

# वार्षिक प्रतिवेदन ANNUAL REPORT

2020



भाकृअनुप—कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान

ICAR-Agricultural Technology Application Research Institute

(Division of Agricultural Extension)

जबलपुर, मध्यप्रदेश-482 004

Jabalpur, Madhya Pradesh – 482 004

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## Guidance

**Dr. S. R. K. Singh**

Director

## Compilation and Editing

**Dr. Dwaipayan Bardhan**, Principal Scientist, ATARI, Jabalpur

**Dr. A.A.Raut**, Scientist, ATARI, Jabalpur

**Dr. Tushar Athare**, Scientist, ATARI, Jabalpur

## Subject Matter Assistance

**Dr. A.K.Singh**, Scientist (Soil Science), KVK Jabalpur, M.P.

**Dr. Shashi Gour**, Scientist (Home Sci.), JNKVV, Jabalpur, M.P.

**Dr. Prashant Shrivastava**, Scientist (Agril. Engg.), KVK Narsinghpur

**Dr. Rajesh Singh, Scientist** (Horticulture), KVK Rewa, M.P.

**Dr. Pramod Gupta, Scientist** (Plant Protection), KVK Jabalpur, M.P.

**Dr. R.K. Singh**, Scientist, (Agronomy), KVK, Chhattarpur, M.P.

**Ms. Pramila Jogi, Scientist** (Horticulture), KVK Mungeli, C.G.

**Dr. Sarita Singh, Scientist**, (Ag. Extension), KVK, Chhindwara, M.P.

**Miss. Lakshmi Chakravarti**, Scientist (Home Sci.), KVK, Raisen, M.P.

**Miss. Manisha Khaparde**, Scientist (Fishery), KVK, Kawardha, C.G.

**Dr. Pramod Sharma**, PA (LPM), KVK Jabalpur, M.P.

## Technical Assistance

Dr. Varsha Shrivastava (RA), Dr. Shrishti Bilaiya (SRF), Dr. Anita Deshmukh (SRF), Dr. Venkateshwar Jallagraph (SRF), Deepshika Singh (SRF)

## Computer Assistance

Mrs. Dipti Dubey, Shri Roshan Lal Singh, Miss. Preeti Tiwari, Shri Ajay Shukla, Shri Neetesh Jain, Shri Rishabh Vishwakarma

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**The Director,**

**ICAR-Agricultural Technology Application Research Institute,  
Jabalpur (MP)**

**Ph: 0761-2680807, 2680158 Fax: 0761-2680485,**

**email: [zcunit@rediffmail.com](mailto:zcunit@rediffmail.com)**

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## सारांश

भा.कृ.अ.प.—कृषि तकनीकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र-9 के अन्तर्गत 82 कृषि विज्ञान केन्द्र, मध्यप्रदेश एवं छत्तीसगढ़ राज्यों में स्थित है ।

### प्रक्षेत्र परीक्षण के द्वारा तकनीक आंकलन

विभिन्न कृषि विज्ञान केन्द्रों द्वारा 1285 प्रक्षेत्र आंकलन, 14807 परीक्षण के द्वारा आयोजित किये गये। मध्यप्रदेश द्वारा 962 एवं छत्तीसगढ़ द्वारा 323 प्रक्षेत्र परीक्षणों का आयोजन किया गया। कुल प्रक्षेत्र परीक्षण 1285 में से 886 प्रक्षेत्र परीक्षण फसल पर व शेष 399 अन्य उद्यमों पर रहा।

### अंग्रिम पंक्ति प्रदर्शन

प्रगति वर्ष के दौरान, कुल 812 अंग्रिम पंक्ति प्रदर्शन विभिन्न फसलों (दलहन, तिलहन, धन धान्य फसलें, सब्जी फसल, मोटे अनाज) पर आयोजित हुए। कुल प्रदर्शन में 8484.39 हे. क्षेत्र 20393 किसानों के प्रक्षेत्र पर आयोजित हुए। मुख्य आय सृजन वाले उद्यम पर भी अंग्रिम पंक्ति प्रदर्शन आयोजित किये गये। जिसमें क्षेत्रफल की दृष्टि से 298.55 हे., 436 इकाईयाँ एवं 2884 लाभार्थियों की संख्या रही।

### प्रशिक्षण एवम् क्षमता संवहन

कुल आयोजित 6451 प्रशिक्षण 181101 लाभार्थी (कृषक, महिलायें, ग्रामीण युवक, प्रसार कर्मी) ने भाग लिया। भारतीय कृषि अनुसंधान परिषद् के विभिन्न संस्थाओं सहयोग से मिलकर कृषि तकनीक अनुप्रयोग अनुसंधान संस्थान, जबलपुर द्वारा आयोजित 25 क्षमता संवहन कार्यक्रम से मध्यप्रदेश एवं छत्तीसगढ़ के कृषि विज्ञान केन्द्रों के 1809 विषय वस्तु विशेषज्ञों ने भाग लिया।

### बीजोत्पादन, रोपण सामग्री, जैव उत्पाद एवं पशु उपयोगी सामग्री का उत्पादन

कृषि विज्ञान केन्द्रों द्वारा 18112.84 क्विंटल बीज, 64.77 लाख रोपण सामग्री (धन-धान्य फसलें, दलहन, तिलहन, सब्जी, औषधीय पौधे, फलदार पौधे) का उत्पादन किया गया। कृषि विज्ञान केन्द्रों द्वारा 22291.97 क्विंटल जैव उत्पाद एवं 650843.14 क्विंटल पशु उपयोगी सामग्री का भी उत्पादन किया गया।

### मृदा, जल एवं पौधों का परीक्षण

क्षेत्र के कृषि विज्ञान केन्द्रों ने 31157 मृदा एवं 190 जल नमूनों का परीक्षण कर 31505 किसान एवं 7555 गांव लाभान्वित हुए।

## प्रसार गतिविधियाँ

वर्ष में कुल 63,671 प्रसार गतिविधियाँ (प्रक्षेत्र दिवस, किसान मेला, कृषक सलाहकारी सेवाएं, प्रदर्शनी, फिल्म शो आदि) के माध्यम से विभिन्न तकनीक का प्रसार कर 39,48,310 किसान एवं प्रसार कर्मी लाभान्वित हुए।

## वैज्ञानिक सलाहकार समिति की बैठक

वर्ष में कुल 117 वैज्ञानिक सलाहकार समिति की बैठकों का आयोजन किया गया। इनमें से म.प्र. के 40 कृषि विज्ञान केन्द्र जिन्होंने वर्ष में दो बार, 12 कृषि विज्ञान केन्द्रों ने वर्ष में एक बार उक्त बैठक आयोजित हुई। छत्तीसगढ़ के 25 कृषि विज्ञान केन्द्रों में एक बार उक्त बैठक आयोजित हुई।

## एटिक वार्षिक प्रगति प्रतिवेदन

अटारी जबलपुर के अधीन 3 एटिक संस्थान हैं। वर्ष में 5392 कृषकों ने एटिक में भ्रमण किये, तकनीकी सूचनाओं से 1133 कृषक लाभान्वित हुए। प्रकाशन के अन्तर्गत 58584 प्रकाशित प्रतियां विक्रय कर कुल 19.10 लाख रुपये अर्जित हुए।

## पुरस्कार एवं सम्मान

कृषि विज्ञान केन्द्र दतिया को पण्डित दीनदयाल उपाध्याय कृषि विज्ञान प्रोत्साहन पुरस्कार-2019 (राष्ट्रीय) प्राप्त हुआ एवं कृषि विज्ञान केन्द्र उज्जैन को पण्डित दीनदयाल उपाध्याय कृषि विज्ञान प्रोत्साहन पुरस्कार-2019 (जोनल) प्राप्त हुआ। कृषि विज्ञान केन्द्र, दतिया को सर्वश्रेष्ठ कृषि विज्ञान केन्द्र पुरस्कार-2020 प्रदान किया गया। बालाघाट जिले के प्रगतिशील किसान श्री विशाल कटरे को जगजीवन राम अभिनव किसान पुरस्कार-2019, कृषि विज्ञान केन्द्र, बस्तर को जनजातीय कृषि प्रणालियों में उत्कृष्ट अनुसंधान के लिए फखरुद्दीन अली अहमद अवार्ड-2019 प्राप्त हुआ साथ ही खंडवा जिले के प्रगतिशील किसान श्री सुरेश चंद्र राठौर को इनोवेटिव फार्मर्स अवार्ड-2020 प्राप्त हुआ।

## कृषि विज्ञान केन्द्रों में आगन्तुको का आगमन

वर्ष में जून-9 के कृषि विज्ञान केन्द्रों में 152365 आगन्तुको का आगमन हुआ, जिसमें कुल 148392 किसान, 6014 अधिकारीगण एवं 1043 गणमान्य व्यक्ति शामिल हैं। राज्यवार आंकड़ों के अनुसार मध्यप्रदेश के कृषि विज्ञान केन्द्रों में सर्वाधिक संख्या 110361 (72.43 प्रतिशत), छत्तीसगढ़ में 42004 (27.57 प्रतिशत) रहा।

## Executive Summary

ICAR-Agricultural Technology Application Research Institute, Zone IX has 82 KVKs located in two Indian states viz., Madhya Pradesh and Chhattisgarh.

### **Technology Assessment through On-Farm Testing**

During 2020, 1285 technologies were assessed in the Zone through 14807 On-Farm Trials. The highest number of technologies were assessed in the state of Madhya Pradesh (962) followed by Chhattisgarh (323). Out of total 1285 technologies assessed, 886 were on crops and remaining 399 technologies on enterprises.

### **Frontline Demonstrations**

During year, 812 FLDs were conducted on crops (oilseeds, pulses, cereals, vegetables crops, cash crops, agro-forestry, millets, etc.) covering the total area 8484.39 ha. benefiting 20393 farmers. FLDs were also conducted on important income generating enterprises, covering the 436 units and 298.55 ha area among 2884 beneficiaries.

### **Training and Capacity Building**

During the year there was a significant increase in the number of training and participants. In 6451 courses organized 181101 participants (farmers and farm women, rural youth, extension personnel) and those sponsored from different agencies were benefitted. ICAR-ATARI, Jabalpur also organized 25 capacity building programmes in collaboration with ICAR institutes for technical upscaling of 1809 Subject Matter Specialists in the Zone.

### **Seed, Planting Materials, Bio-Products and Livestock Material Production**

KVKs of the Zone produced total 18112.84 qtl. of seed and 64.77 lakhs planting material of different crops (cereals, pulses, oilseeds and vegetables), medicinal plants, fruits, etc. and distributed among farmers. Besides, this KVKs of the Zone also produced 22291.97 q bio-products and 650843.14 livestock products at their farms.

### **Soil, Water and Plant Analysis**

During year, 31157 soil samples and 190 water samples were analysed by KVKs of the Zone touching 31505 farmers of 7555 villages.

### **Extension Activities**

A total of 63,671 extension activities were organized in the form of field days, Farmers fair, Farm advisory services, Exhibition, Film show etc. for promoting the technologies in the region which benefited 39,48,310 farmers and extension personnel in the ICAR-ATARI, Zone-IX

### **Technological backstopping**

Technological backstopping were carried out through production of 141337 copies of technical literature, newsletters etc. of which 135764 were distributed among the farmers, in Panchayats as well as Line department officials.

### **Scientific Advisory Committee Meeting**

In the Zone, total 117 Scientific Advisory Committee (SACs) meetings were conducted by KVKs. In MP, 40 KVKs organized SAC meeting twice and 12 KVKs once during the reporting period. In Chhattisgarh, 25 KVKs was organized SAC meeting once during the reporting period.

### **ATIC Progress**

In the Zone, Three ATICs are operational under ATARI, Jabalpur. In these ATICs there were 5392 footfalls during the year. Technological information was provided to 1133 farmers. A total 58584 publications (print & electronic media) were sold and generated revenue of Rs. 19.10 lakh.

### **Awards and Recognitions**

Krishi Vigyan Kendra Datia has been awarded Pt. Deen Dayal Upadhyay Krishi Vigyan Protsahan Award – 2019 (National) and Krishi Vigyan Kendra Ujjain has been awarded Pt. Deen Dayal Upadhyay Krishi Vigyan Protsahan Award – 2019(Zonal). Best KVK award -2020 been awarded to KVK Datia, Jagjivan Ram Abhinav Kisan Puraskar Sh. Vishal Katre, KVK Balaghat, Krishi Vigyan Kendra Bastar has been awarded Fakhruddin Ali Ahmed Award For Outstanding Research in Tribal Farming Systems-2019. Innovative Farmer Award 2020 has been awarded to Sh. Suresh Chand Rathore, KVK Khandwa.

### **Footfalls in KVKs**

In the KVKs of Zone IX, there was 152365 footfalls (148392 farmers, 6014 officials and 1043 dignitaries/VIPs) during 2020. In Madhya Pradesh, it was 110361 (72.43%) and in Chhattisgarh 42004 (27.57 %).

## 1. Introduction

Zonal Coordinating Unit established on 11<sup>th</sup> September, 1979 in the premises of Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur Madhya Pradesh by ICAR was upgraded to Zonal Project Directorate (ZPD), Zone-IX in March 2009. The Directorate attained the status of Institution, and was renamed as Agricultural Technology Application Research Institute (ATARI) in 2015. The Institute coordinates monitors and evaluates the mandated activities of 82 KVKs spread across two States - Madhya Pradesh and Chhattisgarh.

### Major activities of ATARI

- Formulate, implement, monitor and evaluate programmes organized by Krishi Vigyan Kendras
- Coordinate project related work of various agencies such as State Agricultural Universities (SAUs), ICAR Institutes, Voluntary agencies and development departments
- Serve as feedback point for research and extension systems
- Maintain liaison with research and extension institutions
- Coordinate agri-based schemes for successful implementation and better convergence with State/Central Government departments

### KVKs in ATARI, Jabalpur

The Institute monitors the activities of 82 KVKs in the two states namely Madhya Pradesh and Chhattisgarh.

**Table 1.1: KVKs across the two state in the Zone IX**

State	No of Districts	No. of of KVKs					
		SAU	VU	CU	NGO	ICAR	Total
Chhattisgarh	28	27	01	0	0	0	28
Madhya Pradesh	52	44	0	01	08	01	54
<b>Total</b>	<b>80</b>	<b>71</b>	<b>01</b>	<b>01</b>	<b>08</b>	<b>01</b>	<b>82</b>

SAU - State Agricultural University; VU- Veterinary University, CU- Central University, NGO - Non-Governmental Organization; ICAR - Indian Council of Agricultural Research.

### Krishi Vigyan Kendra

Realizing the role and importance of improved technology in the agriculture development for increasing food and nutritional security, Indian Council of Agricultural Research made an institutional innovation in the form of KVK. It was also envisaged that technology assessed by the KVK will be used as model for the Line departments and act as a catalyst to improve the existing systems for better delivery mechanism. For proper functioning, major emphasis was given on the strengthening of physical infrastructure and human resource development in the KVKs. The name of the host institutions managing the KVKs is given in Table 1.2.

**Table 1.2: Institutional set-up of KVKs under ATARI, Zone IX.**

Host Institution	No. of KVKs
<b>A. Madhya Pradesh</b>	<b>54</b>
Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur	22
Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior	22
Indira Gandhi National Tribal University, Amarkantak	1
ICAR-Central Institute of Agricultural Engineering, Bhopal	1
Deen Dayal Research Institute, Chitrakoot, Satna	1
Kasturba Gandhi National Memorial Trust, Indore	1
Lokmata Devi Ahilyabai Holkar Social National Mission, Burhanpur	1
Kalukheda Shikhcha Samiti, Jaora, Ratlam	1
Deen Dayal Krishi Vikas Awam Anusandhan Samiti (DKVAAS) Bhopal	1
Centre for Rural Development and Environment, Sehore	1
KVK, Vidisha (non-functional)*	1
Bhausahab Bhuskute Smriti Lok Nyas Sansthan, Bankhedi, Hoshangabad	1
<b>B. Chhattisgarh</b>	<b>28</b>
Indira Gandhi Krishi Vishwa Vidyalaya, Raipur	27
Chhattisgarh Kamdhenu Vishwa Vidyalaya, Durg	1

\*KVK Vidisha to be reopened

### Mandates of KVK

Assessment, refinement and demonstration of technology/products.

### Activities of KVK

- On farm testing to identify the location specific technologies in various farming systems
- Frontline demonstrations to establish production potentials of newly released technologies on farmers' fields and provide feedback
- Training of farmers and farm women to update their knowledge and skills in modern agricultural technologies and training of extension personnel to orient them in the frontier areas of technology development
- Work as knowledge and resource centre of agricultural technologies for supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district
- Create awareness about frontier technologies through various extension activities like Farmer fair, Field days, Strategic campaign, Ex-trainees meet, etc.
- Seed and planting materials production for making available to the farmers.

### Staff Position

KVKs have sanctioned staff of 16 members. The current staff position in KVKs of Zone-IX is given in Table 1.3. Out of the total posts, 60.75 per cent are filled while remaining 39.25 per cent are lying vacant. The percentage of vacant posts are comparatively higher in case of technical and administrative categories.

**Table 1.3. Staff position in KVKs under ATARI, Jabalpur**

State	No. of KVKs	Senior Sci. & head (1)		SMS (6)		PA (3)		Admn. (6)		Total (16)	
		Sanc.	Filled	Sanc.	Filled	Sanc.	Filled	Sanc.	Filled	Sanc.	Filled
Madhya Pradesh	54	54	40	324	190	162	110	324	154	864	494
Chhattisgarh	28	28	18	168	137	84	69	168	79	448	303
<b>Total</b>	<b>82</b>	<b>82</b>	<b>58</b>	<b>492</b>	<b>327</b>	<b>246</b>	<b>179</b>	<b>492</b>	<b>233</b>	<b>1312</b>	<b>797</b>

The detail of budgetary provision of KVKs under Zone-IX, Jabalpur is given in Table 1.4.

**Table 1.4: Budgetary provision of KVKs and ICAR- ATARI, Zone IX (Rs. in lakh)**

S. no.	States & Institute	Rs. in lakh		
		Pre revised Estimate	Revised Estimate	Total Release/ Expenditure
1	Madhya Pradesh	5406.90	5858.55	5858.55
2	Chhattisgarh	2934.75	3095.17	3095.17
4.	ATARI, Zone IX	293.69	244.003	244.003
	<b>Total</b>	<b>8635.34</b>	<b>9197.723</b>	<b>9197.723</b>

The details status of infrastructure facilities in KVKs under Zone-IX are given in Table 1.5.

**Table 1.5: Status of infrastructural facilities in KVKs under Zone-IX during 2020**

S. No.	States	No. of KVKs	Admn. Building			Trainees Hostel			Staff Quarters		
			Completed	In progress	NA	Completed	In progress	NA	Completed	In progress	NA
1	Madhya Pradesh	54	50	4	-	52	2	-	41	1	-
2	Chhattisgarh	28	22	6	-	24	4	-	6	-	-
	<b>Total</b>	<b>82</b>	<b>72</b>	<b>10</b>	<b>-</b>	<b>76</b>	<b>6</b>	<b>-</b>	<b>47</b>	<b>1</b>	<b>-</b>

### Agro-climatic Zones (ACZ) in Zone-IX, Jabalpur

There are 80 rural districts under the jurisdiction of Zone-IX, Jabalpur out of which 82 KVKs covered these districts. The coverage of KVKs under different agro-climatic zones is given in Table 1.6.

**Table 1.6: Agro-climatic Zones in ATARI, Jabalpur**

State	Agroclimatic Zones (ACZ)	KVKs	No. of KVKs
M. P.	Chhattisgarh Plains	Balaghat	01
	North Hills of Chhattisgarh	Shahdol, Umaria, Dindori, Mandla, Anuppur	05
	Bundelkhand Region	Datia, Tikamgarh, Chattarpur	03
	Gird Zone	Guna, Gwalior, Morena, Ashoknagar, Shivpuri, Sheopur, Bhind	07
	Kymore Plateau and Satpura Hills	Satna, Sidhi, Singarauli, Seoni, Jabalpur, Katni, Panna, Rewa	08
	Jhabua Hills	Jhabua, Alirajpur	02
	Malwa Plateau	Indore, Dhar, Dhar-II, Dewas, Shajapur, Ujjain, Mandsaur, Ratlam, Rajgarh, Neemach, Agar Malwa	11

State	Agroclimatic Zones (ACZ)	KVKs	No. of KVKs
	Nimar Valley	Khandwa, Kargone, Badwani, Burhanpur	04
	Satpura Plateau	Chhindwara, Betul, Chhindwara-II	03
	Vindhya Plateau	Sehore, Bhopal, Raisen, Sagar, Sagar-II Damoh, Vidisha	07
	Central Narmada Valley	Narsinghpur, Hoshangabad (Bankheddi), Harda	03
<b>Total</b>	<b>11 ACZs</b>		<b>54</b>
<b>CG</b>	Chhattisgarh Plains	Bilaspur, Durg, Baloda Bazar (Bhatapara), Raipur, Gariyaband, Raigarh, Dhamtari, Janjgir-Champa, Mahasamund, Korba, Kanker, Rajnandgaon, Kabirdham, Durg-II, Mungeli, Bemetra, Balod	17
	North Hills of Chhattisgarh	Surguja(Surajpur), Mainpat, Jashpur, Korea, Balrampur	05
	Bastar Plateau	Bastar, Dantewada, Bijapur, Narayanpur, Sukma, Kondagaon	06
<b>Total</b>	<b>3 ACZs</b>		<b>28</b>

### Thrust Areas of the KVKs under Zone-IX, Jabalpur

#### Nine broad thrust areas identified for the KVKs under ATARI-IX are:

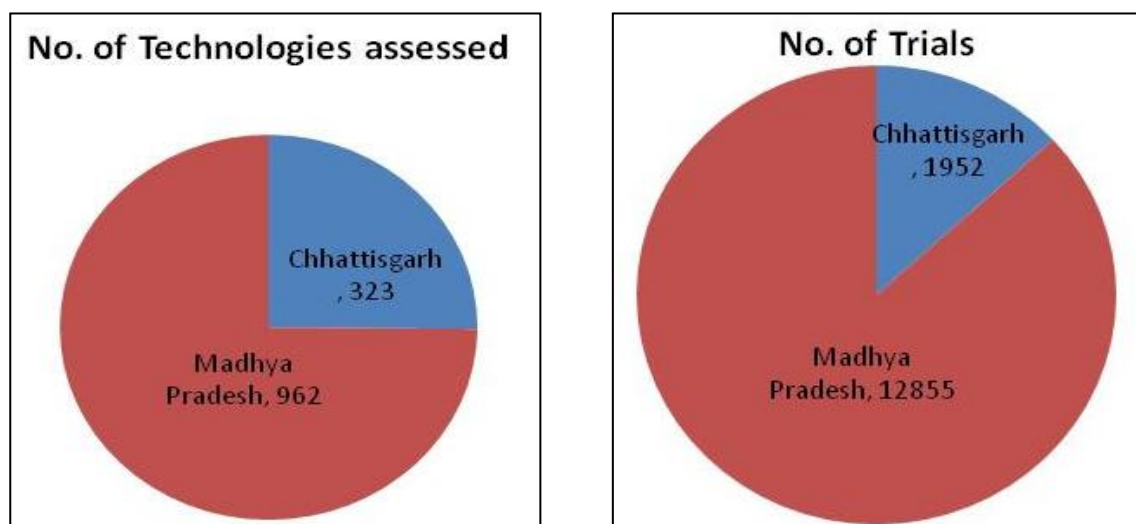
- Sustainable production system through location-specific assessment and demonstrations of technology.
- Resource conservation through watershed management, soil and water conservation including farm mechanization.
- Development and promotion of crop/enterprise diversification and alternate land use system.
- Integrated pest and disease management for cost reduction and clean environment.
- Promotion of rural entrepreneurship (livestock, goatery, poultry, fishery, mushroom, Lac, bee keeping etc. by production, processing, value addition and marketing) for additional income generation.
- Empowerment of farm women and youth through income generating activities and drudgery reduction.
- Alternate livelihood support system in rural sector for marginal farmers, landless labourers and farm women to check migration.
- Promoting climate resilient agriculture for supporting rainfed farming.
- Upscaling nutrition sensitive agriculture through nutri-Smart Village

## 2. TECHNOLOGY ASSESSMENT THROUGH ON-FARM TESTING

The claimed superiority of location- specific technologies were tested by KVKs through On-Farm Testing (OFTs). Technologies to the tune of 1,285 were tested in the Zone through 14,807 different trials (Table 2.1). The highest number of technologies were tested in the state of Madhya Pradesh (962) followed by Chhattisgarh (323). Out of these, 886 technologies were assessed on crops whereas remaining 399 technologies were on allied enterprises. In crops (cereals, pulses, oilseeds and vegetables), major focus has been on testing of location-specific technologies. The focus was on 'more crop per drop of water' through *in-situ* moisture conservation, drip irrigation and plastic mulching in vegetables, soil test based nutrient management etc. Among allied enterprises, fish production & management, farm mechanization, animal husbandry and poultry production & management were the priority areas.

