Field view of Front Line Demonstrations on oilseeds

3.2.1 Oilseed crops

In the recent year's government has given more focus on the cultivation of Pulses and Oilseed crops under national food security mission. The increasing demand of oilseed and pulses had been met through to import and burden on exchequer of the country. In order to reduce the economic crisis, the KVKs of Zone-IV took up the programs to enhance the production and productivity of pulses and oilseed crops through planning and executing frontline demonstration program across the zone (Bihar and Jharkhand). In the FLD programme important oilseed crops like mustard, groundnut, niger, linseed, sesame and soybean were taken up covering 622 ha area by involving 1665 farmers. Among oilseeds more focus wason mustard covering 436 ha involving 1155 farmers with 32.35 to 54.54 % increase in yield over the check with highest BR ratio of 2.31 to 3.66. However, maximum per cent increase in yield (76.0) was observed under soybean (Table 45).

3.2.1 Pulses crops

In case of Pulses like chickpea, pigeon pea, lentil, etc., FLDs were conducted in 427.56 ha area involving 1237 farmers of which area covered in Biharwas 306.56ha involving 879 farmers and in Jharkhand 121.00 ha involving 358 farmers. Among

3.2.2 Pulses crops

In case of Pulses like chickpea, pigeon pea, lentil, etc., FLDs were conducted in 427.56 ha area involving 1237 farmers of which area covered in Biharwas 306.56ha involving 879 farmers and in Jharkhand 121.00 ha involving 358 farmers. Among pulses chickpea occupied the first in area and famers involvement with 21.75 to 30.19 percent increase in yield over local check having BC ratio of 2.53 to 3.33 in Bihar and Jharkhand respectively (Table 46). Second position was of pigeon pea with total 124.16 ha area under frontline demonstration involving 394 farmers of which 206 in Bihar with 66.16ha area having percent increase in yield 32.99 to 50.73(Jharkhand).

3.2.3 Cereal crops

Front line demonstrations on cereals crops covering an area of 1140.08 ha involving 3161 farmers were conducted by the KVKs of Bihar and Jharkhand during 2020 (Table 44).Paddy covered area of 581.00 ha covering 1159 farmers under demonstration by the KVKs of Bihar and Jharkhand resulting in 20.11 to 28.83% increase in yield in demonstration over local check.FLD in wheat, conducted by KVKs of Bihar and Jharkhand covered 363.38 ha under demonstration involving1316 farmers with 22.10 to 48.18% increase in yield in the demonstration plot over local check withbenefit-cost ratio of 1.80 to 1.96.Maize was demonstrated in 259 farmer'sfield covering 75.00 ha by the KVKs of Bihar and Jharkhand with 37.58 % increase in yield in Jharkhand (Table 47)

FLD on Zero tillage in Wheat KVK Darbhanga

Table 45: Details of Frontline Demonstration of *Kharif* &*Rabi* Oilseeds during 2020

Sl. No.	Crop	State	No. of farmer	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	Mustard	Bihar	848	320.00	17.00	12.81	32.35	23782.00	64820.00	41248.00	2.73	21198.75	49448.25	28249.50	2.31
		Jharkhand	307	116.00	17.00	11.00	54.54	13000.00	51000.00	38000.00	3.92	12000.00	44000.00	32000.00	3.66
		Total	**1155**	**436**											
2	Groundnut	Jharkhand	192	66.00	13.17	8.63	43.75	31133.33	66416.67	35283.33	2.11	26933.33	41600.00	14666.67	1.52
		Total	**192**	**66.00**											
3	Niger	Jharkhand	155	65.00	5.08	3.48	47.51	11200.00	22187.50	10986.00	2.11	10650.00	15312.50	4662.50	1.50
		Total	**155**	**65.00**											
4	Linseed	Jharkhand	65	25.00											
		Total	**65**	**25.00**											
5	Sesame	Jharkhand	78	20.00											
		Total	**78**	**20.00**											
6	Soybean	Jharkhand	20	10.00	9.71	5.50	76.00	8000.00	30195.00	22195.00	3.77	7000.00	15750.00	8750.00	2.25
		Total	**20**	**10.00**											
Bihar			**848**	**320**											
Jharkhand			**817**	**302**											
Grand Total			**1665**	**622**											

Table 46: Details of Frontline Demonstration on Pulses (Kharif & Rabi) 2020

Sl. No.	Crop	State	No. of farmers	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	Chick pea	Bihar	301	126.40	14.23	11.77	21.75	31465.00	74871.75	50456.75	2.68	24361.67	60087.63	39481.57	2.53
		Jharkhand	65	25.00	25.27	16.50	30.19	27900.00	82270.00	54370.00	4.20	26250.00	63312.50	37062.50	3.33
		Total	**366**	**151.40**											
2	Pigeon pea	Bihar	206	66.16	16.22	12.33	32.99	26150.00	83780.25	57630.25	2.39	23787.50	58582.50	34795.00	2.20
		Jharkhand	188	58.00	14.60	9.70	50.73	23300.00	51066.67	27766.67	2.21	21366.67	33700.00	12333.33	1.63
		Total	**394**	**124.16**											
3	Lentil	Bihar	222	72.00	13.88	10.29	36.54	28300.00	65662.57	44226.86	2.61	24235.71	47817.86	35939.29	2.33
		Jharkhand	31	12.00	13.00	10.40	18.42	42800.00	73800.00	31000.00	1.72	40000.00	62320.00	22320.00	1.56
		Total	**253**	**84.00**											
4	Green gram	Bihar	125	41.00	10.10	7.39	32.34	22000.00	52448.00	30448.00	2.33	21045.00	37581.20	16536.20	1.56
		Jharkhand	15	5.00	15.00	5.00	9.00	23200.00	63000.00	39800.00	2.71	17100.00	35000.00	17900.00	2.04
		Total	**140**	**46.00**											

Sl. No.	Crop	State	No. of farmers	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
5	Horse gram	Jharkhand	44	16.00	7.65	5.65	34.77	19300.00	34500.00	15200.00	1.80	18450.00	26250.00	7800.00	1.43
		Total	**44**	**16.00**											
6	Black gram	Jharkhand	15	5.00	15.00	5.00	7.60	21400.00	41800.00	20400.00	1.96	17100.00	27500.00	10400.00	1.60
		Total	**15**	**5.00**											
7	Field pea	Bihar	25	1.00	15.64	12.63	25.41	29500.00	139370.00	109870.00	4.72	30500.00	111125.00	80625.00	3.60
		Total	**25**	**1.00**											
Bihar			**879**	**306.56**											
Jharkhand			**358**	**121.00**											
Grand Total			**1237**	**427.56**											

Table 47: Details of Frontline Demonstration of Field Crops 2020

Sl. No.	Crop	State	No. of farmer	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	Paddy	Bihar	803	415.10	41.28	35.00	20.11	38310.71	85399.41	40350.95	2.23	31418.29	61249.37	29600.26	1.88
		Jharkhand	356	165.90	39.75	22.25	28.83	29098.57	53809.14	24674.86	1.90	26933.85	40812.92	13671.38	1.51
		Total	**1159**	**581.00**											
2	Wheat	Bihar	1154	323.73	36.50	30.15	22.10	32555.69	72284.93	52590.96	2.12	31313.00	59003.50	27813.44	1.80
		Jharkhand	162	39.65	28.90	19.21	48.18	24966.67	54778.33	31511.67	2.20	19333.33	36041.67	16708.33	1.96
		Total	**1316**	**363.38**											
3	Jute	Bihar	170	68.00	23.86	19.10	25.27	33562.50	82157.50	48595.00	2.45	33062.50	63820.00	30757.50	1.96
		Total	**170**	**68.00**											
4	Maize	Bihar	121	25.10	48.18	34.40	28.40	31031.75	63937.00	32905.25	2.06	27511.25	50833.75	23322.50	1.88
		Jharkhand	138	31.70	96.46	32.28	37.58	28196.00	64320.60	36124.60	2.32	25265.00	47783.50	22518.50	1.91
		Total	**259**	**56.80**											
5	Sorghum	Bihar	80	23.90	27.15	20.38	29.92	69610.00	51215.00	33355.00	2.80	18206.67	42203.00	23996.33	2.32
		Jharkhand	65	15.00	20.80	15.26	19.58	22907.50	66642.50	43735.00	2.88	21733.33	58286.67	36286.67	3.01
		Total	**145**	**38.90**											
6	Finger Millet	Bihar	25	10.00	8.70	7.50	16.00	10980.00	24000.00	13020.00	2.13	11360.00	27840.00	16480.00	2.46
		Jharkhand	72	20.00	17.50	15.30	14.38	27720.00	55130.00	27410.00	1.99	26120.00	46990.00	20870.00	1.80
		Total	**97**	**30.00**											
7	Oats	Bihar	15	2.00											
		Total	**15**	**2.00**											
Bihar			**2368**	**867.83**											
Jharkhand			**793**	**272.25**											
Total			**3161**	**1140.08**											

3.2.3 Horticultural crops

Bihar and Jharkhand are basically an agrarian state where mainly cereals (paddy/wheat), pulses, oilseeds and sugarcane are cultivated. Adoption of paddy/wheat cropping system has created many problems such as environmental problems, degradation of natural resources, and economic instability. India's total production of horticultural crops is 306.8 million MT and ranked second largest world producer of fruits 97.36 million MT from 6.51 mhaand vegetables184.39 million MTfrom10.25 m ha area. Total area under fruits and vegetable in Bihar and Jharkhand is 1145.51 thousand ha and 409.14 thousand ha respectively (2017-18). Large number of farmers is involved in cultivation of Horticultural crops and Front line demonstrations in horticulture (vegetables, fruits, flower, etc,) are a focal point in terms of validations of technology by KVKs. In Bihar and Jharkhand FLDs on horticulture crops covered 474.11ha involving 2766 farmers field during the year 2020 (Table 44).

3.2.3.1 Vegetable Crops

During the year frontline demonstration on 21 vegetable crops was conducted in 272.04ha involving 2117 farmers of which in Bihar 211.90ha were covered involving 1689 farmers. In vegetables crops major focus was on cauliflower with area of 111.50 ha covering 305 farmers by the KVKs of Bihar and Jharkhand showing 32.39 and 11.37 % increase in yield in demonstration field over local check, respectively followed by brinjal, cucumber, potato, onion and tomato.29.50 ha were brought under demonstration program. In brinjal, which recorded 29.75 to 37.00 % increase in yield over local check in Bihar and Jharkhand with highest benefit-cost ratio of 2.09 and 2.31, respectively. In case of cucumber, 19.50 ha area was covered with demonstration field showing 40.00 to 45.00 % increase in yield over farmers practice in Jharkhand and Bihar respectively. Onion which is one of the major crops of Bihar 16.00 ha area covered with 16.36 % increase in yield over check and had BC ratio of 2.42. Tomato is another important vegetable where 13.83ha area was covered in FLD with involvement of 219 farmers and recording 49.02 to 54.18% increase in yield over farmer's practices and very high BC ratios of 3.59 and 2.79 in Bihar and Jharkhand respectively. Similar trend is recorded in case of broccoli, capsicum, potato and French bean. Among the entire vegetable crops highest BC ratio (5.26) was recorded in cauliflower cultivation (Table 48).

View of FLD on vegetables in bitter gourd and cauliflower improved varieties

Table 48: Details of Frontline Demonstration on Vegetables Crops 2020

Sl. No.	Crop	State	No. of farmer	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	Cauliflower	Bihar	225	107.50	192.07	148.06	32.39	74201.04	271963.37	197762.33	3.58	68420.93	211226.05	142805.12	2.71
		Jharkhand	80	4.00	312.50	247.50	11.37	50000.00	312500.00	262500.00	6.25	47000.00	247500.00	200500.00	5.26
		Total	**305**	**111.50**											
2	Brinjal	Bihar	298	14.50	248.86	198.95	29.75	52401.76	182904.29	130598.96	2.75	50969.47	138088.86	87119.39	2.09
		Jharkhand	80	15.00	327.30	294.60	37.00	73162.00	232200.00	1088440.00	3.17	67700.00	158260.00	78893.33	2.31
		Total	**378**	**29.50**											
3	Cucumber	Bihar	132	4.50	141.88	95.00	40.00	44750.00	131880.00	87130.00	3.08	36055.00	80000.00	43945.00	2.28
		Jharkhand	50	15.00	80.00	55.00	45.00	35000.00	80000.00	45000.00	2.28	34000.00	55000.00	21000.00	1.60
		Total	**182**	**19.50**											
4	Potato	Bihar	42	14.00	229.27	191.43	20.27	71930.00	203213.33	127933.33	2.78	75943.67	169503.33	93559.67	2.23
		Jharkhand	10	2.00											
		Total	**52**	**16.00**											
5	Onion	Bihar	97	16.00	247.12	210.16	16.36	70743.33	12956273.00	101094.50	2.63	64575.00	144604.83	80029.83	2.42
		Total	**97**	**16.00**											
6	Tomato	Bihar	163	7.75	549.10	404.02	49.02	109196.50	536351.58	427155.04	4.96	101337.75	363556.18	262218.39	3.59
		Jharkhand	56	6.08	447.59	274.18	54.18	76848.21	279883.54	258148.04	3.89	71464.29	191811.79	120347.50	2.79
		Total	**219**	**13.83**											
7	Okra	Bihar	70	8.15	139.60	109.97	23.31	47846.44	146211.41	102815.86	3.00	46134.65	112854.59	71061.28	2.33
		Jharkhand	30	3.00	200.00	140.00	42.90								
		Total	**100**	**11.15**											
8	Cowpea	Bihar	81	6.00	21.00	18.00	16.60	41000.00	210000.00	169000.00	5.12	36000.00	144000.00	108000.00	4.00
		Jharkhand	26	5.00	11.00	9.00	22.00	12100.00	20000.00	7900.00	1.65	10000.00	13500.00	3500.00	1.35
		Total	**107**	**11.00**											
9	Chilies	Bihar	100	8.40	89.28	68.25	24.48	69490.00	181082.00	111223.50	2.59	65691.25	135532.50	69841.25	2.07
		Jharkhand	15	2.00	40.50	31.11	30.22	83342.00	405000.00	321658.00	4.85	83000.00	311000.00	228000.00	3.74
		Total	**115**	**10.40**											
10	Bottle gourd	Bihar	172	7.10	257.76	205.92	28.89	57341.60	191268.60	133927.00	3.64	55183.80	147259.40	92075.60	2.80
		Jharkhand	30	2.00	320.00	223.00	46.10	39750.00	225000.00	196500.00	5.91	35050.00	160500.00	115200.00	4.51
		Total	**202**	**9.10**											
11	Cucurbitacae	Bihar	38	8.00	164.12	143.21	44.40	20825.00	63046.00	42446.00	1.53	19360.00	55482.00	36122.00	1.43
		Total	**38**	**8.00**											

Sl. No.	Crop	State	No. of farmer	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
12	Sponge gourd	Bihar	135	2.50	127.79	91.02	37.16	36675.00	132790.00	96115.00	3.56	31385.00	76423.00	45038.00	2.98
		Jharkhand	10	1.00	180.00	128.00	40.63	21300.00	90000.00	68700.00	4.22	20800.00	64000.00	43200.00	3.07
		Total	**145**	**3.50**											
13	Bitter gourd	Bihar	50	1.25	55.00	40.00	37.50	60000.00	180000.00	120000.00	3.00	45000.00	80000.00	35000.00	1.77
		Jharkhand	20	2.00		75.00		50000.00	180000.00	0.00	3.80	0.00		85000.00	3.13
		Total	**70**	**3.25**											
14	French bean	Bihar	10	2.00	12.00	9.00	33.30	36000.00	90000.00	54000.00	2.50	34500.00	67500.00	33000.00	1.95
		Total	**10**	**2.00**											
15	Sweet corn	Jharkhand	10	2.00	140.00	75.00	86.70	96000.00	#DIV/0!	#DIV/0!	2.90	62000.00	#DIV/0!	88000.00	2.42
		Total	**10**	**2.00**											
16	Broccoli	Bihar	40	1.40	56.00	46.68	17.20	216774.19	672000.00	455225.81	3.10	194580.50	533232.00	3886515.50	2.70
		Total	**40**	**1.40**											
17	Ridge gourd	Jharkhand	10	1.00	175.00	123.00	42.28	21200.00	87500.00	66300.00	4.12	21000.00	61500.00	40500.00	2.92
		Total	**10**	**1.00**											
18	Elephant Foot yam	Bihar	21	0.60	323.21	266.81	33.13	115906.50	438361.50	322455.00	3.31	97315.26	331090.50	233775.24	2.86
		Total	**21**	**0.60**											
19	Capsicum	Bihar	10	0.25											
		Total	**10**	**0.25**											
20	Pointed Gourd	Jharkhand	1	0.06	168.26	103.94	61.87	44750.00	168260.00	123510.00	3.75	36250.00	103940.00	67690.00	2.86
		Total	**1**	**0.06**											
21	Carrot	Bihar	5	2.00	1.55	1.35	1.17	7750.00	20670.00	12920.00	2.66	7750.00	17550.00	9800.00	2.26
		Total	**5**	**2.00**											
Total Bihar			**1689**	**211.90**											
Total Jharkhand			**428**	**60.14**											
Grand Total			**2117**	**272.04**											

3.2.3.1 Fruit crops

Bihar and Jharkhand are the hub of subtropical fruits crops like mango, litchi, guava and banana hence due attention were given to conduct FLD in fruit crops covering 88.12 ha area involving 152 farmers during 2020. In Jharkhand, more focus was on Ber or Indian Jujebe on FLD with coverage of 73.00 ha involving 33 farmers and 3.82 as BC ratio. In Bihar, banana, mango and litchi crops covered 4.40, 2.00 and 2.00 ha area under FLD with BC ratio of 2.13, 1.74 and 1.74 respectively. Frontline demonstration on high value crops like strawberry hasalso started in Bihar involving 20 farmers (Table 49).

3.2.3.1 Other Horticultural crops (flower, spices, etc.)

In recent year cultivation of commercial flowers crops like marigold, tuberose and gladiolus has been getting momentum and covered significant area in the Zone IV. Seeing the importance of crop FLDs on marigold was conducted in an area of 3.00 ha involving 27 farmers and recorded 2.80 BC ratio in Bihar and 1.62 in Jharkhand state. In Makhana BAU Sabour released a high yielding variety in last year hence 85.00 ha area was covered FLDs involving 110 farmers and recorded 31.83% increase in yield over farmer's practices. FLD on spices crops, perennial drumstick and nutrition garden were approved and conducted by the KVKs of Bihar and Jharkhand during the year 2020 (Table 50).

Table 49: Details of Frontline Demonstration of Fruit Crops 2020

Sl. No.	Crop	State	No. of farmer	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	Ber	Jharkhand	33	73.00	8.85	5.63	78.18	3175	8440	5265	3.10	1150	4400	3250	3.82
		Total	**33**	**73.00**											
2	Papaya	Bihar	20	0.72	30.00	5.00	25.00	5000	-	-	-	-	-	-	-
		Jharkhand	24	5.00											
		Total	**44**	**5.72**											
3	Banana	Bihar	35	4.40	503.00	431.00	16.70	119500	452700	333200	2.78	123600	387900	264300	2.13
		Total	**35**	**4.40**											
4	Mango	Bihar	10	2.00	310.00	18.00	70.30	45500	112000	36500	2.46	446000	78000	33400	1.74
		Total	**10**	**2.00**											
5	Litchi	Bihar	10	2.00	238.00	155.00	53.50	30500	80500	50000	2.63	29800	45000	15200	1.51
		Total	**10**	**2.00**											
6	Strawberry	Bihar	20	1.00											
		Total	**20**	**1.00**											
Total Bihar			**95**	**10.12**											
Total Jharkhand			**57**	**78.00**											
Grand Total			**152**	**88.12**											

Table 50: Details of Frontline Demonstration of Other Horticultural Crops 2020

Sl. No.	Crop	State	No. of farmer	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	Makhana	Bihar	110	85.00	23.00	17.50	31.88	88000.00	180000.00	92000.00	1.05	75000.00	122400.00	47400.00	0.63
		Total	**110**	**85.00**											
2	Marigold	Bihar	9	1.00	89.00	71.50	24.40	67375.00	275900.00	208525.00	4.09	52250.00	150150.00	97900.00	2.80
		Jharkhand	18	2.00	171.00	88.00	92.13	65000.00	205200.00	140200.00	3.15	65000.00	105600.00	40600.00	1.62
		Total	**27**	**3.00**											
3	Coriander	Bihar	112	1.65	15.00	9.00	30.85	15212.50	52950.00	37737.50	3.13	23962.50	44500.00	20537.50	1.78
		Total	**112**	**1.65**											
4	Tuberose	Bihar	11	0.65	68.06	71.85	19.84	105000.00	286000.00	181000.00	2.73				
		Total	**11**	**0.65**											
5	Turmeric	Bihar	29	0.40	255.06	220.00		138000.00	306072.00	168072.00	2.21	126000.00	264000.00	138000.00	2.09
		Total	**29**	**0.40**											
6	Nigella	Bihar	11	0.20	1.20	0.95	1.26	1550.00	7080.00	5530.00	4.56	1550.00	5200.00	3650.00	3.34
		Total	**11**	**0.20**											
7	Fennel	Bihar	11	0.20											
		Total	**11**	**0.20**											
8	Gladiolus	Bihar	5	0.20	0.20	25.00		90000.00	250000.00	160000.00	2.80				
		Total	**5**	**0.20**											
9	Ajowain	Bihar	11	0.20											
		Total	**11**	**0.20**											
10	Fenugreek	Bihar	11	0.20	1.40	1.10	1.18	2450.00	7635.00	5185.00	3.11	2450.00	6000.00	3550.00	2.44
		Total	**11**	**0.20**											
11	Vegetable Kits	Bihar	19	0.40											
		Jharkhand	30	0.60											
		Total	**49**	**1.00**											
12	Nutrition Garden	Bihar	110	21.25	57.57	37.40	57.83	725.00	3741.33	3016.33	5.39	555.00	2192.50	1637.50	4.37
		Total	**110**	**21.25**											
Total Bihar			**449**	**111.35**											
Total Jharkhand			**48**	**2.6**											
Grand Total			**497**	**113.95**											

3.4.2.4 Otheraspects (Bio-agents, Pheromone Traps, etc.)

In recent year application of bio-pesticides, bio-agents and bio-regulators are very useful and ecofriendly tools in good management practices. Seeing their importance frontline demonstration were conducted to popularize these bio-agents among farmers of the Zone IV and altogether 69.06 ha area with involving 255 farmers were conducted by the KVKs. In Bihar Azotobactor and Pseudomonas was demonstrated each in 12 ha area and pheromone trap in 29 ha area involving 12, 28 and 80 farmers respectively. For popularisingnutri-garden 21.75 ha area was brought under FLD with covering 110 farmers with high BC ratio of 4.37. FLDs on fodder crop like napier, berseem and other fodder crop were conducted. OFTs on Lac cultivation was also done by KVKs in Jharkhand (Table 51).

Table 51:Details of Frontline Demonstration of Other aspects 2020

Sl. No.	Crop	State	No. of farmers	Area (ha)	Yield (q/ha)		Increase (%)	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	*Azotobactor*	Bihar	12	12.00	39.48	28.65	37.80	34400	71064	36664	2.06	29600	51570	21970	1.74
		Total	**12**	**12.00**											
2	Pheromone trap	Bihar	80	29.00	80.00	62.00	29.03	600	2000	1400	2.30	400	1550	1150	2.80
		Total	**80**	**29.00**											
3	*Pseudomonas*	Bihar	28	12.00											
		Total	**28**	**12.00**											
4	Magic sticker in Tomato	Jharkhand	20	1.00											
		Total	**20**	**1.00**											
5	Sugarcane	Bihar	6	1.80	890.00	712.00	23.35	76500	267000	190500	3.49	89000	213600	124600	2.40
		Total	**6**	**1.80**											
6	Fodder Crop	Bihar	8	0.50	828.00	675.00	22.66								
		Jharkhand	25	6.00	255.00	195.00	30.77	35000	76500	41500	2.18	28000	58500	30500	2.08
		Total	**33**	**6.50**											
7	Lathyrus	Bihar	4	4.00											
		Total	**4**	**4.00**											
8	Berseem	Bihar	36	2.50	6.10	5.10	15.10	600	1220	620	2.03	#DIV/0!	1020	420	1.70
		Total	**36**	**2.50**											
9	Napier	Bihar	20	0.26	554.94	453.70	27.86	60000	200000	140000	3.33	65000	140000	75000	2.15
		Total	**20**	**0.26**											
10	Lac	Jharkhand	16	0.00	18.00	6.90	1.00	400	1800	1400	4.50	300	450	150	1.50
		Total	**16**	**0.00**											
Total Bihar			**194**	**62.06**											
Total Jharkhand			**61**	**7.00**											
Grand Total			**255**	**69.06**											

3.2.3 Livestock and Fishery

Frontline demonstrations were conducted on livestock and fisheries related aspects for assessment of breed, feed& fodder management, vaccination of animals, deworming, pond management, stocking density, fish, fingerling production and other areas by the KVKs of ICAR-ATARI Zone IV. In livestock, 2556 farmers were involved in such demonstration for the 8062 numbers of livestockof which 2184number of farmers were involved in Bihar and 372 in Jharkhand. In fisheries total 132 demonstrations were conducted by the KVKs coveringwater area of 572 hain both the state with farmers and water bodies brought under demonstration (Table 52).

Table 52: State wise details of Frontline Demonstration on Livestock and Fisheries

Sl. No.	Category	State	No. of Farmers	Area (ha)/No
1	Livestock	Bihar	2184	4824
		Jharkhand	372	3238
		Total	**2556**	**8062**
2	Fishery	Bihar	116	556
		Jharkhand	16	16
		Total	**132**	**572.00**
Grand total			**2688**	**8634.2**


KVK Bhagalpur


KVK Gopalganj


KVK Ranchi


KVK Vaishali

3.2.3 Other Enterprises

Apart from conducting demonstration on field crops, horticultural crops, livestock and fisheries, the KVKs also conducted demonstrations on various agro-enterprises in the farmers' fields to exhibit relative advantage of improved technologies

over conventional practices and/or to introduce newer income generating enterprises. In this process, altogether 1748 farmers covered 5339 ha ofvermi-compost, bee keeping, value addition, mushroom production, backyard poultry rearing, homestead vegetable cultivation, feed production, azolla cultivation and many more enterprises were taken up by KVKs(Table 53). The Bihar KVKs demonstrated 2004 enterprises involving 1324 farmers and Jharkhand KVKs demonstrated 3335 enterprises covering 424 farmers during 2020.