**Table 2.1: State-wise overall technology assessed during 2020**

State	No. of Technologies assessed	No. of Trials
Chhattisgarh	321	1882
Chhattisgarh (ICT)	02	70
<b>Total</b>	<b>323</b>	<b>1952</b>
Madhya Pradesh	925	8345
Madhya Pradesh (ICT)	37	4510
<b>Total</b>	<b>962</b>	<b>12855</b>
<b>Grand Total</b>	<b>1285</b>	<b>14807</b>



**Figure-1: State-wise overall technology assessed during 2020**

Table 2.2: Crop wise OFTs conducted during 2020

Crop Category	Number of technologies assessed			No. of trials		
	CG	MP	Total	CG	MP	Total
Cereal	92	205	297	485	1527	2012
Pulses	36	125	161	178	863	1041
Oilseed	20	91	111	116	686	802
vegetable	48	102	150	264	611	875
Spices	12	73	85	67	520	587
Fruits	12	23	35	55	146	201
Flower	6	7	13	35	49	84
Cash	4	6	10	32	35	67
Milletts	4	4	8	16	30	46
Fiber	2	6	8	8	44	52
Fodder	2	6	8	8	42	50
<b>Grand Total</b>	<b>238</b>	<b>648</b>	<b>886</b>	<b>1264</b>	<b>4553</b>	<b>5817</b>

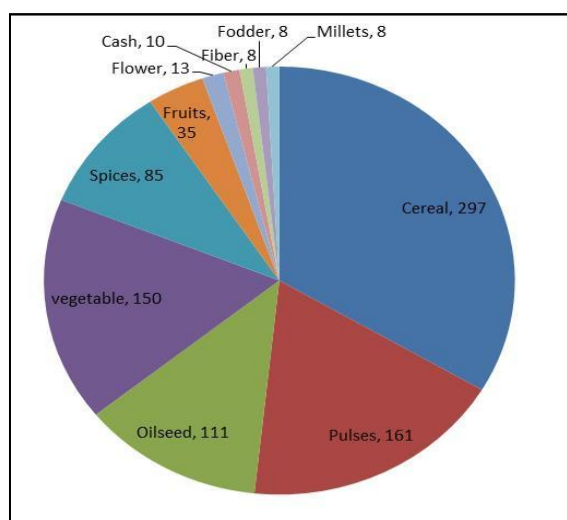
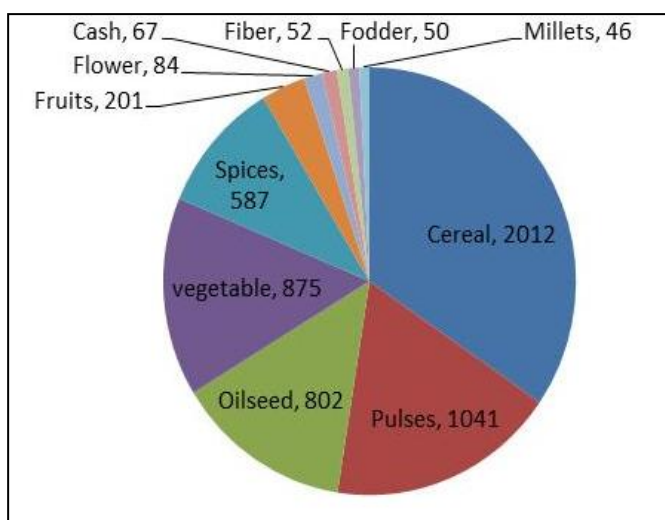


Figure- 3- Crop- wise technology assessed during 2020



Crop- wise no. of trials during 2020

Table 2.3: Thematic area wise OFTs conducted on crops

Thematic Area	Number of technology Assessed			No. of trials		
	CG	MP	Total	CG	MP	Total
Integrated Crop Management	45	49	94	235	362	597
Varietal Evaluation	40	232	272	224	1581	1805
Integrated Nutrient Management	38	95	133	196	692	888
Integrated Pest Management	37	107	144	202	729	931
Integrated Weed Management	29	30	59	164	249	413
Integrated Disease Management	17	54	71	90	371	461
Resource conservation Technology	8	19	27	31	120	151
Soil Fertility Management	6	24	30	27	211	238
Nursery raising	4	6	10	17	40	57
Agroforestry	5	13	18	35	65	100
Integrated Plant Nutrient Management	3	5	8	14	41	55
Feed and Fodder Production	2	3	5	8	27	35
Integrated Farming System	2	1	3	12	5	17
crop diversification	1	0	1	5	0	5
Inter cropping	1	10	11	4	60	64
<b>Grand Total</b>	<b>238</b>	<b>648</b>	<b>886</b>	<b>1264</b>	<b>4553</b>	<b>5817</b>

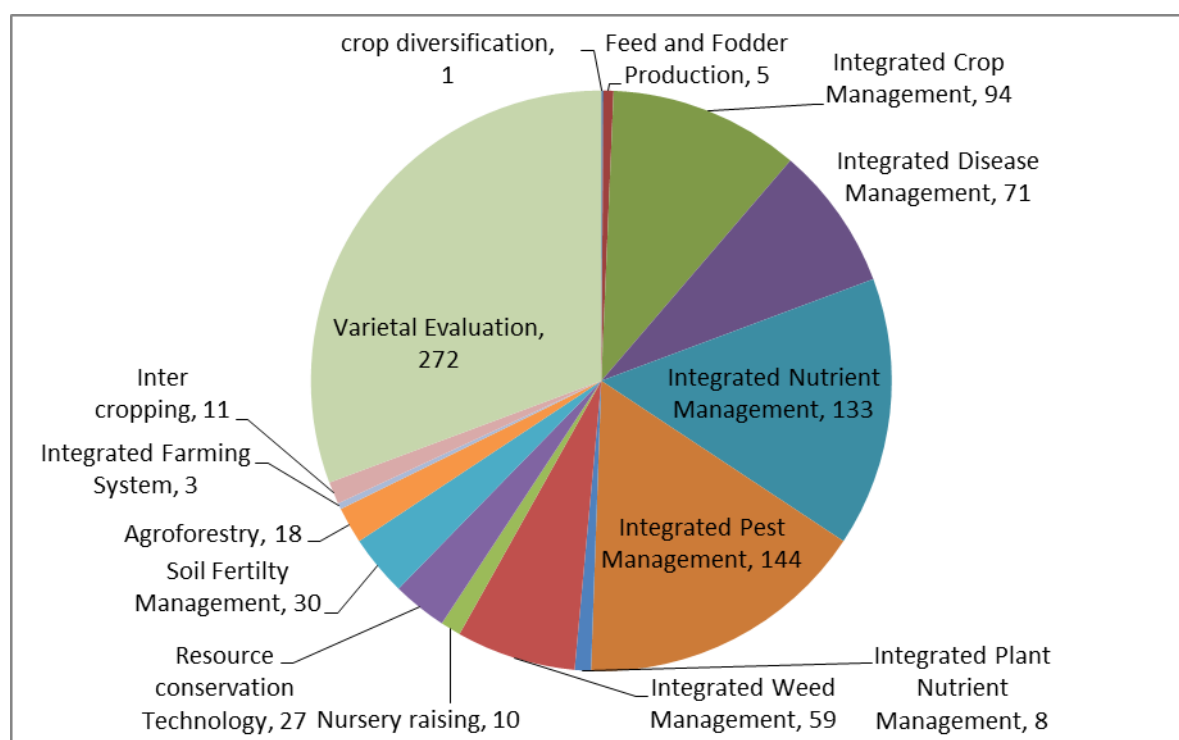
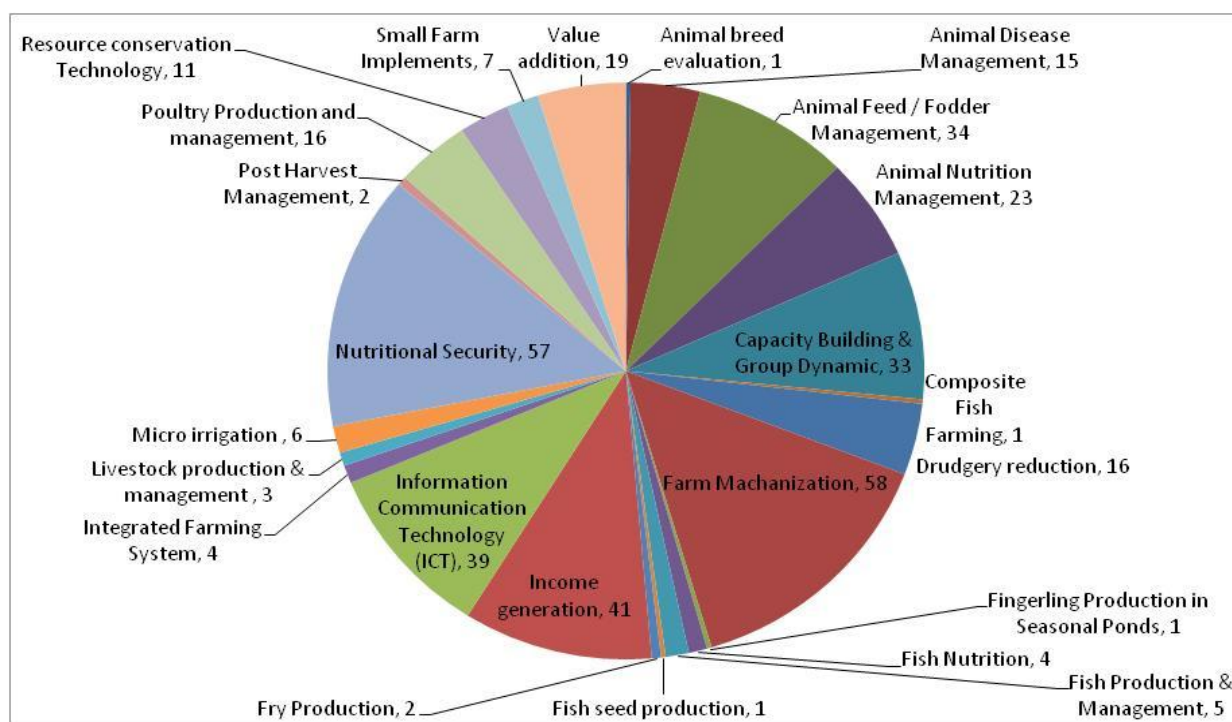


Figure- 3: Thematic area wise technology assessed on crops during 2020

**Table 2.4: Thematic area wise number of technologies assessed on enterprises**

Thematic Area	Number of technology Assessed			No. of trials		
	CG	MP	Total	CG	MP	Total
Farm Machanization	27	31	58	128	191	319
Micro -irrigation	1	5	6	3	46	49
Post Harvest Management	2	0	2	10	0	10
Resource Conservation Technology	1	10	11	5	48	53
Small Farm Implements	3	4	7	15	25	40
Integrated Farming System	2	2	4	12	10	22
Animal Breed evaluation	1	0	1	10	0	10
Animal Disease Management	4	11	15	18	80	98
Animal Feed / Fodder Management	6	28	34	43	204	247
Animal Nutrition Management	2	21	23	20	163	183
Livestock Production & Management	1	2	3	7	10	17
Poultry Production and Management	6	10	16	38	75	113
Fry Production	2	0	2	8	0	8
Fish Nutrition	1	3	4	4	10	14
Fish Production & Management	1	4	5	4	13	17
Fish Seed Production	1	0	1	4	0	4
Fingerling Production in Seasonal Ponds	1	0	1	4	0	4
Composite Fish Farming	1	0	1	4	0	4
Drudgery Reduction	0	16	16	0	124	124
Income Generation	6	35	41	63	209	272
Nutritional Security	4	53	57	40	383	423
Value Addition	7	12	19	28	84	112
Capacity Building & Group Dynamic	3	30	33	150	2117	2267
Information Communication Technology (ICT)	2	37	39	70	4510	4580
<b>Total</b>	<b>85</b>	<b>314</b>	<b>399</b>	<b>688</b>	<b>8302</b>	<b>8990</b>

**Figure- 4: Thematic area wise technology assessed on enterprises during 2020**

## TECHNOLOGIES ASSESSED FOR MAJOR CROPS/ENTREPRISES

## Varietal Assessment

## SOYBEAN

## Varietal Assessment in Soybean

**Problem identified:** Low yield of soybean due to use of old variety

**Technology Assessed:** Assessment of soybean variety JS 20-29 and RVS 2001-4

Assessment of Improved variety JS 20-29 (T2) and RVS 2001-4 (T3) against traditional variety of Soybean JS 95-60 (T1) along with recommended production practices is being taken up by several KVKs Viz Chhindwara, Betul, Tikamgarh, Umaria, Anuppur, Burhanpur, Ratlam, Raisen, Sehore, Khargone, Agar Malwa, Neemuch, Shivpuri, Ujjain, Dhar, Kawardha, Barwani, Sheopur and Gwalior. These KVKs conducted 163 OFTs to assess the performance of soybean variety JS 20-29 and RVS 2001-4. The results of the assessment showed that RVS 2001-4 gave 33.8 and 4.0 per cent higher yield over the T1 and T2 respectively. The pods per plant also increased by 24.2 and 3.0 per cent over T1 and T2 respectively. The economic analysis showed that the net return was Rs 29389/ha with this variety along with 1.3 higher BC ratio over farmer's practice. Another assessed variety JS 20-29 (T2) also performed well which produced 28.58 per cent higher yield over T1 and the net return was Rs 29190 / ha along with 1.2 higher BC ratio over T1. Due to higher production performance RVS 2001-4 is adopted by the farmers in the soybean growing districts of Madhya Pradesh followed by JS 20-29.

**Table 2.5. Performance of soybean variety JS 20-29 and RVS 2001-4**

Details	No. of trials	Yield (q/ha)	No. of pods/plant	Net Return (Rs/ha)	B:C Ratio
Soybean variety JS 95-60 (Farmers' practice) T1	163	10.11	25	16060	1.9
Soybean variety JS 20-29/ (Recommended practice) T2		13.0	31	29190	3.1
Soybean variety RVS 2001-4 (Recommended practice) T3		13.53	33	29389	3.2



Soybean variety JS 20-29



Soybean variety RVS 2001-4

## RICE

## Varietal Assessment in Rice

**Problem identified:** Low yield of rice due to use of medium duration variety in rainfed condition

**Technology Assessed:** Assessment of improved rice variety DRT-1, JR-81, DRR-42, JR-201, Pusa 1637, Pusa 1728 and RRF 105

Under rainfed upland situations, selection of variety is the most important factor responsible for optimal productivity of rice. With the use of improved early and drought tolerant variety, the productivity of the crop can be enhanced. Keeping in view the above, KVKs of Balaghat Damoh, Panna, Anuppur, Govindnagar Hoshangabad, Raisen, Dhamtari, Durg-II, Kanker, Bemetara and Dantewada of the Zone planned and conducted 97 OFTs to assess the performance of the improved early and drought tolerant rice varieties DRT-1, JR-81, DRR-42, JR-201, Pusa 1637, Pusa 1728 and RRF 105. The results showed that the yield of this variety was 26.16 per cent higher over the farmers' practice ( $T_1$ ). The number of effective tillers/hill observed to be high by 40 per cent over farmer's practice ( $T_1$ ). The incremental net return and BC ratio was found Rs 12279.7 per ha and 0.20 respectively with this variety as compared to the farmers practice. The variety gave very good performance in limited irrigation condition. The cumulative effects of superior growth and yield attributes were finally reflected in terms of higher grain yield and economics.

**Table 2.6. Performance of improved rice variety on farmers Field**

Details	No. of trials	Yield (q/ha)	No. of effective tillers/hill	Net Return (Rs/ha)	B:C Ratio
Medium duration rice varieties under rainfed situation-IR 36/IR 64 (Farmers' practice- $T_1$ )	97	28.32	12.5	38658.3	2.2
Improved early and drought tolerant rice variety (Improved variety- $T_2$ )		35.73	17.5	48938.1	2.4



Sowing of seed



Drought resistant variety of Rice "RRF-105"

## BLACKGRAM

### Varietal Assessment in Blackgram

**Problem identified:** Low yield due to use of medium duration variety in rainfed condition

**Technology Assessed:** Assessment of improved Blackgram variety Pratap urd 1 and Sekhar2

Assessment of improved variety Pratap urd 1 and Sekhar 2 of Blackgram along with recommended production practices are being taken up by KVK Sagar, Datia, Gwalior and Shivpuri for enhancing the yield and income of farmers. Since most of the farmers lack knowledge about high yielding diseases resistant varieties and get lower yields culminating in limited net returns. The performance of blackgram production through varietal replacement under mentioned district in Madhya Pradesh was assessed. Results showed that the adoption of improved variety enhanced 44.26% yield and net returns by 66.39 % over locally cultivated varieties. Average yield of 8.8 q/ha was obtained under improved variety as compared to existing farmers practices yield of 6.1 q/ha. The returns per rupee investment were accordingly reflected in improved variety (2.6) as compared to locally cultivated varieties (2.0). On the basis of B:C ratio, 30 per cent more economic return was obtained under improved technology over old/degenerated variety. The result suggests economic viability and agronomic feasibility of adopted module in blackgram cultivation.

**Table 2.7. Performance of improved variety of blackgram on farmers field.**

Details	No. of trials	Yield (q/ha)	No. of pods/plant	Net Return (Rs/ha)	B:C Ratio
Short duration blackgram varieties rainfed situation (Farmers' practice-T <sub>1</sub> )	30	6.1	11	14826.5	2.0
Improved blackgram variety Pratap Urd 1 and Sekhar 2 (Recommended practices T <sub>2</sub> )		8.8	15	24670.8	2.6



Improved variety of Black gram Pratap Urd 1



## GREENGRAM

### Varietal assessment in Greengram

**Problem identified:** Low yield of greengram due to use of unsuitable variety (TJM 37) in rainfed condition

**Technology Assessed:** Assessment of improved green gram varieties MH-421 and Sikha

Several KVKs viz Harda, Dindori, Umariya, Burhanpur and Hoshangabad have made consistent efforts to popularize the improved variety MH-421 and Sikha along with recommended production technology since *kharif* season for enhancing the yield and income of farmers. Most of the farmers lack knowledge about high yielding disease resistant varieties and thereby getting lower yields culminating in limited net returns. Enhancement of Greengram production through varietal replacement in the above mentioned district, which resulted in 25.9 per cent increased yield and their yield attributes 27.8 percent and 26.9 percent enhance the B:C ratio under recommended practices over the traditional farmers practices. The returns per rupee invested was found 3.3 in case of improved variety (MH 421 and Sikha) as compared to 2.6 in locally cultivated varieties with traditional farmers practice. The achievements and outcome of improved variety (MH 421 and Sikha) are outstanding. Greengram has registered significant increase in productivity and returns per rupee investment. It is possible due to introduction of high yielding disease resistant variety along with improved technology against farmer practices.