Table 53: State wise details of Frontline Demonstration on Enterprise 2020

Sl. No.	Category	State	No. of Farmers	Area (ha)/No
1	Enterprise	Bihar	1324	2004.00
		Jharkhand	424	3335.00
Total			**1748**	**5339.00**

3.2.7 Farm Implements:

The use of farm machinery, tools and implements reduces the labour requirement, reducesseed rate, enhances water use efficiency and also helps in drudgery reduction.Various farm machinery, tools and implements were demonstrated in this zone for the benefit of 7649 farmers. The performance of improved tools and implements were demonstrated in 2829.05 ha area during 2020 of which KVKs of Jharkhand covered 1223 ha area involving 4694 farmers and in KVKs of Bihar demonstrated to 2955 farmers to covering 1606.05ha (Table 54).

Table 54: State wise details of FLDon Farm Implement and machinery 2020

Sl. No.	Category	State	No. of Farmers	Area (ha)/No
1	Implement	Bihar	2955	1606.05
		Jharkhand	4694	1223.00
		Total	**7649**	**2829.05**

3.2.8 Women Empowerment

Advance agro-techniques were demonstrated targeting the farm women to empower them in decision making process and in income generation activities such as tailoring, value addition, embroidery and other activities in which total 1774 farm women were involved of which 1236 from Bihar 538 farm women from Jharkhand state (Table 55).

Table 55: State wise Frontline Demonstration on Women Empowerment 2020

Sl. No.	Category	State	No. of Women
1	Women Empowement	Bihar	1236
		Jharkhand	538
Total			**1774**

3.2.9 F1 Hybrid seeds

In Bihar and Jharkhand majority of farmers are small and marginal with small and fragmented plots. In order to bring more areas under the use of hybrid varieties for getting higher return, Frontline demonstrations were conducted on adopting F1 hybrid varieties of different crops by farmers KVKs of Bihar and Jharkhand demonstrating in252.60 ha area involving 733 farmers (Table 56).

Table 56: State wise details of Frontline Demonstration on F1 Hybrid varieties 2020

Sl. No.	Category	State	No. of Farmers	Area (ha)/No
1	Hybrid	**Bihar**	537	176.40
		Jharkhand	196	76.20
Total			**733**	**252.60**

3.3 Cluster Frontline Demonstration (CFLD)

With a view of bringingmore areas under pulses/oilseeds cultivation through cluster frontline demonstrations enhancing production, productivity and area of pulses and oilseed crops, an ambitious program has been implemented since 2015-16 through the KVKs of Bihar and Jharkhand by Department of Agriculture & Cooperation and Farmers Welfare (DAC&FW), GoI. In order to achieve the total target earmarked by DAC&FW, a series of workshop was conducted by ICAR-ATARI, Patna to enable the KVKs to cover as much area as possible under pulse and oilseed crops cultivations with advanced technologies/varieties.

3.3.1 PULSES CROPS

Under the CFLD Pulses altogether 6215 demonstrations covering 2060.50ha were conducted against the target of 6483 demonstrations covering 2583.00ha area (Table 57). Overall increase in pulses yield was 35.79 to 47.03% with very high yield difference of 3.22 and 3.31q/ha in Bihar and Jharkhand respectively.

3.3.1.1 Kharif Pulses

Pulses are the cheapest and concentrated source of protein in the diet of Indian people not only for vegetarian but also for non-vegetarian persons. In order to meet the increasing demand of pulses CFLD on pigeon pea, black gram, green gram and horse gram were conducted during Kharif 2020 covering 730.00 ha against the target of 1825 ha area in Bihar and Jharkhand. As per the target maximum (1175) number of demonstrations covering 470.00 ha area was allotted in pigeon pea followed by black gram 300 demonstration covering 120.00 ha area (Table 58).Performance analysis of individual pulse crop indicated that in pigeon pea, there was 34.88 to 50.09 per centincrease in average yield under demonstration in the two states with a yield difference of approximately 3.78 q/ha. In case of black gram, the increase in average yield in the KVKs of Jharkhand was recorded 50.82% with a yield difference of 3.37q/ha over check. In case of green gram increase in yield was tune of 28.47% over check with yield difference of 2.01q/ha. In respect of yield enhancement in horse gram, average increase was ranged from 32.53 to 57.50% in Bihar and Jharkhand respectively.

CFLD on Kharif Pulses conducted by KVKs

Table 57: State wise Cluster Frontline Demonstration on Pulse during 2020

Sl. No.	State	Target of CFLD Approved		Achievement of CFLD		Average yield (q/ha)		Yield Increase (%)	Difference of yield between demo and local (q/ha)
		No. of Demonstration	Area (ha)	No. of Demonstration	Area (ha)	Demo	Local		
1	Bihar	4108	1643.00	4666	1583.40	12.22	9.00	35.79	3.22
2	Jharkhand	2350	940.00	1549	477.10	10.34	7.03	47.03	3.31
Grand Total		**6458**	**2583.00**	**6215**	**2060.50**				

Table 58:Cluster Frontline Demonstration on *Kharif* Pulses during 2020

Sl. No.	Crops	State	Target of CFLD Approved		Achievement of CFLD		Average yield (q/ha)		Yield Increase (%)	Difference of yield (q/ha)
			No. of Demonstration	Area (ha)	No. of Demonstration	Area (ha)	Demo	Local		
1	**Pigeon pea**	Bihar	725	290.00	707	250.00	14.58	10.81	34.88	3.77
		Jharkhand	450	180.00	355	115.10	11.34	7.56	50.09	3.79
		Total	**1175**	**470.00**	**1062**	**365.10**				
2	**Black gram**	Bihar	0	0.00	0	0.00	0.00	0.00	0.00	0.00
		Jharkhand	300	120.00	274	72.00	10.01	6.64	50.82	3.37
		Total	**300**	**120.00**	**274**	**72.00**				
3	**Green gram**	Bihar	0	0.00	0	0.00	0.00	0.00	0.00	0.00
		Jharkhand	150	60.00	142	50.00	9.07	7.06	28.47	2.01
		Total	**150**	**60.00**	**142**	**50.00**				
4	**Horse gram**	Bihar	25	10.00	38	10.00	11.00	8.30	32.53	2.70
		Jharkhand	175	70.00	89	30.00	6.30	4.00	57.50	2.30
		Total	**200**	**80.00**	**127**	**40.00**				
Total Bihar			**750**	**300**	**745**	**260**				
Total Jharkhand			**1075**	**430**	**860**	**267.1**				
Grand Total			**1825**	**730.00**	**1605**	**527.10**				

3.3.1.2 Rabi Pulses

In Rabi season under CFLD on pulses 2955 demonstrations were conducted in 917.0ha against the target of 3025 with demonstrations in 1210.0ha under lentil, chickpea and field pea during 2020 by KVKs of Bihar and Jharkhand. The performance of demonstration in lentil resulted in an increase in yield of 39.42% in Bihar and 48.00% in Jharkhand with yield difference of 3.48 and 2.97 q/ha respectively (Table 59). In chick pea, the KVKs of Bihar and Jharkhand reported an average increase in yield to the extent of 35.85 %in Jharkhand and 40.96 %in Bihar. In case of field pea yield increase from 26.06 to 53.09 percent was recorded in Bihar and Jharkhand with yield difference of 2.68 and 4.30q/ha respectively.

KVK Rohtas

KVK Supaul

Fig Demonstration of Rabi Pulses in CFLD Programme

Table 59: Cluster Frontline Demonstration on Rabi Pulses during 2020

Sl. No.	Crops	State	Target of CFLD Approved		Achievement of CFLD		Av. yield (q/ha)		Yield Increase (%)	Difference of yield (q/ha)
			No. of Demonstration	Area (ha)	No. of Demonstration	Area (ha)	Demo	Local		
1	Lentil	Bihar	1125	450.00	1278	410.00	12.31	8.83	39.42	3.48
		Jharkhand	350	140.00	145	40.00	9.03	6.07	48.90	2.97
		Total	**1475**	**590.00**	**1423**	**450.00**				
2	Chick pea	Bihar	650	260.00	761	230.00	14.52	10.30	40.96	4.22
		Jharkhand	425	170.00	279	80.00	13.04	9.60	35.85	3.44
		Total	**1075**	**430.00**	**1040**	**310.00**				
3	Field pea	Bihar	275	110.00	436	137.00	12.97	10.29	26.06	2.68
		Jharkhand	200	80.00	56	20.00	12.40	8.10	53.09	4.30
		Total	**475**	**190.00**	**492**	**157.00**				
Total Bihar			**2050**	**820.00**	**2475**	**777.00**				
Total Jharkhand			**975**	**390.00**	**480**	**140.00**				
Grand Total			**3025**	**1210.00**	**2955**	**917.00**				

3.3.1.3 Summer Pulses

KVK PurneaKVKs of Bihar and Jharkhand under CFLD program on summer pulses conducted 1655 demonstrations against the target of 1608 demonstrations covering an area of 616.40ha against the target of 643.0ha on green gram and black gram. In green gram, 471.40ha area was covered by KVKs of Bihar whereas; in Jharkhand 30.0ha was brought under demonstration however, in black gram, 75.0ha and 40.0ha respectively. Performance indicator showed that yield increase was tune of 33.25 to 55.32% in green gram and 30.78 to 77.11% in Black gram under this zone in Bihar and Jharkhand respectively. Higher y
ield difference in both crop was recorded in KVKs of Jharkhand 3.47 and 4.27q/ha in green gram and black gram during summer season (Table 60).

Fig. Demonstration of summer Pulses in CFLD Programme

Table 60: Cluster Frontline Demonstration on Summer Pulse during 2020

Sl. No.	Crops	State	Target of CFLD Approved		Achievement of CFLD		Av. Yield (q/ha)		Yield Increase (%)	Difference of yield (q/ha)
			No. of Demonstration	Area (ha)	No. of Demonstration	Area (ha)	Demo	Local		
1	**Green gram**	Bihar	1133	453.00	1297	471.40	9.45	7.09	33.25	2.36
		Jharkhand	200	80.00	95	30.00	9.73	6.27	55.32	3.47
		Total	**1333**	**533.00**	**1392**	**501.40**				
2	**Black gram**	Bihar	175	70.00	149	75.00	10.50	8.03	30.78	2.47
		Jharkhand	100	40.00	114	40.00	9.80	5.53	77.11	4.27
		Total	**275**	**110.00**	**263**	**115.00**				
Total Bihar			**1308**	**523.00**	**1446**	**546.40**				
Total Jharkhand			**300**	**120.00**	**209**	**70.00**				
Grand Total			**1608**	**643.00**	**1655**	**616.40**				

3.3.2 OILSEEDS CROPS

With the target of increasing oilseed production and productivity in India as well as decreasing the import bill of oilseed cluster frontline demonstration programme was launched. CFLD on Oilseeds altogether covered 3602.80 ha through 9653 demonstrations by KVKs of Bihar and Jharkhand against the target of 7075.00ha and 17688 demonstrations in farmer's field out of which 6393 demonstration covering 2534.50ha in Bihar with increase in yield 36.28 %. However, in Jharkhand KVKs yield increase of 39.15% recorded with yield difference of 3.31q/ha.

3.3.2.1 Kharif Oilseeds

In Kharif season for oilseed crop like sesame, niger, groundnut, soybean and sunflower altogether 2531 demonstrations were conducted covering 878.30ha against the target of 4950 demonstrations in 1980.0ha of which 1785 demonstrations in 588.30ha were conducted in KVKs of Jharkhand. Among different oilseed crop maximum number of demonstration (1043) was under taken insesame with area coverage of 390.0ha of which 588 demonstrations with 210.0ha area under KVKs of Jharkhand. Performance indicator showed that percent yield increase ranged 36.64to 42.83 with yield difference of 1.19 to 1.63q/ha. Second important crop wasgroundnut,in which 539under demonstration was conducted in164.30ha area in Bihar and Jharkhand KVKs resulting in 41.05per cent more yield over local check in Jharkhand whereas, in Bihar 26.37%. Another oilseed crop, niger in which 582 demonstrations were conducted covering an area of 194.0ha with yield increase to a tune of 38.79 to 43.65%. Demonstration programme in soybean and sunflower covering 70.0 and 60 ha respectively both the states (Table 61).


KVK Palamu


KVK Kagaria

CFLD on Kharif Oilseed

Table 61: Cluster Frontline Demonstration on *Kharif* Oilseed during 2020

Sl. No.	Crops	State	Target of CFLD Approved		Achievement of CFLD		Average yield (q/ha)		Yield Increase (%)	Difference of yield between demo and local (q/ha)
			No. of Demonstration	Area (ha)	No. of Demonstration	Area (ha)	Demo	Local		
1	Sesame	Bihar	475	190.00	455	180.00	5.43	3.80	42.83	1.63
		Jharkhand	1300	520.00	588	210.00	4.42	3.24	36.64	1.19
		Total	**1775**	**710.00**	**1043**	**390.00**				
2	Niger	Bihar	75	30.00	62	30.00	5.20	3.62	43.65	1.58
		Jharkhand	1100	440.00	520	164.00	5.03	3.63	38.79	1.41
		Total	**1175**	**470.00**	**582**	**194.00**				
3	Groundnut	Bihar	200	80.00	95	30.00	12.56	9.94	26.37	2.62
		Jharkhand	1125	450.00	444	134.30	12.08	8.57	41.05	3.52
		Total	**1325**	**530.00**	**539**	**164.30**				
4	Soybean	Bihar	125	50.00	77	30.00	15.45	9.30	66.16	6.15
		Jharkhand	200	80.00	109	40.00	12.90	9.90	30.30	3.00
		Total	**325**	**130.00**	**186**	**70.00**				
5	Sunflower	Bihar	50	20.00	57	20.00	13.20	9.95	32.66	3.25
		Jharkhand	300	120.00	124	40.00	7.60	6.05	25.62	1.55
		Total	**350**	**140.00**	**181**	**60.00**				
Total Bihar			**925**	**370.00**	**746**	**290.00**				
Total Jharkhand			**4025**	**1610.00**	**1785**	**588.30**				
Grand Total			**4950**	**1980.00**	**2531**	**878.30**				

3.3.2.2 Rabi Oilseeds

In Rabi season under oilseed crop cluster front line demonstrations were conducted by the KVKs of Bihar and Jharkhand for an area of 2654.50ha against target of 4765.0ha in CFLD on oilseed. In rapeseed & mustard, the KVKs of Bihar conducted 5228 demonstration covering area of 2094.50ha with 40.85 per cent increase in demonstration yield over local check, while in Jharkhand it was 20.92 per cent. In linseed, the demonstrations in clustered mode covered 150.0ha area and recording 29.61 per cent higher yield over the local check in Bihar (Table 62). The KVKs of Bihar recorded the yield increase to tune of 35.28 per cent in Sesame, whereas in Sunflower yield increase was 82.30 percent. In, Safflower Jharkhand covered 30.0ha with 125% yield advantage over check and yield difference of 5.0q/ha.

KVK Purnea

KVK Supaul

Fig. CFLD on Rabi Oilseed

Table 62: Cluster Frontline Demonstration on Rabi Oilseed during 2020

Sl. No.	Crops	State	Target of CFLD Approved		Achievement of CFLD		Average yield (q/ha)		Yield Increase (%)	Difference of yield between demo and local (q/ha)
			No. of Demonstration	Area (ha)	No. of Demonstration	Area (ha)	Demo	Local		
1	Mustard	Bihar	7063	2825.00	5228	2094.50	13.71	9.73	40.85	3.98
		Jharkhand	2775	1110.00	1096	350.00	8.56	7.08	20.92	1.48
		Total	**9838**	**3935.00**	**6324**	**2444.50**				
2	Linseed	Bihar	575	230.00	213	70.00	9.85	7.60	29.61	2.25
		Jharkhand	1075	430.00	201	80.00				
		Total	**1650**	**660.00**	**414**	**150.00**				
3	Safflower	Bihar	0	0.00	0	0.00				
		Jharkhand	100	40.00	103	30.00	9.00	4.00	125.00	5.00
		Total	**100**	**40.00**	**103**	**30.00**				
4	Sunflower	Bihar	200	80.00	25	10.00	11.12	6.10	82.30	5.02
		Jharkhand	125	50.00	75	20.00				
		Total	**325**	**130.00**	**100**	**30.00**				
Total Bihar			**7838**	**3135**	**5466**	**2174.50**				
Total Jharkhand			**4075**	**1630**	**1475**	**480.00**				
Grand Total			**11913**	**4765.00**	**6941**	**2654.50**				

3.3.2.1 Summer Oilseeds:

Cluster frontline demonstrations were also conducted during summer 2020on oilseed crop (Sunflower and Sesame) in an area of 70ha against the targeted area of 330ha. Both the crops were successful in Bihar and failed in Jharkhand. Yield increase to a tune of 24.07 and 35.54% were recorded in sunflower and sesame in Bihar with yield difference of 3.38 and 1.64q/ha respectively (Table 63).

KVK Kaimur

KVK Samastipur

Fig. CFLD on Summer Oilseed

Table 63: Cluster Frontline Demonstration on Summer Oilseed during 2020

Sl. No.	Crops	State	Target of CFLD Approved		Achievement of CFLD		Average yield (q/ha)		Yield Increase (%)	Difference of yield between demo and local (q/ha)
			No. of Demonstration	Area (ha)	No. of Demonstration	Area (ha)	Demo	Local		
1	**Sunflower**	Bihar	175	70.00	113	40.00	17.44	14.06	24.07	3.38
		Jharkhand	150	60.00	--	--				
		Total	**325**	**130.00**	**113**	**40.00**				
2	**Sesame**	Bihar	325	130.00	68	30.00	6.24	4.60	35.54	1.64
		Jharkhand	175	70.00	--	--				
		Total	**500**	**200.00**	**68**	**30.00**				
	Total Bihar		**400**	**200.00**	**181**	**70.00**				
	Total Jharkhand		**325**	**130.00**	**--**	**--**				
Grand Total			**825**	**330.00**	**181**	**70.00**				

4.4. TRAINING ACHIEVEMENTS

4.4.1 Practicing Farmers:

For the sustainable development of agriculture and allied sectors adequate knowledge and skill development are essential at the field level. Hence, providing updated knowledge and recent technological skills to the practicing farmers are pre-requisite in developing agriculture through adoption/application of advanced agricultural technologies. Large number of farmers and farm-women came forward to register their names for

acquiring improved updated knowledge and recent technological skills in different areas of field crop production, vegetable and fruit production, cultivation of ornamental plants, management of plantation crop, livestock production and management, home science and women empowerment, agricultural engineering, plant protection, fisheries development, production of inputs at site, capacity building and group dynamics, agro-forestry and other areas. Rural youths, on the other hand also enrolled their name to obtain hands on skill trainingin more specific areas which are considered to have potentiality for enterprise development in the respective districts. In respect to extension functionaries, the assessment of training need is made by the concerned departments/organizations for the knowledge up-gradation. KVKs help them to refresh and upgrade their knowledge mainly in the areas of frontier technology developed by research institution and universities for their application in farmers' field. For imparting training to farmers, rural youths and extension functionaries, the KVKs conduct trainings on-campus and off-campus condition as per the requirement of training course curriculum. As the farmers need field application of newly generated technologies/practices, emphasis were given by the KVKs concentrated on providing more number of on-campus training programs. A total of 4427 numbers of training programs was organized by the KVKs during 2020 covering 124799 farmers. Participation of farm women in these training programs was 34309, whereas number of farm men was 90490 (Table 71).

Table 71:Training Programme for farmers &farm women (Bihar & Jharkhand) during 2020 a glance

Thematic Area	No. of Courses	No. of Participants (Farmer & Farm Women)											
		Other			SC			ST			Total		
		M	F	T	M	F	T	M	F	T	M	F	T
Bihar	3100	52061	10883	62944	10871	5614	16485	2019	1241	3260	64951	17738	82689
Jharkhand	1327	10165	4752	14917	3864	2804	6668	11510	9015	20525	25539	16571	42110
G. Total	**4427**	**62226**	**15635**	**77861**	**14735**	**8418**	**23153**	**13529**	**10256**	**23785**	**90490**	**34309**	**124799**

Detailed analysis of category-wise training programs organized by the KVKs of Zone-IV indicated that out of total 4427 programmes,1035 courses were conducted in crop production related areas of whichhorticultural crops (706). Among horticulture in vegetable crops (444),fruit crops (168), ornamental plants (16), plantation crop (26), tuber crops (14), spices (18) and medicinal and aromatic plants (20), plant protection (514), home science and women empowerment(473), soil health and fertility management (435), livestock production and management (453)agricultural engineering(390), capacity building and group dynamics(180), fisheries(106), production of inputs(63), in agro-forestry(21)and in others programmes(51).

A further classification of thematic area-wise training programmes organized by the KVKs revealed that in crop production thematic area total 1035 number of courses were conducted by the 68 KVKs for 31813 farmers of which6812 were farm women. Among various sub-thematic areas, highest number of maximum 220 courses were offered in integrated crop management in which total 6067 farmers participated of which 1257 were farm women followed by seed production 145 courses in which 4606 farmers participated among them 851 were farm women. Other sub-thematic areas like resource conservation technologies (115), cropping system (103) and weed management (103) and crop

cultivation (87) courses were offered (Table 72).

Horticultureisconsidered as the 2nd most important thematic areas where as a whole, 706 numbers of training courses were organized for 19,093 farmers of which 4961 were farm women (25.98%). Among seven sub-thematic areas, highest number of courses was offered in cultivation of vegetable crops (444) with total farmers' participants (11,993) followed by cultivation of fruit (168) with 4343 participations.

Among vegetable crops more focus was on cultivation of vegetable crops (92) in which 2556 farmers participated followed by nursery raising techniques (87) with 2406 participations. In fruit crops the maximum priority was on scientific cultivation of fruit (36) courses in which 1047 farmers participated followed by layout and management of orchard (29) programmes with 675 participants and plant propagation techniques (23) courses covering 585 farmers. Among plantation crop emphasis was given on production and management technology in which 13 courses were conducted with 373 participations.

Plant protection is other important thematic area both in terms of training programmes conducted and participation of farmers. The KVKs of Bihar and Jharkhand together organized 514 numbers of courses for the benefit of 14,689 farmers of which 2903 participants were farm-women. Among them integrated pest management in which 254 courses were conducted with 7,022 participations followed by integrated disease management (152) courses with 4638 participants and bio-control of pests and diseases with 36 courses involving 923 participants were thrust areas.

In terms of courses offered and participation, home science/women empowerment was considered as fourth important areas, where 473 courses were conducted for 12,821 farmers of which 9,066 were women covering 70.21per cent of the participants. Among topics household food security by kitchen gardening and nutrition gardening (115) and value addition (96) were considered important sector with 2628 and 1355 farm women participations respectively.

Soil health and fertility management is another important thematic area where 435 training coursed were offered for 12,669 farmers in which integrated nutrient management (137), production of organic inputs (60), soil fertility management (56), soil water testing (53) courses covered with 3971, 1781, 1588 and 1652 participations of farmers, respectively. Other areas like micronutrient deficiency in cropsand nutrient use efficiency were also covered.

Livestock production and management was considered as an important frontier area for training both in respect of number of courses offered and participation of farmers took place. In this thematic area, 453 courses were conducted for 12469 farmers of which 3413 were farm women covering 27.37per cent of the participants. Among different courses;Disease management (95), Dairy management (87), Poultry (78) and Production of quality Animal Products (65) training were conducted by the KVKs for 2626, 2304,2401 and 1567 numbers of farmers' participations, respectively.

Agriculture Engineering is another emerging area in which 390 training programmes conducted and altogether 9918 farmers participated in which 20.85% were farm women. Among thematic areas, installation and maintenance of micro irrigation systems (105) and repair and maintenance of farm machinery and implements (104) were considered as the most important sub-thematic both in terms of courses conducted and farmers participatedto the extent of 2578 and 2889 respectively.

In fishery Science105 numbers of courses were conducted by the KVKs with involvement of 2864 farmers and farm women. Among different aspects composite fish culture & fish disease, integrated fish

farming and fish feed production& application to fish pond were more focused by covering 28, 25 and 10 courses during the year 2020 with involvement of 726, 683 and 260 farmer participations, respectively.

KVKs of Bihar and Jharkhand conducted 180 numbers of courses for 5132 farmers and farm-women in Capacity Building and Group Dynamics. Major areas covered in this thematic area included courses on formation and management of SHGs (39), entrepreneurial development of farmers/youths (37), group dynamics (28), leadership development (21) and others (21) with participation of 1079, 1040, 808, 571 and 660 farmers, respectively.

Production of inputs at site was another thematic area where 1836 trainees received training on vermi-compost production,seed production, bio-agents production, organic manures production, etc. The KVKs also organized 21 courses on agro-forestry covering integrated farming system, production technologies etc. KVK, Patna KVK Muzaffarpur

The overall analysis of the training programmes organized by the KVKs of Zone-IV indicates that KVKs have tried to provide necessary requiredskill and knowledge to the farmers and farm women in various aspects to enable them to enhance the production and productivity of crops, livestock, fisheries and all other areas. Moreover, concentration on certain areas like crop production, vegetable cultivation, plant protection, fertility management, women empowerment, production of inputs at site etc. has helped the farm women in improving their socio-economic condition through SHG/group formation.


KVK Muzaffarpur


KVK, Patna

Table 72 : Training Programme for farmers and farm women (Thematic Area wise) 2020

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
I. Crop Production													
Crop Diversification	40	450	78	528	153	65	218	294	241	535	897	384	1281
Cropping Systems	103	1533	244	1777	417	135	552	549	267	816	2499	646	3145
Fodder production	24	274	98	372	83	53	136	198	65	263	555	216	771
Integrated Crop Management	220	3176	377	3553	667	332	999	967	548	1515	4810	1257	6067
Integrated Farming	61	1072	194	1266	316	105	421	334	196	530	1722	495	2217
Nursery management	36	433	108	541	123	47	170	170	95	265	726	250	976
Others, (cultivation of crops)	87	1601	284	1885	295	170	465	364	160	524	2260	614	2874
Production of organic inputs	49	818	174	992	230	80	310	152	114	266	1200	368	1568
Resource Conservation Technologies	115	2242	194	2436	507	123	630	453	304	757	3202	621	3823
Seed production	145	2388	293	2681	637	195	832	730	363	1093	3755	851	4606
Water management	52	737	116	853	154	118	272	242	199	441	1133	433	1566
Weed Management	103	1548	289	1837	347	211	558	347	177	524	2242	677	2919
Total	**1035**	**16272**	**2449**	**18721**	**3929**	**1634**	**5563**	**4800**	**2729**	**7529**	**25001**	**6812**	**31813**
II. Horticulture													
a) Vegetable Crops													
Enterprise development	12	107	61	168	18	19	37	40	67	107	165	147	312
Export potential vegetables	14	200	51	251	57	33	90	58	73	131	315	157	472
Grading and standardization	18	183	48	231	31	12	43	44	58	102	258	118	376
Integrated nutrient management	52	938	141	1079	161	52	213	53	84	137	1152	277	1429
Nursery raising	87	1265	259	1524	352	147	499	215	168	383	1832	574	2406
Off-season vegetables	48	539	210	749	172	98	270	184	81	265	895	389	1284
Cultivation of Vegetable	92	1291	271	1562	224	173	397	296	301	597	1811	745	2556
Production of low volume and high value crops	28	374	76	450	102	29	131	113	65	178	589	170	759
Protective cultivation	31	509	67	576	128	29	157	44	16	60	681	112	793

Skill development	19	245	46	291	62	12	74	34	105	139	341	163	504
Training and Pruning	16	323	32	355	60	16	76	0	0	0	383	48	431
Water management	10	102	30	132	32	19	51	36	27	63	170	76	246
Yield increment	17	269	45	314	53	17	70	25	16	41	347	78	425
Sub total (a)	**444**	**6345**	**1337**	**7682**	**1452**	**656**	**2108**	**1142**	**1061**	**2203**	**8939**	**3054**	**11993**
b) Fruits													
Cultivation of Fruit	36	490	100	590	140	89	229	75	153	228	705	342	1047
Export potential fruits	12	192	29	221	36	6	42	39	33	72	267	68	335
Layout and Management of Orchards	29	446	57	503	84	32	116	31	25	56	561	114	675
Management of young plants/orchards	17	264	49	313	38	18	56	41	17	58	343	84	427
Micro irrigation systems of orchards	11	157	19	176	56	24	80	18	20	38	231	63	294
Others, if any	15	217	35	252	74	30	104	22	0	22	313	65	378
Plant propagation techniques	23	336	50	386	76	40	116	61	22	83	473	112	585
Rejuvenation of old orchards	13	194	46	240	47	13	60	1	0	1	242	59	301
Training and Pruning	12	63	12	75	22	9	31	85	110	195	170	131	301
Sub total (b)	**168**	**2359**	**397**	**2756**	**573**	**261**	**834**	**373**	**380**	**753**	**3305**	**1038**	**4343**
c) Ornamental Plants													
Export potential of ornamental plants	3	33	7	40	11	3	14	0	0	0	44	10	54
Management of potted plants	2	13	2	15	4	0	4	26	0	26	43	2	45
Nursery management	8	121	17	138	55	1	56	4	0	4	180	18	198
Others, if any	1	30	0	30	0	0	0	0	0	0	30	0	30
Propagation techniques of Ornamental Plants	2	36	6	42	7	8	15	5	8	13	48	22	70
Sub total (c)	**16**	**233**	**32**	**265**	**77**	**12**	**89**	**35**	**8**	**43**	**345**	**52**	**397**
d) Plantation crops													
Others, if any (Lac)	2	17	10	27	0	8	8	6	8	14	23	26	49
Processing and value addition	11	168	45	213	25	40	65	6	9	15	199	94	293
Production and Management technology	13	160	42	202	45	37	82	48	41	89	253	120	373
Sub total (d)	**26**	**345**	**97**	**442**	**70**	**85**	**155**	**60**	**58**	**118**	**475**	**240**	**715**
e) Tuber crops													

Others, if any	1	23	0	23	4	0	4	0	0	0	27	0	27
Processing and value addition	3	44	8	52	6	6	12	6	10	16	56	24	80
Production and Management technology	10	249	38	287	41	24	65	26	10	36	316	72	388
Sub total (e)	**14**	**316**	**46**	**362**	**51**	**30**	**81**	**32**	**20**	**52**	**399**	**96**	**495**
f) Spices													
Others, if any	2	40	6	46	7	1	8	0	0	0	47	7	54
Processing and value addition	3	21	18	39	4	0	4	0	28	28	25	46	71
Production and Management technology	13	219	24	243	50	13	63	16	12	28	285	49	334
Sub total (f)	**18**	**280**	**48**	**328**	**61**	**14**	**75**	**16**	**40**	**56**	**357**	**102**	**459**
g) Medicinal and Aromatic Plants													
Cultivation of Medicinal plant	3	62	8	70	15	4	19	7	0	7	84	12	96
Nursery management	4	69	17	86	20	13	33	1	1	2	90	31	121
Others, if any Mushroom Cultivation	1	33	0	33	2	0	2	0	0	0	35	0	35
Post-harvest technology and value addition	2	37	9	46	16	4	20	1	1	2	54	14	68
Production and Management technology	10	70	35	105	13	22	35	11	220	231	94	277	371
Sub total (g)	**20**	**271**	**69**	**340**	**66**	**43**	**109**	**20**	**222**	**242**	**357**	**334**	**691**
Total (a+b+c+d+e+f+g)	**706**	**10149**	**2026**	**12175**	**2350**	**1101**	**3451**	**1678**	**1789**	**3467**	**14177**	**4916**	**19093**
III. Soil Health and Fertility Management													
Integrated Nutrient Management	137	2650	351	3001	318	105	423	324	223	547	3292	679	3971
Management of Problematic soils	16	208	37	245	35	9	44	74	102	176	317	148	465
Micro nutrient deficiency in crops	29	422	75	497	62	26	88	102	87	189	586	188	774
Nutrient Use Efficiency	27	480	116	596	177	18	195	89	66	155	746	200	946
Others, if any	24	380	106	486	59	20	79	112	66	178	551	192	743
Production and use of organic inputs	60	1082	187	1269	111	65	176	202	134	336	1395	386	1781
Soil and Water Conservation	33	436	56	492	52	27	79	116	62	178	604	145	749

Soil and Water Testing	53	864	277	1141	157	67	224	165	122	287	1186	466	1652
Soil fertility management	56	867	181	1048	189	39	228	197	115	312	1253	335	1588
Total	**435**	**7389**	**1386**	**8775**	**1160**	**376**	**1536**	**1381**	**977**	**2358**	**9930**	**2739**	**12669**
IV. Livestock Production and Management													
Dairy Management	87	1278	308	1586	273	124	397	198	123	321	1749	555	2304
Disease Management	95	1363	199	1562	389	157	546	248	270	518	2000	626	2626
Feed management	20	45	13	58	118	86	204	187	147	334	350	246	596
Fish management	2	33	2	35	3	0	3	0	0	0	36	2	38
Goatry	26	324	26	350	61	30	91	99	138	237	484	194	678
Others, if any	59	774	262	1036	215	190	405	107	155	262	1096	607	1703
Piggery Management	21	103	24	127	67	33	100	223	106	329	393	163	556
Poultry Management	78	1053	239	1292	374	267	641	284	184	468	1711	690	2401
Production of quality animal products	65	922	176	1098	222	127	349	93	27	120	1237	330	1567
Total	**453**	**5895**	**1249**	**7144**	**1722**	**1014**	**2736**	**1439**	**1150**	**2589**	**9056**	**3413**	**12469**
V. Home Science/Women empowerment													
Capacity building	12	18	103	121	23	80	103	37	60	97	78	243	321
Design and development of low/minimum cost diet	22	53	245	298	12	211	223	7	127	134	72	583	655
Designing and development for high nutrient efficiency diet	17	25	222	247	13	98	111	13	112	125	51	432	483
Enterprise development	27	133	202	335	84	100	184	81	151	232	298	453	751
Gender mainstreaming through SHGs	12	33	93	126	14	67	81	38	88	126	85	248	333
Household food security by kitchen gardening and nutrition gardening	115	427	1438	1865	161	824	985	35	366	401	623	2628	3251
Income generation activities for empowerment of rural Women	38	384	422	806	91	215	306	39	57	96	514	694	1208
Location specific drudgery reduction technologies	10	36	121	157	11	41	52	0	14	14	47	176	223
Minimization of nutrient loss in	21	85	144	229	108	158	266	8	89	97	201	391	592

processing													
Others, if any	44	276	581	857	70	187	257	25	96	121	371	864	1235
Rural Crafts	11	38	143	181	12	83	95	20	11	31	70	237	307
Storage loss minimization techniques	17	174	157	331	41	32	73	17	23	40	232	212	444
Value addition	96	722	814	1536	214	331	545	56	210	266	992	1355	2347
Women and child care	31	105	318	423	16	187	203	0	45	45	121	550	671
Total	**473**	**2509**	**5003**	**7512**	**870**	**2614**	**3484**	**376**	**1449**	**1825**	**3755**	**9066**	**12821**
VI. Agril. Engineering													
Care of maintenance of farm machinery	10	80	23	103	17	8	25	90	79	169	187	110	297
Farm Mechanization	18	153	28	181	45	10	55	104	64	168	302	102	404
Installation and maintenance of micro irrigation systems	105	1516	294	1810	298	80	378	201	189	390	2015	563	2578
Others, if any	69	1208	133	1341	205	49	254	58	16	74	1471	198	1669
Post Harvest Technology	23	311	90	401	50	35	85	29	55	84	390	180	570
Production of small tools and implements	31	329	170	499	68	34	102	104	25	129	501	229	730
Repair and maintenance of farm machinery and implements	104	1706	239	1945	412	78	490	309	145	454	2427	462	2889
Small scale processing and value addition	30	345	133	478	77	38	115	135	53	188	557	224	781
Total	**390**	**5648**	**1110**	**6758**	**1172**	**332**	**1504**	**1030**	**626**	**1656**	**7850**	**2068**	**9918**
VII. Plant Protection													
Bio-control of pests and diseases	36	357	98	455	121	93	214	147	107	254	625	298	923
Integrated Disease Management	152	2740	433	3173	709	367	1076	277	112	389	3726	912	4638
Integrated Pest Management	254	4040	560	4600	845	236	1081	810	531	1341	5695	1327	7022
Others, if any	35	726	76	802	166	57	223	11	25	36	903	158	1061
Production of bio control agents and bio pesticides	37	497	83	580	110	36	146	230	89	319	837	208	1045
Total	**514**	**8360**	**1250**	**9610**	**1951**	**789**	**2740**	**1475**	**864**	**2339**	**11786**	**2903**	**14689**
VIII. Fisheries													

Breeding and culture of ornamental fishes	4	67	17	84	2	5	7	0	0	0	69	22	91
Carp breeding and hatchery management	9	136	4	140	43	0	43	56	20	76	235	24	259
Carp fry and fingerling rearing	7	135	9	144	33	3	36	10	0	10	178	12	190
Composite fish culture & fish disease	28	551	40	591	109	11	120	15	0	15	675	51	726
Fish feed preparation & its application to fish pond, like nursery, rearing & stocking pond	10	198	14	212	29	7	36	12	0	12	239	21	260
Fish processing and value addition	2	35	5	40	17	0	17	0	0	0	52	5	57
Hatchery management and culture of freshwater prawn	6	118	7	125	25	3	28	5	0	5	148	10	158
Integrated fish farming	25	375	48	423	144	37	181	61	18	79	580	103	683
Others, if any	8	100	36	136	33	9	42	13	6	19	146	51	197
Pearl culture	2	37	10	47	2	0	2	0	0	0	39	10	49
Pen culture of fish and prawn	2	36	5	41	1	0	1	3	0	3	40	5	45
Portable plastic carp hatchery	3	123	7	130	14	3	17	2	0	2	139	10	149
Total	**106**	**1911**	**202**	**2113**	**452**	**78**	**530**	**177**	**44**	**221**	**2540**	**324**	**2864**
IX. Production of Inputs at site													
Bio-agents production	2	11	12	23	4	2	6	6	10	16	21	24	45
Bio-fertilizer production	2	12	4	16	18	5	23	8	4	12	38	13	51
Bio-pesticides production	2	5	0	5	3	0	3	47	0	47	55	0	55
Organic manures production	4	53	10	63	20	9	29	7	4	11	80	23	103
Others, if any	4	47	14	61	22	10	32	2	22	24	71	46	117
Planting material production	8	91	15	106	30	8	38	46	27	73	167	50	217
Production of Bee-colonies and wax sheets	4	3	3	6	9	4	13	82	43	125	94	50	144
Seed production	12	193	21	214	71	10	81	34	9	43	298	40	338
Small tools and implements	6	73	10	83	44	0	44	11	7	18	128	17	145
Vermi-compost production	19	234	12	246	69	14	83	181	111	292	484	137	621
Total	**63**	**722**	**101**	**823**	**290**	**62**	**352**	**424**	**237**	**661**	**1436**	**400**	**1836**

X. Capacity Building and Group Dynamics													
Entrepreneurial development of farmers/youths	37	540	151	691	134	78	212	119	18	137	793	247	1040
Formation and Management of SHGs	39	614	207	821	106	76	182	32	44	76	752	327	1079
Group dynamics	28	355	145	500	79	55	134	102	72	174	536	272	808
Integrated Farming Systems	6	108	6	114	28	8	36	15	6	21	151	20	171
Leadership development	21	310	59	369	68	25	93	61	48	109	439	132	571
Mobilization of social capital	20	63	157	220	42	74	116	174	88	262	279	319	598
Nursery management	5	91	16	107	4	2	6	0	0	0	95	18	113
Others, if any	21	365	62	427	127	59	186	33	14	47	525	135	660
WTO and IPR issues	3	76	15	91	1	0	1	0	0	0	77	15	92
Total	**180**	**2522**	**818**	**3340**	**589**	**377**	**966**	**536**	**290**	**826**	**3647**	**1485**	**5132**
XI. Agro-forestry													
Integrated Farming Systems	13	197	11	208	42	12	54	63	60	123	302	83	385
Nursery management	3	33	1	34	54	3	57	5	3	8	92	7	99
Production technologies	5	4	4	8	0	7	7	145	38	183	149	49	198
Total	**21**	**234**	**16**	**250**	**96**	**22**	**118**	**213**	**101**	**314**	**543**	**139**	**682**
XII. Others													
Agro-meteorology	14	229	10	239	78	9	87	0	0	0	307	19	326
Cultivation of crops (Celebration of unity day)	4	28	0	28	3	0	3	0	0	0	31	0	31
Cultivation of crops (Constitution day)	4	24	0	24	10	0	10	0	0	0	34	0	34
Cultivation of crops (Live telecast of Hon'ble PM talk with farmers)	4	71	15	86	15	10	25	0	0	0	86	25	111
Sugarcane cultivation	3	170	0	170	31	0	31	0	0	0	201	0	201
Cultivation of Crops, IPM, ICM etc. (SwatchhataAbhiyan)	22	93	0	93	17	0	17	0	0	0	110	0	110
Total	**51**	**615**	**25**	**640**	**154**	**19**	**173**	**0**	**0**	**0**	**769**	**44**	**813**
Grand Total	**4427**	**62226**	**15635**	**77861**	**14735**	**8418**	**23153**	**13529**	**10256**	**23785**	**90490**	**34309**	**124799**

4.4.2 Rural Youth

With the objective of provide skill oriented training to rural youth for self-employment generation, KVKs of Zone-IV conducted various enterprise-oriented training programmes in a planned manner for a large number of rural youths during 2020. In the course of imparting knowledge and technical skill, KVKs conducted 1339 numbers of training programmes for the benefit of 35,794 rural youths covering 26,594 rural boys and 92,00 rural girls. Among the participants 18.07% were Schedule Caste and 16.49% Schedule Tribe. In terms of courses preferred, mushroom production was mostly preferred by the 6364 trainees. The second highest number of trainees (3066) was recorded for integrated farming followed by protected cultivation of vegetable (2144), seed production training (2107) and bee-keeping (1931) numbers of trainees.

In case of animal sector, sheep and goat farming was taken by 2289 people in 72 courses. Under Dairy sector 39 courses was selected by 999 participants; in value addition 63 courses by1819 trainees, poultry production in 1118 trainees participated in 38 courses, production of organic inputs 64 courses was covered in 1782 rural youths and vermi-culture in 63 courses by 1823 trainees (Table 73). Overall trend showed that rural youths including girls have relied on the skill training from KVKs for self-employment generation and getting additional income through agro-based enterprises.

Table 73: Training Programme for Rural Youth, State wise at a Glance 2020

State	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Bihar	983	16656	3649	20305	3698	1802	5500	564	86	650	20918	5537	26455
Jharkhand	356	1966	1151	3117	587	380	967	3123	2132	5255	5676	3663	9339
Total	**1339**	**18622**	**4800**	**23422**	**4285**	**2182**	**6467**	**3687**	**2218**	**5905**	**26594**	**9200**	**35794**

Table 73: Training Programme for Rural Youth, (Thematic Area wise) during 2020

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Backyard Poultry Farming	4	157	0	157	0	0	0	10	0	10	167	0	167
Bee-keeping	67	845	160	1005	226	68	294	489	143	632	1560	371	1931
Commercial fruit production	15	313	25	338	57	5	62	4	5	9	374	35	409
Composite fish culture	29	485	43	528	109	0	109	10	0	10	604	43	647
Dairying	39	632	122	754	94	29	123	86	36	122	812	187	999
Enterprise development	37	367	101	468	83	50	133	243	92	335	693	243	936
Fish harvest and processing technology	7	141	30	171	24	16	40	4	1	5	169	47	216
Fresh water fisheries	6	158	28	186	28	1	29	8	0	8	194	29	223
Fry and fingerling rearing	3	36	31	67	10	5	15	5	2	7	51	38	89
Integrated farming	101	1999	239	2238	392	67	459	236	133	369	2627	439	3066
Mushroom Production	233	3011	1233	4244	662	685	1347	302	471	773	3975	2389	6364
Nursery Management of Horticulture crops	58	826	180	1006	162	49	211	109	31	140	1097	260	1357

Table 73: Training Programme for Rural Youth, (Thematic Area wise) during 2020

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Ornamental fisheries	3	17	26	43	6	16	22	6	3	9	29	45	74
Others, if any	31	371	115	486	46	41	87	64	68	132	481	224	705
Para extension workers	7	125	72	197	36	36	72	7	4	11	168	112	280
Para vets	5	44	2	46	11	2	13	54	5	59	109	9	118
Pearl culture	6	73	15	88	16	2	18	9	7	16	98	24	122
Piggery	13	27	28	55	58	27	85	136	75	211	221	130	351
Plant Propagation technique	3	45	16	61	7	24	31	11	21	32	63	61	124
Planting material production	19	313	24	337	41	8	49	51	21	72	405	53	458
Post-Harvest Technology	15	158	97	255	34	25	59	34	47	81	226	169	395
Poultry production	38	529	108	637	234	61	295	129	57	186	892	226	1118
Production of organic inputs	64	989	201	1190	241	74	315	196	81	277	1426	356	1782
Production of quality animal products	10	48	106	154	16	70	86	17	5	22	81	181	262
Protected cultivation of vegetable crops	75	1201	270	1471	283	153	436	130	107	237	1614	530	2144
Quail farming	11	141	13	154	18	33	51	54	23	77	213	69	282
Rabbit farming	4	49	0	49	7	4	11	50	26	76	106	30	136
Repair and maintenance of farm machinery and implements	73	1142	177	1319	218	76	294	154	26	180	1514	279	1793
Rural Crafts	8	34	131	165	4	21	25	0	0	0	38	152	190
Seed production	98	1121	161	1282	294	93	387	359	79	438	1774	333	2107
Sericulture	10	56	7	63	18	14	32	83	97	180	157	118	275
Sheep and goat rearing	72	1215	303	1518	375	113	488	225	58	283	1815	474	2289
Small scale processing	16	86	52	138	22	7	29	47	67	114	155	126	281
Tailoring and Stitching	7	27	79	106	8	50	58	0	25	25	35	154	189
Training and pruning of orchards	26	175	22	197	28	4	32	30	14	44	233	40	273
Value addition	63	593	435	1028	189	200	389	109	293	402	891	928	1819
Vermi-culture	63	1073	148	1221	228	53	281	226	95	321	1527	296	1823
Grand Total	**1339**	**18622**	**4800**	**23422**	**4285**	**2182**	**6467**	**3687**	**2218**	**5905**	**26594**	**9200**	**35794**

KVK, Patna

KVK Darbhanga

KVK, Bokaro

Training of rural youth for skill development

4.4.3 Extension Functionaries

State Government Departments Extension functionaries play vital role in disseminating the recent technologies among the larger agriculture farming communities. From time to time knowledge up-gradation of extension functionaries are required about recent technologies along with advancement in the agricultural sciences including animal sector. In this context, KVKs play an important role in updating technological knowledge and skill in the frontier areas of the agriculture and allied sectors. A total of 730training programme were conducted in various thematic areas for 24714 extension functionaries comprising 6970 females and 17744males.Among different thematic area of training programmes,integrated nutrient managementis preferred one with 104 courses followed by productivity enhancement in field crops (93), integrated pest management (71), production and use of organic inputs (37), protected cultivation technology (48) and care and maintenance of farm machinery and implements were in the priority list. In integrated nutrient management 104 courses were conducted in which 3164 extension functionaries participated at the same time 93 courses were organized for 3491 extension functionaries in the field of productivity enhancement in field crops. At the same time 71 courses in integrated pest management for 2420 persons and 48 courses in protected vegetable technology for 1770 extensionist and production and use of organic inputs 37 courses and for household food security 37 programmes for 1661 and 1189 extension persons, respectively. Rejuvenation of old senile orchards, formation and management of SHGs, management of farm animals and livestock feed and fodder production were other important thematic areas of training to the extension functionaries and complete details can be seen in table 74 and table 75. In order to extend the benefit to large number of extension worker, the trainees include line department officials, teachers, NGO staff and other agricultural related workers of Bihar and Jharkhand.

Table 74: Training programme for Extension Functionaries(Bihar Jharkhand), 2020.

State	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Bihar	541	12355	3698	16053	1854	882	2736	246	55	301	14455	4635	19090
Jharkhand	189	1667	973	2640	280	227	507	1342	1135	2477	3289	2335	5624
Total	**730**	**14022**	**4671**	**18693**	**2134**	**1109**	**3243**	**1588**	**1190**	**2778**	**17744**	**6970**	**24714**

Table 75: Training programme for extension functionaries (Thematic Area wise) 2020

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Capacity building for ICT application	25	382	102	484	20	52	72	154	79	233	556	233	789
Care and maintenance of farm machinery and implements	37	1016	269	1285	207	59	266	58	6	64	1281	334	1615
Formation and Management of SHGs	12	339	39	378	34	16	50	42	72	114	415	127	542
Gender mainstreaming through SHGs	13	172	36	208	54	8	62	22	43	65	248	87	335
Group Dynamics and farmers organization	18	369	57	426	46	42	88	93	46	139	508	145	653
Household food security	37	362	789	1151	117	212	329	32	149	181	511	1150	1661
Information networking among farmers	9	384	11	395	23	3	26	0	0	0	407	14	421
Integrated Nutrient management	104	1666	886	2552	148	161	309	84	219	303	1898	1266	3164
Integrated Pest Management	71	1532	310	1842	242	66	308	192	78	270	1966	454	2420
Livestock feed and fodder production	14	292	24	316	40	28	68	46	20	66	378	72	450
Low cost and nutrient efficient diet designing	23	82	489	571	21	81	102	7	7	14	110	577	687
Management in farm animals	26	400	50	450	89	26	115	106	50	156	595	126	721
Othrs if any	68	1532	118	1650	204	17	221	64	38	102	1800	173	1973
Production and use of organic inputs	37	669	133	802	144	45	189	112	86	198	925	264	1189
Productivity enhancement in field crops	93	2364	341	2705	288	80	368	308	110	418	2960	531	3491
Protected cultivation technology	48	1123	329	1452	119	56	175	119	24	143	1361	409	1770
Record keeping on Biodiversity	18	434	26	460	174	6	180	0	0	0	608	32	640
Rejuvenation of old orchards	30	544	90	634	108	27	135	71	26	97	723	143	866
Value addition	19	230	176	406	27	43	70	78	15	93	335	234	569
Women and Child care	22	17	361	378	10	72	82	0	122	122	27	555	582
WTO and IPR issues	6	113	35	148	19	9	28	0	0	0	132	44	176
Grand Total	**730**	**14022**	**4671**	**18693**	**2134**	**1109**	**3243**	**1588**	**1190**	**2778**	**17744**	**6970**	**24714**

4.4.4 Sponsored Training Programme

The KVKs of ATARI Zone-IV is not only helping the farming community in receiving need-based support and information back-up but also attracting different organizations engaged in agricultural development activities to come in close contact with KVKs to improve the linkages between different agencies. Visit and interaction with KVKs and farming community convinced these organizations to solicit help and guidance from KVKs for better implementation of their plan of action. At the same time, the organizations felt it appropriate to utilize the expertise of KVKs in upbringing the knowledge and skill of their target beneficiary through HRD programmes of KVKs Zone-IV towards agricultural development in general and capacity building of farmers in particulars. A number of Govt. and other organizations have approached KVKs to get their clienteles training on various aspects of agricultural development, livestock rearing, fishery, post-harvest technology and value addition, farm machinery, women empowerment/ home science, capacity building etc. The KVKs, on the other hands, have tried to fulfill the expectations of those organizations apart from working on the mandated activities. During the year 2020 KVKs conducted 537 courses for 20019 participants of which 4835 were female Table 76.

Table 76: State wise Sponsored Training Programme during 2020

State	No. of Courses	General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Bihar	384	10854	2313	13167	1965	938	2903	112	70	182	12931	3321	16252
Jharkhand	153	1084	526	1610	364	206	570	805	782	1587	2253	1514	3767
Total	**537**	**11938**	**2839**	**14777**	**2329**	**1144**	**3473**	**917**	**852**	**1769**	**15184**	**4835**	**20019**

The major areas of training covered by the KVKs were crop production and management (88) involving 4383 participants followed by horticultural crop production 87 courses involving 2983 participants, agricultural extension (84) accommodating 1686 persons. In case of animal sector on livestock and production management 61 programmescoverdinvolving 1870 persons, production of organic inputs (63) covering 2973 participants and home science (45), post-harvest and value addition (37), farm machinery (32) and entrepreneurship development (40) courses were conducted. The trend of participation indicated that the sponsoring organizations preferred to get their clienteles trained in those areas where the participants might start their own venture for self-employment.