**Table 2.8. Performance of improved variety MH 421 and Sikha of Greengram**

Details	No. of trials	Yield (q/ha)	No. of pods/Plant	Net Return (Rs/ha)	B:C Ratio
Use of old variety-TJM 37 (Farmers' practices-T <sub>1</sub> )	31	10.8	14	28705.2	2.6
Improved greengram variety MH 421 and Sikha (Recommended practices T <sub>2</sub> )		13.6	18	45308.4	3.3



Green gram variety IPM 410-3 (Shikha)- Vegetative stage



Green gram variety MH 421

**PIGEONPEA****Varietal assessment in Pigeonpea**

**Problem identified:** Low yield of Pigeonpea due to use of unsuitable variety (JA 4 or asha) in rainfed condition

**Technology Assessed:** Assessment of improved varieties of Pigeonpea Pusa 16 and TJT 501 in limited irrigated condition

The average grain yield obtained by farmers in this region is generally low, because farmers were grown unimproved variety. While growing of improved variety of pigeonpea to meet out the demand of increasing population pressure as well as the need to minimize the risk of crop failure in erratic climatic situation. Therefore, the broad objective of the assessed improved

variety under the supervision of scientist for across the state (MP and CG). KVKs Panna, Ashoknagar, Shivpuri and Ujjain have made consistent efforts to popularize the improved variety Pusa 16, Rajeev Lochan and TJT 501 along with recommended production technology in *kharif* season for enhancing the yield and income of farmers. Since most of the farmers lack of knowledge about high yielding diseases resistant varieties and thereby harnessing lower yields culminating in limited net returns. The present study deals with enhancement of pigeonpea production through varietal replacement in the above-mentioned district, which resulted 28.2 per cent increase yield and their yield attributes 36.3 percent and 13.9 percent enhance the B:C ratio under recommended practices over the traditional farmers practices. The returns per rupee invested was found 4.1 in case of improved variety (Pusa 16, Rajeev Lochan and TJT 501) as compared to 3.6 in locally cultivated varieties with traditional farmers' practice. The achievements and outcome of improved variety (Pusa 16, Rajeev Lochan and TJT 501) are outstanding. Pigeonpea has registered significant increase in productivity and returns per rupee investment. It is possible due to introduction of high yielding disease resistant variety along with improved technology against farmer practices.

**Table 2.9. Performance of improved variety Pusa 16, Rajeev Lochan and TJT 501 of pigeonpea**

Details	No. of trials	Yield (q/ha)	No. of pods/Plant	Net Return (Rs/ha)	B:C Ratio
Use of old variety-JA 4 (Farmers' practices-T <sub>1</sub> )	38	12.4	34	48525.3	3.6
Improved Pigeonpea variety Pusa 16 and TJT 501 (Recommended practicesT <sub>2</sub> )		15.9	46	66435.2	4.1



Improved variety -Pusa 16



Flowering stage

## WHEAT

### Varietal assessment in Wheat

**Problem identified:** Low yield of wheat due to use of unsuitable variety (Lok 1) in restricted irrigation condition

**Technology Assessed:** Assessment of improved wheat varieties JW 3269 and JW 3288 in restricted irrigation condition

Use of farmers variety is an important factor for declining wheat productivity at farmers' field under restricted irrigation condition. With the use of improved variety under restricted irrigation condition, the production and productivity of the crop can be enhanced to desired

level. Keeping this in view, KVK Balaghat, Betul, Rewa, Sidhi, Anuppur, Hoshangabad, Raisen Ratlam, Ratlam, Sehore, Agar Malwa, Dhar, Guna, Gwalior, Khargone, Khargone, Mandasaur, Shajapur, Ujjain, Gariyaband, Harda, Panna and Sheopur conducted 176 on farm trials to assess the performance of the improved varieties JW 3288, JW 3211, JW 3269, Pusa Mangal, Pusa Anmol, GW 273 and MP 1203 ( $T_2$ ) of wheat under limited irrigation condition. The results showed that the yield of improved variety was noted to be 22.5 per cent high over the farmers' variety (Lok 1). The number of effective tillers per  $m^2$  was recorded by 35.9 per cent higher over farmers' practice. The incremental net return and BC ratio was found Rs 14198 per ha and 0.4 units with this variety over the farmers variety.

**Table 2.10. Performance of improved variety JW 3288 of wheat**

Details	No. of trials	Yield (q/ha)	No. of tiller/ $m^2$	Net Return (Rs/ha)	B:C Ratio
Wheat old variety-Lok 1 (Farmers' practices- $T_1$ )	176	35	172	46747.8	2.9
Improved variety of Wheat ( $T_2$ )		42.9	234	60946.6	3.3



Improved variety JW 3288

## CHICKPEA

### Varietal assessment of Chickpea

**Problem identified:** Low yield of chickpea due to use of old variety which is susceptible to wilt in rain fed condition.

**Technology Assessed:** Assessment of improved Chickpea varieties JG 14 and JG 12 in rainfed condition

Most cultivars grown by farmers are old and only a few of the released cultivars are widely grown in this region. One of the main reasons for low cultivar replacement rates is that farmers have inadequate exposure to new cultivars. If adoption rates are to be improved, farmers need to try a wide range of novel cultivars in their fields by verification trial OFT. Newly released variety have higher potential and tolerant & resistant to pest than the exiting variety. In this regards KVKs Balaghat, Betul, Chhatarpur, Anuppur, Hoshangabad, Dhar and Barwaniwere assessed different cultivar JG 12 and JG 14 at farmers field to enhance the yield and income per unit area. This intervention enhanced the yield 33.9 percent and number of pods/plant by 48.6 percent and income per rupees investment by 26.1 percent respectively than farmer traditional cultivar. Because newly improved varieties have tolerant to abiotic stress and resistant to biotic stress and more foliage/canopy developed which have beneficial in

more interception of sunlight and more absorption of available or given resource which ultimately enhanced the yield per unit area.

**Table 2.11. Performance of improved variety JG 12 and JG 14 of chickpea.**

Details	No. of trials	Yield (q/ha)	No. of pods/plant	Net Return (Rs/ha)	B:C Ratio
Chickpea old variety-JG 315 (Farmers' practices-T <sub>1</sub> )	42	10.6	15	30513	2.3
Improved variety (JG 14 and JG 12) of chickpea (T <sub>2</sub> )		14.2	22	46653.6	2.9



Improved Chickpea variety JG-12-Vegetative stage



Improved Chickpea variety JG-14

## MUSTARD

### Varietal Assessment of Mustard

**Problem identified:** Low yield of mustard due to use of old varieties

**Technology Assessed:** Assessment of improved Varieties (RVM2, NRCHB-101, RH 749, CG-Sarson and RKH-101) of Mustard

While mustard growers wanted to increase area under improved mustard cultivation in next growing season considering the high yielding ability, low cultivation cost, high profit, and less labour requirements. Under such circumstance KVKs Guna, Gwalior, Mahasamund, Surguja and Sheopur have been conducted 38 on farm trial at farmers field to enhance the yield and income to improve their standard of living. Result showed that 13.2 per cent enhanced yield and 22.2 per cent enhanced B:C ratio as compared to farmers practice. While additional income was found Rs. 12348/ha under improved variety along with suitable package and practices. Farmers agree to adoption of this improved variety and their suitable package and practices.

**Table 2.12. Performance of improved variety (RVM2, NRCHB-101, RH 749, CG-Sarson and RKH-101) of Mustard**

Details	No. of trials	Yield (q/ha)	No. of silqua/plant	Net Return (Rs/ha)	B:C Ratio
Use of old variety Kalasona (Farmers' practice-T <sub>1</sub> )	38	11.4	127	24926	2.7
Use of improved variety RVM2, NRCHB-101, RH 749, CG-SARSON and RKH-101 (Recommended practice – T <sub>2</sub> )		12.9	145	37274	3.3



RH 749



CG-Sarson

## Integrated Nutrient Management

### Integrated Nutrient Management in Soybean

#### Sulphur Management and Mycorrhiza application in Soybean

**Problem identified:** Low yield of soybean due to sulphur deficiency and less root development due to shranked rhizosphere

**Technology Assessed:** Assessment of response of sulphur and mycorrhiza along with NPK in soybean

Soybean is an important kharif oilseed crop grown in majority of areas of Madhya Pradesh. Imbalanced/indiscriminate use of major plant nutrients, no use of secondary and micronutrients are the major reasons for declining the yield of soybean. Farmers usually not apply recommended dose of NPK nor sulphur containing fertilizers; hence, the deficiency of the above elements occurs in the soil, which affects the soybean productivity. Sulphur is responsible for synthesis of amino acids and fatty acids which in turn increase the oil content in oilseeds and mycorrhiza increases the rhizosphere which in turn increases the root growth and nutrients availability especially P due to increased solubility. Looking the above problem, KVKs Guna, Indore, Jhabua and Rajgarh of the Zone planned and conducted 33 OFTs to assess the response of sulphur and mycorrhiza along with NPK; and applied Sulphur @ 20 kg/ha through bentonite sulphur, NPK @ 20:60:20 kg/ha on soil test basis (T<sub>2</sub>) and Rhizobium & PSB @ 5 g/kg as seed inoculation + mycorrhiza @ 25 kg/ha + FYM – 5 t/ha + 75% of NPK @ 20:60:40 kg/ha, Sulphur @ 20 kg/ha(T<sub>3</sub>). The results showed that the seed yield under T<sub>3</sub> was 28.4 and 7.65 per cent higher over the farmers' practice (T<sub>1</sub>) and T<sub>2</sub> respectively. The number of pods per plant was also increased by 39.06 and 9.56 per cent over T<sub>1</sub> and T<sub>2</sub> respectively with the assessed technology. Similarly the incremental net return and BC ratio was Rs. 8,480 and 0.41 units over farmer's practice with the assessed technology in T<sub>3</sub>. The assessed technology in T<sub>2</sub> also performed well and gave 28.38 per cent higher yield over farmer's practice with the incremental net return and BC ratio of Rs. 6,075 and 0.25 respectively. On the basis of the above findings it may be concluded that the assessed technology under T<sub>3</sub> and T<sub>2</sub> are effective as these increases the crop yield *vis-a-vis* maintains the soil health and fertility.

**Table 2.13. Response of sulphur and Mycorrhiza along with NPK in soybean**

Details	No. of trials	Yield (q/ha)	No. of pods/ plant	Net Return (Rs/ha)	B:C Ratio
NPKSZn @ 10:28:0:0 kg/ha (Farmers' practice-T <sub>1</sub> )	33	8.77	13.85	8622	1.65
NPK @ 20:60:20 kg/ha, Sulphur @ 20 kg/ha and Zn @ 5 kg/ha (T <sub>2</sub> )		10.46	17.58	13078	1.86
Rhizobium & PSB @ 5 g/kg as seed inoculation + Mycorrhiza @ 25 kg/ha + FYM – 5 t/ha + 75% of NPK @ 20:60:40 kg/ha, Sulphur @ 20 kg/ha (T <sub>3</sub> )		11.26	19.26	14697	1.90



75 % NPK alongwith biofertilizers in soybean



### Integrated Nutrient Management in Rice

**Problem identified:** Low yield of rice due to inadequate application of fertilizers

**Technology Assessed:** Assessment of balance application of NPK in rice through organic and inorganic sources

Among the cereals rice is an important crop of *kharif* season grown across the zone in low and midlands. Imbalanced/indiscriminate application of fertilizers and no use of organic sources are the major reasons for declining yield of rice. Looking the above problem, KVKs of Shahdol and Umaria of the Zone conducted 15 OFTs to assess the balance application of NPK through organic and inorganic sources; and taken sunhemp for green manuring and applied 25% NPK through vermicompost and BGA with integration of 50% of RDF (NPK @100:60:40 Kg/ha based on STV) through inorganic fertilizers(T<sub>2</sub>) and sunhemp for green manuring with integration of 75% of RDF (NPK @ 100:60:40 Kg/ha based on STV) through inorganic fertilizers(T<sub>3</sub>). The results showed that the rice yield was 33.92 and 34.6 per cent higher in T<sub>2</sub> and T<sub>3</sub> respectively over farmers' practice. Similarly number of tillers/hill increased by 47.15 and 59.25 per cent in T<sub>2</sub> and T<sub>3</sub> respectively over farmer's practice. The incremental net return and BC ratio was recorded to be Rs. 26308, 26546 and 0.51, 0.6 units in T<sub>2</sub> and T<sub>3</sub> respectively over farmer's practice. On the basis of the above findings it may be concluded that the technology assessed in T<sub>2</sub> and T<sub>3</sub> is effective as it increases the crop yield and maintains the

soil health.

**Table 2.14. Response of green manuring and application of NPK in Rice**

Details	No. of trials	Yield (q/ha)	No. of effective tillers/ hill	Net Return (Rs/ha)	B:C Ratio
NPK @ 62:40:0 kg/ha (Farmers' practice-T <sub>1</sub> )	15	45.31	29.5	64874	3.89
Sunhemp green manuring + 25% NPK through vermicompost and BGA + 50% of RDF (NPK @100:60:40 Kg/ha based on STV) through inorganic fertilizers(Recommended practice-T <sub>2</sub> )		60.68	43.41	91182	4.40
Sunhemp green manuring + 75% of RDF (NPK @100:60:40 Kg/ha based on STV) through inorganic fertilizers(Recommended practice-T <sub>3</sub> )		60.99	46.98	91420	4.49



Balance application of NPK

### NPK and Zinc Management in Rice

**Problem identified:** Low yield of rice due to imbalanced use of fertilizers

**Technology Assessed:** Assessment of soil test based NPK and Zn application in rice through inorganic sources with vermicompost and biofertilizers

Rice is an important kharif cereal which is used as staple food by most of the population, grown across the zone in low and midlands. Imbalanced/indiscriminate application of fertilizers and no use of organic sources are the major reasons for declining yield of rice. Looking the above problem, KVKs of Gwalior, Rajnandgaon, Rewa and Seoni of the Zone conducted 32 OFTs to assess the STV based application of NPK and Zn through inorganic sources and organic sources; and applied Biofertilizers (Azospirillum & PSB @ 3kg/ha) + NPK @100:60:40 Kg/ha based on STV through inorganic fertilizers + Zn @ 5 kg/ha (T<sub>2</sub>) and Vermicompost- 3 ton/ha + Biofertilizers (Azospirillum & PSB @ 3kg/ha) +75% of RDF (100:60:40 Kg NPK/ha based on STV through inorganic fertilizers) + Zn @ 5 kg/ha(T<sub>3</sub>). The results showed that the rice yield was 23.7 and 25.84 per cent higher in T<sub>2</sub> and T<sub>3</sub> respectively over farmers' practice. Similarly number of tillers/hill increased by 33.53 and 43.21 per cent in T<sub>2</sub> and T<sub>3</sub> respectively over farmer's practice. The incremental net return and BC ratio was recorded to be Rs. 14016, 15107 and 0.34, 0.38 units in T<sub>2</sub> and T<sub>3</sub> respectively over farmers

practice. On the basis of the above findings it may be concluded that the technology assessed in T<sub>2</sub> and T<sub>3</sub> is effective as it increases the crop yield and maintains the soil health.

**Table 2.15. Response of vermicompost and biofertilizers with balance application of NPK and Zn in Rice**

Details	No. of trials	Yield (q/ha)	No. of effective tillers/ hill	Net Return (Rs/ha)	B:C Ratio
NPK @ 68:38:0 kg/ha (Farmers' practice-T <sub>1</sub> )	32	35.22	23.65	35081	2.17
Biofertilizers (Azospirillum & PSB @ 3kg/ha) +NPK @100:60:40 Kg/ha based on STV through inorganic fertilizers + Zn @ 5 kg/ha (Recommended practice-T <sub>2</sub> )		43.57	31.58	49097	2.51
Vermicompost- 3 ton/ha + Biofertilizers (Azospirillum & PSB @ 3kg/ha) +75% of RDF (100:60:40 Kg NPK/ha based on STV through inorganic fertilizers) + Zn @ 5 kg/ha (Recommended practice-T <sub>3</sub> )		44.32	33.87	50188	2.55

### Integrated Nutrient Management in Blackgram

**Problem identified:** Low yield of blackgram due to inadequate application of fertilizers

**Technology Assessed:** Assessment of integrated application of nutrients in Blackgram

Blackgram is an important pulse crop grown across the zone during *kharif* season. Use imbalanced/indiscriminate applications of chemical fertilizers and no use of organic sources are the important factors for declining yield of blackgram. Integrated use of organic manures and inorganic fertilizers help in sustaining the fertility and facilitates all the essential nutrients to the crop. Looking the above problem, KVKs of Bilaspur, Guna, Panna and Raigarh of the Zone conducted 21 OFTs to assess the inoculation of Rhizobium and PSB @ 5 g/kg seed and application of NPK @ 20:50:20 kg/ha based on STV(T<sub>2</sub>) and Inoculation of Rhizobium and PSB @ 5 g/kg seed, vermicompost @ 3t/ha and 75% of RDF (NPK@ 20:50:20 kg/ha) based on STV (T<sub>3</sub>) at farmer's field. The results showed that the seed yield was 38.1 and 49.8 per cent higher in T<sub>2</sub> and T<sub>3</sub> respectively over farmers' practice. Similarly number of pods/plant also increased by 22.18 and 26.95 per cent in T<sub>2</sub> and T<sub>3</sub> respectively over farmer's practice. The incremental net return and BC ratio was recorded to be Rs. 10419 and 0.62 units higher over farmer's practice with the assessed technology in T<sub>3</sub>. On the basis of the above findings it may be concluded that the technology assessed in T<sub>3</sub> was more effective (followed by T<sub>2</sub>) as it increases the crop yield and maintains the soil fertility.

**Table 2.16. Performance of Integrated Nutrient management in Blackgram**

Details	No. of trials	Yield (q/ha)	No. of pods/plant	Net Return (Rs/ha)	B:C Ratio
Application of NPK @ 9:23:0 kg/ha (Farmers' practice-T <sub>1</sub> )	21	5.04	19.29	15042	2.06

Inoculation of Rhizobium and PSB @ 5 g/kg seed and application of NPK@ 20:50:20 kg/ha based on STV (Recommended practice-T <sub>2</sub> )	6.96	23.57	23596	2.65
Inoculation of Rhizobium and PSB @ 5 g/kg seed, vermicompost @ 3 t/ha and 75% of RDF (NPK@ 20:50:20 kg/ha) based on STV (Recommended practice-T <sub>3</sub> )	7.55	24.49	25461	2.68



Integrated Nutrients management of blackgram

### Integrated Nutrient Management in Maize

#### Nutrient Management in hybrid maize

**Problem identified:** Low grain yield of maize due to inadequate application of fertilizers

**Technology Assessed:** Assessment of integrated nutrient management in hybrid maize

Maize is one of the most nutrient exhaustive crops among the cereals, grown in summer and kharif season across the zone on mid and uplands. Use imbalanced/indiscriminate applications of chemical fertilizers and no use of organic sources are the important factors for declining grain yield of maize especially in hybrids. Integrated use of organic sources and inorganic fertilizers help in sustaining the productivity and facilitates all the essential nutrients to the crop as per the demand during the cropping period. Looking the above problem, KVKs of Dhar-II, Harda, Jhabua, Khargone, Rajnandgaon and Sarguja of the Zone conducted 43 OFTs to assess the application of NPKZn @ 120:60:40:5 kg/ha based on STV (T<sub>2</sub>) and FYM @ 5 t/ha + Biofertilizers (Azotobactor & PSB @ 2.5 kg/ha) and 75% RDF (NPK@ 120:60:40 kg/ha) + Zn @ 5 kg/ha based on STV (T<sub>3</sub>) at farmers field. The results showed that the seed yield was 33.42 and 46.29 per cent higher in T<sub>2</sub> and T<sub>3</sub> respectively over farmers' practice. Similarly number of cobs also increased by 17.5 and 27.5 per cent in T<sub>2</sub> and T<sub>3</sub> respectively over farmer's practice. The incremental net return and BC ratio was recorded to be Rs.17487 and 0.73 units higher over farmer's practice with the assessed technology in T<sub>3</sub>. On the basis of the above findings it may be concluded that the technology assessed in T<sub>3</sub> was more effective (followed by T<sub>2</sub>) as it increases the crop yield and maintains the soil fertility.

**Table 2.17. Performance of Integrated nutrient management in hybrid maize**

Details	No. of trials	Yield (q/ha)	Cobs/plant (No.)	Net Return (Rs/ha)	B:C Ratio
No use of FYM/compost and application of NPKZn @ 37:36:0:0 kg/ha through chemical fertilizers (Farmers' practice-T <sub>1</sub> )	43	39.53	1.2	51698	2.76
Application of NPKZn @ 120:60:40:5 kg/ha based on STV through chemical fertilizers (Recommended practice-T <sub>2</sub> )		52.74	1.41	62847	3.42
FYM @ 5 t/ha + Biofertilizers (Azotobactor & PSB @ 2.5 kg/ha) and 75% RDF (NPK@ 120:60:40 kg/ha) + Zn @ 5 kg/ha based on STV (Recommended practice-T <sub>3</sub> )		57.83	1.53	69185	3.49



Integrated Nutrient Management in Maize

### Integrated Nutrient Management in Wheat

**Problem identified:** Low yield of wheat due to imbalanced/indiscriminate use of fertilizers and no use of zinc

**Technology Assessed:** Assessment of soil test based NPK and zinc application in irrigated wheat through inorganic and organic sources

Wheat is second most nutrient demanding crop among the cereals grown in *rabi* season under irrigated ecosystem. In addition to major nutrients, micronutrient such as zinc is equally important for better crop production. Imbalanced/indiscriminate uses of nutrients are one of the major reasons for declining yield of wheat. Farmers are using imbalanced dose of NPK fertilizers hence, the nutrient availability is declining gradually which significantly affects the crop yield. Looking the above problem, KVK Guna, Khandwa, Mungeli, Panna and Raisen of the zone planned and conducted 32 on farm trials to assess the use of NPK @ 100:60:40 kg/ha + 5 kg Zinc /ha (T<sub>2</sub>) and use of biofertilizers inoculation (azotobactor & PSB @ 5g/kg

seed and soil application @ 2.5 kg/ha) + FYM – 5 t/ha + 75 % of NPK @ 100:60:40 kg /ha + Zn @ 2.5 kg/ha (T<sub>3</sub>) on soil test value basis in wheat. The results showed that the crop yield in T<sub>3</sub> was 14.74 and 7.07 per cent higher over the farmers' practice (T<sub>1</sub>) and T<sub>2</sub> respectively. Similarly the number of effective tillers per plant was also increased by 37.76 and 15.63 per cent over the farmers' practice (T<sub>1</sub>) and T<sub>2</sub> respectively. The net return and BC ratio was also found to be higher by Rs.9313 and 0.44 with the assessed technology over farmer's practice. The technology is effective for irrigated situation as it increases the crop yield and maintains the soil health due to integrated use of organic and inorganic sources and creates favorable environment for optimum crop production.