Table 77: Sponsored Training Conducted by Zone-IV during 2020

Area of Training	No. of Courses	General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agricultural Extension	84	1102	165	1267	231	82	313	91	15	106	1424	262	1686
Crop Production & Management	88	3127	373	3500	453	127	580	176	127	303	3756	627	4383
Entrepreneurship Development	40	794	298	1092	198	200	398	86	130	216	1078	628	1706
Farm Machinary	32	1400	126	1526	313	108	421	24	10	34	1737	244	1981
Home Science	45	563	439	1002	88	97	185	14	69	83	665	605	1270
Horticultural Crops Production	87	1408	715	2123	280	153	433	203	224	427	1891	1092	2983
Livestock Production & Management	61	991	152	1143	319	159	478	128	121	249	1438	432	1870
Post-harvest technology & Value Addition	37	636	138	774	121	44	165	119	109	228	876	291	1167
Production and use of Organic Inputs	63	1917	433	2350	326	174	500	76	47	123	2319	654	2973
Total	**537**	**11938**	**2839**	**14777**	**2329**	**1144**	**3473**	**917**	**852**	**1769**	**15184**	**4835**	**20019**



4.4.5 Vocational Training Programme:

KVKs of the Zone IV organized 374 vocational training programmes for 12,444 participantsto address problem of unemployment among the rural youths during 2020 (Table 78). Category wise analysis of vocational training showed that rural youths and girls preferred maximum training in mushroom production. Based on the potential of agro-based enterprise in the district as well as interest of farmers, the KVKs identified frontier areas like mushroom production, goat farming, entrepreneurship development, vegetable cultivation, integrated farming system, income generation, dairy management, farm mechanization, commercial fruit production, value addition to enable the youths to develop their own enterprise/ consultancy as a source of their livelihood. In most of the cases, financial/ credit institutions were associated to help the youths for seed money which helped them overcome their anxiety in the case of enterprise development.

Table 78: State wise Vocational Training Programme during Year 2020

Sl. No.	State	No. of Training	Grand Total		
			Male	Female	Total
1	Bihar	268	7411	1351	8762
2	Jharkhand	106	2692	990	3682
Total		**374**	**10103**	**2341**	**12444**

Vocationaltraining courses being of longer duration programme helped to upgrade the skill and knowledge of the rural youths and farmers. It was conducted in different areas of importance and most liked programme wasmushroom production (52) courses covering 1875 participants. Secondly the goat farming (31) courses involving total 1031 rural persons of which 885 boys and 146 girls (Table 79). Thirdly in entrepreneurship development (28) for 1060 participants covering 905 boys and 155 girls and fourth vegetable cultivation (25) for 775 farmers of which 662 boys and 113 girls fifthly integrated farming system (22) for 989 trainees among them 817 boys and 172 girls. The KVK training programmes which helped to build up trained manpower for self- employment in different areas of rural farming and agro-based enterprises.About 484 participants were trained in dairy management in 19 courses. Similarly, 613 rural youths had chosen poultry farming as their desired vocational courses and were trained through 16 courses. Commercial fruit production, vermi-composting, repair and maintenance of farm machinery and implements, organic farming, rural crafts were also the other areas where trainees showed their interest.

Table 79:Vocational Training Programme, 2020

Sl. No.	Area of training	No. of Training	Grand Total		
			Male	Female	Total
1	Beekeeper	19	558	151	709
2	Commercial Fruit Production	17	406	60	466
3	Dairy Management	19	451	33	484
4	Entrepreneurship Development	28	905	155	1060
5	Farm Mechanization	15	385	78	463
6	Fish Production	9	263	44	307
7	Goat farming	31	885	146	1031
8	Income generation	23	580	132	712
9	Integrated farming system	22	817	172	989
10	Integrated Nutrient management	3	184	26	210
11	Mushroom Production	52	1361	514	1875
12	Organic Farming	4	57	42	99
13	Poultry farming	16	588	25	613
14	Production of Organic Input	9	252	51	303
15	Protected cultivation	9	181	63	244
16	Quail farming	1	35	0	35
17	Seed Production	22	494	101	595
18	Soil & water testing	13	285	80	365
19	Tailoring and Stitching	5	30	98	128
20	Value addition	12	135	199	334
21	Vegetable cultivation	25	662	113	775
22	Vermicompost production	20	589	58	647
Grand Total		**374**	**10103**	**2341**	**12444**


KVK, Patna


KVK,Darbhanga

4.5 EXTENSION PROGRAMMES

In creating awareness among farmers about the benefit of advanced agricultural and allied technologies, scientific livestock rearing, fish fingerling production, soil testing, group farming and other related aspects, the KVKs of Zone-IV

organized 1,83,468 different extension activities to reach out 14,81,584 farmers and extension officials. Among the beneficiaries 14,51,728 farmers and 29,856extension officials participated in the extension activities. Gender-wise classification indicates that 2,90,923 farm women took part in various extension activities against 11,90,661 numbers of farm men. In respect of extension officials, there are 3,700 were women extension officials and 26156 were male extension officials (Table 80).

Table 80:State wise Extension Activities during 2020

Name of State	No. of activities	Farmer			Extension officials			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Bihar	151552	444901	58653	503554	24108	3067	27175	469009	61720	530729
Jharkhand	31916	719604	228570	948174	2048	633	2681	721652	229203	950855
Total	**183468**	**1164505**	**287223**	**1451728**	**26156**	**3700**	**29856**	**1190661**	**290923**	**1481584**

In respect of programme organized, advisory service was the most important extension activities conducted by KVKs where 1,00,330 number of advisory services were provided for 9,13,947 number of farmers and farm women and 5650 for extension officials total 919597. A total of 5795 diagnostic visits were performed by the scientists to farmer's field covering 20213 famers and extension officials. On the other hand, altogether 81215 farmers visited to the KVKs of which 14727 were farm women including women extension officials. Another important category of extension activities by KVKs was scientific visit to farmer's field and total 8319 visit was made in which 39,254 farmers benefitted. Organization of workshop was another window to update the farmer's knowledge and as such 128 workshops were organized by the KVKs for 11,952 beneficiaries.Organization of exhibition is another way to show case the technology developed and total 81 exhibition and 471 exposure visits such were organized by the KVKs and benefitted 27612 and 9720 farmers including extension officials during the year (Table 81).

Method demonstration is also very effective tools of KVKs where 10,062 farmers were benefited by organizing 444 numbers of programme. In spite of COVID-19 pandemic KVKs had conducted as many as 64 numbers of Farmer Seminars where 3197 beneficiaries participated. Other important extension activities carried out by the KVKs includes conducting kisangosthi, field day, film show, group meeting, soil test campaign, self-help group conveners meeting, mahilamandalconvener's meetings and farm science club conveners' meet, celebration of important days and others.

Table 81: Extension Activities Organized by Zone IV during 2020

Name of Extension Activity	No. of activities	Farmer			Extension officials			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory Services	100330	717452	196495	913947	4822	828	5650	722274	197323	919597
Agri-mobile Clinic	38	764	266	1030	7	1	8	771	267	1038
Animal Health Camp	126	3221	1118	4339	98	25	123	3319	1143	4462

Clinical service	82	182	16	198	0	0	0	182	16	198
COVID-19 Awareness Programme	62	1162	193	1355	5	0	5	1167	193	1360
Diagnostic visits	5795	16160	3503	19663	477	73	550	16637	3576	20213
Exhibition	81	18719	8172	26891	562	159	721	19281	8331	27612
Exposure visits	471	7993	1485	9478	191	51	242	8184	1536	9720
Farm Science Club Conveners meet	30	817	234	1051	30	12	42	847	246	1093
Farmers Seminar	64	2455	630	3085	89	23	112	2544	653	3197
Farmers visit to KVK	64678	60689	14339	75028	5799	388	6187	66488	14727	81215
Field Day	718	16563	3845	20408	825	122	947	17388	3967	21355
Film Show	477	20060	7085	27145	396	82	478	20456	7167	27623
FLD training	27	280	67	347	0	0	0	280	67	347
Group meetings	201	3737	1467	5204	316	79	395	4053	1546	5599
Jal Shakti Abhiya	6	1686	504	2190	85	21	106	1771	525	2296
Kharif workshop	3	161	129	290	12	8	20	173	137	310
KisanChaupal	62	1530	702	2232	129	33	162	1659	735	2394
KisanGhosthi	700	36875	9866	46741	4950	391	5341	41825	10257	52082
KisanMela	88	48716	14036	62752	1716	362	2078	50432	14398	64830
MahilaMandals Conveners meetings	54	228	2606	2834	75	60	135	303	2666	2969
Method Demonstrations	444	7581	2145	9726	261	75	336	7842	2220	10062
mKisan Portal	8	149971	0	149971	0	0	0	149971	0	149971
Parthenium Awareness week	20	789	381	1170	19	2	21	808	383	1191
PM Live telecast	63	3057	1039	4096	96	15	111	3153	1054	4207
PM-KisanSammanNidhiYojana	8	1291	466	1757	137	6	143	1428	472	1900
PoshanMah	52	59	1708	1767	8	14	22	67	1722	1789
Rabi workshop	13	848	437	1285	45	15	60	893	452	1345
Scientist visit to farmers field	8319	30617	7434	38051	1065	138	1203	31682	7572	39254
Self Help Group Conveners meetings	183	1178	2708	3886	60	27	87	1238	2735	3973
Soil health Camp	106	4306	1455	5761	176	48	224	4482	1503	5985
Video Conferencing	31	225	112	337	96	12	108	321	124	445
Workshop	128	5133	2580	7713	3609	630	4239	8742	3210	11952
Grand Total	**183468**	**1164505**	**287223**	**1451728**	**26156**	**3700**	**29856**	**1190661**	**290923**	**1481584**

4.5.1 Other Extension activities

The KVKs also exercised other means of communication like publishing through newspaper, radio/ TV talks, writing popular article, preparing extension literature and acting as resource persons for ATMA or state agriculture department as well as organizing awareness camps etc. The KVKs of Zone-IV conducted 16,295 number of such extension activities for the benefit of 28,788 farmers. The KVKs prepared and distributed 19442 extension literature depicting cultivation techniques of crops, vegetables, fish rearing, livestock rearing etc. in local vernacular. Among all the states, KVKs of Bihar developed and distributed (10251) of extension literature followed by Jharkhand (9191). KVK personnel delivered TV talk 385 of which 264 times in Jharkhand, 121 times in Bihar during year 2020. Activities of KVKs of Zone IV also were published through newspaper by 5159 times. The KVKs also extended their expertise through delivering 792 numbers of lectures as resource person(Table 82).

Table 82:Others Extension Activities organized during 2020

Nature of Extension Activity	No. of Activities		
	Bihar	Jharkhand	Total
Extension Literature	10251	9191	19442
Multimedia coverage	10	0	10
Newspaper coverage	3750	1409	5159
No. of Soil Sample Analyzed	448	0	448
Popular articles	283	85	368
Radio talks	116	111	227
TV talks	121	264	385
Ex-trainees Sammelan	27	07	34
Lectures delivered as resource persons	792	341	1133
Soil test campaigns	279	709	988
Any Other (Specify)	218	376	594
Total	**16295**	**12493**	**28788**

सब्जी की उन्नत खेती पर कार्यशाला आयोजित

कोडरमा | हिन्दुस्तान प्रतिनिधि

प्रशिक्षण

- प्रशिक्षण में जिले के विभिन्न प्रखंडों के कृषक, महिलाओं और उद्यान मित्रों ने भाग लिया
- कृषकों को कम लागत में अच्छी पैदावार करने की विस्तृत जानकारी दी गई

पोषण वाटिका बनाकर पोष्टिक सब्जी का कर सकेंगे उत्पादन : सिंह

परसौनी कृषि केन्द्र के वैज्ञानिकों ने दी कई जानकारिया

KVK Koderma **East Champaran II**

5.1 Seed produced by KVKs (Farm and Village Seed Production)

Seed isone of the most critical input on which the production and productivity of any crops depends. It is very essential that seed of any annual crops should be replaced by farmers at regular interval to maintain and the productivity of the crop and to increase the production. As farm size in KVKs is limited so seed production cannot be done in large quantities at KVK farm. To maximize the seed production and to meet the demands of farmers for quality seed it has been initiated in the villages as "Village Seed Production" programme. During 2020, KVKs produced 10446.74q of seeds of major field crops like paddy, wheat, maize, mustard, linseed, niger, groundnut, red gram, chick pea, black gram, fodders etc. (Table 82).

5. PRODUCTION OF SEED, PLANTING MATERIALS AND BIO-PRODUCTS

Table 82:State wise Seed Productionduring 2020

Sl. No.	State	Seed Production (q)
1	Bihar	8159.99
2	Jharkhand	2286.75
Total		**10446.74**

5.1 Seed produced by KVKs (Farm and Village Seed Production)

Seed isone of the most critical input on which the production and productivity of any crops depends. It is very essential that seed of any annual crops should be replaced by farmers at regular interval to maintain and the productivity of the crop and to increase the production. As farm size in KVKs is limited so seed production cannot be done in large quantities at KVK farm. To maximize the seed production and to meet the demands of farmers for quality seed it has been initiated in the villages as "Village Seed Production" programme. During 2020, KVKs produced 10446.74q of seeds of major field crops like paddy, wheat, maize, mustard, linseed, niger, groundnut, red gram, chick pea, black gram, fodders etc. (Table 82).

Table 83: Crop wise Seed Production during 2020 in Bihar and Jharkhand

Crop Type	Name of Crop	Quantity of Seed produced		
		Bihar(q)	Jharkhand(q)	Total(q)
Cereals	Paddy	4657.38	1447.86	6105.24
	Wheat	2419.32	237.84	2657.16
	Maize	1.90	6.90	8.80
	Millet	2.23	2.50	4.73
	Total	**7080.83**	**1695.10**	**8775.93**
Pulses	Chickpea	199.95	3.37	203.32
	Lentil	101.50	0.32	101.82
	Pigeon Pea	36.92	14.80	51.72
	Green gram	44.39	6.00	50.39
	Pea	6.98	28.80	35.78
	Horsegram	1.50	1.00	2.50

Table 83: Crop wise Seed Production during 2020 in Bihar and Jharkhand

Crop Type	Name of Crop	Quantity of Seed produced		
		Bihar(q)	Jharkhand(q)	Total(q)
	Black Gram	1.01	0.50	1.51
	Fieldpea	0.00	0.07	0.07
	Lathyrus	3.58	0.00	3.58
	Total	**395.83**	**54.86**	**450.69**
Oilseeds	Mustard	93.46	67.89	161.35
	Linseed	15.18	3.20	18.38
	Nizer	0.00	11.77	11.77
	Sesame	8.14	0.90	9.04
	Groundnut	6.00	8.39	14.39
	Soybean	3.75	0.00	3.75
	Tori	1.00	0.00	1.00
	Total	**127.53**	**92.15**	**219.68**
Vegetables	Elephant Foot Yam	20.85	281.60	302.45
	Brinjal	0.00	0.17	0.17
	French Bean	0.00	0.03	0.03
	Tomato	0.00	0.03	0.03
	Cowpea	0.00	0.02	0.02
	Sponge gourd	0.00	0.01	0.01
	Cucumber	0.00	0.00	0.00
	Capsicum	0.00	0.00	0.00
	Total	**20.85**	**281.86**	**302.71**
Commercial Crops	Sugarcane	173.50	0.00	173.50
	Gooseberry	0.00	0.01	0.01
	Potato	105.00	122.00	227.00
	Total	**278.50**	**122.01**	**400.51**
Spices	Turmeric	4.30	9.45	13.75
	Chili	0.00	0.00	0.00
	Total	**4.30**	**9.45**	**13.75**
Fodder Crops	Barseem	249.00	0.00	249.00
	Sesbania	3.00	3.11	6.11
	Tephrosia	0.00	0.56	0.56
Green Manure	**Total**	**3.00**	**3.67**	**6.67**
	Aonla	0.00	27.64	27.64
	Spawn	0.15	0.00	0.15
Total		**8159.99**	**2286.75**	**10446.74**

KVK Darbhanga

KVK Hazaribagh

5.2 Horticultural Planting materials

Saplings and other quality planting materials like grafts, gooties, bulbs, etc. are another important areas and quality planting materials were produced to supply among the farmers. During 2020, altogether 27.91 lakh numbers of planting materials were produced by the KVKs of which 18.33 lakh were from Bihar and 9.58 lakhs from Jharkhand and generated total Rs.86.66 lakh as revenue from the sale quality planting materials to 37980 numbers of beneficiaries in Zone-IV (Table 84).

Table 84: State wise production of Horticultural Planting Materials by KVKs during 2020

Crops	Bihar			Jharkhand			Total		
	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)
Fruits	156833	58,74,165	11443	89292	9,81,526	4504	246125	68,55,691	15947
Vegetable	1570709	4,89,615	11002	720130	4,50,955	7236	2290839	9,40,570	18238
Tuber	-	-	-	4500	21,250	510	4500	21,250	510
Medicinal plants	1675	1,500	101	82314	1,67,756	-	83989	1,69,256	101
Ornamental plants	23230	27,600	192	13025	54,965	980	36255	82,565	1172
Spices	500	-	7	-	-	-	500	-	7
Plantation	15250	4,57,500	371	-	-	-	15250	4,57,500	371
Fodder crop saplings	56250	10,000	240	48450	73,800	1252	104700	83,800	1492
Forest species	8760	54,700	142	200	1,400	-	8960	56,100	142
Total	**1833207**	**69,15,080**	**23498**	**957911**	**17,51,652**	**14482**	**2791118**	**86,66,732**	**37980**

5.2.1: Fruit crops

Quality planting of important fruit crops like mango, litchi, guava and lemon were high demand every year. During the year altogether 2.46 lakh of quality materials were propagated during the year of which maximum 103708 nos. of mango plants in which KVKs of Bihar produced 85889 plants. In case of papaya total 48979 plants of different varieties were produced during the year of which 35864 were from KVKs of Jharkhand. In case of guava total 42355 plants were propagated of which 28229 were from KVKs of Bihar. In case of litchi altogether 8422 plants were propagated from which 8236 from Bihar (Table 85).

KVK Gumla

KVK East Singhbhum

Table 85: Production of planting materials in fruits crops by KVKs during 2020

Fruit crops	Bihar			Jharkhand			Total		
	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)
Mango	85889	44,32,860	7195	17819	2,01,456	355	103708	46,34,316	7550
Papaya	13115	1,38,255	578	35864	2,65,910	575	48979	4,04,165	1153
Guava	28229	6,18,250	1772	14126	3,95,595	2210	42355	10,13,845	3982
Lemon	13273	2,48,320	1325	1747	64,015	1126	15020	3,12,335	2451
Litchi	8236	3,32,450	215	186	13,800	48	8422	3,46,250	263
Banana	5630	7,400	121	0	0	0	5630	7,400	121
Dragon fruit	1220	73,200	0	0	0	0	1220	73,200	0
Coconut	750	11,250	127	0	0	0	750	11,250	127
Ber	0	0	0	450	2,250	0	450	2,250	0
Jack fruit	173	5,220	65	100	500		273	5,720	65
Custard apple	200	2,000	0	0	0	0	200	2,000	0
Gooseberry	0	0	0	19000	38,000	190	19000	38,000	190
Pomegranate	118	4,960	45	0	0	0	118	4,960	45
Total	**156833**	**5874165**	**11443**	**89292**	**981526**	**4504**	**246125**	**6855691**	**15947**

5.2.2: Vegetable crops

Quality planting of important vegetable crops as per season were also propagated of which Tomato ranked first with total 567946 seedlings during the year followed by Onion, cabbage, cauliflower with their values 5,64,560, 400920 and 292379 respectively. In case of tomato total 56,7946 seedlings 3,24,721 from Bihar and 2,43,225 were from Jharkhand KVKs. Cole crops was the second most important crop in the zone and in Bihar 3,14,425, 2,07,008 and 18,235 number of seedlings were of Cabbage, cauliflower and broccoli respectively, were propagated (Table 86).

KVK Hazaribagh

KVK Gumla

Table 86: Production of Planting Materials in Vegetable Crops by KVKs during 2020

Vegetable Crops	Bihar			Jharkhand			Total		
	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)
Tomato	324721	84,384	1421	243225	89,955	1098	567946	1,74,339	2519
Onion	457540	14,000	156	107020	500	40	564560	14500	196
Cabbage	314425	45,305	1227	86495	71,595	839	400920	116900	2066
Cauliflower	207008	65,738	1676	85371	67,139	766	292379	132877	2442
Brinjal	98932	57,475	1813	125556	80,072	905	224488	137547	2718
Chilies	98298	51,912	1401	32792	16,634	237	131090	68546	1638
Broccoli	18235	12,371	263	13550	12,690	100	31785	25061	363
Drumstick	10100	93,000	1223	6421	1,03,370	3121	16521	196370	4344
Bottle gourd	8170	3,350	120	4000	0	17	12170	3350	137
Capsicum	5080	15,080	345	5000	2,000	20	10080	17080	365
Creepers	10000	10,000	420	0	0	0	10000	10000	420
Sponge gourd	4500	0	0	3500	0	18	8000	0	18
Cucumber	7500	5,000	105	0	0	0	7500	5000	105
Ridge Gourd	0	0	0	6000	0	20	6000	0	20
Bitter Gourd	3000	0	0	500	0	0	3500	0	0
Cucurbits	3200	32,000	832	700	7,000	55	3900	39000	887
Total	**1570709**	**4,89,615**	**11002**	**720130**	**4,50,955**	**7236**	**2290839**	**9,40,570**	**18238**

5.2.3: Spices, Medicinal and aromatic crops

KVKs of Bihar and Jharkhand also propagated planting materials of medicinal and aromatic plants (83,989), tuber crops (4,500), ornamental and flowers plants (36,255) and plantation crops 15,250 during the year 2020 shows interest of farmers in cultivation of these crops which have local demand and bio-aesthetic values (Table 87).In medicinal and aromatic high demand were of lemon grass, palmarosa, rauvolfia, etc. In tuber crop Cassava and sweet potato had high demand in the Jharkhand whereas; forest species like mahogany, teak and other plants had more demand in Bihar states.

Table 87:Production of planting materials in other horticultural crops by KVKs during 2020

Other horticultural crops	Planting Materials	Bihar			Jharkhand			Total		
		Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)
Tuber	Sweet potato	-	-	-	2500	1,250	10	2500	1,250	10
	Cassava	-	-	-	2000	20,000	500	2000	20,000	500
	Total	**0**	**0**	**0**	**4500**	**21250**	**510**	**4500**	**21250**	**510**
Spices	Spices	500		7	-	-	-	500	-	7
Medicinal and Aromatic	Medicinal plants	1675	1,500	101	58500	1,40,000	-	60175	1,41,500	101
	Lemon grass	-	-	-	13000	6,500	-	13000	6,500	0

Table 87:Production of planting materials in other horticultural crops by KVKs during 2020

Other horticultural crops	Planting Materials	Bihar			Jharkhand			Total		
		Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)	Plants (No.)	Value (Rs.)	Farmers (No.)
Medicinal and Aromatic	Sarpgandha	-	-	-	2772	13,860	-	2772	13,860	0
	Palmarosa	-	-	-	2300	1,150	-	2300	1,150	0
	Khas	-	-	-	1800	900	-	1800	900	0
	Tulsi	-	-	-	1692	846	-	1692	846	0
	Citronella	-	-	-	1500	750	-	1500	750	0
	Giloy	-	-	-	500	2,500	-	500	2,500	0
	Neem	-	-	-	250	1,250	-	250	1,250	0
	Total	**1675**	**1500**	**101**	**82314**	**1,67,756**	**0**	**83989**	**1,69,256**	**101**
Ornamental Plants	Marigold	17000	7,500	42	2575	788	4	19575	8,288	46
	Annuals	3730	7,600	150	9190	48,877	976	12920	56,477	1126
	Flowering plants	2500	12,500		-	-	-	2500	12,500	0
	Arhul	-	-	-	1060	5,300	-	1060	5,300	0
	Gladiolus bulbs	-	-	-	200			200	-	0
	Total	**23230**	**27600**	**192**	**13025**	**54964.5**	**980**	**36255**	**82,565**	**1172**
Plantation	Plantation	15250	4,57,500	371	-	-	-	15250	4,57,500	371
Forest Species	Forest Species	6100	1,500	142	200	1,400		6300	2,900	142
	Teak	2560	51,200		-	-	-	2560	51,200	0
	Mahogany	100	2,000		-	-	-	100	2,000	0
	Total	**8760**	**54700**	**142**	**200**	**1400**	**0**	**8960**	**56100**	**142**
Fodder (Sapling)	Fodder	56250	10,000	240	33450	66,300	1170	89700	76,300	1410
	Napier	-	-	-	15000	7,500	82	15000	7,500	82
Total		**56250**	**10000**	**240**	**48450**	**73800**	**1252**	**104700**	**83800**	**1492**

KVK Muzaffarpur

KVK East Singhbum

5.3 Bio-Products

There is huge demand for bio-products and bio-pesticides by the farmers. To motivate farmers about use and to produce these products, the KVKs of Zone-IV also facilitated supply of bio-fertilizers, bio-pesticides and bio-agent like earthworms, azolla. Most demanded commodity is bio-fertilizers and huge quantity of 194625.14kg was produced by the KVKs along with the production of 11009 kg bio-pesticides and 3047.40kg bio-agent (Table 88).

Table 88: State wise bio-product productions by KVKs during 2020

Name of Bio-Product	Bihar			Jharkhand			Total		
	Quantity (Kg or L)	Value (Rs.)	No. of Farmers	Quantity (Kg or L)	Value (Rs.)	No. of Farmers	Quantity (Kg or L)	Value (Rs.)	No. of Farmers
Bio-agents	4.50	1350	2	3042.90	245149	185	3047.40	246499	187
Bio-fertilizers	143752.84	981773	422	50872.30	646970	284	194625.14	1628743	706
Bio-pesticide	159.00	-	0	10850.00	53975	270	11009.00	53975	270
Total	**143916.34**	**983123**	**424**	**64765.20**	**946094**	**739**	**208681.54**	**1929217**	**1163**

KVK Gumla

KVK Muzaffarpur II

5.4 Livestock Production

Livestock production is an inherited property of small and marginal farmers of this zone to support their survival and farm income. In order to meet their basic needs improved breeds of livestock strain, poultry birds, ducks, piglets, fingerlings spawn etc. were provided to the farmers. During the year 2020 KVKs made available 30 dairy animals, 1403 small ruminants, 2996 poultry birds, 142 Piggery and 448300 fisheries fingerlings to different farmers under this zone.