**Table 2.18. Response of NPK and zinc application in irrigated wheat along with FYM and biofertilizers**

Details	No. of trials	Yield (q/ha)	No. of effective tillers/plant	Net Return (Rs/ha)	B:C Ratio
Use of NPKSZn @ 23:58:0:0:0 kg/ha (Farmers' practices-T <sub>1</sub> )	32	32.91	11.52	44685	3.23
Use of NPK @ 100:60:40 kg/ha + 5 kg zinc /ha based on STV (Recommended practice-T <sub>2</sub> )		37.76	15.87	49775	3.34
Use of Biofertilizers- azotobactor & PSB (seed treatment and basal application ) + FYM – 5 t/ha + 75% of NPK @ 100:60:40 kg /ha based on STV + Zn @ 2.5 Kg/ha (Recommended practice-T <sub>3</sub> )		40.43	18.35	53998	3.67



**Integrated application of NPK and zinc in irrigated wheat**

### Integrated Nutrient Management in Chickpea

**Problem identified:** Low yield of chickpea due to indiscriminate/inadequate application of fertilizers

**Technology Assessed:** Assessment of INM and seed inoculation of biofertilizers and ammonium molybdate in chickpea

Chickpea cultivation mostly affected by non-adoption of recommended package and practices but imbalanced/inadequate uses of NPK fertilizers are the major reasons for declining in seed yield of chickpea. Due to inadequate application of NPK fertilizers the status of available nutrients in soil continuously declining which is in turn affecting the crop yield due to improper plant nutrition. In addition to balanced application of NPK fertilizers, seed inoculation of biofertilizers and ammonium molybdate coating enhances the nodulation in chickpea and results in higher yield. Keeping the above in view, KVK Dewas, Jhabua and Panna of the zone conducted 23 on farm trials to assess the seed inoculation with Rhizobium and PSB @ 5 g/kg seed, seed coating with ammonium molybdate @ 1g/kg seed and application of NPK @ 20:60:20 kg/ha based on STV (T<sub>2</sub>) and application of FYM – 2.5 t/ha, seed inoculation with Rhizobium and PSB @ 5 g/kg seed, seed coating with ammonium molybdate @ 1g/kg seed and use of 75% of NPK (20:60:20 kg/ha) based on STV (T<sub>3</sub>). The results showed that the seed yield was 36.72 and 20 per cent higher in T<sub>3</sub> over T<sub>1</sub> and T<sub>2</sub> respectively. Similarly, the number of pods/plant also increased by 64 and 37.13 per cent over T<sub>1</sub> and T<sub>2</sub> respectively. The incremental net return and BC ratio was recorded to be Rs. 11346 and 0.41 over farmer's practice. On the basis of the above findings it may be concluded that the technology was effective as it served the purpose in obtaining the optimum yield and also helped in maintaining the soil health and fertility.

**Table 2.19. Response of INM in chickpea**

Details	No. of trials	Yield (q/ha)	No. of pods/plant	Net Return (Rs/ha)	B:C Ratio
Application of NPK @ 13:35:0 kg/ha (Farmers' practice -T <sub>1</sub> )	23	12.58	34.54	35454	2.50
Seed inoculation with Rhizobium and PSB @ 5 g/kg seed + seed coating with ammonium molybdate @ 1g/kg seed + application of NPK @ 20:60:20 kg/ha based on STV (Recommended practice -T <sub>2</sub> )		14.33	41.31	42381	2.72
FYM – 2.5 t/ha + Seed inoculation with Rhizobium and PSB @ 5 g/kg seed + seed coating with ammonium molybdate @ 1g/kg seed + 75% NPK of 20:60:20 kg/ha based on STV (Recommended practice -T <sub>3</sub> )		17.2	56.65	46800	2.91



Performance of NPK and molybdenum in chickpea

## Integrated Weed Management

### Weed Management in Soybean

**Problem identified:** Low yield of soybean due to improper weed management

**Technology Assessed:** Assessment of appropriate herbicides for weed management in soybean crop

The weeds emergesimultaneously with the crop plants and compete with soybean causing loss yield (35-55%) depending upon the weed flora (narrow leaved weeds or broad leaved weeds), density and duration of competition. Due to intermittent rainfall during rainy season and scanty labour, manual weeding at right stage is difficult and time consuming and expensive. Farmers rarely adopt inappropriate herbicides for weed management. In this regards KVKs Harda, Guna, Khargone, Shajapur, Ujjain, Rajnandgaon and Sheopur tested several appropriate herbicides (Diclozulam 26 g/ha. Imazethapyr 10SL@ 700ml ai/ha at 20 DAS Propaquizafop 2.5% + Imazethapyr 3.75% ME @ 125 g/ ha at 15 DAS+ 1 Kolpa at 30 DAS Carfentrazone ethyl @ 360 g a.i. g/ha (PE)) for proper weed management and enhance the production and productivity of soybean crop. The results showed that the seed yield and weed control efficiency was 27.5, 23.8 and 78.5 per cent higher under T<sub>3</sub> and T<sub>2</sub> over the farmers' practice (T<sub>1</sub>). The number of pods per plant was also increased by 19.2 per cent over T<sub>1</sub> with the assessed technology. Similarly the net return and BC ratio was Rs. 10200, 9432 and 0.04 respectively over farmer's practice with the assessed technology. The assessed technology under T<sub>2</sub> and T<sub>3</sub> are effective for proper weed management which increases the crop yield and their economics.

**Table 2.20. Performance of appropriate herbicides for weed management in soybean crop**

Details	No. of trials	Yield (q/ha)	No. of pods/plant	Net Return (Rs/ha)	B:C Ratio
Use of inappropriate herbicide Pendimethaline @ 2lit/ha or Imazthayper @ 75 g a.i. /ha (Farmers' practice-T <sub>1</sub> )	50	10.9	14	23344	2.2
Use of appropriate herbicide @ Imazethapyr 10SL@ 100 g a.i./ha/ha at 15 DAS (Recommoneded practices-T <sub>2</sub> )		13.5	18	32776.8	2.6

Details	No. of trials	Yield (q/ha)	No. of pods/plant	Net Return (Rs/ha)	B:C Ratio
Propaquizafop 2.5% + Imazethapyr 3.75% ME @ 125 g/ ha at 15 DAS(Recommended practices-T <sub>3</sub> )		13.9	19	33544.2	2.6



Performance of appropriate herbicides for weed management in soybean crop

### Weed Management in Rice

**Problem identified:** Low rice yield due to heavy weed infestation

**Technology Assessed:** Assessment of appropriate herbicide (Triafamone 20%+Ethoxysulfuron 10% W, Pyrazosulfuron-ethyl 10 % WP 20g a.i/ha and Penoxsulam 1.02% + Cyhalofopbutyl) for weed management in rice.

Weeds are one of the major constraints in rice production. Loss in rice yield resulting from weed competition has been estimated at 30-40% on the basis of infestation of weeds and duration of competition. Besides these environmental concerns and increasing herbicide-resistance in weeds, herbicides are extensively used in paddy fields as a major part of weed control strategy. Nowadays, paddy fields are treated with an appropriate combination of above mentioned herbicides to manage all type of weed flora against the farmers practices of inappropriate herbicide use. In this regards KVK Balaghat, Rewa, Bilaspur, Korba and Rajnandgaon conducted 31 on farm trials to assess the response of pre and post emergence herbicides i.e. Triafamone 20% + Ethoxysulfuron 10% W, Pyrazosulfuron-ethyl 10 % WP 20g a.i/ha and Penoxsulam 1.02% + Cyhalofopbutyl for weed management in rice. The results showed that the yield under the assessed appropriate herbicide was 15.8 per cent higher over T<sub>1</sub> (farmers' practice). The number of weeds per m<sup>2</sup> was reduced by 87.6 per cent over T<sub>1</sub>. Similarly the net return and BC ratio was also found to be higher by Rs. 12107 and 0.3 units with the assessed appropriate herbicide over farmer's practice.

**Table 2.21. Performance of appropriate herbicide for weed management in rice**

Details	No. of trials	Yield (q/ha)	No. of weeds/m <sup>2</sup>	Net Return (Rs/ha)	B:C Ratio
Use In appropriate herbicide (Farmers' practices-T <sub>1</sub> )	31	33.86	109	34938.96	2.0

Details	No. of trials	Yield (q/ha)	No. of weeds/m <sup>2</sup>	Net Return (Rs/ha)	B:C Ratio
Use of appropriate herbicide (Recommended practices T <sub>2</sub> )		39.22	13	47045.28	2.3
Percent enhance in yield and B:C ratio and Weed control efficiency		15.8	87		15.0



**Appropriate Herbicide applied for weed management**

### **Integrated Weed Management in Blackgram**

**Problem identified:** Low yield of Blackgram due to heavy infestation of weeds

**Technology Assessed:** Assessment of appropriate herbicide (Imazethapyr 10% SL @ 100 g a.i./ha) and one hand weeding for weed management in Blackgram.

Blackgram is an important pulse crop being grown during summer/rainy season throughout the India. The productivity of this crop is adversely affected due to varying biotic and abiotic stresses. Among the problems weeds are one of the major constraints in blackgram production. Loss in blackgram yield resulting from weed competition has been estimated at 50-70 % on the basis of infestation of weeds and duration of competition. Non-availability and high wages of labour during critical period warrant an effective and economical weed control practice during Kharif season. Though chemical herbicides become cost-effective, their efficacy is greatly reduced during Kharif due to uncertain rainfall. Thus, it is a major challenge to maximize productivity of this important pulse crop. Under this situation, an integrated weed management (IWM) practice involving both chemical and other agronomic manipulation may be an efficient tool, as increasing crop density seems to be an alternative to shift crop weed competition in favour of crop. In this regards field number of 29 OFT was conducted at farmers field by several KVKs Rewa, Bhatapara, Bijapur, Kanker, Korba, Jashpur and Bhind in different location during kharif season. Under verification trials of 29 OFT conducted on weed management at the farmers field and observation were recorded. Increased production up to 2.6 and 1.8 q/ha raised the income of Rs. 13324 and Rs. 8063 ha respectively in treatment T<sub>3</sub> and T<sub>2</sub> against farmers traditional practices. Farmers were encouraged with this results and next year adopted same practice on their own whole Groundnut area. Significant growth in yield, additional income, B: C ratio (2.5) and reduction in weed density (94.7%) were recorded with new technology as compared to farmer's traditional practices (1.9). This module effectively control the weeds at early stage by using appropriate herbicides at 15-20 days after sowing and one hand weeding at 45 DAS which

resulted significantly reduced the infestation of remaining weeds leading increased yield of blackgram.

**Table 2.22. Response of appropriate herbicide for weed management in blackgram**

Details	No. of trials	Yield (q/ha)		No. of weeds/m <sup>2</sup>	Net Return (Rs/ha)	B:C Ratio
Use of Inappropriate herbicide (Farmers' practices-T <sub>1</sub> )	29	6.3	11	85	11823.3	1.9
Use of appropriate herbicide (Imazethapyr 10% SL @ 100 g a.i./ha) (Recommended practicesT <sub>2</sub> )		8.1	14	25	19886.1	2.3
Use of appropriate herbicide(Imazethapyr 10% SL @ 100 g a.i./ha) at 20 DAS + one hand weeding at 45 DAS (Recommended practicesT <sub>2</sub> )		8.9	16	4	25147.4	2.5



Spray of herbicides(Imazethapyr @ 100g a.i./ha at 20-25 DAS) in Blackgram



Negligible weed in crop

### Integrated Weed Management in Groundnut

**Problem identified:** Low yield of Groundnut due to heavy infestation of weeds

**Technology Assessed:** Assessment of appropriate herbicide (Imazethapyr 10% SL @ 100 g a.i./ha) and one hand weeding for weed management in Groundnut

In our country, weeds are one of the important factors responsible for low yield of groundnut. Weeds reduce yields by competing with the groundnut plant for resources, such as sunlight, space, moisture, and nutrients not only throughout the growing season, but also create problem during digging and inverting procedures and reduce harvesting efficiency. Harvesting losses increases as the biomass of weeds slow down the field-drying of groundnut vines and pods and increases the possibility of exposure to rainfall. In this situation herbicides are the most effective and economic weed control measures against manual weed management. In view of the above facts, the present investigation was assesses weed management practices to identify effective and economically viable weed control method through evaluating the performance of post emergence herbicides in groundnut by comparing their relative effect

with that of farmer's practice for augmenting the productivity of groundnut crop and harvesting higher yield. In this regards number of 29 OFT were conducted at farmers field by several KVK Surguja, Raigarh and Jashpur. Trials on weed management on the farmers field recorded increased yield of 20.9 percent which raised the income by Rs. 20370/- ha under treatment T<sub>2</sub> against their own farmers traditional practices. Significant growth in yield, additional income, B: C ratio (32%) and reduction in weed density (90.1%) were recorded with new technology as compared to farmer's traditional practices. This module effectively control the weeds at early stage by using appropriate herbicides at 15-20 days after sowing and one hand weeding at 45 DAS significantly reducing infestation of remaining weeds leading to increased yield of groundnut.

**Table 2.23. Performance of appropriate herbicide for weed management in Groundnut.**

Details	No. of trials	Yield (q/ha)	No. of pods/plant	No. of weeds/m <sup>2</sup>	Net Return (Rs/ha)	B:C Ratio
Use of in appropriate herbicide (Farmers' practices-T <sub>1</sub> )	29	11.68	12	78	33149	2.5
Use of appropriate herbicide (Imazethapyr 10% SL @ 100 g a.i./ha) at 20 DAS + one hand weeding at 45 DAS (Recommended practicesT <sub>2</sub> )		14.12	16	8	53519.7	3.3



**Performance of appropriate herbicide for weed management in Groundnut**

### **Integrated Weed Management in Wheat**

**Problem Identified:** Low yield of wheat due to heavy weed infestation of mono and dicot weeds

**Technology Assessed:** Assessment of sulphasulfuron + metsulfuron methyl for weed management in wheat

High yielding dwarf wheat varieties are highly responsive to irrigation and fertilizers. Its intensive cultivation leads to significant changes in crop ecological condition that favour intensification of grassy and broad-leaved weed problem. These weeds become troublesome and difficult to control by traditional methods. It poses serious problems in wheat production and adversely affects the quality of produce. The magnitude of yield losses varies from 15-30%

depending upon the type of weeds and duration of competition for available resources. Therefore, a consistent effort is required for the effective management of the weed population by using one or more compatible molecules of herbicide for effective management of complex weed flora. Selective herbicide with single molecule would be effective against either grasses or broad-leaved weeds. While its compatible mixture of two or more molecules was quite effective against complex weed flora in wheat under such circumstances KVK Rewa, Jhabua, Morena, Rajnandgaon and Barwani have been conducted 47 on farm trial on appropriate herbicidal weed management through clodinafop 15% (60 g a.i./ha) + metsulfuron methyl 1% (4 g a.i./ha) at 25-30 DAS (T<sub>2</sub>) for weed management in wheat. This resulted into maximum weed control efficiency (88.1 %) and enhanced the production per unit area by 50.3 percent and income per rupees invested 20 percent as compared to farmer's practices.

**Table 2.24. Performance of sulphosulfuron + metsulfuron methyl for weed management in wheat**

Details	No. of trials	Yield (q/ha)	No. of weeds/m <sup>2</sup>	Net Return (Rs/ha)	B:C Ratio
One manual weeding (Farmers' practices-T <sub>1</sub> )	47	30.2	102	31394.2	2.0
Use of Clodinafop 15% (60g a.i./ha) + metsulfuron methyl 1% (4g a.i./ha) at 25-30 DAS and Use of sulphosulfuron 75% WP (25 g a.i./ha) + metsulfuron methyl 5% WP (6 g a.i./ha) at 25-30 DAS (T <sub>2</sub> )		45.4	12	51055.5	2.4



**Weed management in wheat**

## Plant Protection

### Integrated Pest Management in Soybean

#### Integrated Management of Girdle beetle and semilooper in Soybean

**Problem Identified:** Low yield of Soybean due to heavy infestation of Girdle beetle and semilooper/defoliator

**Technology Assessed:** Assessment of Thiocloprid followed by *Buveria bessiana* to control girdle beetle and semilooper/defoliator in soybean

Girdle beetle and semilooper/defoliator infestation in soybean is a major problem which affects the crop severely if not managed in time and properly resulting in low crop yield.

Farmers generally use insecticides with herbicide which works better in weed control not for girdle beetle/semilooper/defoliator. Looking the above problem, KVKs of Raisen, Khndwa, Bhatapara, Durg, Dewas, Mandour, Ujjain and Ashoknagar from Madhya Pradesh conducted 37 OFTs for assessing the management of girdle beetle/semilooper/defoliator in soybean. The result of these OFTs showed that the yield was increased by 74.09 and 26.65 per cent in the assessed insecticidal and biocontrol agent treatment (spray of Thiachloprid 21.7 SC @ 750 ml/ha and *Buveria bessiana* 1500 ml at 25-30 DAS) over farmer's practice (spray of Imazathypre 10% 1000 ml + Trizophos 40 EC @ 500 ml/ha at 20-25 DAS-T<sub>1</sub>) and spray of Imazathypre + Ranaxypyre 20 SC @100 ml/ha at 20-25 DAS (T<sub>2</sub>) respectively. The insect population per plant reduced to more than 100 per cent in the assessed technology over T<sub>1</sub> and T<sub>2</sub> respectively. The net return and BC ratio under the assessed technology also increased by Rs. 11,685 per ha and 0.71 respectively over farmer's practice.

**Table 2.26. Performance of Integrated management of girdle beetle in soybean**

Details	No.of trials	Yield (q/ha)	Net Return (Rs/ha)	Insect population/plant	B:C Ratio
Spray of Imazethapyr 10% SL + Outright 1000 ml + Trizophos 40 EC @ 500 ml/ha at 20-25 DAS (Farmer's practices-T <sub>1</sub> )	37	6.80	9329	21	1.49
Spray of Imazethapyr 10% SL + Outright + Ranaxypyre 20 SC @100 ml/ha at 20-25 DAS (T <sub>2</sub> )		9.40	19780	10	2.16
Spray of Thiachloprid 21.7 SC @ 750 ml/ha followed by <i>Buveria bessiana</i> 1500 ml at 25-30 DAS(T <sub>3</sub> )		11.90	21014	1	2.40



**Integrated management of girdle beetle/semilooper/defoliator in soybean**

### Integrated Pest Management in Rice

#### Management of False smut in Rice

**Problem Identified:** Low yield of rice due to high incidence of false smut disease

**Technology Assessed:** Integrated management of false smut disease in rice

Rice is the major cereal crop which is widely grown across the country. False smut of rice caused by *Ustilaginoidea virens* is a major biotic constraint of rice in most of the rice growing countries of Asia. In which individual rice grain transformed into a mass of yellow fruiting

bodies and growth of velvety spores that enclose floral parts seen in the grain, infected grain has greenish smut balls with a velvety appearance. The losses due to false smut occur between 20 to 50 percent when all the panicles are infected. KVKs of Harda, Seoni, Rewa, Singrouli, Balaghat, Anjora, Balod, Dhamtari, Kanker, Raipur and Katni from Chhatisgarh and Madhya Pradesh conducted 39 OFTs on false smut management in rice. Seedling treatment and Spray of *Pseudomonas fluorescens* @ 1.5 kg/ha at early onset of disease (T<sub>2</sub>), seed treatment and Spray of Azoxystrobin 11% + Tebuconazole 18.3% SC @ 1 lit/ha at early onset of disease (T<sub>3</sub>) were assessed for false smut management. The results of OFTs revealed that the yield increased in T<sub>3</sub> by 54.13 and 36.84 percent over T<sub>1</sub> and T<sub>2</sub>, respectively. False smut incidence decreased in T<sub>3</sub> by 63.43 and 24.80 percent over T<sub>1</sub> and T<sub>2</sub>, respectively. The net return increased by Rs. 27590 and 14781 per ha and B:C ratio 1.01 and 0.34 respectively over farmers' practice.

**Table 2.27. Performance of Azoxystrobin 11% + Tebuconazole 18.3% SC for false smut management in rice**

Details of Technology	No. of trials	Disease incidence (%)	Yield (q/ ha)	Net return (Rs/ ha)	B:C ratio
Indiscriminate use of any fungicide after severe incidence (Farmers' practice-T <sub>1</sub> )	39	26.8	26.6	28745	1.79
Seedling treatment and Spray of <i>Pseudomonas</i> spp. @ 1.5 kg/ha at early onset of disease (T <sub>2</sub> )		20.2	36.4	41554	2.13
Spray of Azoxystrobin 11% + Tebuconazole 18.3% SC @ 1 l/ha at early onset of disease (T <sub>3</sub> )		9.8	41.0	56335	2.80



Farmers Field at village Gatora



Matured crop of Rice at village Gatora

### Integrated Pest Management in Maize

#### Management of fall Armyworm (*Spodoptera frugiperda*) in kharif maize

**Problem Identified:** Low yield of maize due to fall Armyworm (*Spodoptera frugiperda*) in kharif maize

**Technology assessed:** Integrated pest management of fall Armyworm(*Spodoptera frugiperda*) in kharif maize

Fall Armyworm (*Spodoptera frugiperda*) in kharif maize is an important pest of maize. KVKs of Seoni, Burhanpur, Bastar, Durg, Mainpat, Rajnandgaon, Surguja, Sehare, Mandasour and Govindnagar from Madhya Pradesh and Chhattisgarh conducted 28 trials on Fall Armyworm management in maize. The Fall Armyworm management technology assessed was T1- No seed treatment with Thiomethaxam or tolerant variety (Farmers practice), T2- Deep summer ploughing + application of Neem oilcake 250kg/ha+ 5 % Neem oil 1500 ppm 5 ml/lit. of water(T<sub>2</sub>), T3- Deep summer ploughing + Pheromone trap 10/ha & Light trap 01/ha + Early sowing (Onset of monsoon)+ Balance use of Nitrogen fertilizers + spray of Bueveria bessiana 1.5l/ha. The increase of cob yield in T3 was 54.36 and 17.18 percent over T1 and T2 respectively, where Fall Armyworm incidence decreased 90 percent in T3. The increase in net return and B:C ratio under T3- was Rs. 63800 per ha and 85.7 unit, respectively over farmers' practice.