Table 89: State wise livestock production during 2020

Particulars of Livestock	Bihar		Jharkhand		Total	
	Numbers	Value (Rs.)	Numbers	Value (Rs.)	Numbers	Value (Rs.)
Dairy animals	12	3,03,000	18	2,32,000	30	5,35,000
Fisheries	441000	7,29,000	7300	15,960	448300	7,44,960
Poultry	1724	1,15,025	1272	3,13,500	2996	4,28,525
Small ruminants	1354	2,96,150	49	2,47,350	1403	5,43,500
Piggery	33	1,50,100	109	3,84,525	142	5,34,625
Total	**444123**	**15,93,275**	**8748**	**11,93,335**	**452871**	**27,86,610**

KVK Banka

KVK Bhagalpur

6.SOIL AND WATER SAMPLE ANALYSIS AND "WORLD SOIL DAY" CELEBRATION

Soil testing and soil based fertilizer application are very important for increasing the productivity and doubling the farmer's income. KVK scientists of Zone IV through different awareness and training programmes tried to motivate farmers to test soil before crop cultivation so that soil test based fertilizer recommendation may be promoted to reduce indiscriminate use of fertilizers and to manage environmental and other health hazards. The KVKs have also tested a large number of soil and water samples supplied by the farmers for quality analysis at KVK laboratories. In year 2020, 10,857 soil and water samples were analyzed from 875 villages benefitting26,346 farmers of this Zone. A minimum amount was charged from farmers for testing soil samples and total Rs.6,78,785 revenues was generated(Table 90).

The KVKs of this Zone celebrated "World Soil Day" on 5th December, 2020. On this occasion, various programmes like seminar, lectures, hands on training on soil sampling methodology, awareness programme were conducted. The distribution of soil health cards to the farmers by local MPs/ MLAs/ other Public representatives was one of the major highlight soil day celebration by the KVKs and total 8056 farmers participated in this program where 6557 soil health card were also distributed to the farmers (Table 91).

Table 90: State wise Soil & Water Testing by KVKs of Zone-IV during 2020

Sl.	State	Name of Sample	No. of KVK	Number of samples			Amount realized (Rs.)
				Sample Analysed	Farmers	Villages	
1	Bihar	Soil	36	5321	11579	550	5,54,785
		Water	2	67	54	11	-
2	Jharkhand	Soil	20	5341	14585	301	1,23,500
		Water	1	1	1	1	500
		Food (Honey)	1	127	127	12	-
Total				**10857**	**26346**	**875**	**6,78,785**

Table 91:State wise World Soil Day celebration at KVKs on 5th December 2020

Sl.	State	No. of KVKs distributed	No. of VIP attended	No. of Soil Health Card distributed to farmers	Farmers benefitted
1	Bihar	38	43	2860	3768
2	Jharkhand	21	55	3697	4288
Total		**59**	**98**	**6557**	**8056**

KVK Palamu

KVK Aurangabad

KVK Bokaro

KVK Banka

7. SCIENTIFIC ADVISORY COMMITTEE (SAC) MEETING

To review the day to day work in details and to discuss about local problems for finalize the Action Plan for the next yearwith the suggestions from line department members, progressive farmers, NGOs and other agencies the Scientific Advisory Committee (SAC) Meeting is being organized by the KVKs everyyear. As per the guidelines of ICAR, the committee comprises of representatives from ICAR-ATARI Patna, Host Organization, other nearby ICAR Institutes, State Agricultural Universities, developmental departments of the district, media personnel, financial institutions, progressive farmers and farm women and others. During the year 2020, out of total 68 KVKs of ICAR-ATARI, Patna conducted total of 43 SAC meetings covering 34 KVK of Bihar and 9 KVKs of Jharkhand state (Table 92). These meetings were attended by 1405 participants with presence of all nominated members.

Table 92: Details of SAC Meeting organized during 2020

Sl. No.	State	No. of SAC Meeting	No. of Participants
1	Bihar	34	1160
2	Jharkhand	9	245
	Total	**43**	**1405**

8. PUBLICATION BY KVKs

To highlight the research and transfer of technology through print media in local language the KVKs scientists are encouraged to actively involve themselves in publishing research papers, books, book chapters, technical bulletins, newsletters, popular articles, leaflets/pamphlets, DVD/CD etc. to make it available to researchers and extension worker of other KVKs, SAUs, ICAR institutes, line departments, ATMA, NABARD, other agencies, farmers and other stake holders. A total of 1682 publications comprising of 102 research papers, 198 symposia papers, 63 newsletter, 232 popular articles, 113 book chapters, 289 extension pamphlets/ literature, 77 technical bulletins and 78 electronic publications were published by the KVK personnel of this Zone(Table 93). The total number of circulation was 2,18,517 and 33 papers in NAAS rated journal during the year 2020.

Table 93: List of publications by KVKs and ATARI Patna during 2020

Item	Bihar				Jharkhand			
	No. of KVKs	Paper (No.)	No. of copies	Research papers in NAAS Journal	No. of KVKs	Paper (No.)	No. of copies	Research papers in NAAS Journal
Research Paper	36	77	-	25	13	25	-	9
Seminar/Conference/Symposia Papers	20	113	-	8	11	85	-	4
Books	17	23	-	-	3	3	-	-
Bulletins	19	45	-	-	9	32	-	-
News Letter	17	47	28002	-	8	16	1748	-
Popular Articles	30	202	32868	-	8	30	4626	-
Book Chapter	26	103	-	-	5	10	-	-
Extension Pamphlets/Literature	32	205	85974	-	14	84	29100	-
Technical Reports	27	134	-	-	12	58	-	-
Electronic Publication (CD/DVD etc)	11	46	217	-	8	32	242	-
Total		**1214**	**175055**	**33**		**468**	**43462**	**13**

9. TECHNOLOGICAL BACKSTOPPING BY DIRECTORATES OF EXTENSION EDUCATION

The process of technology transfers from Research Institutes/Agricultural Universities to the farmers' field and its feedback from the end users to the researchers play an important role for conducting different activities by the KVKs either in the form of On-farm-trial (OFT) or front line demonstration (FLD) or through organizing various training programs/health camps etc. Under the technological and administrative support of Directors of Extension Education (DEEs), all 68 KVKs disseminated need based agricultural technologies developed by various ICAR Institutes/ Universities of the Zone IV. Under the jurisdiction of Directorate of Extension EducationBihar Agricultural University, Sabour, has 21 KVKs; 16 KVKs under Dr. Rajendra Prasad Central Agricultural University, Pusa, 16 KVKs under Birsa Agricultural University (BAU), Ranchi and one KVK under Bihar Animal Sciences University (BASU), Patna. The Directorate of Extension Education provides technological backstopping to all the KVKs of this Zone. In the year 2020-21 all the four Directorates and 04 ICAR institutes had provided updated technological information and inputs to KVKs in the form of breeder and foundation seeds, planting materials, livestock & poultry breeds, mineral mixtures for animals, fish spawns/fingerlings apiary units, mushroom spawn etc. which have ultimately helped the farmers of their areas to benefit from it. Besides, this technological literature has also been provided to KVKs for information and distribution.

With the objective to improve and upgrade the knowledge and skill of KVK scientists/SMS and technical staff the Directorate of Extension Education of this zone have conducted many HRD programs both offline and on-line covering a various domain like accounts management, GFR rules, orchard management, soil health management, improving communication and extension skills, quality seed production, demonstrations, livestock management during disaster, conducting health/ vaccination camp for animals, skill development in laboratory work, advance agriculture and allied technologies, mechanization in agriculture, scientific fish production, disease/ pest management and many others.

Monitoring the activities of KVKs is most important function of the Directorate which includes Extension Education council meeting which was held in all Directorates. To oversee the activities and monitor the work carried by the KVKs DEE, ADEE, DDE have visited different KVKs on more than 150 different occasions and functions including celebration of important meetings, conduction of field days, monitoring of OFTs/ FLDs, seed production programs, training programs etc. These activities also help the Directorate to assess the technological needs of KVKs and in empowering the KVKs with advance knowledge and skill.

A number to technologies developed by the four universities in this zone have been implemented through the KVKs and is being monitored by DoEE like installation of 3HP single phase irrigation system in all 16 KVK under RPCAU for facilitating ensured irrigation in 15 acre area under Rice-wheat cropping system and achieving 10 tons production/ha, water recharge system at KVKs, hydroponics technology for fodder production, cage culture demonstration, Nano fertilizer application, solar tree irrigation system, solar powered boat irrigation system for diara lands etc by RPCAU, Pusa and well established technologies like DSR, raised bed planting of maize, farm mechanization and other technologies, new varieties, promotion of minor millets, nutrition security projects, etc by BAU, Sabour and RPCAU, Pusa. Besides a number of technological inventory were has been published by DoEE like Technological Basket for Migratory Workers, Kissan Diary 2021, Kisan Mela Samarika,

by RPCAU similarlyBeej Upchar Ke Vividh Upaya, Krishi Ki Kahawate, Bihar Kisan Diary-2021, Takniki Aadharit Kheti ke liye Yuvaon ka Sashaktikaran (Smarika), Vishwavidhalaya Ke Uplabdhiyan, Poshan Vatika. The Directorate also overlooks and monitors the publication of extension bulletin, folders, training manuals and other extension materials and 140 such publications were registered by DoEE, RPCAU, Pusa.

The DEEs of Bihar and Jharkhand state visited their KVKs for proper application of proposed work plan under different projects. The DEE officials of BAU, Bhagalpur visited their OFT fields 11 times and FLD fields also for 12 times for monitoring and DEE & DDE& T and DDE of DRPCAU, Pusa official visited 18 times for OFT fields and 21 times for FLD fields, similarly DEE official of BASU, Patna also monitored OFT fields and FLD fieldsto follow up the performance of various cereal, pulses and oilseed crops, establishment of new orchards, farm mechanization, establishment of apiary technology they also inspected the field to assess the performance of different herbicide for controlling weeds in onion, drum seeder, improved poultry and duck breeds, different fungicides used in fruits and vine rot of pointed gourd, nutrient management for groundnut production and other technologies.

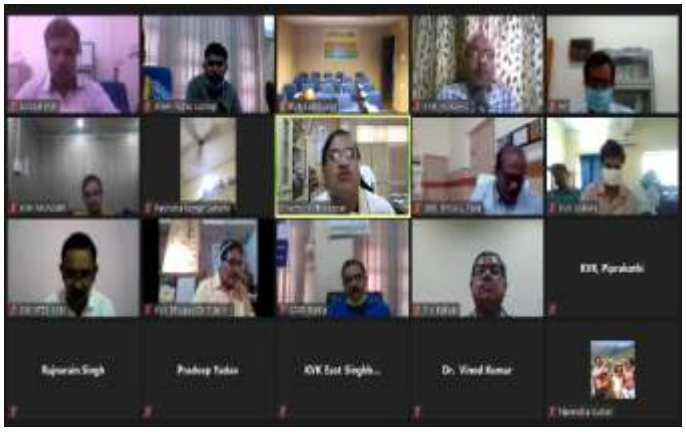
10. AGRICULTURE TECHNOLOGY INFORMATION CENTRE

To deliver updated technologies available at the research institute/ state agricultural universities related to agriculture, animal husbandry and fishery sciences to the end users i.e. farmers, Agricultural Technology Information Centre (ATIC) serves as a "single window" system which usually present at the entrance of any institute. It enables farmers to access the desired information for solution to their problems. Under this Zone, the ATICs are being operated in Bihar state under Bihar Agricultural University (BAU), Sabour and DRPCAU, Pusa and in Jharkhand state under Birsa Agricultural University (BAU), Ranchi. The facilities available in ATIC are reception centre, exhibition/ technology museum, touch screen kiosk, sales counter, farmers' feedback register, video conferencing facility, library, cafeteria, community radio station etc. During 2020, due to unprecedented COVID-19 situation the number of farmers visiting ATICs were less but even then 2703 farmers visited ATIC for information, seeds and other services.

As per technology information was concerned, 3144 farmers used kissan call centre to get the information on improved hybrids varieties, pest management, disease management, agro-techniques, soil and water conservation, post-harvest technology and value addition, and animal husbandry including fisheries. The majority of the farmers were interested in receiving information on pest and disease management of various crops (1030), animal husbandry and fishery (356), soil health card (651), soil and water testing (293) and post-harvest technology and value addition (532). During the period, a total of 283 farmers, benefitted from video showing in the ATICs of this Zone. The ATIC of this Zone was also a potential source of supplying various technological products like seeds, planting materials, livestock, poultry birds, eggs, fish fingerlings, bio-products, bio-fertilizers, farm-produces, vermi-compost etc and about 10358 q of seed, 1.96 lakh nos. of planting materials, a numbers of poultry birds and livestock as well as quintals of vermi-composting, and lakhs fish fingerlings were provided to farmers by ATIC, RPCAU, Pusa.

Table 94: Workshop/Meetings Conducted by ATARI Patna in 2020

S.No.	Workshop/Meeting	Date	Mode/Venue
1.	QRT Phase III	9-10 January 2020	KVK Deoghar
2.	Workshop on CFLD (Pulses & Oilseeds)	09-10 February 2020	KVK East Champaran
3.	4thIMC Meeting	19 February 2020	ATARI Patna
4.	Meeting of Nutritional Programme of NCD GOI	20 February 2020	ATARI Patna
5.	Workshop on OFT Finalization (Agronomy/Soil Science)	04-05 March 2020	BAU Sabour
6.	Workshop on OFT Finalization (Horticulture)	06-07 March 2020	BAU Sabour
7.	NEMA Project Review Meeting	20 June 2020	Virtual
8.	Annual Action Plan Finalization meeting	09-10 July 2020	Virtual
9.	OFT Finalization Workshop on Animal Science	15 July 2020	Virtual
10.	Annual Zonal Workshop of KVKs 2020	20-21July 2020	Virtual
11.	OFT Finalization Workshop Plant Protection	29-30th September, 2020	Virtual
12.	NICRA Review and Action Plan Finalization Workshop 2020	12 August 2020	Virtual
13.	Seed Hub Annual Review Workshop 2020	13 August 2020	Virtual
14.	Inauguration of academic and administrative building of Rani Lakshmi Bai CAU, Jhansi	28 August 2020	Virtual
15.	Poshan Maah & Poshan Day17th September Meeting	11 September 2020	Virtual
16.	NICRA Meeting	29 September 2020	Virtual
17.	GKRA Review Meeting	30 September 2020	Virtual
18.	NICRA Review Meeting	12 October 2020	Virtual
19.	IISF-AGRICULTURAL SCIENTISTS' MEET 2020 and nomination of KVK Scientists & National Horticulture Fare 2021(IIHR)	15 December 2020	Virtual
20.	OFT Finalization Workshop on Home Science ATARI Patna Zone IV	26 December 2020	Virtual



The ICAR-Agricultural Technology Application Research Institute, Patna organised two days "Virtual Annual Zonal Workshop for 68 KVKs of ICAR-ATARI, Patna comprising Bihar and Jharkhand" from 20-21 July, 2020.

Virtual NICRA Review and Action Plan finalization workshop 2020 of Zone –IV Dated 12.08.2020

Virtual Review Meeting of Garib Kalyan Rojgar Abhiyaan 2020 of Zone-IV Dated 20.08.2020

12. OUTSOURING OF FUND BY KVKS

The KVK scientists of this zone are actively involved in receiving funds from a large number of external sources and agencies through sanctioning projects in their favour. The projects include organizing additional training programme, research projects, building infrastructural facilities etc which help in strengthening of KVKs. The KVKs of Bihar and Jharkhand under ICAR-ATARI ZONE IV, Patna managed to get funds in 2020 from different other sources such asGovt. of Bihar, State department of Agriculture, Central Government, ITC, BISA, ATMA, MNREGA, NABARD, District's DHO, NHB, GOI, Forest Division, CCS NIAM, ASPEE, PCRA, District Administration etc. Total fund of ₹45157682.00was generated by the KVKs of ICAR-ATARI, Patna.

Table 95 : Details of funds from other Agencies in KVK 2020

State	KVKs	Amount (in)	Sources of Fund
Bihar	19	36915827	State Ag. Dept, Bihar Govt.,MNREGA,DAO,DHO, SewaBharat, ATMA,DBT, JEEVIKA,Aga KhanFoundation etc
Jharkhand	7	8241855	DistrictAdministration,PCRA,ASPEE,NABARD,ATMA,NHB,DHO,ATMA, ForestDivision etc
Total	**26**	**45157682**	

Table 96: Purpose of Funds KVKwise

State	KVK	Purpose of the programme	Amount (in)
Bihar	Bhagalpur	Capacity building	145000
	Araria	CRAP, Biotech Kisan Hub, Video Conferencing	4980800
	Banka	IFS Development	520000
	Begusarai	Climate Resilient Agriculture Technologies, Promotion of diversification in agriculture through low volume high value vegetables, fruits, & Goatry	7000000
	Darbhanga	Facility for conducting training,InstitutionalCharges Soil testing Facility for conducting training	166467
	East Champaran-II	To demonstrate resource conservation and climate resilient technologies for sustainable crop production, Training	337000

State	KVK	Purpose of the programme	Amount (in)
	East Champaran	Resource conservation and climate resilient technologies for sustainable crop production, protected Cultivation of vegetable seedlings, IFS, Nutrition garden, Value addition of vegetables, low cost mushroom production, Nursery management, Training for fertilizer dealers	4003000
	Jehanabad	BGREI ,STCR ,NADCA	45000
	Katihar	Seed Production, CRA, Makhana Development Scheme	2300000
	Khagaria	Entrepreneurship Bee Keeping, Mushroom Entrepreneurship, Nutri Garden	8050000
	Munger	Vermi compost, Pigeon pea seed, To prepare saplings,Soil Testing Lab	3415000
	Nawada	Promotion of Climate Resilient Agriculture	950000
	Rohtas	For fish fingerlings rearing	149000
	Saharsa	BSDM Training Prog., Strengthening training institutes	1027560
	Samastipur-II	Trainig and visit	1073000
	Samastipur	Trainig and visit	1073000
	Sheohar	Organic farming	6000
	Siwan	IFS Model	275000
	Supaul	Farm road ,Fingerling raising	1400000
Jharkhand	Godda	IWMS (Soil & water conservation), FPO formation, Capacity building, Scientist farmers interaction, Certificate course, Weather forecasting and crop advisory	6105000
	Dhanbad	Strengthening Soil Testing lab	649380
	East Singhbhum	Training and demonstration	28600
	Garhwa	Training and demonstration	456000
	Hazaribag	Self-employment	430875
	Ranchi	Training On & OFF station trials	572000
	Sahibganj	Establishment of Lab	106500

13. NATIONAL FARMERS' PORTAL

All Central and State Government organizations in agriculture & allied sectors i.e. State Agriculture Universities, KVKs, Agromet Forecasts Units of India Meteorological Department, ICAR Institutes, Organization in Animal Husbandry, Dairying & Fisheries etc. provide information/ services/ advisories to the farmers by SMS in English/ Hindi/ Local languages on weather conditions, agricultural and allied sectors practices through mKisan Portal. As part of agricultural extension (extending research from lab to the field), under the National e-Governance Plan-Agriculture (NeGP-A), various modes of delivery of services have been envisaged. These include internet, touch screen kiosks, agri-clinics, private kiosks, mass media, Common Service Centres, Kisan Call Centres, and integrated platforms in the departmental offices coupled with physical outreach of extension personnel equipped with pico-projectors and hand held devices. Since its inception, about 377 crore messages with 249118 advisories and more than 662crore SMSs have been sent to the farmers. In 2020 thirty three KVKs sent 251 advisories benefitting 6116161 farmers. The supplied information includes crops, seeds, pesticides, farmers' insurance, farm machineries, storage, fertilizers, market price of agricultural produce, package of practices, disease outbreak and its prevention, various extension activities etc. There are also provisions of downloading different schemes, farm friendly handbook and like many other things. The portal can be accessed at www.mkisan.gov.in.

Table 97: State wise Advisories Sent through mKisan Portal by KVKs during 2020

Sl. No.	State	No. of KVKs	No. of Advisories Sent	No. of Beneficiaries
1	Bihar	24	164	1854714
2	Jharkhand	9	87	4261447
Total		**33**	**251**	**6116161**

14.TRIBAL SUB PLAN

The Tribal Sub Plan (TSP) project was launched for tribal development intended to address the issues of backwardness in tribal areas and tribal population in an integrated way with the aim to minimize the gap between the livelihood of tribal people and others.Total21 KVKs are under Tribal Sub Plan and for FY 2020-21a sum of Rs. 314.00 lakh was earmarked. To improve the livelihood and skill up-gradation of tribal people, KVKs of Zone IV conducted various Agricultural and allied sector activities including agricultural farming, horticulture, animal husbandry, fish production, vocational training etc. throughout the year providing direct benefit to the individual or families belonging to schedule tribes. During the period, KVKs under TSP produced 1971.08 quintal of various seeds, worth value of Rs3.64 lakh of different planting materials distributed in the tribal areas. About 5363 farmers tested their soil/ water/ plant/ manure samples from their district KVKs and more than 18,30,191 number of farmers were benefitted by getting farm related SMS and advisories & total number of beneficiaries under this project was 1830191

Table 98: Activities under TSP during 2020

Sl.	Activities	Physical Achievement	
1	**Trainings**	No. of Trainings/Demos	No. of beneficiaries
a.	Farmer	492	14960
b.	Rural Youths	184	4416
c.	Extension Personnel	74	2227
2	**OFT**	74	717
3	**FLD**	1053	2987
4	**Mobile agro- advisory to farmers**	4924	1830191
5	**Other activities**		
a.	Participants in extension activities (No.)	92419	
b.	Production of seed (q)	1971.08	
c.	Production of Planting material (No. in lakh)	3.64079	
d.	Production of Livestock strains (No. in lakh)	0.51493	
e.	Production of fingerlings (No. in lakh)	0.3075	
f.	Testing of Soil, water, plant, manures samples (Nos.)	5363	



15 NATIONAL INNOVATIONS IN CLIMATE RESILIENT AGRICULTURE - TECHNOLOGY DEMONSTRATION COMPONENT (NICRA-TDC)

A National Network Project on National Innovations in Climate Resilient Agriculture (NICRA) launched during 2011 to address the climate resilience of Indian agriculture and climate vulnerability through strategic research and technology demonstration. Technology Demonstration Component (TDC) of NICRA offers great opportunity to work with farmers and apply such technologies under field conditions in order to address current climate variability. This will enhance the pace of adoption of these resilient technologies. On-farm participatory demonstrations for climate resilience are being implemented in village clusters through KVKs in 121 climatically vulnerable districts across the country and by seven core research institutes of ICAR. The emphasis has been given to capture and improve the understanding on performance of technologies in different agro-ecologies and farming systems. This also facilitates identification of what constitutes climate resilience in different bio-physical and socio-economic contexts. NICRA, KVKs also prepared and implemented village level contingency crop plans and measures.

Adoption of climate resilient practices and technologies by farmers are now a necessity of hours.Technology Demonstration Component (TDC) of NICRA offers a great opportunity to work with farmers to address current climate variability with matching responses. Important objective of the programme is getting existing technologies into the hands of small and marginal farmers and developing situation specific technologies to meet the demands of a changing climate. To enhance the resilience of Indian agriculture against climatic variability and climate change, NICRA project is functioning in 13KVK districts of Bihar and Jharkhand covering 54 villages. During the Kharif 2020 distinct variation in rainfall was observed in the project locations in NICRA district (Table 97). Some of the NICRA district received higher rainfall than their normal viz. Palamu (150mm), Aurangabad (138.00mm),(Buxar (133.20mm), Godda (38.90) and Banka (33.12mm) whereas, some district had deficit in rainfall namely Gumla (-377.60mm), Nawada (-309.39mm),Supaul (-207.40mm) and Jehanabad (-202.90mm), Koderma (-191.20mm) and Saran (115.70mm)than normal precipitation.

Table 99: Seasonal rainfall pattern of district under NICRA project

State	Name of the District	Actual (mm)	Normal (mm)	Excess/ deficit (mm)	% Excess/ deficit in rainfall
Jharkhand	Chatra	1140.40	1180.00	-39.60	-3.36
	Gumla	722.40	1100.00	-377.60	-34.33
	Koderma	934.60	1125.80	-191.20	-16.98

State	Name of the District	Actual (mm)	Normal (mm)	Excess/ deficit (mm)	% Excess/ deficit in rainfall
	E. Singhbhum	1227.80	1369.30	-141.50	-10.33
	Godda	1133.70	1094.80	38.90	3.55
	Palamu	1314.30	1163.40	150.90	12.97
Bihar	Aurangabad	1155.00	1017.00	138.00	13.57
	Jehanabad	702.00	904.90	-202.90	-22.42
	Nawada	687.11	996.50	-309.39	-31.05
	Saran	1024.30	1140.00	-115.70	-10.15
	Supaul	1136.60	1344.00	-207.40	-15.43
	Banka	1189.42	1156.30	33.12	2.86
	Buxar	1153.20	1020.00	133.20	13.06

15.1 NATURAL RESOURCE MANAGEMENT (MODULE 1)

Major activities under Natural resources management (NRM) are in situ moisture conservation, rain water harvesting and recycling for supplemental irrigation, conservation tillage where appropriate, utilization of residual moisture for crop sowing, etc. During 2020, covered 3685.89 haarea involving 5909 farmers in different activities(Table 100).Major outcomes were recharge of ground water table, water saving irrigation technique and demonstration on rainwater harvesting structures resulted into visible impact of enhanced cropping intensity of the villages through cultivation of high value crops like vegetables, spices and flowers etc.