**Table 2.28. Performance of IPM module for fallarmy worm in maize**

Details of Technology	No. of trials	Weight of cob (gm)	Fall Armyworm Incidence (%)	Yield (q/ ha)	Net return (Rs/ ha)	B:C ratio
Sowing without seed treatment (Farmers' Practice – T <sub>1</sub> )	28	2.1	28.1	35.5	34325	2.23
Deep summer ploughing + application of Neem oilcake 250kg/ha+ 5 % Neem oil 1500 ppm 5 ml/lit. of water(T <sub>2</sub> )		2.5	12.1	41.6	41562	2.41
Deep summer ploughing + Pheromone trap 10/ha & Light trap 01/ha + Early sowing (Onset of monsoon)+Balance use of Nitrogen fertilizers + spray of Bueveria bessiana 1.5l/ha (T <sub>3</sub> )		3.0	2.7	54.8	63800	2.98



In visilation of maize field and vegetative stage



Infected plant by fall Armyworm

### Integrated Pest Management for Pod borer in Chickpea

**Problem Identified:** Low yield of chickpea due to severe infestation pod borer

**Technology assessed:** IPM module for pod borer management in chickpea

Pod borer is a major pest of chickpea, responsible for heavy reduction (20-35%) in yield. KVK Seoni, Shahdol, Singrouli, Tikamgarh, Raisen, Harda, Anjora, Bastar, Bilaspur, Mainpat, Sehore, Anoopur and Mandasaur from Madhya Pradesh and Chhattisgarh conducted 93 OFTs on integrated pod borer management in chickpea. The technology for pod borer management assessed were T<sub>3</sub>- Deep Summer ploughing, Bird percher @ 50/ha, pheromone traps @ 5/ha and two foliar spray of *Beauveria bassiana* @ 1000ml/ha at 45 and 75 DAS, T<sub>2</sub>-Deep Summer ploughing, spray of Emamectin benzoate 5 SG @ 100gm/ha and Farmers practice (T<sub>1</sub>) were Spray of Triazophos 40EC @ 800ml. Results of the OFTs revealed that the yield of chickpea increased in T<sub>3</sub> by 51.55 and 26.97 percent in comparison to T<sub>1</sub> and T<sub>2</sub> while number of larvae/m<sup>2</sup> decreased by 91.16 and 54.7 percent respectively over T<sub>1</sub> and T<sub>2</sub>. The net return increased as Rs. 20,067 and 9589 per ha, while B:C ratio increased by 0.88 and 0.23 units respectively over T<sub>1</sub> and T<sub>2</sub>. Farmers are satisfied by this technology for pod borer management and they realized that IPM modules in chickpea are better than only use of chemical insecticide.

**Table 2.29. Performance of IPM module-I for Management of Pod borer in Chickpea**

Details of Technology	No. of trials	Number of Larvae/sq met	Yield (q/ ha)	Net return (Rs/ ha)	B:C ratio
T1- Spray of Triazophos 40EC @ 800ml (Farmers' practice T <sub>1</sub> )	93	3.62	10.9	33280	2.49
Deep Summer ploughing, spray of Emamectin benzoate 5 SG @ 100gm/ha and farmers' practice (T <sub>2</sub> )		1.65	13.84	43758	3.14
Deep Summer ploughing, Bird percher @ 50/ha, pheromone traps @ 5/ha and two foliar spray of <i>Beauveria bassiana</i> @ 1000ml/ha at 45 and 75 DAS (T <sub>3</sub> )		0.32	16.52	53347	3.37



Integrated Pest Management Practice for *Helicoverpa armigera* in Chickpea

### Integrated Pest Management in Rice

#### Integrated pest Management in Rice for yellow stem borer and brown plant hopper

**Problem Identified:** Low yield of Paddy due to heavy infestation of Yellow stem borer and brown plant hopper

**Technology assessed:** Integrated management of Yellow stem borer and brown plant hopper in Rice

Remarkable reduction in yield has been observed due to heavy infestation of yellow stem borer and brown plant hopper in rice. KVK Balaghat, Katni, Harda, Rewa, Seoni, Singrouli, Tikamgarh and Raisen from Madhya Pradesh, Anjora, Bastar, Bilaspur and Korba, Rajnandgaon, Bhatapara and Bemetara from Chhattishgarh conducted 42 OFTs for assessing the integrated pest management for Yellow stem borer and brown plant hopper in rice. IPM modules i.e. Use balance dose of fertilizer 20:80:20:20 NPKS kg/ha, installation of Bird perches @ 50 perches/ha, drenching of fipronil 0.03% @ 2.5 k/ha and spraying of *Bueveria bessaiana* @ 1250 ml/ha followed by Thiomethaxam 125 ml/ha and (T<sub>2</sub>) was assessed for managing the stem borer and brown plant hopper. The results revealed that the crop yield increased by 61.17 percent over farmers practice. The number of dead heart decreased by 40 and Number of hopper/plant 23.5 percent over farmers practice. The net return and B:C ratio increased by Rs 7260 per ha and 0.91 over farmers' practice.

**Table 2.30. Performance of Integrated management of stem borer in rice**

Details of Technology	No. of trials	Dead heart plant (%)	Number of hopper/plant	Yield (q/ ha)	Net return (Rs/ ha)	B:C ratio
Indiscriminate use of insecticide after severe infestation of stem borer(Farmers' practice-T <sub>1</sub> )	42	42	21	32.3	21825	2.24
installation of Bird perches @ 50 perches/ha followed by Imidacloprid 125 ml/ha(T <sub>2</sub> )		30	17	38.04	37015	3.01

Details of Technology	No. of trials	Dead heart plant (%)	Number of hopper/plant	Yield (q/ ha)	Net return (Rs/ ha)	B:C ratio
Use balance dose of fertilizer 20:80:20:20 NPKS kg/ha, installation of Bird perches @ 50 perches/ha, drenching of fipronil 0.03% @ 2.5 k/ha and spraying of <i>Bueveria bessaiana</i> @ 1250 ml/ha followed by Thiomethaxam 125 ml/ha(T <sub>3</sub> )		06	03	52.06	58756	3.61



Integrated management of yellow stem borer and brown plant hopper in rice

## Integrated Disease Management

### Integrated Disease Management in Soybean

#### Yellow Vein Mosaic (YMV) management in soybean

**Problem Identified:** Heavy yield reduction of soybean due to severe incidence of yellow vein mosaic virus disease

**Technology Assessed:** Assessment of Thiomethoxam and Yellow sticky trap for the management of vector associated (white fly) yellow vein mosaic disease in soybean

Yellow vein mosaic virus disease of soybean causes up to 50-80 percent yield loss due to use of susceptible varieties and non adoption of suitable integrated disease management modules for YMV management. KVKs of Betul, Harda, Narsinghpur, Panna, Tikamgarh, Gwalior, Sagar and Ujjain from Madhya Pradesh have conducted 37 OFTs on yellow vein mosaic disease management in soybean. YMV management technology i.e. Seed treatment with thiamethoxam 70% WS 3g/kg seed + Spray of thiamethoxam 25% WG @100g/ha 20DAS T<sub>3</sub>) and Installation of 50 yellow sticky trap was assessed for YMV management followed by Seed treatment with Imidacloprid 48% + Imidacloprid 17.8% SL @ 100ml/ha 20DAS (T<sub>2</sub>). The result of the OFTs showed that the soybean yield increased by 79.92 and 35.9 percent over T<sub>1</sub> and T<sub>2</sub> respectively. Similarly, disease incidence was decreased by 98.28 and 39.13 percent over T<sub>1</sub> and T<sub>2</sub> respectively. The net return and BC ratio increased by Rs. 8,595 per ha and 0.63 respectively over farmer's practice. Farmers were satisfied with this technology for YMV

management in soybean.

**Table 2.31. Performance IDM module for management YMV in soybean**

Details	No.of trials	Yield (q/ha)	Disease incidence (%)	Net Return (Rs/ha)	B:C Ratio
Sowing without seed treatment by insecticide (Farmer's practice-T <sub>1</sub> )	37	5.68	56.41	(-)4833	0.46
Seed treatment with Imidacloprid 48% + Imidacloprid 17.8% SL @ 100ml/ha 20DAS (T <sub>2</sub> )		7.52	12.70	1417	1.09
Seed treatment with thiamethoxam 70% WS 3g/kg seed + Spray of thiamethoxam 25% WG @100g/ha 20DAS and Installation of 50 yellow sticky trap (T <sub>3</sub> )		10.22	1.73	3762	1.09



**Yellow vein mosaic disease free soybean crop**

### **Integrated Disease Management for wilt of Chickpea**

**Problem Identified:** Low yield of chickpea due to severe incidence of wilt disease

**Technology assessed:** IDM module for wilt disease management in chickpea

Wilt of chickpea is a major disease of chickpea, responsible for heavy reduction (20-35%) in yield. KVK Basta, Betul, Panna, Sidhi, Dhamtari, Dewas, Sehore, Ashoknagar, Anoopur, Harda, Satna and Mandasaur from Madhya Pradesh and Chhattisgarh conducted OFTs on integrated disease management of chickpea at 87 locations. The technology for wilt disease chickpea IDM module were assessed T<sub>3</sub>-Deep Summer ploughing, Soil application of *Trichoderma herzianum* 4kg/ha. + Seed treatment with *Pseudomonas fleuroscens* 4gm/kg of seed, T<sub>2</sub>- Deep Summer ploughing + seed treatment with Carbendazim 2g/k seed and Farmers practice (T<sub>1</sub>) were seed treatment with Carbendazim 2g/k seed. Results of the OFTs revealed that the yield of chickpea increased in T<sub>3</sub> by 20.3 and 16.2 percent in comparison to T<sub>1</sub> and T<sub>2</sub> while disease incidence decreased by 97.2 and 71.7 percent respectively over T<sub>1</sub> and T<sub>2</sub>. The net return increased as Rs. 20,067 and 9589 per ha, while B:C ratio increased by 0.88 and 0.23 units respectively over T<sub>1</sub> and T<sub>2</sub>. Farmers are satisfied by this technology for wilt management and they realized that IDM modules in chickpea are better than only use of *Pseudomonas* and *Trichoderma*.

**Table 2.32. Performance of IDM module-I for Management of wilt of Chickpea**

Details of Technology	No. of trials	Disease incidence (%)	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
T1- seed treatment with Carbendazim 2g/k seed (Farmers' practice T <sub>1</sub> )	87	44.3	12.9	33280	2.49
Deep Summer ploughing + seed treatment with Carbendazim 2g/k seed (T <sub>2</sub> )		12.65	13.84	43758	3.14
Deep Summer ploughing, Soil application of <i>Trichoderma herzianum</i> 4kg/ha. + Seed treatment with <i>Pseudomonas fleuroscens</i> 4gm/kg of seed. (T <sub>3</sub> )		1.32	15.52	53347	3.37

Seed treatment with *Pseudomonas*

Seed treatment with Carbendazim

## Horticulture

### Varietal Evaluation in Tomato

**Problem identified:** Low yield due to use of unsuitable / inappropriate varieties

**Technology Assessed:** Assessment of HYV variety of Tomato

There are 13 recognized wild tomato species that display a great variety of phenotypes and can be crossed with the cultivated tomato. These wild tomatoes are important for breeding, as sources of desirable traits, and for evolutionary studies. Current progress on the tomato genome sequencing project has generated useful information to help in the study of tomato. Farmers generally do not use the suitable tomato cultivars hence they are getting less production. Keeping this in perspective, KVK Govindnagar Hoshangabad, Panna, Ratlam, Sehore, Raisen, Alirajpur and Umaria in MP and Surguja in CG conducted 44 OFTs, the result showed that the fruit yield T1 tomato 132.0 q/ha and Kashi Aman, Prabhav, Himshikhar tomato variety in T2 180.0 q/ha and Arka Rakshak, Arka Samrat in T3 190.0q/ha. T3 variety tomato yield higher than T1 and T2 the incremental net return and B:C ratio were 286549 and 5.06 units when compared to the same under farmers' practice On the basis of the above findings it may be concluded that the technology assessed in T3 was more effective (followed by T2) as it increases the fruit yield.

**Table 2.33. Performance of of HYV variety of Tomato**

Details	No. of trials	Crop	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
(Farmers' practices) T1	44	Tomato	132.0	183180	3.35
(Recommended practice)T2 Kashi Aman, Prabhav, Himshikhar			180.0	268260	4.70
(Recommended practice)T3 Arka Rakshak, Arka Samrat			190.0	286549	5.06

**Variety Arka Rakshak****Variety Kashi Aman**

### Integrated Nutrient Management in onion

**Problem identified:** Less bulb yield of onion due to inadequate application of fertilizers

**Technology Assessed:** Assessment of balance fertilizer application based on STV in onion

Onion is an important commercial spice of our country. It is one of the oldest cultivated spices which is used as salad or cooked in various ways in all curries, fried, boiled or baked. Onion has great therapeutic value. They are stimulants and mild counter-irritant. It has been used as herbal remedy for centuries in colds, coughs, bronchitis and many other diseases. The major reasons of low productivity of onions are unavailability of right type of seed in time, inadequate fertilizers doses, high seedling mortality in nursery due to incidence of diseases. Among the above factors, balanced application of the major and secondary nutrients especially sulphur plays important role in enhancing the bulb yield of onion. Keeping this fact, KVKs of Indore, Sagar and Sehore of the Zone conducted 25 OFTs to assess the application of NPKS @ 150:60:60:40 kg/ha based on STV ( $T_2$ ) and application of NPKS @ 150:60:60:40 kg/ha based on STV + foliar application of NPK 18:18:18 @ 2.5 kg/ha at 30 DAT and NPK 13:0:45 @ 2.5 kg/ha at 75 DAT ( $T_3$ ) at farmer's field. The results showed that the bulb yield was 18.85 and 26.25 per cent higher in  $T_2$  and  $T_3$  respectively over farmers' practice. Similarly, bulb weight also increased by 21.74 and 30.31 per cent in  $T_2$  and  $T_3$  respectively over farmer's practice. The incremental net return and BC ratio was recorded to be Rs.46895 and 0.41 units higher over farmer's practice with the assessed technology in  $T_3$ . On the basis of the above findings, it may be concluded that the technology assessed in  $T_3$  was more effective followed by  $T_2$  as it increases the bulb yield and maintains the soil fertility.

**Table 2.34. Performance of balance NPKS application in onion**

Details	No. of trials	Bulb yield (q/ha)	Bulb weight (g)	Net Return (Rs/ha)	B:C Ratio
Application of NPKS @ 96:51:10:0 kg/ha (Farmers' practice-T <sub>1</sub> )	25	209.63	63.28	92007	2.30
Application of NPKS@ 150:60:60:40 kg/ha based on STV (Recommended practice-T <sub>2</sub> )		249.14	77.04	125899	2.55
Application of NPKS @ 150:60:60:40 kg/ha based on STV + foliar application of NPK 18:18:18 @ 2.5 kg/ha at 30 DAT and NPK 13:0:45 @ 2.5 kg/ha at 75 DAT (Recommended practice-T <sub>3</sub> )		264.66	82.46	138902	2.71



Onion Crop Growth stage under T3



Onion Crop Maturity stage under T3

### Integrated Nutrient Management in Cauliflower

**Problem identified:** Less curd yield of cauliflower due to inadequate application of fertilizers

**Technology Assessed:** Assessment of Integrated Nutrient Management in cauliflower

Cauliflower (*Brassica oleracea* var. botrytis) is a cash crop and is one of the most widely consumed vegetables in India. Cauliflower is rich in nutrients and in phytochemicals (glucosinolates) that can lower the risk of cancer and cardiovascular diseases. Aside from its nutritional value, cauliflower production and marketing offer many economic opportunities in the region especially for smallholder farmers. To avoid wastage of natural resource and minimize the environmental damage there is need to develop and demonstrate balance use of chemical fertilizers to improve the crop production economically in sustainable ways. Cauliflower is a heavy feeder of nutrients and the higher food production needs higher amount of plant nutrients. As no single source is capable of supply the required quantity of nutrients, the integration of all available resources is essentially resupplying balance nutrition of plants, which should be aimed at increasing yield, nutrients deficiencies, improving lasting soil fertility restoring fertility and productivity that has been regarded by wrong and exploitive activities in the past. Vermicompost as well as farm yard manure (FYM) influences the physico-chemical as well biological properties of the soil, which in turn improves the soil fertility, provide excellent soil structure, porosity, aeration, drainage, water retention capacity and prevent soil degradation. Keeping this fact, KVKs of Bijapur, Dhar and Sagar of the Zone conducted 19 OFTs to assess the application of NPK @ 120:80:60 kg/ha and boron @ 1.5

kg/ha based on STV (T<sub>2</sub>) and FYM – 10 t/ha + Biofertilizers (azotobactor & PSB @ 5 kg/ha) + 75% NPK of 120:80:60 kg/ha and boron @ 1.5 kg/ha based on STV (T<sub>3</sub>) at farmer's field. The results showed that the curd yield was 19.5 and 33.22 per cent higher in T<sub>2</sub> and T<sub>3</sub> respectively over farmers' practice. Similarly, curd weight also increased by 25.94 and 37.86 per cent in T<sub>2</sub> and T<sub>3</sub> respectively over farmer's practice. The incremental net return and BC ratio was recorded to be Rs. 72502 and 0.56 units higher over farmer's practice with the assessed technology in T<sub>3</sub>. On the basis of the above findings, it may be concluded that the technology assessed in T<sub>3</sub> was more effective (followed by T<sub>2</sub>) as it increases the tuber yield and maintains the soil fertility.

**Table 2.35. Performance of INM in cauliflower**

Details	No. of trials	Curd yield (q/ha)	Curd weight (g)	Net Return (Rs/ha)	B:C Ratio
Application of NPK @ 43:31:05 kg/ha and no use of micronutrients and FYM (Farmers' practice-T <sub>1</sub> )	19	248.77	446.97	189100	4.32
Application of NPK @ 120:80:60 kg/ha and boron @ 1.5 kg/ha based on STV (Recommended practice-T <sub>2</sub> )		297.26	562.91	231473	4.65
FYM – 10 t/ha + Biofertilizers (azotobactor & PSB @ 5 kg/ha) + 75% NPK of 120:80:60 kg/ha and boron @ 1.5 kg/ha based on STV (Recommended practice-T <sub>3</sub> )		331.4	616.2	261602	4.88



**INM in cauliflower**

### **Integrated Crop Management in Pointed gourd**

**Problem identified:** Low yield and poor quality of pointed gourd.

**Technology Assessed:** Improved variety Swarna Alaukik with recommended package of practices.

Farmers generally use local variety of pointed gourd which gives poor yield and quality. KVK Dhar in MP and Raipur and Baster in CG planned and conducted 18 OFT to assess the performance of conducted OFT to assess the performance of Swarna Aloukik and Swarna Rekha variety of pointed gourd. Results revealed that the yield of this variety was 60 percent

higher over the farmer's local variety. Similarly the net return and BC ratio were found to be higher by Rs. 288000/- and 2.40 with improved variety Swarna Alaukik.

**Table 2.36. Performance of Pointed gourd variety**

Details	No. of trials	Yield (q/ha)	Net Return (Rs./ha)	B:C Ratio
Farmers' local / practice (Farmers' practice- T <sub>1</sub> )	18	70	110000.00	1.64
Improved variety (Swarna Alaukik) (Recommended practice- T <sub>2</sub> )		112	288000.00	2.40
Improved variety (Swarna Rekha) (Recommended practice- T <sub>3</sub> )		109	236000.00	2.18



Farmer's practice T1



Recommended practice T3

### Integrated Disease Management in Mandarin

**Problem identified:** Heavy incidence of Phytophthora and gummosis (Intensity – 60-70%)

**Technology Assessed:** Assessment of NRCfBA 44 (*Trichoderma harizanium*) to mitigate the incidence of Phytophthora/gummosis in Nagpur mandarin

India is an agricultural country and in the context of its under developed economy, agricultural development becomes vitally important. Though production processes are beyond human control, marketing of commodities is a matter of human resourcefulness. Production is one side of the coin while the marketing is another one. A discernible significance with wider precepts and better potential. Hence, effort must be made In view of growing demand for Nagpur oranges for domestic consumption and export various agencies recognized the urgent need for increasing production in Nagpur oranges. KVK Alirajpur and Chhindwara in MP conducted 20 OFT the result showed that the disease incidence (%) T1 70.24% and T2 with Paste + spraying + drenching Mefenoxam MZ @2.5g/li (twice during Aug. to Oct. at 40 days interval) have 34.53% in T3 190.0q/ha. T3 with Soil application of NRCfBA 44 (*Trichodermaharizanium*) pre and post monsoon 100g/tree with well fermented FYM have 15.22 %. Percent change higher then T3 and T2 On the basis of the above findings it may be concluded that the technology assessed in T3 was more effective (followed by T2) as it decreased disease incidence (%).

**Table 2.37. Integrated Disease Management Nagpur mandarin**

Details	No. of trials	Crop	Disease incidence (%)	(%) change
T <sub>1</sub> -No use of Bordeaux paste and spray after harvesting	20	Mandarin (Orange) Nagpur mandarin	70.24	-
T <sub>2</sub> -Paste + spraying + drenching Mefenoxam MZ @2.5g/li (twice during Aug. to Oct. at 40 days interval)			34.53	50.63
T <sub>3</sub> -Soil application of NRCfBA 44 ( <i>Trichoderma harizanium</i> ) pre and post monsoon 100g/tree with well fermented FYM			15.22	78.33



Demonstration for application NRCfBA 44



Application of NRCfBA 44 in below of the plant canopy root zone

### Nursery Raising

**Problem identified:** Maximizes the seed input cost & low yield.

**Technology Assessed:** Assessment of Ginger planting materials propagated through plug type nursery.

Farmers grow ginger through its rhizome. KVK Raipur conducted trials to assess the performance of planting the ginger bud sprouts in pro-tray with nursery medium coco pit & vermicompost (3:1). The results revealed that the yield of this variety (Suprabha) was 10.65 per cent higher over the farmers' variety and practice. The net return and BC ratio with Suprabha variety was found to be higher by Rs. 372000 and 3.21 with this variety.

**Table 2.38. Performance of Ginger**

Details	No. of trials	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Hand weeding (Farmers' practice- T <sub>1</sub> )	4	122	260000	1.65
Improved practice (Recommended practice- T <sub>2</sub> )		135	372000	3.21



Pro tray with media and small pieces of ginger cut bud



Ginger crop at farmer field

**Problem identified:** Low yield due to use of Indiscriminate Variety & Traditional package of practices

**Technology Assessed:** Assessment of high yielding variety of sweet potato.

Farmers grow local variety of potato without recommended package of practices which results in low yield. KVK Mungeli and Jashpur were conducted 13 trials to assess the performance of high yielding variety of sweet potato (Indira Nandini). The results revealed that the yield of this variety was 47.97 per cent higher over the farmers' variety and practice. The net return and BC ratio with this variety was found to be higher by Rs. 282719 and 4.47 with this variety.