KVK East Singhbhum


KVK Jehanabad

Table 100: Coverage of farmers and areas under Module 1 (Natural Resource Management)

Name of submodules	No. of farmers	Coverage Area (ha)
In-situ moisture conservation measures	1760	1562.59
Ex-situ moisture conservation measures (Water harvesting and efficient use /critical/ supplemental irrigation)	2948	1250.20
Soil health improvement interventions	1201	873.10
Total	**5909**	**3685.89**

15.2 CROP PRODUCTION (MODULE 2)

Under crop production module 3836 demonstrations covering 1377.84 ha areas were taken up under different interventions. Major emphasis was given on drought tolerance varieties i.e. introduction of less water requiring crops like paddy, wheat, ragi, niger, sweet potato, etc. specially in upland of Jharkhand involving 1120beneficiaries covering 356.09 ha followed by crop diversification in 168.85ha involving 604 farmers and advances of planting date of rabi crops in area of 149.93 ha involving 480 beneficiaries.Location specific intercropping system with high sustainable yield index viz. (maize + okra; elephant foot yam + bitter gourd; chickpea + linseed; maize + pigeon pea) was taken as another important activities involving 189 farmers and covering 84.30 ha area. Other activities of crop production module like short duration varieties involving 374 beneficiaries in about 110.87ha area and water saving through SRI involving 220 farmers and covering 56.70ha area shown great impact(Table 101).

Table 101: Details of beneficiaries and area coverage under Module 2 (Crop production)

Intervention	No. of Demos	No. of farmers Involved	Area taken up with demo (ha)
Advancement of planting dates of *Rabi* crops in areas with terminal heat stress	349	480	149.93
Community nurseries for delayed monsoon	147	179	87.50
Conservation tillage where appropriate like zero tillage/ minimum tillage etc…	127	230	121.40
Contingency crops	142	162	19.40
Crop diversification	523	604	168.85
Drought tolerant/improved varieties	821	1120	356.09
Flood tolerant varieties	55	120	20.00
Frost/ cold wave management in horticultural crops through fumigation	235	236	6.00
Heat tolerant with higher income & nutritional security	8	21	2.50
Integrated Farming System	98	144	17.30
Intercropping	10	14	4.00
Introducing of improved variety of chick pea	80	80	15.00
Introducing of improved variety of lentil	120	120	28.00
Location specific intercropping systems demonstrated	170	189	84.30
Low cost tunnels for minimizing impact of frost/ cold wave	35	40	6.00
Nutrient spray during drought	57	72	13.40
Pest and diseases management	26	75	20.00
Short duration varieties	275	374	110.87

KVK Chatra

KVK Banka

Water saving paddy cultivation methods	166	220	56.70
Seed production	53	174	36.00
Others (if any)	339	391	54.60
Grand Total	**3836**	**5045**	**1377.84**

15.3 LIVESTOCK AND FISHERIES (MODULE 3)

Livestock and fisheries plays significant role in stabilizing the productivity of farming system component. Introduction and demonstration of improved breed of poultry was very successful activities and altogether 2440 nos. of poultry breed were provided to 240 beneficiaries at 14 locations for making the module sustainable. Introduction and demonstration of improved breed of pig and goat were another very successful activities in Bihar and Jharkhand covering 14 units of Goatery and 28 unit of pig with 2 females and one male totaling 126 nos. were provided to the beneficiaries in NICRA villages during 2020. Other major activities involved are preventive vaccination among 7773 cattle, use of community land for fodder production covered about 46.0 ha area and management of 40 fish ponds/ tanks were important one (Table 102).

Table 102: Details of beneficiaries and area coverage under Module 3 (Livestock & Fisheries)

Name of submodules	No. of farmers	Coverage		
		Location (no.)	Area (ha)/	Quanti ty
Hydroponic fodder production (quintal)	10	02	-	22
Improved feeding (location specific mineral mixtures or mineral bricks	401	20	-	1610
Improved fodder/feed storage methods (Silage/ hay/ etc.) (q)	130	-	-	165
Improved shelters for reducing heat stress/ cold stress/ water logging/ flood and diseases in livestock (nos.)	121	12	-	305
Introduction of improved breeds (Poultry/ duck) nos.	240	14	-	2440
Introduction of new fodder crops or new varieties	190	-	46.0	-
Management of fish ponds / tanks during water scarcity and excess water	40	-	36.4	-
Preventive vaccination (nos.)	4076	20	-	7773
Pig farming pig/ goat farming (nos.)	42	12	-	126
Total	**5250**	**80**	**82.4**	

15.6 Capacity building (module 5)

Knowledge upgradation through capacity building is an important module of NICRA programme and during 2020 a total of 255 no. of courses under 21 thematic area were conducted involving6094 farmers of which men (3940) and women (2154) were benefited. Among thematic areas maximum emphasis was given on crop production, insect management, natural resources management and integrated crop management production covering 46, 26 and 18 courses involving 1073, 568 and 380 farmers respectively. The next important thematic areas were livestock's management in which 19 courses covered involving 434 beneficiaries. (Table 103).

Table 103: Details of beneficiaries and area coverage under Module 3

S. No.	Thematic area	No of course	No of beneficiaries		
			Male	Female	Total
1	Composite fish culture	7	105	33	138
2	Crop production	46	686	387	1073
3	Farm mechanization	9	153	90	243
4	Income generation	12	95	51	146
5	Integrated crop management	15	252	145	397
6	Integrated diseases management	12	190	114	304
7	Integrated farming system	5	84	59	143
8	Integrated insect management	26	372	196	568
9	Live-stock management	19	310	124	434
10	Mushroom cultivation	6	65	55	120
11	Natural resource management	18	225	155	380
12	Nursery raising	18	288	244	532
13	Nutrient management	15	263	159	422
14	Organic farming	4	66	28	94
15	Production & use of organic produce	8	179	38	217
16	Resource conservation technology	4	57	51	108
17	Skill development programme	3	54	25	79
18	Soil and Water management	2	48	2	50
19	Value addition	13	195	50	245
20	Vermi-compost	9	152	117	269
21	Water conservation (bunding)	4	101	31	132
	Grand Total	**255**	**3940**	**2154**	**6094**

KVK Banka


KVK Supaul

15.7 Extensions activities (Sub module)

Under extension activities total 453 programmes were conducted involving 10095 farmers among them 7023 men and 3072 women farmers received training on in different thematic areas of NICRA-TDC. The major extension activities were field day (59), group discussion (44), Kisan Gosthi (37), animal health camp (28) and exposure visit of farmers (9). Maximum number of extension activities were conducted in Kisan gosthi (37) in which (2077) farmers were participated of which 682 were female farmers (Table104).

Table 104: Details of beneficiaries and area coverage under Sub module 5 (extension activities)

Sl. No.	Thematic area	No of programme	No of beneficiaries		
			Male	Female	Total
1.	Animal Health Camp	28	530	535	1065
2.	Diagnostic visit	10	68	64	132
3.	Exposure visit of farmers	9	169	130	299
4.	Exposure visit of students	15	294	121	415
5.	Field days	59	1265	733	1998
6.	Group discussion	44	570	94	664
7.	*Kisan Gosthi*	37	1395	682	2077
8.	Scientist visit to field	20	92	9	101
9.	Soil Test	54	400	80	480
10.	Strengthening *Kisan* clubs	7	143	170	313
11.	Strengthening SHGs	22	246	224	470
12.	Others (if any)	148	1851	230	2081
Grand Total		**453**	**7023**	**3072**	**10095**


KVK Aurangabad


KVK Supaul


KVK Chatra

16. MERA GAON MERA GAURAV PROGRAMME (MGMG)

An innovative initiative "MeraGaonMera Gaurav" has been planned to promote the direct interface of scientists with the farmers to bridge the gap between lab and land. The objective of this scheme is to provide farmers with required information, knowledge and advisories on regular basis by adopting villages. In Zone IV, 6 ICAR Institutes and 1 SAU were implementing MGMG programme covering 58 villages and13010farmers. Altogether 1913 field activities were conducted and 857 messages sent to the farmers time to time (Table 105). The major activities performed include visit to village by scientific teams, Interface meeting/ Goshthieswith farmers, providing training, conducting demonstrations, mobile based advisories, literature support as per the agro-ecological conditions of the village, awareness and educating farmers through newspapers, community radio etc.

Table 105: Detail of works under MGMG Programme 2020

S No. / State	Total No of Groups/team formed	No. of Scientists Involved	No. of villages covered	No. of field activities conducted	No. of messages/ advisory sent	Farmers benefited (No.)
Bihar	19	120	18	1737	746	8590
Jharkhand	21	73	40	176	111	4420
Total	**40**	**193**	**58**	**1913**	**857**	**13010**

Table 106: Institute's Team-wise progress

ATARI	No. of institutes/ universities involved	Total No. of Groups formed	No. of Scientist Involved	No. of village covered	No. of activities conducted	No. of messages/ advisory sent	Farmers involved (No.)
ICAR Institutes	6	22	75	43	179	143	4490
State Universities	1	18	118	15	1734	714	8520
G. Total (A+B)	**7**	**40**	**193**	**58**	**1913**	**857**	**13010**

Table 107:Detailed Progress:

No. of Team formed	No. of Scientists	No. of Villages selected	No. of Blocks	No. of Districts	Bench Mark Survey conducted (No. of villages)
40	193	58	28	16	59

Table 108: Activities undertaken by ICAR Institutes under MGMG

S. No.	Name of activity	No. of activities conducted	No. of farmers benefitted
1	Awareness created	133	3077
2	Demonstrations conducted	148	769
3	Interface meeting/ *Goshthies*	53	1178
4	Literature support provided	380	2387

S. No.	Name of activity	No. of activities conducted	No. of farmers benefitted
5	Training organized	38	1054
6	Visit to village by teams	124	1619
7	Mobile based advisories	1215	2469
Total		**2091**	**12553**

Table 109: Other activities organized by ICAR Institutes/ SAUs under MGMG

S. No.	Activity	Particulars	Beneficaries
1	Linkages developed with other agencies	No of Agency (No)	31
		Farmers Benefitted (No)	806
2	Facilitation for		
	i) New varieties	Numbers	71
		Area (ha)	13
		Farmers Benefitted (No)	168
	ii) Technology (No)	Numbers	12
		Area (ha)	122
		Farmers Benefitted (No)	372
	iii) Seeds (q)	Area (ha)	51.5
		quantity (q)	39
		Farmers Benefitted (No)	768
	iv) New crops (No.)	Numbers	8
		Farmers Benefitted (No)	49
	v) Other (seedlings, biofert. Poultry bird etc.)	Numbers	11721
		Area (ha)	17.1
		Farmers Benefitted (No)	74

Activity-wise action photographs with caption

Distribution of face-masks amongst the villagers Scientists creating awareness about crop residue management and cultivation techniques Gathering of villagers for interaction with experts. Distribution of Callindra saplings to farmers for conducting field level demonstration at Beniyazara under MGMG programme Lac Integrated Agro forestry system at farmers field in Angarha block Training on mushroom production



17. CSISA-ICAR Collaborative Project Phase-III

Indian Council of Agricultural Research (ICAR) in collaboration with Cereal Systems Initiative in South Asia (CSISA) of CIMMYT has implemented a project for the transfer of developed technologies at the farmer's field. CSISA was first approved by DARE on December 28, 2008 with subsequent agreements to support specific collaborative activities with ICAR institutes sanctioned under this over-arching umbrella. In Phase II of CSISA (2012 – 2015), close collaborations were developed and executed through the Natural Resources Management Division's research institutes in Karnal (Central Soil Salinity Research Institute – CSSRI) and in Patna (Research Complex for the Eastern Region – RCER), primarily in the form of process-based field research at the 'research platforms' that were jointly established and managed by ICAR and CSISA scientists. Collaborations were also initiated with the Extension Division through a jointly sponsored and continuing dialogue on modernizing extension services that was launched at an event hosted by IFPRI and the University of Illinois in June, 2015.

The overarching goal of CSISA in Phase III (2017 – 2020) remained to support the widespread adoption of SI technologies to spur inclusive agricultural growth, both within the time-horizon of investment and beyond. CSISA's theory of change in Phase III was structured around four inter-linked primary outcomes and was coordinated by a fifth that ensures that potential synergies across the project was realized and lessons learnt during implementation was reflected in periodic strategy adjustments.

A total of 68 KVK's of Bihar and Jharkhand, 14 KVK'S of Bihar under ICAR-ATARI Patna implement the collaborative project in FY2020-21. A total of Rs.18 lakh was sanctioned for this project during FY2020-21 to ICAR-ATARI, Patna. Out of total sanctioned amount, total Rs. 15 lakh was released for 14 KVK's for implementation of this project. An amount of Rs. 7.0 lakh, 6.0 lakh and 2.0 lakh were released to BAU Sabour, RPCAU, Pusa and NGO's Bihar respectively. Total 14 KVKs under BAU Sabour, RPCAU PUSA and NGO's Bihar were engaged in FY2020-21 under CSISA Project.


Different Activities undertaken by KVKS under CSISA Projects by KVKs.

Table 110: Details of Work Plan protocol wise of CSISA during 2020

Activities	Name of KVKs	Details of work plan
Protocol I	Arwal, Gaya Lakhisarai, Madehpura, Nalanda Rohtas	✓ Timely sown wheat varieties (TSWVs) is critical in the ✓ EIGP Early wheat sowing helps beat terminal heat and improves yield in EIGP ✓ Nutrient use: focus on balanced nutrition ✓ Improve access to irrigation in EIGP for timely sowing and higher yield ✓ Poor weed management: a silent threat to wheat productivity in EIGO
Protocol II	Muzaffarpur Begusarai East Cahmparan, Buxar Bhojpur Lakhisarai	➢ Performance of short duration (SDVs) and long duration varieties (LDVs) under different sowing schedules across ecologies ➢ Assessing the role of additional irrigation during terminal heat stress period during grain filling stage to beat the heat stress and its effect on wheat productivity

In collaboration with Agriculture Skill Council of India (ASCI), Indian Council of Agricultural Research has taken an initiative of taking up entrepreneurship development programmes through imparting skill training through KVKs under RKVY during 2020-21. This was in consonance with the directives received from the Ministry of Skill Development and Entrepreneurship, Govt. of India.

Out of 68 KVKs of Bihar and Jharkhand, 26 KVKs of this Zone were assigned with the job role undertaking the training programmes as per ASCI norms. These KVKs were Aurangabad, Banka, Bhagalpur, Purnea, Lakhisarai, Munger, Nalanda, Patna, Saharsa, Supaul, Katihar, Darbhanga,East Champaran,Siwan,East Singhbhum, Chatra, Garhawa, Jamui, Ramgarh, Bhojpur, Nawada, Sitamarhi, Hazaribag, Godda, Gumla, and Ranchi. Each of them was tasked with 1 training programmes during the year except Sitamarhi KVK with 2 job roles. A total of 8 job roles were covered under 27 Skill Development Training Programmes for 650 participants undertaken by 26 KVKs during 2020-21.

During the year, a fund of Rs.6680498 was allocated to ATARI Patna for this purpose. Out of total fund Rs. 6680498received from council, a sum of Rs.6584000 was released.The Job Role-wise details with the KVKs involved are given below: -

Table 111: Skill Development training with their job roles undertaken by KVKs during 2020

State	*Institutes/ Universities*	*Name of KVK*	*Job Role/QPs of trainings*	*Duration of training (hrs.)*	*No. of participants*
Bihar	BAU Sabour	Aurangabad	Assistant Gardener	200	25
		Banka	Assistant Gardener	200	25
		Bhagalpur	Mushroom Grower	200	25
		Purnea	Mushroom Grower	200	25
		Lakhisarai	Assistant Gardener	200	25
		Munger	Mushroom Grower	200	25
		Nalanda	Organic Grower	200	25
		Patna	Mushroom Grower	200	25
		Saharsa	Quality Seed Grower	200	25
		Supaul	Quality Seed Grower	200	25
		Katihar	Bee keeper	200	25
	RPCAU, PUSA	Darbhanga	Mushroom Grower	200	25
		East Champaran	Mushroom Gower	200	25
		Siwan	Quality Seed Grower	200	25
	BASU, Patna	Jamui	Bee Keeper	200	25
	NGOs, KVKs	Bhojpur	Bee Keeper	200	25
		Nawada	Mushroom Grower	200	25
		Sitamarhi	Animal Health Worker	200	25
			Assistant Gardner	200	25
Jharkhand	BAU, Ranchi	East Singhbhum	Assistant Gardener	200	25
		Chatra	Animal Health Worker	200	25
		Garhawa	Small poultry farmer	200	25
	ICAR-RCER,	Ramgarh	Mushroom grower	200	25
	NGOs, KVKs	Hazaribag	Medicinal Plant Cultivator	200	25
		Godda	Animal Health Worker	200	25
		Gumla	Animal Health Worker	200	25
		Ranchi	Bee Keeper	200	25

ASCI Training at Different KVKs in Zone IV

19. Farmers First Programme (FFP)

Farmer FIRST is an adaptive research project. The term "Farmer FIRST" signifies the farmers' Farm, Innovations, Resources, Science and Technology (FIRST). The basic concept is that the farmer of a village will be in a centric role for research problem identification, prioritization, conduct of experiments and its management in farmers' field conditions. It emphasizes resource management, climate resilient agriculture, and production management including storage, marketing, supply chains, value chains, innovation systems and mobilization of information systems for focusing on shifting from production to profit. Thus, the initiative was taken by ICAR to move beyond the production and productivity; to privilege the smallholder agriculture; and complex, diverse and risk prone realities of majority of the farmers. Major four components of the project included –

(i) Farmers-scientists interface, (ii) Technological implementation and assessment, (iii) Institutional linkage through development of partnership at the village level and (iv)Content mobilization through publication, documentation of success story and uploading information in Farmer FIRST portal.

With this concept, Agricultural Extension Division of ICAR, New Delhi invited project proposals for funding under Farmer FIRST Programme from ICAR Institutes/ Agricultural Universities and thereafter four projects, two for ICAR Institutes and two for State Agricultural Universities, were sanctioned under ICAR-ATARI, Patna.

Table 112: The name of the Institute, their project title, budget allotted during 2020

Sl. No.	Name of the Institute	Title of project	Fund sanctioned during 2020-21 (Rs. in lakh)
1.	Bihar Agricultural University, Sabour, Bhagalpur, Bihar	"Cross Sectional Livelihood Improvement and Income Enhancement through Agro-Enterprise Diversification"	20.32
2.	Birsa Agricultural University, Ranchi	"Technology integration for doubling farm income through participatory research and extension approaches in Ranchi district of Jharkhand"	16.00
3.	MGIFRI, Motihari (East-Champaran, Bihar)	"Improved livelihood through good practices in agricultural production system"	23.50
4.	ICAR-RCER, RC, Ranchi	"Enhancing food, nutritional and livelihood security of marginal and small farmers in Jharkhand through need based agricultural technologies"	19.49
Total			**79.31**

Table 113: Achievements of Farmer FIRST Programme (FFP) during 2020

STATE	NRM Module		Crop Module		Horticulture Module		Livestock & Poultry			IFS Model		Extension Activities	
	Demo	No Farm Families	Demo	No Farm Families	Demo	No Farm Families	Demo	No Farm Families	No of Animals	Demo	No Farm Families	No. of prog	Farmers
Bihar	6	192	2	208	6	183	2	158	668	1	1	6	250
Jharkhand	1	23	5	293	8	205	2	105	620	0	0	27	469
Total	**7**	**215**	**7**	**501**	**14**	**388**	**4**	**263**	**1288**	**1**	**1**	**33**	**719**

RCER, RC, Ranchi

BAU Ranchi

BAU Sabour

MGIFRI Motihari

20. SEED HUB

India is the largest producer, consumer and importer of pulses but in recent years, the area under pulses was decreasing steadily resulting in increased import bill and rising prices of pulses. In order to fulfil growing demand and reduce import, our government focused on increasing pulse production from 23.13 million tonnes during 2016- 17 to 26.5 million tonnes by 2020. It is a Centrally Sponsored Scheme of NFSM (National food security mission) with project entitled (Creation of Seed Hub for increasing indigenous production of pulses in India) Started in June 15, 2016.Hence, Ministry of Agriculture and Farmers Welfare has developed a plan to establish 150 'Seed Hubs' each targeting to produce 100 tons of pulses seeds during the next three years and provide quality seeds to our farmers.

Pulses are the important commodities for nutritional securities and the efforts of the KVKs will be helpful to meet demand of pulses as well as to reduce imports. In order to promote production of quality seeds of new varieties (released / notified) not older than 10 years, 10 Seed Hubs at 07 KVKs (Buxar, Bhojpur, East Champaran, Lakhisarai, Munger, Saran, Vaishali) of Bihar and 3 KVKs (Bokaro, Dumka, East Singhbhum) of Jharkhand under Zone IV have been established.

Production of 11270 quintalpulses seed was expected from the Seed Hubs of Zone IV during 2020 but crop failure due to COVID pandemic, heavy rainfall, etc. only 5717.01 quintal pulses seed could be produced during this year in Seed hub project.

Table 114: Performance of Seed Hub during 2020

Crop	Varieties	Seed target (q)	Area (ha)	Seed Production Crop wise (q)	Category (F/S,C/S,T/L)
Pigeon pea	TJT-501,IPA-203,Rajeev Lochan, Birsa Arhar-1,Rajendra Arhar-1,	2080	104	1213	F/S,C/S,F/S-2
Lentil	IPL316, HUL-57,IPL-316,WBL-277,PUSA SIWALIK	3660	214.75	1895.77	C/S,F/S,B/S

Crop	Varieties	Seed target (q)	Area (ha)	Seed Production Crop wise (q)	Category (F/S,C/S,T/L)
Green gram	HUM-16, SML-668,IPM 2-14,IPM-2-3,	1350	99.8	485	C/S-1,CS-2
Chick Pea	RVG202, RVG201, PUSA3043, PG186, BG372, GNG1581, JG12, JG14, RVG 202, Shubra	3350	193.05	1450.38	C/S,F/S,F/S-2,B/S,T/L
Black Gram	WBU19(Sulata),WBU-109,Birsa Urad-1,	330	40	275	F/S,C/S,
Gram	PG-186 (C./S)	500	57.3	397.86	C/S
Total		**11270**	**708.9**	**5717.01**	

Table115: Seed Produced and Revolving Fund Status 2020

KVK	Seed Production(q)	Revolving fund status(lakh)
Bhojpur	733.79	111.83
Bokaro	940	82.19
Buxar	78.85	81.84
Dumka	1515	90.47
East champaran	264	93.43
East Singhbhum	623	54.07
Lakhisarai	649.67	56.55
Munger	174.7	71.13
Saran	650	87.38
Vaishali	112	92.36




21. Attracting and Retaining Youth in Agriculture (ARYA)

To attract the Rural Youth towards agriculture and allied sector as income generating enterprise ICAR has initiated a programme "Attracting and Retaining Youth in Agriculture"through 96 identified KVKs in Idia. This programme is aimed at taking up capital intensive activities like Food processing, Value addition and marketing. Under Zone-IV 6 KVKs of Bihar (Aurangabad, Bhagalpur, Bhojpur,Vaishali, East Champaran, and West Champaran) and 4 KVKs of Jharkhnad (Chatra, East Singhbhum, Gumla, and Ranchi) are implementing this programme. ARYA project has opened a new avenue of opportunities and income generating activities for the rural youths in their native places. Rural youths have been trained onrunning the Goatary, Backyard poultry, Nursery raising, Fish farming, poultry, Bee keeping, Mushroom production unit, pig farming, Quail farming, Banana fiber extraction, Duck farming, Seed production and lac cultivation, etc. enterprises as a major source of income for their livelihood. This programme was helpful in reducing the labour migration problem prevalent in this Zone. ARYA project has brought profound change in the living status of the family and encouraging

Table 11 6: Details of achievement of ARYA during 2020

State	Name of Enterprises	Youths Identified	Training programme	Rural youths trained	Youths establish enterprise	No. of unit developed	Sustainable units (youths)	Adoption by other youths	No. of KVK involved
Bihar	Goat farming	110	3	85	34	12	34	75	1
	Poultry farming	680	13	439	152	599	132	215	3
	Mushroom unit	580	17	374	210	242	177	423	5
	Nursary raising	310	13	350	37	37	34	19	3
	Bee keping	235	7	223	75	75	75	47	3
	Fish farming	255	8	240	57	57	57	35	1
	Banana fiber	12	4	80	2	2	2	1	1
	Quail farming	20	10	100	10	10	10	2	1
Sub Total (A)		**2202**	**75**	**1891**	**577**	**1034**	**521**	**817**	**18**
Jharkhand	Seed prod. unit	30	4	125	10	21	20	262	1
	Mushroom unit	30	4	135	30	16	15	195	1
	Pig farming	40	11	223	52	16	15	418	2
	Poly house (LC)	25	8	220	20	25	20	46	1
	Backyard poultry	40	12	366	40	24	26	28	2
	Goat farming	165	15	291	97	97	91	171	2
	Lac cultivation	235	9	216	120	120	100	124	2
	Bee keeping	202	7	119	53	53	45	75	2
Sub Total (B)		**767**	**70**	**1695**	**422**	**372**	**332**	**1319**	**13**
Grand Total (A+B)		**2969**	**145**	**3586**	**999**	**1406**	**853**	**2136**	**31**


KVK Ranchi


KVK Vaishali,


KVK East Singhbhum

22. Krishi Vigyan Kendra (KVK) Knowledge Network/ KVK Portal

System (NARS), KrishiVigyan Kendra (KVK) of this zone is working on application of location specific technology modules in agriculture, livestock, fishery and allied sectors through technology assessment, refinement and demonstrations. KVK also serves as Knowledge and Resource Centre of Agricultural Technology which supports public, private and voluntary sector for improving the agricultural economy of any given district and is linking the NARS with extension system and farmers. KVKs are also producing quality technological products like seed, planting material, bio-agents, livestock, fish fingerlings etc. and make them available to farmers. However, there is mostly only one KVK for serving the whole district. Sometimes, the farmers may not get access to KVK services. To bridge the communication gap between the farmers and KVK, ICAR has developed one portal named as KVK knowledge network/ KVK Portal (www.kvk. icar.gov.in) for the farmers and other stakeholders where various information about KVK and various activities of KVK have been uploaded by the KVK Scientists for quick dissemination of technologies in the district and in the country as a whole. During the period under report, 68 KVKs (44 KVKs of Bihar and 24 KVKs of Jharkhand) of ICAR-ATARI, Patna have uploaded various information e.g. KVK profile report, facility available at the KVK, past and upcoming events, package of practices, status of Cluster Front Line Demonstration (CFLD) on Pulses and Oilseeds etc. in the portal. This portal is being continuously updated by the KVK as per direction. The KVKs have also uploaded Monthly Progress Report to the Portal.