**Table 2.39. Performance of Sweet Potato.**

Details	No. of trials	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Local variety (Farmers' practice- T <sub>1</sub> )	13	123	175868	3.5
Improved Variety (Indira Madhur) (Recommended practice- T <sub>2</sub> )		167	252719	4.1
Improved Variety (Indira Nandini) (Recommended practice- T <sub>2</sub> )		182	282719	4.47



High yielding variety of sweet potato (Indira Nandini)

## Home Science

## Income Generation

## Income generation through oyster mushroom production

**Problem identified:** Poor economic status of the households due to seasonal unemployment of farm family.

**Technology Assessed:** Oyster mushroom production for income generation of farm family.

Mushroom production is suitable enterprises for small & marginal farm women for income generation. A total number of 38 on farm trials on mushroom cultivation were conducted by KVK Shahdol, Raisen of Madhya Pradesh and KVK Dantewada, Sukma and Korea of Chhattisgarh. The results of the OFTs showed that oyster Mushroom (*Pleurotus florida*) ( $T_2$ ) had an average net return of Rs 4200 alongwith 2.35 B:C ratio. Farm women were satisfied with oyster mushroom production because of higher yield, lower cost of inputs and higher net returns.

**Table 2.40-** Performance of Oyster mushroom production

Detail of Technology	No. of trials	Production (kg)	Average Cost of input (Rs)	Average Gross Return (Rs)	Average Net Return (Rs)	Benefit-Cost Ratio (Gross Return / Gross Cost)
No Mushroom production (Farmers Practices- $T_1$ )	38	-	-	-	-	-
Oyster Mushroom Production (Recommended Practices- $T_2$ )		36.5 /30 bags	3100	7300	4200	2.35



**oyster mushroom production by farm women**

## Drudgery Reduction of Farm Women

**Problem identified:** High drudgery and low efficiency of farm women during manually plucking of bhindi

**Technology Assessed:** Use of Bhindi Plucker for bhindi harvesting

During the plucking of bhindi, the farm women who harvest bhindi have wrist pain, itching & discomfort to skin. During manual harvesting farm women suffers wrist pain due to force in the hands resulting to low harvesting efficiency. KVKs Khandwa, Shahdol and Gwalior of Madhya Pradesh conducted 20 trials on assessment of bhindi Plucker for farm women to address the problem of manual plucking. Results revealed that use of bhindi Plucker showed an increase work efficiency 70.59 % with 55.8 % reduction in drudgery.

**Table 2.41– Performance of Bhindi Plucker for farm women**

Detail of Technology	No. of trials	Output	Est. Energy Expenditure kj/min	WHR beat/min	% reduction in drudgery	% increase in efficiency
Manual plucking (Farmers Practices-T <sub>1</sub> )	20	2.5	8.13	106	-	-
Use of Bhindi Plucker (Recommended Practices-T <sub>2</sub> )		8.5	6.86	98	55.8	70.59



**bhindi harvesting by use of Bhindi Plucker**

### Value addition

**Problem identified:** Local made porridges are characterized by high viscosity and low energy content.

**Technology Assessed:** Protein rich weaning food for infants.

Amylase Rich Food (ARF) is germinated cereal flour, which is extremely rich in the enzyme alpha-amylase. The alpha-amylase cleaves the long carbohydrate chains in the cereal flour into shorter dextrins. Just half a flat teaspoon of any ARF can reduce even a very high total solid concentration of 45g, made up of 25g flour, 15g sweetener and 5g oil cooked in 100ml of water to a soupy consistency. This remarkable property makes it possible to offer the weaning child a low viscosity yet high energy dense preparation. Malted cereal flour is inexpensive and can be used in brewing and in the

preparation of malt extract for pharmaceutical purposes and in the preparation of malted milk powder. Puffed rice act as appetizer food and easily digested in body. Puffed rice helps to repair the internal layers of intestines and prevent diarrhea. Powder prepared from puffed rice (70%). Looking above KVK Jabalpur, Neemuch and Harda from Madhya Pradesh conducted 25 OFTs on weaning food for nutritional security

**Table 2.42– Performance of weaning food prepared from locally available food material**

Detail of Technology	No. of trials	Per capita Consumption gm/ day	Nutrient Intake / (Unit)		
			Energy (kcal)	Protein (gm)	Iron (mg)
local made porridges (Farmers Practices-T <sub>1</sub> )	25	30	150.3	5	15.5
Amylase Rich Food (ARF) (Recommended Practices-T <sub>2</sub> )		30	175.2	8	18.8
Puffed rice based weaning food (Recommended Practices-T <sub>3</sub> )		20	169.5	7	17.2



Protein rich weaning food for infants

### Value addition for Nutritional Security

**Problem identified:** Low Nutritional status of farm women due to No value addition of Cereals, Pulses & Horticultural Crop .

**Technology Assessed:** Assessment of Various technology of value addition for Nutritional Security of farm women, Childrens & Adolescent girls.

Value added agriculture helps to increase the value of primary agricultural commodities through a particular production process. Value addition is defined as the addition of time, place and as farm utility to a commodity in order to meet the taster of consumer.

Looking above KVKs Neemuch, Ratlam, Khandwa, Jabalpur, Satna, Sehore, Shehdol, Sidhi, Balaghat, Bilaspur, Damoh, Harda, Morena from Madhya Pradesh & KVKs Anjora, Raigarh from CG conduct 65 On farm trails on different value added product for nutritional Security of farm women due unavailability of crop. KVK conducted trails on drumstick leave powder & their value added product from water chestnut, oyster mushroom, value addition of small millet, soy biscuits.

Some KVKs conduct on farm trails on value added product for children & adolescent girl for prevention malnutrition also save from nutrition deficiency like anemia, calcium, vitamins deficiency etc. KVK's conducted on farm trails amylase rich food, porridge weaning, multigrain flour, dumstick leave product, protein powder, sprouted cowpea feeding powder. Result showed that farm women get extra nutrition from different type value added product with increase energy 400 kcal , Protein 48.78 gram (+ 25.78gm ), iron 27.6(+14.4 mg), calcium 794

mg(+429 mg) per day diet. Anthropometric measurement also increase from value process average weight gain 3 kg /Height 5 cm in 6 month (All anthropometric measurement recorded 6 month duration)

**Table 2.43. Value addition for Nutritional Security**

Details	No. of trials	Energy (kcal)	Protein (gm)	Iron (mg)	Calcium (mg)	Increase in Wt(kg)	Increase in Ht(cm)	Increase in BMI (kg/m <sup>2</sup> )
(Farmer practice) T1	65	-	23	13.2	294	-	-	-
(Recommended practice) T2		400	48.78	27.6	723	3	5	1



**Mushroom production by farm women**



**Amla Product**

### Value addition for income generation

**Problem identified:** Lack of knowledge regarding value addition & marketing channels of value added product for income generation.

**Technology Assessed:** Assessment of Various technology of value addition for income generation & provide marketing channels through SHGS

Most of the KVKS Conduced on farm trails on value added product for income generation of farm women. Majority of the farming women marginal small land holding and their income is also very less.To enhance the income level and living standard of those farming women there is urgent need to provide technology of value addition .looking above this problem KVKS Raipur (CG) conducted On farm trails on 20 Trails on Marketing Channels on Multigrain flour, value added product from alsI (ALS I Mouth Freshener), Value added product from fruits & Vegetables with packaging and labeling .Result On farm showed that farm women get extra Net income Rs 70000 with cost of input Rs 30000 Benefit cost Ratio 3.3 by marketing ALS I Mouth freshener .Similarly KVK Raipur develop marketing channels( Through SHGS) on value added product multigrain ATA with Net return RS. 60000 .Self help group produced 6 quintals multigrain ATA with cost of input RS 33000 Save 2.7 Benefit cost Ratio.

Table 2.42. Value addition for income generation

Detail of Technology	No. of trials	Parameter of enterprise	Production per unit (qt/no/lit)	Average Cost of input (Rs/unit)	Average Gross Return (Rs/unit)	Average Net Return (Rs/unit)	Benefit-Cost Ratio (Gross Return / Gross Cost)
T <sub>1</sub> (Farmers Practices)	20	-	-	-	-	-	-
T <sub>2</sub> (Recommended Practices) (ALSI MOUTH Freshener )		Quintals	2Quintals	30,000	1,00,000	70,000	3.3
T <sub>2</sub> (Recommended Practices) (Multigrain Ata)		Quintals	6 Quintals	33000	90000	60000	2.7
T <sub>2</sub> (Recommended Practices) (pickle Jam)		Kg	250 kg	17500	47500	30000	2.7



Mixing of Different Flour For Concentrate



Packaging in Polythene

## Nutrition Security

### Nutrition Security through Biofortified variety of Wheat

**Problem identified-** High magnitude of malnutrition among farm families

**Technology Assessed-** Promotion of Bio fortified variety of Wheat (Poshan) HI 8663 and WB-2 for nutrition security.

Biofortified crops can complement existing micronutrients interventions can have significant impact on the lives and health of millions of people, especially childrens, adolescents and women. Looking above KVK Jabalpur, Damoh, Sidhi, Umariā, Singrauli, Morena, Neemuch and Mandla from Madhya Pradesh conduct 45 on farm trails on different Bio fortified variety of Wheat to utilize as Paratha, Dhaliya and Sevai for school going children (5-7 years) under Mid Day Meal programme

**Table 2.43-** Bio fortified variety of wheat for nutritional security

Detail of Technology	No. of trials	Nutrient /100gm		
		Protein (gm)	Iron (ppm)	Zn (ppm)
Lok-1 (Farmers Practices T <sub>1</sub> )	45	10.57	-	-
HI-8663 (Poshan (Recommended Practices T <sub>2</sub> ))		11.7	47.0	
WB-2 (Recommended Practices T <sub>3</sub> )		12.4	40.0	42.0
Pusa Tejes (Recommended Practices T <sub>4</sub> )		12.0	42.1	42.8



Pusa Tejas



WB-02



Biofortified variety of wheat at field condition

### Nutritional security through Nutrition Garden

**Problem identified:** Low nutrition status of farm women due to unavailability of nutrient dense vegetable in daily life

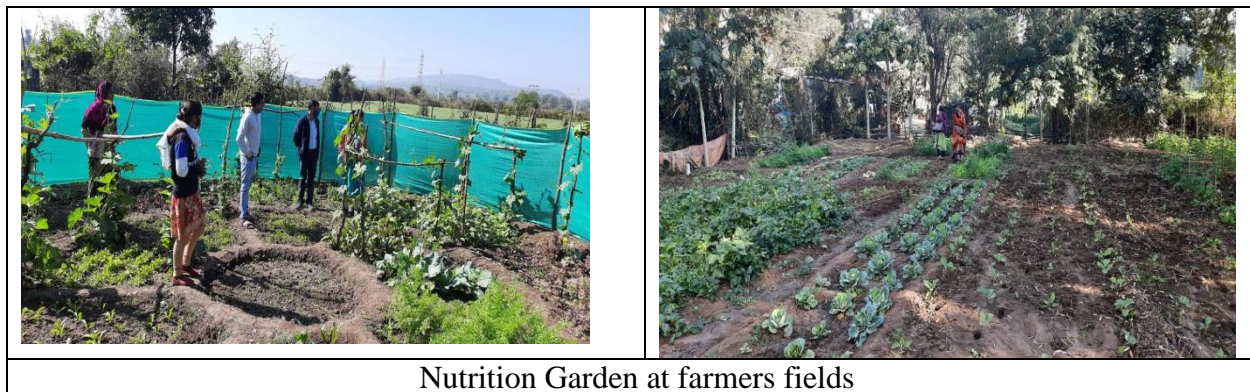
**Technology Assessed:** Nutrition Garden for regular vegetable supply to farm families.

Nutrition garden caters the daily nutritional needs of the rural families. Vegetables are rich source of nutrients which comprises minerals and multivitamins. This helps to fight against anemia, malnutrition and hidden hunger. Keeping this in view, KVKs of Madhya Pradesh and Chhattisgarh conducted 345 Onfarm trials on Nutrition Garden, each measuring around 200-250 sqm land area. Results shows the significant differences in nutrient contents increase per capita consumption gm/day of farm women increased up to 340 gm vegetables energy 550 (kcal), Iron 54 mg and Calcium 220 mg as compare to these existing practices. It may be concluded that nutrition-kitchen gardens have the potential to provide essential nutrients for the farm women, thus reducing health problems, and also enhancing the income round of the year by selling surplus vegetable.

**Table 2.44: Performance of Nutrition garden**

Details	No. of trials	Per capita Consumption gm/ day	Energy (kcal)	Iron (mg)	Calcium (mg)
Vegetable in backyard (Farmer practice) T <sub>1</sub>	345	150	430	22	160

Nutrition Garden Recommended practice) T <sub>2</sub>		340	550	54	220
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Nutrition Garden at farmers fields

## Agriculture Engineering

### Resource Conservation Technology

#### Direct Sowing through Happy Seeder

**Problem identified:** There is need for shift from intensive tillage based practices to conservation agriculture based crop management techniques to address the issues of labour, energy, water and soil health.

**Technology Assessed:** Direct Sowing through Happy Seeder

Compared to conventional tillage practices, sowing wheat directly into just-harvested rice fields without burning or removing crop residues improves soil health, reduces irrigation need and mitigates climate change effects. A happy seeder is a tractor-mounted implement that cuts grooves in the soil, drops seed and fertilizer into the groove and covers the seeded row, all in one pass without any significant soil disturbance. The Happy seeder is a promising technology in conservation agriculture. KVK Betul and Janjgir Champa conducted OFTs on assessment of conservation agriculture practices with happy seeder technology for wheat and chickpea in rabi after the rice harvest. Assessment of waste decomposer was also done in one such trial at Betul. A total of 14 trials were conducted. Results were encouraging. In case of Wheat the incremental increase in yield, net return and B:C ratio over the conventional system were 14.6 q/ha, Rs. 13645.00 per ha and 1.3 respectively. In case of chickpea, the incremental increase in yield, net return and B:C ratio over the conventional system was 2.27 q/ha, Rs.7720.00 per ha and 0.5 respectively. Thus the concept of direct sowing through happy seeder is a promising one.

**Table 2.45. Direct Sowing through Happy Seeder**

Details	No. of trials	Crop	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Conventional sowing after field	14	Wheat	38.6	46505	2.6

preparation (Farmers' practices)		Chickpea	6.85	13830	2.1
Direct sowing through Happy Seeder (Recommended practice)		Wheat	42.2	60150	3.9
		Chickpea	9.12	21550	2.6



Wheat Direct Sowing by Happy seeder Machine



crop view

### Furrow irrigated raised bed sowing

**Problem identified:** Raising crop productivity and saving irrigation water is one of the major concerns of crop production. Ways need to be developed to address this aspect.

**Technology Assessed:** Furrow irrigated raised bed sowing

Irrigation is crucial for agricultural activities. However if it is not managed well then it results into high water losses and inefficient application of irrigation water. The furrow irrigated raised bed system of crop cultivation is an improved surface irrigation strategy, which makes the application of water in irrigated systems more efficient and enhances water productivity. In this technique, the crop is grown on raised beds and irrigation water is applied to the furrows. Lesser amount of water is required for irrigation as the furrows collect the water efficiently rather spreading it over the whole surface as in the case of border irrigation or other flood irrigation methods. KVK Seoni, Mandsaur and Shajapur conducted 20 OFTs on raised bed planting of soybean and chickpea. In case of soybean the incremental increase in yield, net return and B:C ratio over the conventional system were 2.7 q/ha, Rs. 8703.00 per ha and 0.4 respectively. In case of chickpea the incremental increase in yield, net return and B:C ratio over the conventional system were 5.35 q/ha, Rs. 26050.00 per ha and 1.2 respectively. Overall the furrow irrigated raised bed concept proved better than the conventional planting technique.

**Table 2.46. Furrow irrigated raised bed sowing**

Details	No. of trials	Crop	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Conventional sowing after field preparation (Farmers' practices)	20	Soybean	8.7	11114	1.6
		Chickpea	13.75	48950	3.5
Furrow irrigated raised bed sowing (Recommended practice)		Soybean	11.4	19817	2.0
		Chickpea	19.10	75000	4.7



FIRB seed drill in operation



Field sown by FIRB seed drill

### Drip irrigation system with plastic mulch

**Problem identified:** Low crop yield due to poor water use efficiency & high infestation of weeds.

**Technology Assessed:** Drip irrigation system in conjunction with plastic mulch

The benefits of drip irrigation are well known. When plastic mulch is also incorporated in a drip irrigation system then additional benefits can be achieved in crop production. Plastic mulch is used in a similar fashion to organic mulch. to suppress weeds and conserve water in crop production. A plastic mulch plays part in the various aspects of crop production such as alteration in soil temperature, soil moisture retention, weed management, reduction in leaching of fertilizers when used with drip irrigation, improved crop quality as the contact between the crop produce and the soil is reduced, reduction in root damage as the inter-culture operations are be done only in the area between the mulches. OFTs on drip irrigation system along plastic mulches were conducted by KVK Seoni, Mandsaur and Shajapur on tomato, chilli and watermelon. Use of drip with plastic mulch gave better results than the practice of conventional planting and conventional irrigation. In case of tomato the incremental increase in yield, net return and B:C ratio over the conventional system were 137.09 q/ha, Rs. 61742.00 per ha and 0.26 respectively. In case of chilli the incremental increase in yield, net return and B:C ratio over the conventional system were 37.4 q/ha, Rs. 101175.00 per ha and 0.89 respectively. In case of watermelon the incremental increase in yield, net return and B:C ratio over the conventional system were 232.0 q/ha, Rs. 191092.00 per ha and 0.9 respectively.

**Table 2.47. Drip irrigation system in conjunction with plastic mulch**

Details	No. of trials	Crop	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Conventional planting accompanied by conventional irrigation practice (Farmers' practices)	34	Tomato	276.13	104169	2.16
		Chilli	235.8	52445	2.46
		Watermelon	166	81083	1.73
Use of drip irrigation along with plastic mulch (Recommended practice)		Tomato	413.22	165911	2.42
		Chilli	273.2	153620	3.35
		Watermelon	398	272175	2.63



Chilli cultivation with drip and mulching



Crop condition of Chilli

### Different sowing methods of soybean

**Problem identified:** Low yield of soybean due to erratic rainfall

**Technology Assessed:** Assessment of different sowing methods of soybean crop

Due to climate change the normal rainfall pattern is disturbed with frequent aberrations of sudden downpour, long dry spells entailing severe stress on soybean crop that resulted in yield. Keeping in to consideration KVK Agarmalwa assessed different sowing methods i.e. line sowing with seed cum fertidrill, sowing with modified seed drill (attached shovel) and sowing through furrow irrigated ridge bed planter to protect the soybean crop from this aberrations. Ridge and furrow technology contributes in increasing soybean yield and also helps in reducing cost of production. Maximum yield and B:C ratio was found under treatment T<sub>3</sub> followed by T<sub>2</sub> (15.7, 14.5 q/ha and 2.4, 2.3) respectively as compared to farmers practices (13.2 q/ha and 2.0). The results showed 33.0 yield and 20 percent income increases with the adoption of sowing methods of furrow irrigated ridge planter. The results showed a convincing impact as far as economic superiority of ridge and furrow technique over conventional method of sowing. Ridge and furrow technology is very conducive in increasing the crop production and net income.

**Table 2.48. Assessment of different sowing methods of soybean crop**

Details	No. of trials	Yield (q/ha)	No. of pods/ plant	Net Return (Rs/ha)	B:C Ratio
Line sowing with seed cum fertidrill (Farmers' practice-T <sub>1</sub> )	10	11.8	13	22616	2.0
Sowing with modified seed drill (attached shovel) (Recommoned practices-T <sub>2</sub> )		14.5	19	31448	2.3
sowing of soybean through Furrow irrigated ridge bed planter (Recommoned practices-T <sub>3</sub> )		15.7	20	35512	2.4



Assessment of different seed drill in soybean

## Farm Mechanization

### Zero till seed drill

**Problem identified:** There is need for shift from intensive tillage based practices to conservation agriculture based crop management techniques to address the issues of labour, energy, water and soil health.

**Technology Assessed:** Zero till seed drill

A zero-till seed drill is used for sowing of crop directly in an uncultivated field just after harvest of the previous crop by eliminating the tillage operations. The direct zero-till drilling offers the advantage of timely planting at reduced time fuel and labour costs. It is very helpful in situations where late harvesting of rice crop compels delay in sowing of next crop mostly wheat. Shortage of time after paddy harvest to sow wheat creates uncertainty and delay in sowings which sometimes results in moisture stress during the initial stages of crop growth eventually leading to poor yields. Zero-till drill is a good method to avoid such situation. KVK Chhattarpur, Shahdol and Ashoknagar conducted 17 OFTs on zero till seed drill on wheat. Results were encouraging. In case of Wheat the incremental increase in yield, net return and B:C ratio over the conventional system were 2.8 q/ha, Rs. 4320.00 per ha and 0.1 respectively. Thus it can be well said that the timeliness of sowing by zero till seed drill not only reduces operational costs but also facilitates in getting better crop yields in comparison to the conventional method of planting.

**Table 2.49. Zero till seed drill**

Details	No. of trials	Crop	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Conventional sowing after field preparation (Farmers' practices)	17	Wheat	38.5	42540	2.3
Direct sowing through zero till seed drill (Recommended practice)			41.3	46860	2.4



Sowing of Wheat by Zero tillage technology



Germination of Wheat in Zero tillage technology

### Inclined plate planter

**Problem identified:** Unavailability of proper plant to plant spacing while using ordinary seed drill hampers interculture operations. If the sowing is done manually then it involves high labour cost and chances of delayed sowing.

**Technology Assessed:** Inclined plate planter

Planting of maize is done either manually or through seed drills. A better way of planting would be the precision sowing which facilitates saving of seeds, fewer working hours, achieves more uniform spacing in the row and depth of planting and a uniform crop density which is considered to be one of the prerequisites for higher crop yields. KVK Kanker and Seoni conducted 15 OFTs on inclined plate planter. The results so obtained prove the efficacy of the precision seeding technology. In case of maize the incremental increase in yield, net return and B:C ratio over the conventional system were 6.8 q/ha, Rs. 9768.00 per ha and 0.23 respectively. In case of blackgram the incremental increase in yield, net return and B:C ratio over the conventional system were 1.6 q/ha, Rs. 2300.00 per ha and 0.08 respectively. Overall, precision planting provides a better environment for crop growth and eventually facilitates higher crop yield.

**Table 2.50. Inclined plate planter**

Details	No. of trials	Crop	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Conventional planting (Farmers' practices)	15	Mize	35.8	32908	2.09
		Blackgram	5.2	20200	2.08
Use of maize planter (Recommended practice)		Mize	42.6	42676	2.32
		Blackgram	6.8	22500	2.16



Inclined plate planter for sowing of black gram

## Animal Science

### Animal Nutrition Management

#### Oral calcium and phosphorus supplementation

**Problem Identified:** Low milk production due to deficiency of calcium in dairy animal feed

**Technology Assessed:** Assessment feeding of oral calcium supplement on milk production in dairy animal

The major mineral requirements for dairy buffalo are calcium and phosphorus. The calcium: phosphorus ratio is important, and any imbalance can cause low milk production and infertility. There are reserves of both elements in the skeleton. Pasture is often deficient in minerals, mainly in calcium and phosphorus. In some grazing areas, particularly uplands, dairy buffalo are subject to a mineral deficiency (especially during lactation), and thus calcium and phosphorus deficiency symptoms are frequently observed. To overcome the deficiency of calcium and phosphorus an OFT named supplementation of oral calcium and phosphorus supplement in dairy animal on milk production was conducted.

Four KVKs from M.P Seoni, Singrauli, Umaria & Datia from the zone IX conducted 30 OFT to assess the oral calcium and phosphorus supplementation in dairy animal on milk production. Animals were given oral calcium and phosphorus @ 100 ml per animal per day for two month. Average milk production increased by 15.13%, i.e. 7.55 liter (FP) to 8.69 liter per animal per day (RP). Net return of farmer also increased from Rs 5315.00 per animal (FP) to Rs. 5577.75 per animal per day (RP) over a period of two month.

**Table 2.51. Assessment feeding of oral calcium supplement on milk production in dairy animal**

Details	No. of trials	Average milk yield (Lit/day)	Avg. Net Returns (Rs.) in two month	B:C ratio
No oral calcium supplement in feed (Farmers' practices) T <sub>1</sub>	30	7.55	5315.00	2.12
Oral Ca and P supplement in feed (Recommended practice) T <sub>2</sub>		8.69	5577.75	2.39



Oral calcium and phosphorus supplement in dairy anima

### Animal Feed/Fodder Management

#### Round the year fodder production

**Problem diagnosed:** Low milk yield due to unavailability of green fodder round the year

**Technology assessed:** Assessment of cultivation and feeding of green fodder round the year on milk production dairy buffalo.

Green fodders play important role in the profitability of the livestock production. The objective of the increased milk production can be met only through ensuring availability of good quality fodder in balanced rations round the year. Success of dairy farming is largely dependent on the feed and fodder availability of high nutritional value, which accounts for 65-70 per cent expenses incurred over the animal feeds. Green forage availability is very important to maintain livestock health and productivity and this is particularly essential in dairy entrepreneurship where consistent and regular supply of green Fodder is imperative to sustain the milk production. Green herbage in addition to energy also provides vitamins, minerals with better dry matter digestibility.

Nine KVKs Chhatarpur, Shahdol, Singrauli, Raisen & Datia from MP and 04 KVK Anjora Durg, Balod, Balrampur & Surguja from CG conducted 66 OFT of cultivation and feeding of green fodder round the year on milk production in dairy buffaloes. The study revealed that there is an increase in average milk yield and net return by 19.74% and 32.57%, respectively, indicating that along with normal concentrate feed and dry fodder, green fodder is also essential for improving production of animals.

**Table 2.52. Assessment of cultivation and feeding of green fodder round the year on milk production dairy buffalo**

Details	No. of trials	Average milk yield (Lit/lactation)	Avg. Net Returns (Rs./lactation)	B:C ratio
Feeding green fodder only in rabi (Farmers' practices) T <sub>1</sub>	66	7.6 (2052 / lactation)	31704	1.85
Feeding green fodder round the year (Recommended practice) T <sub>2</sub>		9.1 (2457 / lactation)	42030	2.13

**Note:** one lactation taken 270 days



Hybrid Napier Fodder cultivated At Farmers Field



Green Fodder cultivated At Farmers Field

### Cultivation and feeding of Azolla in dairy buffaloes

**Problem diagnosed:** Low milk production due to unavailability of green fodder in the in the scarcity period in dairy buffaloes

**Technology assessed:** Assessment of feeding *Azolla* as green fodder supplement in scarcity period on milk production in dairy buffalo

*Azolla* is a floating fern and belongs to the family of Azollaceae. This plant is high with protein content, essential amino acids, vitamins, growth promoter intermediaries and minerals like calcium, phosphorus, potassium, ferrous, copper, magnesium etc. The carbohydrate and fat content of *Azolla* is very low. It is very easy to cultivate and ideal feed for dairy animals and poultry.

Nine KVKs Chhatarpur, Dindori, Shahdol, Singrauli, Govindnagar, Indore, Raisen, Sehore & Datia from MP of this zone conducted 74 trials to assess the effect of *Azolla* as green fodder for sustaining milk production when there is unavailability of green fodder during lean period. In recommended practice 2.5 kg azola was offered to animal per day for two month in addition to the feed offered in farmers practice. The result revealed that there is an increase in average milk yield and net return by 24.27% and 30.27%, respectively; indicating that supplementing existing feed with *Azolla* regularly at appropriate amount is beneficial in improving production of an animal.

**Table 2.53. Assessment of feeding *Azolla* as green fodder supplement in scarcity period on milk production in dairy buffalo**

Details	No. of trials	Average milk yield (Lit/day)	Avg. Net Returns (Rs.)/animal/two month	B:C ratio
Feeding only dry Fodder (Farmers' practices) T <sub>1</sub>	74	7.21	7380	2.22
Feeding dry fodder along with <i>Azolla</i> @ 1 to 1.5 kg /animal/day (Recommended practice) T <sub>2</sub>		8.96	9614	2.97



Azolla production and feeding

### Animal Health Management

#### Technology accessed: Indigenous Technical Knowledge (ITK) in poultry

**Problem diagnosed:** Slow growth, higher mortality, lower feed efficiency ratio in poultry

**Technology assessed:** Assessment of Indigenous Technical Knowledge (ITK) for better production performance

Indigenous Technical Knowledge (ITK) is the actual knowledge of a given population that reflects the experiences based on tradition and includes more recent experiences with modern technologies. ITK is the information base for a society, which facilitates communication and decision making. The advent of the concept of sustainable agriculture in late eighties in Indian agricultural scenario has evoked interest on indigenous technical knowledge (ITK) that has the element of use of natural products to solve the problems pertaining to agriculture and allied activities. Different traditional practices in poultry farming, quail farming and duck rearing were discussed.

Seven KVKs Tikamgarh, Govindnagar, Sehore & Dhar from MP and Kanker, Korea & Surguja from CG conducted 41 trials for assessing the effect of Indigenous Technical Knowledge (ITK) in poultry. This resulted in increase of body weight by 50.67%, reduction in mortality by 74.02% and increase in net return by 62.88%.

**Table 2.54. Assessment of Indigenous Technical Knowledge (ITK) for better production performance**

Details	No. of trials	Body weight of poultry, kg (at 03 month age)	Mortality (%) upto 03 month age	Avg. Net Returns (Rs.)	B:C Ratio
No use of Indigenous Technical Knowledge in poultry (Farmers' practices) T1	41	0.75	43.50	6482	1.86
Indigenous Technical Knowledge (Turmeric, herbal preparation, Aonla powder) (Recommended practice) T2		1.13	11.30	10558	2.39



ITK for better production performance in poultry

### Poultry Production

#### Backyard poultry farming

**Problem diagnosed:** Low income due to poor body weight gain and egg production of local breeds of poultry reared in backyard/intensive system

**Technology assessed:** Assessment of improved variety of poultry birds reared in backyard/intensive rearing system

Poultry production has been practiced by the farmers since long time in rural areas but rearing of local /indigenous variety of poultry birds, with poor production performance, leads to low economic return. However, the poultry production can be easily boosted up with improved varieties of chicken/ducks and can promise better remuneration from production of meat and eggs.

Thirteen KVKs (08 from M.P and 05 from C.G) from the zone conducted 86 OFT on assessment of Improved varieties of poultry birds (Kadaknath, Pratapdhan, Black Plymouth Rock, Vanaraja, Gramapriya, RIR, Giriraja, Aseel, Quail, Red Cornish, Narmada Nidhi etc.) in backyard/ intensive systems. Introduction of such varieties of birds, with better management practices, resulted in increase in average body weight by 23.52% and eggs by 45.45% with net return increasing by 58.71 %.

**Table 2.55. Assessment of improved variety of poultry birds reared in backyard/ intensive rearing system**

Technology Details	No. of trials	Average body Weight (kg.)	Average egg production/ month (nos.)	Avg. Net Returns /100 birds(Rs.)	B:C Ratio
Rearing of Local colored bird (poor in egg and meat production) (Farmers' practices) T <sub>1</sub>	86	1.19	11	28700	2.90

Rearing of Improved poultry bird (Kadakhnath, Pratapdhan, Black Plymouth Rock, Vanaraja, Gramapriya, RIR, Giriraja, Aseel, Quail, Red Cornish, Narmada Nidhi etc.) T <sub>2</sub>		1.47	16	45550	3.8
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Kadakhnath birds in backyard



Poultry Farming

## Fisheries

### Fish Seed Production

**Problem Identified** - Poor Management Practices due to survival rate of low in fish seed and growth, lack of feeding material, insect & Predatory fish & weed Fish.

**Technology Assessed** – Fish Seed production in nursery pond, eradication of aquatic insect with supplementary feed.

Survival & Growth rate of fish seed depends on proper management practices of nursery pond because quality fish seed production is good for fish culture and higher production farmer are not using supplementary feed they using traditional feeds of minimum quality if increase survival rate as well as growth of fish seed there is highly demand to use supplementary feed vitamin, mineral mixture feed floating feed, pre stocking management like eradication of aquatic insect, predatory & weed fishes to used supplementary feed mahua oil cake and oil soap emulsion .

**Table 2.56. Performance of fish seed production.**

Details	No of trials	Survival rate (%)	Cost of cultivation (Rs.)	Net Return (Rs.)	B:C ratio (Rs.)
Do not used supplementary feed, does not remove aquatic insect and predatory and weed fishes (FP T1)	12	39.2	77,666	59833	1.7

Stocking of fish spawn catla, rohu, mrigala (10 lac) application of mustard oil cake +rice bran (1:1) application of lime 200-250 kg/ha. Used of oil soap emulsion @ 56 kg oil with 18 kg of any cheap soap/ha. (RP T2)		67.5	106833	116000	2.08
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KVK Raipur conducted 04 OFT on assessment of survival rate at nursery ponds through control of aquatic insects and kvk Dhamtari conducted 08 OFT assessment of fish seed (fingerling) production at seasonal pond maximum survival rate 73% was recorded by KVK Dhamtari.



Stocking



Harvesting

### Composite fish culture

**Problem Identified-** Low yield of fish production because farmer are used single species improper ratio of fish species no used of supplementary feed and improve verity no used of proper nutrient feed.

**Technology assessed** – Assessment of fish farming through community participation, used of vitamin mineral mixture along with conventional feed used efficiency of liquid micronutrient in sustaining phytoplankton bloom.

Combination or mixed farming of compatible fish species is called polyculture or composite fish culture stocking of cultivable fishes of different species which differ in feeding habits in same pond fish culture in which compatible and non compacting fishes are cultured situation through the utilization of different feeding zones from a pond so as to increase the total production.

**Table 2.57. Performance of composite fish culture**

Details	No of trials	Survival rate (%)	Cost of cultivation (Rs.)	Net Return (Rs.)	B:C ratio (Rs.)
Do not stocked fish seed proper ration , improper practices not used of nutrient feed (supplementary feed) (FP T1)	11	21.97	111325	93801	1.8
Stocking of 8000 fingerling of catla, rohu, mrigala 4:3:3 ratio, application of mustard oil cake + rice bran (1:1) floating fish feed @ 5-3% body weight, vitamin mineral mixture premix, liquid micronutrient (RP T2)		30.90	127603	158771	2.2

KVK Dhamtari conducted 04 OFT on Assessment of fish farming through community participation result was yield 34q/ha. , KVK Raipur conducted 04 OFT Assessment of vitamin mineral mixture along with conventional feed for fish production result was 35.6 q/ha. KVK Dindori conducted 03 OFT on Assessment of efficiency of liquid micronutrient in sustaining phytoplankton bloom during winter result was 23 q/ha.

**Fish seed stocking****Harvesting**

KVK Dindori conducted 03 OFT on Assessment of biological control of aquatic weeds by grass carp. Grass carp are used for aquatic weed control no of trails 03 significant increases in production was found 80% grass carp is able to consume large quantities of aquatic macrophytes under suitable condition adult grass carp will eat more than its own weight of plants material on a assessment of performance on oxidizing agent  $KMnO_4$  in mitigating low dissolve oxygen condition in pisciculture tanks no of trials 03 significant increases in survival rate 91% for used of oxidizing agent for proper dissolve oxygen.

### 3. Frontline Demonstrations

Frontline demonstrations (FLD) are conducted to demonstrate the superiority of frontier and location specific proven technologies of agriculture and allied sectors among the farming community and extension functionaries for up-scaling in the larger area as well as for generating the production data along with the feedback. During the year 2020, 812 FLDs were conducted on oilseeds, pulses, cereals, vegetables crops, cash crops, agro-forestry, millets, etc.; covering the total area 8484.39 ha and benefitting 20393 farmers. FLDs were also conducted on important income generating enterprises, covering the total area of 298.55 ha in Zone IX including 436 units and 2884 beneficiaries (Table -3).

**Table 3: Summary of FLDs (State-wise) conducted in by KVKs**

State	Categories	No. of Technology Demonstrated	Area (ha)	Unit (no.)	No. of FLDs (Beneficiaries)
Chhattisgarh	Crops	134	584.28		1468
	CFLD (Oilseed)	51	1780		3837
	CFLD (Pulses)	87	1054.32		2266
	Enterprises	64	222	97	784
<b>Total</b>	-	<b>336</b>	<b>3640.6</b>	<b>97</b>	<b>8355</b>
Madhya Pradesh	Crops	342	1363.99	-	3684
	CFLD (Oilseed)	82	1923.4		4694
	CFLD (Pulses)	116	1778.4		4444
	Enterprises	177	76.55	339	2100
<b>Total</b>	-	<b>717</b>	<b>5142.34</b>	<b>339</b>	<b>14922</b>
<b>Total</b>	<b>Crops</b>	476	1948.27		5152
	<b>CFLD (Oilseed)</b>	133	3703.4		8531
	<b>CFLD (Pulses)</b>	203	2832.72		6710
	<b>Total</b>	<b>812</b>	<b>8484.39</b>		<b>20393</b>
	<b>Enterprises</b>	<b>241</b>	<b>298.55</b>	<b>436</b>	<b>2884</b>
<b>Grand Total</b>	-	<b>1053</b>	<b>8782.94</b>	<b>436</b>	<b>23277</b>

**Table 3.1: Summary of FLDs (Crop wise) conducted by KVKs of Zone-IX**

Categories	No. of FLDs	Area (ha)	Unit (no.)	Beneficiaries
Cereal	128	538.3	-	1330
Pulses	96	411.7		1033
Oilseed	94	343.79		918
Spices	55	174.6		595
Vegetable	55	235.08		619
Tuber	11	21.4		115
Millet	9	43.6		128
Fruit	6	13.5	-	47
Fibre	4	18	-	42
Flower	4	11.5	-	45
Fodder	4	30.8	-	48
Vermicompost	4	35		130
Bio Waste decomposer	3	36		45
Cash Crop	2	15	-	25
Medicinal and aromatic plants	1	20		32
<b>Total</b>	<b>476</b>	<b>1948.27</b>		<b>5152</b>
<b>Enterprises (ha/Units)</b>			-	

Categories	No. of FLDs	Area (ha)	Unit (no.)	Beneficiaries
Agriculture Engineering	48	260.8	-	447
Animal Science (ha/unit)	49	12	436	488
Fisheries	10	25.75	-	68
Women Empowerment	122			1680
Other Enterprises	12	-	-	201
<b>Total</b>	<b>241</b>	<b>298.55</b>	<b>436</b>	<b>2884</b>
<b>Grand Total</b>	<b>717</b>	<b>2246.82</b>	<b>436</b>	<b>8036</b>

Table 3.2: Summary of FLDs conducted in different areas by KVKs of Madhya Pradesh

Categories	No. of FLDs	Area (ha)	Unit (no.)	Beneficiaries
Oilseed	83	302.79		835
Cereal	80	305.1		784
Pulses	73	301.5		761
Spices	44	130.5		472
Vegetable	34	194.5		437
Millet	7	36.6		96
Fruit	6	13.5		47
Fibre	4	18		42
Flower	3	6.5		40
Tuber	3	4		15
Bio Waste decomposer	3	36		45
Vermicompost	2	15		110
<b>Total</b>	<b>342</b>	<b>1363.99</b>		<b>3684</b>
<b>Enterprises (ha/Units)</b>			-	
Agriculture Engineering	<b>23</b>	<b>70.8</b>		<b>175</b>
Fisheries	<b>4</b>	<b>3.75</b>		<b>19</b>
Animal Science (ha/unit)	<b>38</b>	<b>2.00</b>	<b>339</b>	<b>337</b>
Women Empowerment (ha/unit)	<b>105</b>	-	-	<b>1435</b>
Other enterprises	<b>7</b>	-	-	<b>134</b>
<b>Total</b>	<b>177</b>	<b>76.55</b>	<b>339</b>	<b>2100</b>
<b>Grand Total</b>	<b>519</b>	<b>1440.54</b>	<b>339</b>	<b>5784</b>

Table 3.3: Summary of FLDs conducted by KVKs of Chhattisgarh

Categories	No. of FLDs	Area (ha)	Unit (no.)	Beneficiaries
Cereal	48	233.2		546
Pulses	23	110.2		272
Vegetable	21	40.58		182
Oilseed	11	41		83
Spices	11	44.1		123
Tuber	8	17.4		100
Fodder	4	30.8		48
Medicinal and aromatic plants	1	20		32
Millet	2	7		32
Cash Crop	2	15		25
Flower	1	5		5
Vermicompost	2	20		20
<b>Total</b>	<b>134</b>	<b>584.28</b>		<b>1468</b>
<b>Enterprises (ha/Units)</b>			-	
Agriculture Engineering	<b>25</b>	<b>190</b>		<b>272</b>

Categories	No. of FLDs	Area (ha)	Unit (no.)	Beneficiaries
Fisheries	06	22		49
Animal Science (ha/unit)	11	10	97	151
Women Empowerment (ha/unit)	17	-	-	245
Other enterprises	05	-	-	67
<b>Total</b>	<b>64</b>	<b>222</b>	<b>97</b>	<b>784</b>
<b>Grand Total</b>	<b>198</b>	<b>806.28</b>	<b>97</b>	<b>2252</b>

Table 3.4: Summary of FLDs under Integrated Crop Management

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP* (T <sub>2</sub> )	FP** (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>								
Maize	3	20.8	52	44.02	33.27	32.29	29296.1	44902.88
Paddy	8	37.4	90	50.03	41.75	19.84	54515.58	69872.06
Wheat	5	31	77	37.1	30.36	22.20	34015.65	45780.71
<b>Fibre</b>								
Cotton	1	6	15	18.5	14.26	29.73	37800	57850
<b>Flower</b>								
Marigold	1	0.5	20	121.7	65.00	87.23	56765	110540
<b>Medicinal and aromatic plants</b>								
Lemon grass	1	20	32	206.4	157.20	31.30	14310	47970
<b>Millet</b>								
Barley	1	4	10	30.56	21.40	42.80	43352	55199
Sorghum	2	16	40	32	20.50	56.10	20139	41121.25
<b>Oilseed</b>								
Groundnut	1	2	5	13.5	10.00	35.00	27750	43812
Linseed	1	4.8	12	7.15	4.12	73.54	9932	21620
Mustard	1	10	25	12.3	9.55	28.80	22510	30285
Niger	1	5	5	3.26	1.12	191.07	1898	8737
Sesame	8	31.2	110	14.61	10.98	33.11	12498.01	19889.74
Soybean	7	48.6	121	14.9	11.49	29.66	16636.67	27506.21
<b>Pulses</b>								
Blackgram	7	50.8	126	7.86	5.52	42.51	13153.75	21822.03
Chickpea	4	40.8	77	14.62	10.94	33.69	23830.78	40494.98
Green Gram	1	16	40	6.42	3.46	85.55	4500	22082
Lentil	1	10	25	17.04	12.44	36.98	31150	67245
Pigeonpea	2	13.6	34	12.8	6.56	95.18	17353.26	47250.71
<b>Spices</b>								
Chilli	1	3.2	8	107	90.00	18.89	105000	178000
Fennel	1	8	20	16.56	3.95	319.24	37300	81800
Garlic	1	1	5	82	65.00	26.15	260000	328000
Onion	1	1	5	150.2	107.50	39.72	268750	375500
<b>Tuber</b>								
Elephant foot yam	1	1	10	608	345.00	76.23	425000	901000
Sweet potato	1	8	55	10.15	2.14	374.30	28915	209961
<b>Vegetable</b>								
Broccoli	1	1	20	151	130.00	16.15	63200	149500
Cauliflower	1	1	10	211.1	188.40	12.05	104287	127272
Colocasia	1	5	5	22.3	17.36	28.46	76667	150129
Cucumber	1	2	5	482.55	262.55	83.79	124050	295000

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP* (T <sub>2</sub> )	FP** (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
Seasonal vegetables	4	130.88	147	120.48	60.51	99.11	1563.79	4579.69
Sponge gourd	1	3.2	8	118	92.00	28.26	120000	214000
Tomato	2	6.6	24	19.35	12.85	50.50	53818.18	122181.82
White brinjal	1	1	6	350	270.00	29.63	108370	137550
<b>Total</b>	<b>74</b>	<b>541.38</b>	<b>1244</b>					