23. KRISHI PORTAL

KRISHI (Knowledge based Resources Information Systems Hub for Innovations in Agriculture) Portal has been developed during 2016- 17 as ICAR Research Data Repository for knowledge management. Data Inventory Repository aims at creating Meta Data Inventory through information related to data availability at Institute level. The portal consists of six repositories viz. technology, publication, experimental data, observational data, survey data and geo-portal. During the period of 2020, input data on latitude and longitude of all KVKs under the Zone- IV was submitted to the concerned authority to put them in geo-portal. As per guidelines of the Council, various kinds of publications pertaining to this institute were uploaded in this portal. The portal can be accessed at http://krishi.icar.gov.in.

24. Management Information System including Financial Management System (MIS-FMS) under ICAR-ERP

ICAR-ERP developed under NAIP project "Implementation of Management Information System (MIS) including Financial Management System (FMS) in ICAR" was initiated in the year 2015-16. Since September 2017, the system is regularly being updated for proper system management in respect of personnel and finance of the ICAR-ATARI Patna. There are five modules of MIS-FMS, viz., financial management, supply chain management (SCM), human resource management (HRM), Payroll module and Project management. All the modules of the MIS-FMS are being regularly implemented by ICAR-ATARI, Patna.

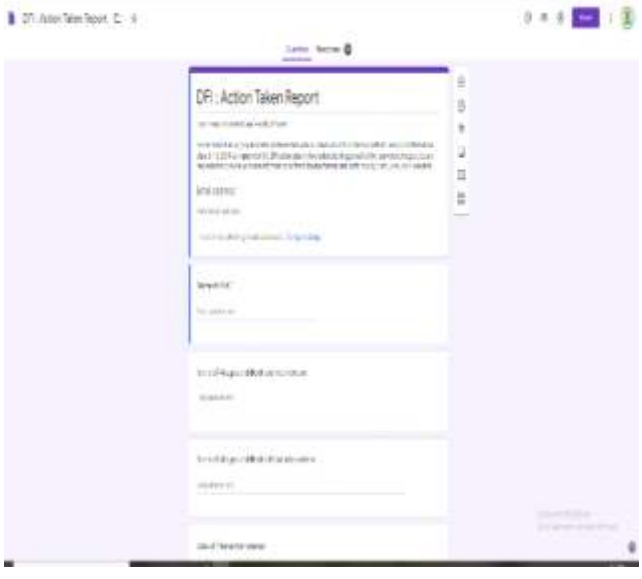
25. Implementation of Public Finance Management System (PFMS)

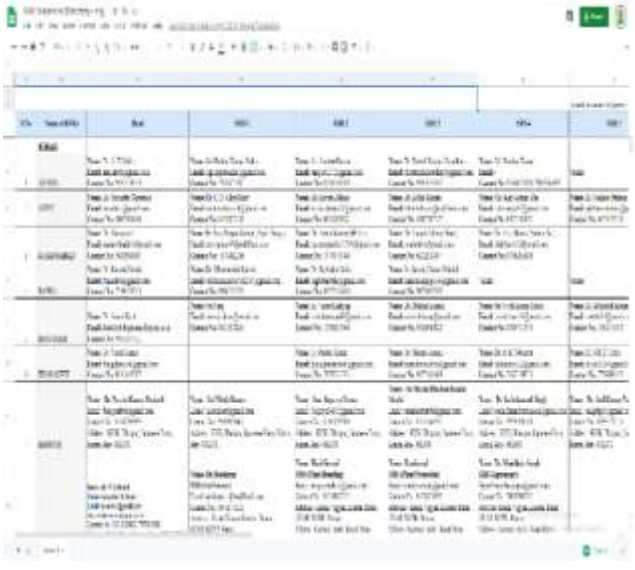
Public Finance Management System (PFMS) is an electronic fund tracking mechanism which compiles, collates and provides real time information on resource availability, flows and actual utilization. It provides unified platform to scheme managers for tracking releases and monitoring their last mile utilization. Considering the diversity and multiplicity of channels through which money is spent/ transferred, the PFMS is designed to serve the pertinent need of establishing a common electronic platform for complete tracking of fund flow from the Central Government to large number of programme implementing agencies, both under Central Government and the State Governments till it reaches the final intended beneficiaries. The PFMS Scheme has been rolled-out by the Controller General of Accounts (CGA) at the behest of Finance Ministry, Department of Expenditure as a cherished Public Finance Management (PFM) reform in the country since 2009. PFMS is poised to develop as one of the biggest Financial Management Systems of the world, which is critical for bringing about a transformational accountability and transparency in the Government Financial Management Systems and promoting overall Good Governance. The latest enhancement in the functionalities of PFMS has been commenced in late 2014 for the implementation of various Schemes through Direct Benefit Transfer (DBT) mechanism in this regard. ICAR-ATARI, Patna has implemented PFMS from the financial year 2019-20 and is continuing bringing transparency in the system and helping in easy transfer and tracking of funds.

26. On-line reporting by KVKs

The data collection and report compilation of the Zone IV is a basic component for monitoring the activities of ICAR-ATARI Patna. The World Wide Web (WWW) is increasingly used worldwide recognized search engine as a tool and platform for data collection and easier compilation. It also provides internet related services and products to a wide range of users at greater utility and lesser cost. There are many web based applications of Google like Google docs, Google forms, Google drive, Google slides, Google sheets etc., which have

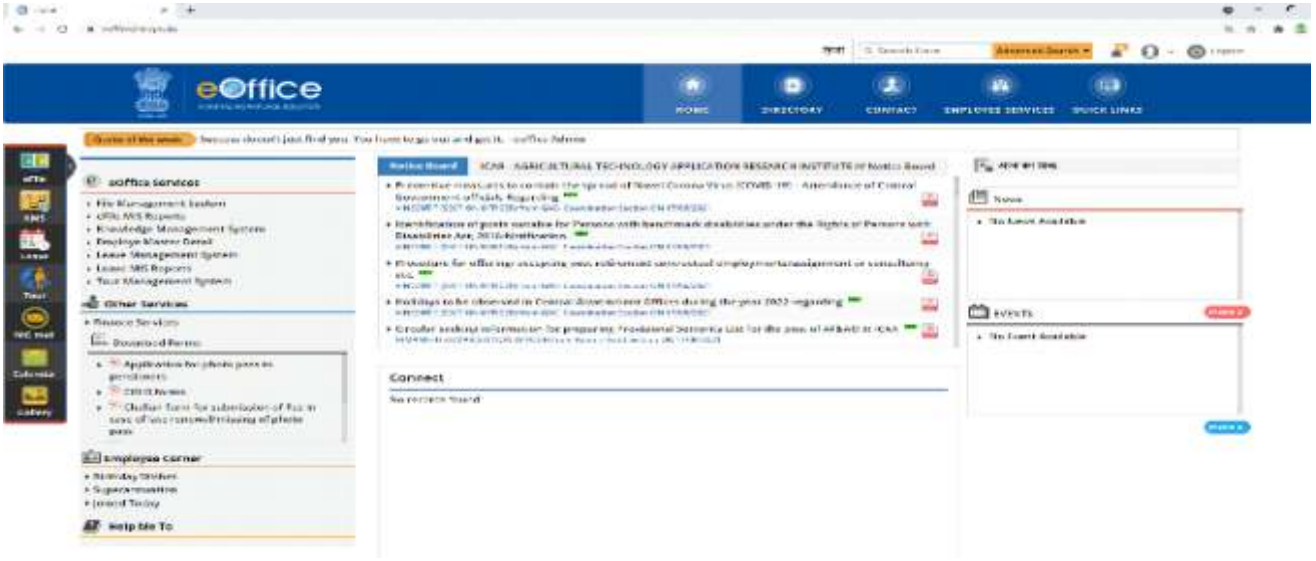
immense potential for increasing productivity of academicians, researchers, professionals, policy makers, etc. The non-tampered analysis of the data with full authenticity is also possible within few seconds without any manual tabulation and coding. Further, online method of reporting is much faster than the traditional method of data collection. ICAR-ATARI Patna has started online method data collection system using Google forms and sheets for data collection on various aspects like Results Framework Document, Monthly physical and financial progress report, Mandated activities of KVK, Soil analysis, Special programs etc. Specific guidelines for filling up the forms and sheets have been provided to all KVKs of the Zone for easy understanding and proper timely reporting.





26.1 E-OFFICE

Eoffice initiated in the year 2009 was developed by NIC with the aim to improve the functioning of government through more efficient, effective and transparent inter-Government transactions and processes. The e-office product aims to support governance by ushering in more effective and transparent inter and intra-government processes. The vision of e-office is to achieve a simplified, responsive, effective and transparent working of all government offices. The Open Architecture on which eOffice has been built, makes it a reusable framework and a standard reusable product amenable to replication across the governments, at the central, state and district levels. The product brings together the independent functions and systems under a single framework.



27. SPECIAL PROGRAMMES

27.1 SWACHH BHARAT ABHIYAN

As a part of mass movement of cleanliness, initiated by the Government of India, all the staff members of ICAR-ATARI, Patna including KVKs under this Zone picked up the broom to clean the dirt, garbage, debris, litters, other obnoxious/ unwanted materials from the office surroundings, roads, dwelling places etc. The KVKs of this Zone observed the cleanliness drive through sensitizing farmers/ villagers adopting the slogan “Neither litter, nor let others litter". A number of awareness programmes, sensitizing workshops and campaigns were carried out within KVKs and even in the remote villages for all categories of citizens. A sense of responsibility was evolved among the people to keep the environment clean which also included field sanitation and plantation drive. Scientists of KVKs made effort to train the people for making compost from different kinds of waste materials and also taught them in maintaining hygiene and sanitation in and around the houses. All the 68 KVKs under ICAR-ATARI, Patna conducted many activities during this abhiyan in which 20327 was total participation including 212 VIPs and 20115 farmers and farm women.

Table 117: Details of activities undertsken by KVKs of Zone IV under Swachh Bharat Abhiyan

State	No. of KVKs	No. of farmers participated	No. of VIPs	Total Participants
Bihar	44	13754	136	13890
Jharkhand	24	6361	76	6437
Total	**68**	**20115**	**212**	**20327**

Table 118: Celebration of Swachhata Pakhwada 2020

Date	No. of KVKs	No. of farmers participated	No. of VIPs Attended	Total No. of Participants
16.12.2020	68	920	8	928
17.12.2020	65	674	5	679
18.12.2020	60	1175	6	1181
19.12.2020	60	807	2	809
20.12.2020	58	1007	19	1026
21.12.2020	56	1009	12	1021
22.12.2020	53	1110	11	1121
23.12.2020	62	2019	36	2055
24.12.2020	53	1176	11	1187
25.12.2020	51	4760	41	4801
26.12.2020	59	1039	12	1051
27.12.2020	54	1178	3	1181
28.12.2020	61	956	8	964
29.12.2020	59	856	10	866
30.12.2020	59	827	14	841
31.12.2020	57	602	14	616
Grand Total		**20115**	**212**	**20327**

27.2 SWACHHTA HI SEWA PROGRAMME

To celebrate the Birth anniversary of Mahatma Gandhi Swachhta Hi Sewa programme was launched by Govt. of India from 11 September to 1st October 2019. A number of programmes were undertaken this programme including plastic waste management and towards the effective ban of single use plastic (SUP) with focus on Swachh Bharat Diwas by massive community mobilization and shramdaan for plastic waste collection organized by

all the KVKs under Zone IV of ATARI, Patna. Massive awareness activities were undertaken across the rural areas in year 2020 also.

KVK Sitamarhi

KVK Hazaribagh

Table 119: Sawachhta Hi Sewa Hai, 2020

State	No. of KVKs	No. of villages Involved	No. of Participants	No. of VIPs
Bihar	32	425	13338	44
Jharkhand	18	214	15703	25
Total	**50**	**639**	**29041**	**69**

27.3 INTERNATIONAL WOMEN'S DAY 8 MARCH 2020:

Every Year 8th March is globally observed as the International women's day for celebrating the social, economic, cultural, and political achievements of women. The purpose of celebrating this day is to promote peace with women's as well as to honor all women and their achievements and rights. This day is also used as an occasion to reflect and amplify on various issues that come in the way of women's emancipation and hinder realization of gender equality. A total of 4150 farm women participated in the celebrations organized by all 68 kvks of this zone

Table 120: INTERNATIONAL WOMEN'S DAY 8 MARCH 2020:

State	No. of KVKs	Total No. of participants
Bihar	44	2812
Jharkhand	24	1338
Total	**68**	**4150**

KVK Hazaribagh

KVK Sitamarhi

27.4 CELEBRATION OF RASHTRIYA MAHILA KISSAN DIWAS

Women farmers play important multidimensional role in Agriculture and Allied sectors participating in 48% of agriculture related employment in India and around 7.5 crore women are actively involved in livestock management and in this light 15th October every year is celebrated as "Rashtriya Mahila Kisan Divas" in the country by ICAR and KVKs. This year also, all ICAR Institutes, Agricultural Universities and Krishi Vigyan Kendras organized Rashtriya Mahila Kisan Diwas by organizing programmes like gosthis, debates, essay and drawing competition, exhibition, etc. on the theme like role of women in agriculture, women empowerment, nutrition and income generation, etc. and also honoured the selected women of the area/district for their contributions in the fields of agriculture and allied sectors.

Table 121: Mahila Kisan Diwas Report (held on 15.10.2020)

Name of State/UT	Number of KVKs	Number of participants
Bihar	43	2448
Jharkhand	24	1392
Total	**67**	**3840**

27.5 Plantation Programme

Special drive was conducted for plantation at all KVKs of Bihar and Jharkhand on 2nd October 2020. On this occasion planting materials of orchard and Agro forestry and medicinal plants were distributed to farmers and farm women to create awareness importation of plant in our ecosystem for sustainable development. A total 5785 participants were participated during the programme and 28455 plants were distributed among the farmers for plantation.

Table 122 : Details of planting material provided during Plantation programme by KVKs

State	Name of fruit/ Vegetables	KVK	Distribution of plants/saplings	Farm women	Angan wadi Sewika	Farmer	KVK Staff	Dignitaries	Total
Bihar	Fruits, Vegetables, flowers, medicinal and aromatic plants	44	12106	1100	1097	1019	379	87	3611
Jharkhand		23	16349	594	854	491	168	71	2174
Total		**67**	**28455**	**1694**	**1951**	**1510**	**547**	**158**	**5785**

27.6 Programme on Rural Agricultural Work Experience (RAWE)

Students of various Agricultural Universities pursuing agricultural degree and ARS trainee probationers were assigned to undergo Rural Agricultural Work Experience (RAWE) at various KVKs of this zone. The sole purpose of such programme was to get acquainted with the overall agricultural scenario in rural India. Such trainee's/ trainee officers were also associated with the Scientists and administrative staff of ATARI Patna in order to make a note of the activities of this institute. Due to unprecedented condition due to COVID-19 situation the ICAR decided that the RAWE students will persue their RAWE programme in their nearby KVKs.

Table 123:Details of RAWE programme conducted during 2020

Sl. No.	State	KVKs Involved	Student trained	Days stayed
1	Bihar	37	310	104
2	Jharkhand	9	126	65
Total		**46**	**436**	**169**

KVK Deoghar

KVK Darbhanga

27.7 Diploma in Agricultural Extension Service for Input Dealers (DASAI) Programme

KVKs of Bihar (Saharsa, Gopalganj, Vaishali, Madhubani, Bhojpur, Buxar, Darbhanga, Turki, Muzzarpur, Birauli, Samastipur, East Champaran) and Jharkhand(West Sighbhum)during 2020conducted 0 Diploma in Agricultural Extension Service for Input Dealers (DASAI) Programme sponsored by ATMA of the concerned districts to educate Agri-Input Dealers. The purpose of this programme was to facilitate Agri-Input Dealers for serving the farmers in better way and they will act as para-extension professionals in the districts. Altogether seven (0) programmes were conducted in which total 298 participants received training.

DASAI	
No. of programmes organized	**No. of participants**
-	-

Skill Development Programme (Other than ICAR) organized at KVKs during 2020

Sl. No.	State	No. of KVKs Involved	No of Training	No. of Participant Trained
1	Bihar	13	20	534
2	Jharkhand	6	35	1461
Total		**19**	**55**	**1995**

27.8 National Farmers Day/Kisan Diwas

Every year 23rd December 2019 in India is celebrated as National Farmers Day/Kisan Diwas to mark the birth anniversary of Chaudhary Charan Singh. Chaudhary Charan Singh has served as the sixth prime minister from 28 July 1979 until 14 January 1980 and passed away in 1987. During his tenure as the Prime Minister of India, Chaudhary Charan Singh introduced policies to improve the lives and conditions of farmers in the country. He also played a leading role in the agricultural sector of the country by introducing bills for farmers' reforms. It is believed that 'Zamindari Abolition Bill-1952' was passed due to Chaudhary Charan Singh's hard work. To pay him tribute, the government in 2001 decided to celebrate his birth anniversary as National Farmer's day. On this day, the KVKs of ICAR ATARI, Zone IV organized many activities, workshops, seminars on agriculture in which large number of farmers participated and honored the progressive farmers under the jurisdiction.

27.9 INTERNATIONAL YOGA DAY

To mark the importance and significance of yoga in one's life, June 21 is observed as International Day of Yoga every year since the United Nations declared it in 2015. The theme of 5thInternational Yoga Day 2020 was “Yoga for Heart". Yoga, which has been practiced for thousands of years, is a holistic solution for physical as well as mental wellness. On this day, several events were organized across the KVKs of Bihar and Jharkhand and756 personsparticipated in yoga, meditation, debates, meetings along with a variety of cultural performances.

TABLE 122: International Yoga Day Celebration at KVKs under Zone IV

State	No. of participants
Bihar	547
Jharkhand	209
Total	**756**

KVK Hazaribagh

KVK Simdega

27.10 PRE- KHARIF AND PRE- RABI SAMMELAN

Pre-Kharif and Pre-Rabi Sammelan 2020 were organized by the KVKs of ICAR-ATARI, Patna under the banner of the Indian Council of Agricultural Research (ICAR), Ministry of Agriculture and Farmers' Welfare to create awareness amongst the farmers and other stake holders about the latest agricultural technologies. On the occasion, technologies show casing, group meetings, video film on technologies, exhibitions, demonstrations, seminars, lectures, etc. were arranged by the KVK personnel to enrich the farmers and other line department personnel about agricultural knowledge for developing and adopting various strategies for ensuing higher crop production. During the period under report, 6 KVKs of ATARI, Zone IV organized 13Pre-Kharif and Pre-Rabi Abhiyan programme in which 3315 numbers of participants were present includingpublic representative MP/MLA/ MLC and others.

Sl. No.	State	No. of KVKs Involved	No of Programme organized	Total Participants
1	Bihar	2	2	171
2	Jharkhand	4	11	3144
Total		**6**	**13**	**3315**

KVK West Singhbhum

27.11 Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

Pradhan Mantri Krishi Sinchai Yojana is a national mission to improve farm productivity and ensure better utilization of the resources in the country.The primary objectives of PMKSY are to attract investments in irrigation system at field level, develop and expand cultivable land in the country, enhance ranch water use in order to minimize wastage of water, enhance crop per drop by implementing water-saving technologies and precision irrigation. The goal is to open the doors for optimal water budgeting in all sectors. Tagline for PMKSY is "more crop per drop".

This programme is running in 43 KVKs of Bihar and Jharkhand among them 06 was NGO and 04 in ICAR KVKs. Altogether 205 micro irrigation units were installed and 7476 farmers participated and benefitted.

Micro irrigation	
No. of units established	**No. of participants**
205	7476

Activities of Rain Water Harvesting Structure and Micro Irrigation System at KVKs during 2020

Sl. No.	State	No. of KVK Involved	No of training programme	No. of demonstrations	No. of plant material produced	Visit by the farmers (No.)
1	Bihar	17	59	42	52360	6101
2	Jharkhand	13	83	41	249956	3617
Total		**30**	**142**	**83**	**302316**	**9718**

27.12 Parampragat Krishi Vikas Yojna (PKVY)

The Paramparagat Krishi Vikas Yojana (PKVY) is an initiative to promote organic farming in the country. The scheme envisages promotion of commercial organic production through certified organic farming, the produce will be pesticide residue free and will contribute to improve the health of consumer, it will raise farmer's income and create potential market for traders, it will motivate the farmers for natural resource mobilization for input production. The programme was operational in all 63 KVKs of Bihar and Jharkhand under the banner of ICAR-ATARI, Patna covering 327 farmers.

27.14 World Food Day

The ICAR-ATARI Zone IV, Patna and the KVKs of Bihar and Jharkhand celebrated the World Food Day on 16th October, 2020. World Food Day is a day of action dedicated to tackling global hunger. This day has special relevance to people from around the world come together to declare their commitment to eradicate worldwide hunger from our lifetime. World Food Day is celebrated every year with different themes to focus on areas that require action and offer a common objective. This year the World Food Day 2020 theme was "Grow, nourish, sustain. Together. Our actions are our future".Total 31 KVKs had successfully organized Kisan gosthi, filed day and other activities on this day and large number of persons participated on functions in which the number of participants were 1175.

KVK Hazaribagh

27.15 PROGRAMMES/ SPECIAL DAY CELEBRATED AT ATARI PATNA

Hindi Pakhwara: (14th - 29th September, 2020)

ICAR-ATARI, Zone-IV celebrated the Hindi Pakhwara from 14thto 29th September, 2020 and conducted various events for promoting use of Hindi (Rajbhasha) in official work. The main events held were essay competition, Hindi poem recitation, speeches and typing test in which staffs of the Institute took participation. Some of events were conducted virtually.

Gandhi Jayanti (2nd October, 2020)

The ICAR-ATARI, Zone-IV, Patna observed the 151st anniversary of Father of Nation Mahatma Gandhi on 2nd October 2020 in order to follow his principle of non-violence and remember his contribution in making India independence.

Vigilance Awareness Week: (28th Oct-2nd Nov.

2020)

ICAR-ATARI, Patna observed vigilance awareness week from 28th October to 2nd November, 2020 with the Theme "Integrity – A way of life." Director had given the pledge to all staff on this occasion to make corruption free India. A series of events, debates, queries, essay and speech were organized during the vigilance week 2020.

Constitution Day: (26th November, 2020)

On 26th Nov 2020 the Institute celebrated the 71st Year of Indian constitution adoption by constituent Assembly and all the staff took pledge to save our constitution and observed as Samvidhan Diwas. Director, ICAR-ATARI, Patna, Zone-IV briefed all staff members about the Preamble of our constitution and gave Oath to all staffs.

Table 123: Celebration of Important Days in KVKs

Celebration of Important Days	Bihar			Jharkhand			Total		
	No. of KVK Organized	No. of Activities	Participants	No. of KVK Organized	No. of Activities	Participants	No. of KVK Organized	No. of Activities	Participants
Republic day (26th Jan.)	35	35	1879	9	11	291	44	46	2170
International Women's Day (8th Mar.)	35	36	2535	9	13	532	44	49	3067
Ambedkar Jayanti (14th Apr.)	7	7	267	2	2	121	9	9	388
World Environment Day (5th Jun.)	7	7	401	-	-	-	7	7	401
International Yoga Day (21st Jun.)	30	31	547	6	11	209	36	42	756
Independence Day (15th Aug.)	35	35	1501	9	10	325	44	45	1826
Parthenium Awareness Week (16th to 22nd Aug.)	28	90	2823	8	32	1224	36	122	4047
Hindi Diwas (14th Sep.)	12	12	348	3	4	97	15	16	445
Gandhi Jayanti (2nd Oct.)	35	56	1603	8	11	427	43	67	2030
Mahila Kisan Diwas (15th Oct.)	38	39	1994	10	12	469	48	51	2463
World Food Day (16th Oct.)	24	24	915	7	7	260	31	31	1175
Vigilance Awareness Week (27th Oct. to 2nd Nov.)	29	74	1891	10	30	772	39	104	2663
National Unity Day (31st Oct.)	18	18	543	6	6	169	24	24	712
World Science Day (10th Nov.)	8	8	214	2	2	123	10	10	337

Celebration of Important Days	Bihar			Jharkhand			Total		
	No. of KVK Organized	No. of Activities	Participants	No. of KVK Organized	No. of Activities	Participants	No. of KVK Organized	No. of Activities	Participants
National Education Day (11th Nov.)	12	12	370	2	5	88	14	17	458
National Constitution Day (26th Nov.)	31	46	1249	6	7	258	37	53	1507
World Soil Day (5th Dec.)	38	39	2846	10	12	635	48	51	3481
Kisan Diwas (23rd Dec.)	32	32	2145	8	8	723	40	40	2868

28. NEW INITIATIVE UNDERTAKEN

28.1 GARIB KALYAN ROJAGAR ABHIYAAN (GKRA)

The GKR Abhiyaan was launched by Prime Minister Narendra Modi from village Telihar, Block Beldaur, district Khagaria, Bihar on June 20 (Saturday) 2020 through Video-Conference attended by the CMs and Representatives of the 6 Participating States, various Union Ministers and others to give skill training to migratory person returning to their native place for their employment generation and rehabilitation. The Hon'ble Prime Minister interacted with some of the migrants and inquired about their current state of employment and also whether the various welfare schemes launched during the Lockdown period were available to them. The GKRA was launched in collaboration with 12 ministries of the GOI with a total outlay of Rs. 50,000 crore.

The timeline for this Abhiyaan was of 125 days in mission mode with focused implementation of 25 categories of works/ activities in 116 districts including 27 aspirational districts, each with a large concentration of returnee migrant workers in 6 states of Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan, Jharkhand and Odisha. There were 25 projects/activities undertaken in GKRA to meet the needs like rural housing for the poor, Plantations, provision of drinking water through Jal Jeevan mission, Panchayat Bhavans, community toilets, rural mandis, rural roads, other infrastructure like Cattle Sheds, Anganwadi Bhavans etc.

In Bihar and Jharkhand state, total 35 districts were selected i.e., East Champaran, Kathiar, Madhubani, Gaya, West Champaran, Darbhanga, Araia, Muzaffarpur, Purnea, Saran, Rohtas, Samastipur, Banka, Khagaria, Begusarai, Supaul, Bhaglpur, Saharsa, Aurangabd, Buxar, Vaishali Kishanganj, Madhepura, Kaimur, Nawada, Jamui, Nalanda, Gopalganj, Sitamarhi, Bhojpur, Siwan, Patna in Bihar and Giridih, Hazaribagh, Godda in Jharkhand .

A total fund sanctioned under GKRA was Rs. 11,480000 for ATARI ZONE IV Patna and Rs. 492000, 3280000, 328000, 328000, 328000, 2296000 were allotted to BAU Sabour, DRPCAU Pusa, BAU Ranchi, BASU Patna, ICAR-RCER,

Patna, NGOs (Bihar and Jharkhand) respectively for smooth conduction of this project.

Major objectives were to:

· Provide livelihood opportunity to returning migrants and similarly affected rural citizens.

· Saturate village with public infrastructure and create livelihood opportunities viz. Roads, Housing, Anganwadis etc.

· Panchayat Bhavans, various livelihood assets and community complexes among others

In Bihar and Jharkhand, total 560 number of trainings were conducted for migrant workers and 20,152 number of person were trained or skilled in different type of activities.

Table 124: Achievement Report of GKRA (2020)

State	Training conducted (in number)	Persons skilled (in number)
Bihar	512	18472
Jharkhand	48	1680
Total	**560**	**20152**

Table 125:Garib Kalyan Rozgar Abhiyaan under ICAR-ATARI, Patna

State	Districts	Aspirational Districts
Bihar	32	12
Jharkhand	03	03
Total	**35**	**15**

28.2 POSHAN MAAH (1-30 September 2020) & NARI (Nutri SensitiveAgri-Resources & Innovations)

ICAR has initiated NARI (Nutri Sensitive Agri-Resources & Innovations) program through KVKs across the country which aimed to sensitize farm women and others on various aspects of nutrition to address malnutrition by bringing change in the food systems through different interventions.

The Government of India is celebrating POSHAN MAAH in September 2020 and ICAR has also taken a decision to celebrate it at each KVK keeping in view the objectives of the NARI program.

· Creation of Awareness on Nutri Sensitive Agriculture among farming community through capacity development and different level of interfaces.

· Promotion of Bio-fortified crop varieties for Nutritional Security among farm women and Children.

· Promotion of Nutri Garden, Nutri-Thaali, and Nutri Villages.
· Development of Entrepreneurship among youth by producing nutritional products.
· Promoting Nutri Sensitive innovative practices and Value chain development.

The following action points are proposed for Poshan Maah.

1. To give special emphasis on POSHAN, 17 September 2020 has been chosen for conducting various programs by each KVK, including one training program, distribution of vegetable seeds and awareness creation at district level. IFFCO collaborated to organize this event on 17thSept 2020.

(i) A special training program was organized on 17thSeptember 2020 for the 40 Anganwadi Workers at each KVK to bring about awareness about Nutri-Garden, Nutri-Thali & Bio-fortified varieties.

2. Distribution of 100 packets of seasonal vegetable seeds made available by IFFCO to each KVK were distributed among farm women and Aaganwadi workers. Distribution of Vegetable seedlings & plants to the participating Anganwadi Workers for establishing Poshan Vatika around their homestead by each KVK.

3. During 1-30 September 2020, several activities were carried out by KVKs to create awareness among masses through Press and media about importance of POSHAN and other activities.

Table 126: POSHAN MAAH (1-30 September 2020) & NARI (Nutri Sensitive Agri-Resources & Innovations)

State	Number of participants				Total Participants with others
	Farm women	Adolescent girls	School Children's	Anganwadi workers	
Bihar	4307	510	148	3769	10150
Jharkhand	2632	353	216	3431	7101
Total	**6939**	**863**	**364**	**7200**	**17251**

Table 127: Capacity Development of Anganwadi Workers & Farm Women on Poshan 2020

State	No. of Angwandi Workers	No. of Farm Women	Total Trainees	Distribution of seed packets, seedlings and planting material			Total
				No. of Seed packets	No. of Veg Seedling	No. Planting material	
Bihar	1494	1761	3255	3133	15216	2396	3677
Jharkhand	1085	659	1744	1911	24118	1829	1864
Total	**2579**	**2420**	**4999**	**5044**	**39334**	**4225**	**5541**

Table 128 : Poshan Maah Celebrations State wise 2020

State	No. of KVKs	No. of Angwandi Workers	No. of Farm Women	Total Trainees	No. Seed packets	No. Veg Seedlings	No. Planting material	State Minister	Union Minister	MP	MLA	Others	Total
Bihar	43	1494	1761	3255	3133	15216	2396	3	1	2	8	408	3677
Jharkhand	24	1085	659	1744	1911	24118	1829	0	0	0	1	117	1864
TOTAL	**67**	**2579**	**2420**	**4999**	**5044**	**39334**	**4225**	**3**	**1**	**2**	**9**	**525**	**5541**




28.3 INTERACTION/LIVE TELECAST PROGRAMME OF HON'BLE PRIME MINISTER/HON'BLE AAGRICULTRE MINISTER, GOVT OF INDIA

Hon,ble Prime Minister GOI and Agricultuire Minister many times interated with the farmers of the country on different occasions and these programmes were live telecasted so that maximum farmers could benefit from this. Total 08 progrmmes were direct telcasted by all 68 KVKs of this zone in which 16249 farmers and farm women participated.

Table 129 : Interaction/Live telecast programme of Hon'ble Prime Minister/Hon'ble Aagricultre Minister, Govt of India

Sl.	Date of event	Name of Event/Programme	No. of KVK reported	Total Participants
1	28-01-2020	Global Potato Conclave 2020	16	1181
2	20-06-2020	Inauguration of Garib Kalyan Rojgar Abhiyan	12	1002
3	09-08-2020	PM-Kisan Samman Nidhi Programme	42	4385
4	29-08-2020	Inaugural ceremony of RLBCAU, Jhansi	22	1055
5	10-09-2020	eGopala and lauch of PM Matsya Sampada Yojana	11	551
6	03-10-2020	Interaction with KVKs & Workshop on Farm Amendment Act 2020	6	62
7	16-10-2020	Foundation day of Food & Agriculture Organization (FAO)	8	271
8	25-12-2020	PM-Kisan Samman Nidhi Programme	68	7742
Total				**16249**

Some Photographs of Live Telecast of PM EVENTS

KVK Lakhisarai

KVK Bhagalpur

KVK Nawada

KVK Khunti

KVK Latehar

KVK Darbhanga

28.4 GRAMIN KRISHI MAUSAM SEWA (GKMS)

Agromet Advisory Service rendered by India Meteorological Department (IMD), Ministry of Earth Sciences, GoI is a set-up to contribute weather information based crop /livestock management strategies and operations dedicated to enhancing crop production and food security. At present IMD

in collaboration with ICAR is venturing into implementation of block level agro met advisory service through KVKs under Gramin Krishi Mausam Sewa (GKMS).

This programme is run with the border objectives of

- To prepare Agromet Advisory Bulletins for farmers and stakeholders regarding weather sensitive agricultural operations to mitigate weather based risk on crop cultivation
- To impart training to the farmers about climate change and its mitigating options.

During 2020, a total of 20 centres comprising 14 centres under Bihar Agricultural University, Sabour, Bhagalpur and 06 centres under Birsa Agricultural University, Ranchi have prepared and disseminated block level Agromet Advisory Service to the farmers of the respective districts. Altogether 2067 adviosries bulletin had been issued covering 257 blocks of Bihar and Jharkhand by which 60011 farmers has been benefitted. During the year total 438farmers awareness programme were organized to benefit the famers about the usefulness of the Gramin Krishi Mausam Sewa.

Table 130: Agromet advisories services during the year 2020

S. No.	Name of the State	No. of KVKs	No. of Block agromet advisories	No. of advisory bulletin	No. of FAP organized	No. of farmers feedback	No. of farmers received agromet advisory bulletin	No. of publication
1	Bihar	14	198	1451	266	1877	49980	25
2.	Jharkhand	6	59	616	172	533	10031	05
	Total	**20**	**257**	**2067**	**438**	**2410**	**60011**	**30**

28.5 DOUBLING FARMERS' INCOME IN BIHAR AND JHARKHAND

The Doubling Farmers' Income (DFI) Central Committee recognises agriculture as a value led enterprise and suggests empowering farmers with "improved market linkages" and enabling "self-sustainable models" as the basis for continued income growth for farmers. Science and Technology (S&T) and Innovation in Farm Management are critical inputs for economic development and poverty alleviation in the country. The Committee identifies and focuses on seven major sources of growth operating within and outside the agriculture sector. These are (i) Improvement in crop productivity, (ii) Improvement in livestock productivity, (iii) Resource use efficiency or saving in cost of production, (iv) Increase in cropping intensity, (v) Diversification towards high value crops, (vi) Improvement in real prices received by farmers and (vii) Shift from farm to non-farm occupations. In view of achieving the target of doubling the farmers' income by March 2022, initiatives for Doubling Farmers' Income in Bihar and Jharkhand have been undertaken by State Coordination Committee (SCC) where the Director of ICAR- ATARI, Patna has been involved actively in formulation of strategy documents for both the states. During the year 2020 KVKs of Bihar and Jharkhand conducted various programme in which 7091 farmers participated and took the benefits.

Activities Conducted under DFI	Participants
Dairy Farming, Fish Farming, Vegetable cultivation, Capacity Building Rural youth Training Farm Advisory Discussion on Soil Health Card & Soil Testing Mobile Agro Advisory	7091

KVK Koderma

KVK Koderma

KVK Begusarai

KVK Begusarai

29.PERSONNEL

Sl. No	Name	Designation
1.	Dr. Anjani Kumar	Director
2.	Dr. Amrendra Kumar	Pr. Scientist.
Project Staff		
1.	Rabindra Kumar	SRF (NICRA)
2.	Khushboo Kumari	SRF (CFLD Oilseed)
3.	Avinash Sarin Saxena	SRF (CFLD Pulses)
4.	Sumit Kumar Singh	SRF (NEMA)
5.	Preeti Kumari	Young Professional II (FFP)
6.	Anshu Kumari	DEO (CFLD Pulses)
7.	Manoj Kumar	DEO (CSISA)

30. AWARDS

30.1 Award and Recognitions obtained by the farmers during the Year 2020

Name of the Farmer	Name of the Award	District	Purpose	Conferring Authority
Sri Ranjan Sharma Pahadpura, Arwal	District level Farmer Award	Arwal	Fish based IFS	BAU Sabour
Sri Amrendra Kumar, Aurangabad	Best Farmers Award	Aurangabad	Poultry Farming	BAU Sabour
Sri Ripu Sudan Singh, Bindi, Banka	Progressive Farmer Award	Banka	Progressive Farmer	BAU, Sabour
Sri Vimlesh Kumar, Begusarai	Abhinav Kisan puraskar	Begusarai	Innovative Farmer	Hon'ble Vice Chancellor
Shri Vijay Kumar Vill. - Koirigawa,, Block - Mehsi, Dist- East Champaran,	Abhinav Kisan Puraskar	East Champaran	Bee Keeping	DRPCAU, Pusa
Shri Umesh Yadav Gopalganj	Kisan Abhinav Puraskar	Gopalganj		DrRPCAU, Pusa
Mr. Anand Mohan Vill: darha, Block: Barhat Jamui	Krishi Abhinav Award	Jamui	Conservation Agriculture	BAU, Sabour
Sri Umesh Bhagat, Jehanabad	Ist Prize in Flower Garland Making	Jehanabad	State level Flower Exhibition, Gyan Bhawan, Patna, 06-08 Feb. 2020	State level Flower Exhibition, Patna

Name of the Farmer	Name of the Award	District	Purpose	Conferring Authority
Prabhat Kumar (Guddu Kr.), Jehanabad	Ist prize in White melon (Bhatua)	Jehanabad	State level Vegetable Exhibition cum Competition Patna, 17-19 Jan 2020	State level Vegetable Exhibition cum Competition Patna
Prabhat Kumar (Guddu Kr.), Jehanabad	3rd prize in Bitter Gourd	Jehanabad	State level Vegetable Exhibition cum Competition Patna, 17-19 Jan 2020	State level Vegetable Exhibition cum Competition Patna
Sanjay Kumar Singh, Mahinathpur,Kohra, Katihar 7991143703	BAU,Kisan Samman in Kisan Mela	Katihar	Dragon Fruit, Inter cropping	BAU, Sabour
Sri Ranjay Paswan Village-Parri, Panchayat - Bhikhari Ghat, Block-Alouli, District-Khagaria	Best Farmer Award	Khagaria		BAU, Sabour
Mr. Joshep Hembram, Kishanganj	Progressive Farmer Award	Kishanganj	Beekeeping	BAU, Sabour
Sri Laxman Mahto Vill. Dheera, Block: Halsi, Lakhisarai	Innovative & Best farmer award	Lakhisarai	Kisan Mela	BAU, Sabour
Ram Babu Thakur Vill- Bittuhar Block- Harlakhi Dist- Madhubani	Kisan Abhinav Purskar	Madhubani	Innovative Farmer for the field of	DRPCAU,PUSA
Smt. Bina Devi Munger	NARI Shakti Award	Munger		President of India
Sri Dhananjay kumar Singh Munger	Innovative Farmer	Munger		IARI
Rama Shankar Singh Vill- Chainpur Parai Madwan Muzaffarpur	Innovative farmer Purskar	Muzaffarpur	Use of farm machinery to increase the productivity of Mustard & green gram	DRPCAU, Pusa

Name of the Farmer	Name of the Award	District	Purpose	Conferring Authority
Rama Shankar Singh Vill- Chainpur Parai Madwan Muzaffarpur	Jagjivan Ram Abhinav Purskar (Zonal)	Muzaffarpur	Use of farm machinery to increase the productivity of Mustard & green gram	ICAR Delhi
Smt Usha Devi, Nalanda	Best progressive farmer award	Nalanda	Outstanding work in Dairy	BAU, Sabour, Bhagalpur
Sri Manoj Kumar Village – Kajhiya, P.O.- Maheshdih, Block – Akabarpur, Distict – Nawada, Bihar Pin – 805121	Pandit Deen Dayal Upadhyay Antodaya Krishi Puruskar	Nawada	-	ICAR, RCER Patna
Sri Manoj Kumar Village – Kajhiya, P.O.- Maheshdih, Block – Akabarpur, Distict – Nawada, Bihar Pin – 805121	Abhinav Kisan Puraskar	Nawada	-	BAU, Sabour
Sri Sadanad Kumar Village – Nurichak, P.O.- Bauri , Block– Kashichak, Distict – Nawada , Bihar Pin – 805130	Pandit Deen Dayal Upadhyay Antodaya Krishi Puruskar	Nawada	-	ICAR, RCER Patna
Sri Survijay Singh, Patna	Best Farmer of District Award	Patna	Certificate	BAU, Sabour
Sri Sashibhushan Singh,Purnea	Best Farmer Award	Purnea	Tarkari Mahotsaw	Bihar Govt.
Sri Chandradeep Kumar, Purnea	Farmer Award	Purnea	Tarkari Mahotsaw	Bihar Govt.
Santosh Kumar, Purnea	Farmer Award	Purnea	Tarkari Mahotsaw	Bihar Govt.
Sri Dilip Kumar Singh Vill.- Mohaddiganj, Sasaram Rohtas	Nawachar Krishak	Rohtas	New technology adoption & increase in producitivity	ICAR Kisan Mela 2020
Sri Dilip Kumar Singh Vill.- Mohaddiganj, Sasaram Rohtas	Dhanuka Innovative Agriculture Award	Rohtas	Save water & Rain water harvesting for farmer-East Zone	Dhanuka Agritech Ltd.

Name of the Farmer	Name of the Award	District	Purpose	Conferring Authority
Rama Shankar Singh Vill- Chainpur Parai Madwan Muzaffarpur	Jagjivan Ram Abhinav Purskar (Zonal)	Muzaffarpur	Use of farm machinery to increase the productivity of Mustard & green gram	ICAR Delhi
Smt Usha Devi, Nalanda	Best progressive farmer award	Nalanda	Outstanding work in Dairy	BAU, Sabour, Bhagalpur
Sri Manoj Kumar Village – Kajhiya, P.O.- Maheshdih, Block – Akabarpur, Distict – Nawada, Bihar Pin – 805121	Pandit Deen Dayal Upadhyay Antodaya Krishi Puruskar	Nawada	-	ICAR, RCER Patna
Sri Manoj Kumar Village – Kajhiya, P.O.- Maheshdih, Block – Akabarpur, Distict – Nawada, Bihar Pin – 805121	Abhinav Kisan Puraskar	Nawada	-	BAU, Sabour
Sri Sadanad Kumar Village – Nurichak, P.O.- Bauri , Block– Kashichak, Distict – Nawada , Bihar Pin – 805130	Pandit Deen Dayal Upadhyay Antodaya Krishi Puruskar	Nawada	-	ICAR, RCER Patna
Sri Survijay Singh, Patna	Best Farmer of District Award	Patna	Certificate	BAU, Sabour
Sri Sashibhushan Singh,Purnea	Best Farmer Award	Purnea	Tarkari Mahotsaw	Bihar Govt.
Sri Chandradeep Kumar, Purnea	Farmer Award	Purnea	Tarkari Mahotsaw	Bihar Govt.
Santosh Kumar, Purnea	Farmer Award	Purnea	Tarkari Mahotsaw	Bihar Govt.
Sri Dilip Kumar Singh Vill.- Mohaddiganj, Sasaram Rohtas	Nawachar Krishak	Rohtas	New technology adoption & increase in producitivity	ICAR Kisan Mela 2020
Sri Dilip Kumar Singh Vill.- Mohaddiganj, Sasaram Rohtas	Dhanuka Innovative Agriculture Award	Rohtas	Save water & Rain water harvesting for farmer-East Zone	Dhanuka Agritech Ltd.
Sri Umesh Kumar Vill.- Niyay, Sasaram Rohtas	Innovative Farmers' Award	Rohtas	Onion hub	BAU, Kisan Mela 2020
Sri Nakul Singh Vill.- Bishunpur, Nokha Rohtas	Innovative Farmers' Award	Rohtas	Chilli & Radish	BAU, Kisan Mela 2020
Sri Dilip Kumar Singh Vill.- Mohaddiganj,	Innovative	Rohtas	Lettuce	BAU, Kisan Mela

Name of the Farmer	Name of the Award	District	Purpose	Conferring Authority
Sri Umesh Kumar Vill.- Niyay, Sasaram Rohtas	Innovative Farmers' Award	Rohtas	Onion hub	BAU, Kisan Mela 2020
Sri Nakul Singh Vill.- Bishunpur, Nokha Rohtas	Innovative Farmers' Award	Rohtas	Chilli & Radish	BAU, Kisan Mela 2020
Sri Dilip Kumar Singh Vill.- Mohaddiganj, Sasaram Rohtas	Innovative Farmers' Award	Rohtas	Lettuce	BAU, Kisan Mela 2020
Mr. Subodh Rai Saharsa	Prograssive Farmers Award	Saharsa	Protective Agriculture	BAU, Sabour, Bhagalpur
Sri Narendra Prasad Singh Manda, Bibhutipur, Samastipur	Abhinav Kisan Puruskar	Samastipur	Farm mechanization, new orchard & pulse seed cultivation	RPCAU, Pusa, Samastipur
Mr. Narendra Kumar Sahni Ghoru Mathiya, Dariyapur Saran	AbhinavKisanPuraskar	Saran		DRPCAU, Pusa
Sri. Birenndra Rajak, Sheikhpura	Innovative farmers of district	Sheikhpura	Working in the field of mushroom cultivation	BAU, Sabour
Sri Manoj Kumar Minapur Balha Sheohar	Abhinav Kisan Puraskar	Sheohar	Innovative idea in Agriculture	RPCAU, Pusa, on 26 Jan.2020
Pappu Thakur Jalalpur, Pupri Sitamarhi	Kisan Abinav Puraskar	Sitamarhi	Integrated farming	DRRPCAU, Pusa
Sri Mukesh Kumar,Siwan	Innovative Farmer's Award	Siwan	Encouragement	Dr.RPCAU, Pusa
Sri Mukesh Kumar, Siwan	Kisan Shree	Siwan		ATMA
Ram Ayodhya Prasad, Siwan	Kisan Shree	Siwan		ATMA
Tarakant Prasad, Siwan	Kisan Shree	Siwan		ATMA
Laxman Prasad, Siwan	Kisan Shree	Siwan		ATMA
Sri. Hreram Yadav Laxmipur sayat Supaul	District Kisan Award	Supaul	Kisan Award	BAU, Sabour
Sri. Sheshnath Singh Pariyahi, Chhatapur Supaul	Kisan Sri	Supaul	Betterment/ Recognition	ATMA, Supaul

Name of the Farmer	Name of the Award	District	Purpose	Conferring Authority
Sri. Bhola Mandal Andauli, Kishanpur Supaul	Kisan Sri	Supaul	Betterment/ Recognition	ATMA, Supaul
Sri. Satyanarayan Sahnogiya Karjain , Raghopur Supaul	Kisan Sri	Supaul	Betterment/ Recognition	ATMA, Supaul
Sri Harivansh Narayan Singh Dhobauli, Bidupur Vaishali	Abhinav Kisan Puraskar	Vaishali	Innovative work of Agriculture	DRPCAU, Pusa
Sri Jeetendra Kr. Singh Namidih, Lalganj Vaishali	Kisan Gaurav Puruskar	Vaishali	High production of wheat	ATMA, Vaishali
Smit Rupmati Devi Village – Nawaghar Serka Block – Bishunpur Gumla	Women Farmer Samman	Gumla	Leman Grass Cultivation	Vikas Bharti Bishunpur by Shri Ram Nath Kovind, Honorable Presedent of India
Smit Anita Devi Village – Bishunpur Block – Bishunpur Gumla	Women Farmer Samman	Gumla	Value Addition	Vikas Bharti Bishunpur by Shri Ram Nath Kovind, Honorable Presedent of India
Smit Sayamuni Devi Village – Salamnawatoli Block – Bishunpur Gumla	Women Farmer Samman	Gumla	Mango cultivation	Krishi Vigyan Kendra Gumla by Shri Sameer Oraon Honorable M.P. Raj Shabha, Govt. of India
Smit Sila Devi Village – Salamnawatoli Block – Bishunpur Gumla	Women Farmer Samman	Gumla	Goat Farmimg	Krishi Vigyan Kendra Gumla by Shri Sameer Oraon Honorable M.P. Raj Shabha, Govt. of India
Smit Fagni Devi Village – Salamnawatoli Block – Bishunpur Gumla	Women Farmer Samman	Gumla	Mango cultivation	Krishi Vigyan Kendra Gumla by Shri Sameer Oraon Honorable M.P. Raj Shabha, Govt. of India

Name of the Farmer	Name of the Award	District	Purpose	Conferring Authority
Ramchandra Mehto Naitarnd Koderma	Vegetable Grower	Koderma	Agri mela	ATMA, Koderma
Babula Mehto Chandwara Koderma	Best Fruit grower	Koderma	Agri mela	ATMA, Koderma
Ajay Kumar Mehto Sardarodih Koderma	Best vegetable rower	Koderma	Agri mela	ATMA, Koderma
Sri Sanjeet bobonga West Singhbhum	Progressive farmer	West Singhbhum		Birsa Agricultural University, Ranchi
Sri Rajendra, Sundi	Innovative farmer	West Singhbhum		Birsa Agricultural University, Ranchi

Award and Recognition of Scientist/Institution during 2020

Name of Institution/Scientists	Name of Award	Year	Organization	Purpose
Dr. S.K. Rajak SMS (Vet. Sci) KVK East Champaran II	Received "**Second best oral presentation award"** in a National symposium on topic entitled morphometric analysis and quantification of spermatogenic and Sertoli cell in crossbred and Indigenous bull	2020	ISAPM Conference at PGIVER, Jaipur	-
Dr. S.K. Rajak SMS (Vet. Sci) KVK East Champaran II	Received **Dr. C.M. Singh, National Award of excellence**, 2020 under the category " Lab to Farm based popular article" on the topic How to increase the livestock farmer's income	2020	Pashudhan Parharee, Jamshedpur	-
Shri Ashish Rai, SMS (Soil Science) KVK East Champaran II	Young Scientist Award	2020	Bioved Research Society, Prayagraj Uttar Pradesh	-
Dr B. D. Singh SMS (Ag. Extension) KVK Patna	Scientist of the year	2020	-	-
KVK Begusarai	KVK Scientist Award	2020	Agro Environmental Development Society	-
	Best Poster Presentation Award	2020	National Seed Congress	-
	Best Poster	2020	Uttar Pradesh Agricultural Science Congress	-
	National Agriculture Teacher		Art of living International Centre	-
	Best Article Award		Agriculture & Food: e-Newsletter	-

Name of Institution/Scientists	Name of Award	Year	Organization	Purpose
KVK Bhagalpur	Best Young Scientist	2020	EET-CRS, Research wing for excellence in professional education in industry, Kolkata	For Agronomy in 8th Faculty Branding Awards-2020
	Best Senior Scientist and Head	2020	Agro Environmental Development Society (AEDS), Uttar Pradesh	For Extension Education on International Web-Conference New Trends in Agriculture, Environmental and Biological Sciences for Inclusive Development during 21-22, June 2020
	Young Professional Award	2020	Agro Environmental Development Society (AEDS), Uttar Pradesh	For Plant physiology on International Web-Conference New Trends in Agriculture, Environmental and Biological Sciences for Inclusive Development during 21-22, June 2020
	Best KVK Scientist Award	2020	Agro Environmental Development Society (AEDS), Uttar Pradesh	For Animal Science on International Web-Conference New Trends in Agriculture, Environmental and Biological Sciences for Inclusive Development during 21-22, June 2020
KVK Jehanabad	Best KVK scientist Award 2020	2020	2nd National conference of society of krishi vigyan, Ludhiyana	2nd National conference of society of krishi vigyan
	Global Academic Award 2020	2020	Pashu Parharee, Tata	Pashu Parharee
KVK Khagaria	1st Prize in Stall Pradarshani	2020	BAU, Sabour	
	Best Stall Award in Kisan Mela, 2020	2020	BAU, Sabour	
KVK Kishanganj	Best Stall Exhibition	2020	BAU, Sabour	Stall exhibition in Kisan Mela 2020

Name of Institution/Scientists	Name of Award	Year	Organization	Purpose
KVK Purnea	Best Stall Award in Kisan Mela BAU Sabour	2020	BAU Sabour	-
	Skoch Award- Health Silver (Apni Kyari Apni Thali)	2020	-	-
KVK Saran	Best KVK award	2020	Dr. RPCAU, Pusa, Samastipur	For delievering best amongst KVK under
				DRPCAU, Pusa
KVK Siwan	Best KVK Award	2020	Dr.RPCAU, Pusa	-
KVK Godda	Appreciation certificate	2020	DAO, Godda	Live demonstration and putting stall in district level Kisan Mela
KVK Ranchi	Best KVK SWARAJ Award 2020	2020	Outlook	Best on the performance of KVK