\* RP-Recommended practice, \*\*FP-Farmers' practices

**Table 3.5: Summary of FLDs on Integrated Disease Management**

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		%Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>								
Paddy	8	24.5	64	44.72	38.04	17.57	42004.04	55780.01
<b>Oilseed</b>								
Mustard	1	2	10	12.3	8.40	46.43	18920	32650
Sesame	2	6	15	6.06	4.21	43.98	20324.67	30044.67
Soybean	2	6	15	10.51	7.38	42.30	93626.37	161482.73
<b>Pulses</b>								
Blackgram	2	4	10	5.39	3.82	41.15	8814.5	15528.5
Chickpea	5	16	39	13.55	13.13	3.18	37630	51266.88
Lentil	1	2	5	8.75	7.00	25.00	13750	18875
Pigeonpea	2	4	10	14.4	10.84	32.86	46618.5	65452.5
<b>Spices</b>								
Chilli	5	14	37	80.81	59.31	36.26	83711.14	137591.14
Garlic	2	4.5	23	132.1	117.33	12.59	304958.89	385177.33
Onion	1	2	10	486.25	409.50	18.74	194588	254468
<b>Vegetable</b>								
Tomato	4	11.1	39	337.74	285.67	18.23	84429.54	106704
<b>Total</b>	<b>35</b>	<b>96.1</b>	<b>277</b>					

**Table 3.6: Summary of FLDs on Integrated Nutrient Management**

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>								
Maize	10	50	111	38.88	29.86	30.23	27293.6	41025.12
Paddy	12	43.8	113	43.68	36.50	19.68	45137.03	59363.11
Wheat	8	24	67	44.55	37.87	17.63	54002.33	70291.96
<b>Fibre</b>								
Cotton	1	4	10	18.03	15.83	13.90	44543	54399
<b>Fruit</b>								
Guava	3	5.5	20	491.56	393.56	24.90	157345.09	200003.27
<b>Millet</b>								
Sorghum	1	4	10	32.8	26.50	23.77	50070	62454
<b>Oilseed</b>								
Mustard	4	10.2	28	16.55	13.78	20.15	38255.75	47854.92
Sesame	1	4	10	4.66	3.70	25.95	22440	29440
Soybean	7	20.9	56	9.77	8.17	19.56	14653.08	16175.6
<b>Pulses</b>								
Blackgram	6	14.6	55	7.68	5.83	31.63	11713.62	17720.42
Chickpea	13	45.5	121	15.32	12.59	21.71	36111.5	47262.45
Pigeonpea	3	8	30	17.91	14.45	23.91	37772.25	50903.25

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Spices</b>								
Chilli	4	10	35	167.17	134.25	24.52	180162	234064
Coriander	1	1	10	8.6	7.20	19.44	25700	34600
Garlic	2	4.5	20	108.89	96.36	13.00	229321.33	287450.22
Ginger	1	2	5	190.46	137.33	38.69	210920	387966
Onion	2	3	15	277.12	222.67	24.45	91608.67	131664
<b>Tuber</b>								
Potato	2	2	10	206.5	165.50	24.77	191800	245225
<b>Vegetable</b>								
Bitter gourd	1	1	5	110	84.00	30.95	85600	137700
Bottle gourd	1	1	10	282.51	242.09	16.70	204010	161690
Cabbage	1	1	10	285.71	239.74	19.17	124392	159068
Cauliflower	6	15.5	79	251.37	198.25	26.79	104575.84	141938.81
Cucumber	2	2	15	121.14	92.51	30.94	124628	176340
Okra	1	1	5	123	93.00	32.26	47000	73000
Tomato	4	9	35	518.81	414.80	25.08	160708.67	227038.22
<b>Total</b>	<b>97</b>	<b>287.5</b>	<b>885</b>					

Table 3.7: Summary of FLDs on Integrated Pest Management

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>								
Maize	2	7	17	37.21	28.79	29.28	25778.57	38550
Paddy	10	50.8	108	47.56	37.45	27.00	39157.24	56807.6
Wheat	2	6	15	40.87	38.38	6.50	42785.67	46202.67
<b>Fibre</b>								
Cotton	2	8	17	18.91	16.14	17.13	43955	54870
<b>Fruit</b>								
Papaya	1	1	12	202	130.00	55.38	455000	726000
<b>Oilseed</b>								
Groundnut	2	4	20	18.76	15.40	21.82	12946	27659
Linseed	1	2	5	6.75	4.50	50.00	11562	20343
Mustard	5	15	37	12.77	9.38	36.14	25552.53	35915.53
Sesame	1	2	5	6.25	4.20	48.81	17604	24344
Soybean	9	29	82	109.86	87.96	24.90	18014.41	23749.85
<b>Pulses</b>								
Blackgram	2	4	20	9.19	7.61	20.76	17460	25340
Chickpea	8	28.4	77	18.2	15.89	14.57	34152.92	45230.59
Pigeonpea	2	6	15	12.57	9.80	28.23	37653.33	51700
<b>Spices</b>								
Chilli	2	4	15	133.63	117.05	14.16	70410	93225
Garlic	2	7	22	109.24	95.10	14.87	409688.57	476121.43
Onion	2	6	17	203.56	181.59	12.10	397870.33	431563.33
<b>Tuber</b>								
Potato	1	2	5	380	320.00	18.75	185000	228000
<b>Vegetable</b>								
Brinjal	2	1.1	22	284.23	172.77	64.51	152021.18	265423.69
Cauliflower	2	3.4	10	148.49	133.76	11.01	151974.26	182021.32
Kharif Onion	1	2.6	13	168.08	152.92	9.91	327206.16	378984.59
<b>Cash Crop</b>								
Lac	1	10	10	108	53.00	103.77	4830	12880
<b>Total</b>	<b>60</b>	<b>199.3</b>	<b>544</b>					

Table 3.8: Summary of FLDs on Integrated Weed Management

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>								
Maize	2	8	20	39.3	29.55	32.99	26325	39400
Paddy	5	22.8	58	46.78	36.70	27.45	40640.89	57515.98
Wheat	7	27	67	40.45	33.97	19.09	43802.22	54890.26
<b>Millet</b>								
Pearl millet	1	2	10	24.27	21.13	14.86	28650	33873
<b>Oilseed</b>								
Niger	1	4	10	4.5	3.00	50.00	12200	23950
Soybean	8	25	67	14.11	11.10	27.06	18237.2	21525.04
<b>Pulses</b>								
Blackgram	6	21	51	8.64	6.90	25.27	19557.86	27570.19
Chickpea	2	9	23	8.84	6.84	29.22	12855.56	20322.22
Green Gram	1	2	10	8.1	6.72	20.54	15990	21550
Pigeonpea	1	5	12	12.5	9.80	27.55	27600	37200
<b>Spices</b>								
Chilli	1	5	15	392.5	265.50	47.83	85300	210700
Coriander	1	2.8	7	23	21.11	8.95	75288	83699
Onion	5	24.4	83	218.21	190.75	14.40	215799.56	213361.7
<b>Vegetable</b>								
Okra	2	2	14	127	96.50	31.61	62300	93550
<b>Total</b>	<b>43</b>	<b>160</b>	<b>447</b>					

Table 3.9: Summary of FLDs on Varietal evaluation

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>								
Maize	1	4	10	42.82	33.16	29.13	41816	59112
Paddy	13	61.6	165	41.03	34.35	19.47	40128.59	51717.98
Wheat	23	84.8	216	42.49	35.41	20.00	46805.43	58458.28
<b>Flower</b>								
Marigold	2	6	20	135	108.33	24.62	159545	209706.67
<b>Fruit</b>								
papaya	2	7	15	401	251.64	59.35	156785.71	267800
<b>Millet</b>								
Barley	1	5.6	14	26.25	19.77	32.78	10047	18775
Finger millet	1	2	20	15.65	9.55	63.87	6786.5	11217.5
Ragi	1	5	12	8.3	6.50	27.69	13500	20200
<b>Oilseed</b>								
Groundnut	1	2	5	14	8.00	75.00	38695	48650
Mustard	5	9.49	55	21.33	17.75	20.17	49095.48	64390.34
Niger	2	9	19	3.63	2.21	63.97	5011.11	10675.56
Sesame	1	2	5	3.72	3.32	12.05	20630	23320
Soybean	13	53	127	13.56	9.39	44.46	13580.73	25225.09
<b>Pulses</b>								
Blackgram	4	14.2	46	9.03	6.73	34.14	20535.46	31461.63
Chickpea	11	47.2	100	17.33	12.87	34.62	38074.97	55978.25
Green Gram	1	2	5	2.5	1.50	66.67	5794	10500
Lathyrus	2	10	24	8.76	7.17	22.26	8628.5	11616.5
Lentil	1	2.4	6	19.5	11.70	66.67	42300	79600
Pigeonpea	4	16.2	42	13.42	10.64	26.13	34074.32	43880.44

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Spices</b>								
Ajawain	1	5	10	11.8	8.12	45.32	52618	81340
Chilli	2	7	22	138.9	116.94	18.78	103285.71	132199.29
Coriander	5	13.1	41	10.01	6.90	45.05	48349.47	74802.98
Fenugreek	2	3.6	18	6.04	4.96	21.77	32506.39	46027.78
Garlic	1	0.1	5	62.8	44.50	41.12	65044	105689
Ginger	1	4	10	117.02	98.41	18.91	294245	370225
Nigella	1	5	10	12.1	7.25	66.90	56930	103350
Onion	4	14.4	87	201.71	127.57	58.12	110565.42	125750.88
Turmeric	2	17	35	62.97	42.69	47.49	60951.53	243703.06
<b>Tuber</b>								
Elephant foot yam	3	3.4	15	412.35	253.94	62.38	219147.06	321835.29
Sweet potato	3	5	20	201.6	154.00	30.91	78000	112000
<b>Vegetable</b>								
Ash gourd	2	6	30	302.5	213.98	41.37	61740	100750
Colocasia	1	5	5	84.36	67.30	25.35	72900	106400
Cowpea	4	6.4	20	55.11	42.29	30.33	22231.28	28875.91
Drumstick	1	1	12	90	0.00	0	0	140000
Tomato	5	10.6	40	386.89	247.03	56.62	207610.28	365948.11
<b>Total</b>	<b>127</b>	<b>450.09</b>	<b>1286</b>					

Table 3.10: Summary of FLDs on Resource Conservation Technology

Crops	Methods of RCT	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
					RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>									
Maize	Line sowing	1	5	5	68	28.00	142.86	21630	84110
Paddy	Dry seeding technology in Rice	1	5.2	13	43.03	35.84	20.06	32330	44662
Wheat	Zero tillage technology	1	6	15	42.05	38.10	10.37	35688	40972
<b>Oilseed</b>									
Soybean	FIRBS & BBF planting	3	18	30	16.51	12.78	29.22	29933.33	43575.56
<b>Pulses</b>									
Blackgram	Deep summer ploughing	1	2	5	3.5	3.00	16.67	10000	12000
<b>Vegetable</b>									
Onion	Storage of onion in Exhaust fan model (Malwa Modal)	1	2.5	10	23.31	2.35	891.91	109155	495407
<b>Total</b>		<b>8</b>	<b>38.7</b>	<b>78</b>					

Table 3.11: Summary of FLDs on Soil Fertility Management

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Cereal</b>								
Paddy	5	17.6	44	37.53	33.62	11.63	28597.84	45285.23
Wheat	2	6	15	38.85	35.38	9.81	46495.33	52127.67

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Oilseed</b>								
Linseed	2	3.6	9	10.1	7.46	35.47	18244.44	28244.44
Soybean	1	4	10	17.84	15.55	14.73	34106	40818
<b>Pulses</b>								
Chickpea	2	7	15	8.85	7.05	25.53	28436.86	46409.14
Field Pea	1	10	10	6.8	5.50	23.64	8090	19030
<b>Spices</b>								
Garlic	1	2	5	54.2	36.51	48.45	302900	403104
<b>Bio Waste decomposer</b>								
Residues management	4	38	50	78.07	41.23	89.37	11338.53	21469.37
<b>Vermicompost</b>								
Vermicompost	4	35	130	100	46.36	115.72	27425.71	56589.29
<b>Total</b>	<b>22</b>	<b>123.2</b>	<b>288</b>					

Table 3.12: Summary of FLDs on Crop Diversification

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Oilseed</b>								
Sesame	1	4	10	6.62	4.85	36.49	27597	37860
<b>Vegetable</b>								
Cucurbits, Bottlegourd, Sponge Gourd and Bitter Gourd	1	2	10	336.56	274.26	22.72	196880	256275
Seasonal vegetables	1	0.2	10	15	6.00	150.00	6300	17500
<b>Total</b>	<b>3</b>	<b>6.2</b>	<b>30</b>					

Table 3.13: Summary of FLDs on Feed and Fodder

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Fodder</b>								
Maize	1	4.8	10	500	400.00	25.00	31000	44000
Napier	3	26	38	252.92	23.38	981.58	31673.08	113807.69
<b>Total</b>	<b>4</b>	<b>30.8</b>	<b>48</b>					

Table 3.13: Summary of FLDs on Agro forestry

Crops	No. of FLDs	Area (ha)	No. of farmers	yield (q/ha)		% Change	Net Return (Rs/ha)	
				RP (T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )
<b>Flower</b>								
Mahua	1	5	5	3.5	2.50	40.00	1500	2700
<b>Oilseed</b>								
Groundnut	1	5	5	6	4.00	50.00	0	19660
<b>Cash Crop</b>								
Lac in semialata	1	5	15	44.8	21.00	113.33	29700	73500
<b>Total</b>	<b>3</b>	<b>15</b>	<b>25</b>					

Table 3.14: Summary of FLDs on Farm Mechanization

Technology	Crops	No. of FLDs	Area (ha)	No. of farmers	Yield (q/ha)		%Change	Net Return (Rs/ha)	
					RP(T <sub>2</sub> )	FP(T <sub>1</sub> )		FP (T1)	RP(T2)
<b>Farm Machanization</b>									
8 row Paddy Drum seeder	Paddy	1	2	5	35.62	33.41	6.61	37009	45338
Ridge and Furrow	Turmeric	1	50	15	2000	1600	25	229000	710000
8 row self-propelled paddy transplanter	Paddy	1	3	7	38.1	37.5	1.6	35663	40593
Ambika paddy weeder	Paddy	1	1	5	30	24	25	36876	55102
Garlic planter	Garlic	1	2	5	93.8	92.2	1.74	129680	138300
Improved Drum Seeder	Paddy	1	5	5	46.9	42.33	10.8	29417	39744
Inclined plate planter	Paddy	1	5	13	48.7	42.3	15.13	49450	64950
MB Plough	Field preparation	1	2	10	12.98	11.51	12.77	11236	16028
Paddy weeder	Paddy	1	4	10	39.45	32.63	20.9	22393	38443
potato planter	Potato	1	2	5	195	193	1.04	120400	136700
Power weeder	Paddy	1	5	10	35.5	30.15	17.74	40225	57180
Reaper cum binder	Wheat	1	2.6	12	45.51	44.48	2.32	62045	65691
Ridge Bed planter	Maize	1	2	10	55.78	45.12	23.63	22000	31819
RMB Plough	Soybean	1	4.8	10	9.6	8.8	9.09	2083	4366
seed cum fertilizer drill	Chickpea	1	4	10	9.4	7.3	28.77	28470	36660
	Paddy	4	14	29	41.26	37.98	8.65	49851.36	36742.33
	Soybean	1	2	5	9.28	7.88	17.77	9980	18800
	Wheat	1	5	13	30.25	28.4	6.51	32970	37800
Self propelled vertical conveyor reaper	Wheat	1	2	5	38.5	38.5	0	48512	49512
Tractor Drawn ridger	Maize	1	2	13	53.35	45.5	17.25	37675	47057
Tractor Drawn seed cum fertilizer drill	Paddy	1	3	13	42.65	37.78	12.89	30920	37309
Tractor drawn seed drill	Paddy	1	5	8	52.64	48.73	8.02	47470	53320
tractor operated axial flow thresher	Paddy	1	5	5	9.78	1.37	613.87	16188	65030
Tractor operated mustard planter	Mustard	1	2.6	13	17.66	16.29	8.41	32710	36923
Vertical Conveyor Reaper	Wheat	1	5	13	30.25	28.4	6.51	32970	37800
Reaper cum binder(Field capacity ha/hr)	Wheat	1	4	10	0.45	0.05	800	0	0
Tractor operated baler machine( bel/hr)	Paddy	2	20	28	36.5	0	0	0	0
Disc harrow (Field Capacity (ha/hr))	Paddy	1	25	25	0.3	0	0	0	0
Animal drawn Biasi ploughField Capacity (ha/hr)	Paddy	1	5	10	0.09	0.04	125	0	0
<b>Post Harvest Management</b>									
Dal Mill	Desi Dal	1	17	6	14	12	16.67	67500	79500
Rice Mill	Desi Scented Rice	1	2	15	28	25	12	11250	49500
<b>Resource Conservation Technology</b>									
Broad bed furrow (BBF) seed drill	Soybean	2	7	23	17.07	13.51	26.36	25248.29	37780.14
Drip Irrigation	Cabbage	1	1	5	273	221	23.53	86000	103400

Technology	Crops	No. of FLDs	Area (ha)	No. of farmers	Yield (q/ha)		%Change	Net Return (Rs/ha)	
					RP(T <sub>2</sub> )	FP(T <sub>1</sub> )		FP (T <sub>1</sub> )	RP(T <sub>2</sub> )
	Chilli	1	1	5	214	148	44.59	67600	121800
FIRBS Machine	Chickpea	1	4	10	18.54	15.28	21.34	42600	57700
Line sowing	Paddy	1	4	8	42.67	38.2	11.7	68500	82675
Raised bed furrow system	Soybean	1	4.8	10	10.25	8.55	19.88	2270.5	7737.5
Raised bed Planter	Soybean	2	7	18	16.45	12.64	30.11	25642.86	42067.86
Ridge furrow seed cum fertilizer drill	Chickpea	1	2	5	16.67	14.2	17.39	47435	59616
<b>Small Farm Implements</b>									
Cono weeder	Paddy	1	2	5	46.58	45.54	2.28	56668	62511
Groundnut Decorticator (kg/hr)	Groundnut	1	10	10	175	80	118.75	7964	11644
spiral grain separator(kg/hr)	Soybean	1	5	5	320	60	433.33	1875	3925
<b>Grand Total</b>		<b>48</b>	<b>260.8</b>	<b>447</b>					

Table 3.15: Summary of FLDs on Livestock and Poultry Production

Thematic area	No. of FLDs	Area (ha) / No. of animals or birds	No. of farmers	Parameter	Result		% change	Net Return (Rs) over two month of demonstration	
					RP(T <sub>2</sub> )	FP (T <sub>1</sub> )		FP (T <sub>1</sub> )	RP(T <sub>2</sub> )
<b>Cattle/Bufalo (Average milk yield-1/day), Body wt gain in gm /day, mortality %</b>									
Animal Disease Management	8	115	94	Milk yield (Lit/day/animal)	9.56	8.8	8.67	4420	5205
				Body wt gain in gm /day	690	590	16.95		
				Mortality %	18.5	15.05	22.92		
				Disease incidence (%)	21.72	44.83	51.55		
Animal Feed / Fodder Management	13	103	102	Milk yield (Lit/day/animal)	5.13	4.27	20.11	4875.33	6276.01
				Body wt gain (Kg)	245.05	226.9	7.99		
Animal Feed / Fodder Management (ha)	3	12	41	Milk yield	5.29	4.05	30.82	2497.33	3360.40
Animal Nutrition Management	10	88	88	Milk yield	5.65	4.69	20.55	9480	11636
				Body wt gain in kg /calf	71.67	56.2	27.53		
Livestock production & management	4	30	57	Milk yield/day	11.6	8.6	34.88	9685	11995
				Vermi compost production / bed/year (kg)	2015.29	1541.18	30.76		
				Body weight gain (in 3 months)	55.4	42.4	30.66		
<b>Goat &amp; Sheep (Average body weight in kg)</b>									
Animal Disease Management	2	16	16	Body weight at 6 month (kg/ Animal)	10.55	9.1	15.94	8960	10800

Thematic area	No. of FLDs	Area (ha) / No. of animals or birds	No. of farmers	Parameter	Result		% change	Net Return (Rs) over two month of demonstration	
					RP(T2)	FP (T1)		FP (T1)	RP(T2)
Nutrition Management	1	5	5	Average body weight in kg	10.5	9.56	9.83	8450	10320
Livestock production & management	1	10	10	Body wt. (kg/animal in 8 months)	10.13	8.25	22.79	6140	8657.40
<b>Poultry (Average body weight/100 birds in kg in two month)</b>									
Feed management	1	10	10	Average body weight/Bird	1.55	1.15	34.78	11268	15275
Poultry Production and management	6	59	65	Average body weight in gm	665.89	594.89	11.94	13460	17685
				Mortality percent	8.2	11.2	26.79		
<b>Grand Total</b>	<b>49</b>	<b>12.0 ha (436 unit)</b>	<b>488</b>						

Table 3.16: Summary of FLDs on Fisheries

Thematic area	No. of FLD	Area (ha)	No. of farmers	Results			Net Return (Rs.)	
				RP(T <sub>2</sub> )	FP(T <sub>1</sub> )	% Change	FP(T <sub>1</sub> )	FP(T <sub>2</sub> )
Composite Fish Farming	1	0.75	4	140550	85320	64.73	94360	165975
Fingerling Production in Seasonal Ponds	2	5.5	17	20.68	8.65	138.92	56281.82	256917.82
Fish Breeding	1	1	5	1934	929	108.18	16951	76588
Fish Nutrition	1	7.5	12	44.54	29.45	51.24	137500	229400
Fish Production & Management	2	2	13	1285.5	459	180.07	40257.5	141427
Fish-cum-Duck Farming	1	1	7	33	25	32	105000	160000
Pond management	1	4	6	28	21	33.33	83000	114000
Spawn to fry production	1	4	4	0.8	0.45	77.78	37230	79070
<b>Grand Total</b>	<b>10</b>	<b>25.75</b>	<b>68</b>					

Table 3.17: Summary of FLDs on Women Empowerment

Name of technology demonstrated	No of farm women	Output (m <sup>2</sup> /kg/hr)		Av. % reduction in drudgery	Av. % increase in efficiency
		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )		
<b>Drudgery Reduction</b>					
Potato Peeler and Slicer	10	5.86	16.5	49.9	75.61
Twin wheel hoe	5	120	470	20.5	49.5
Spiral Seed Grader	5	170	60	26.66	63.69
Motor operated Seed decorticator	10	53	263	41.43	86.36
Revolving stool	16	2.3	4.4	20.23	51.4
Ring cutter	5	72.5	88.3	16.82	23.23
Pedal cum motor operated grain cleaner	5	35	247	28.77	62.38
Multipurpose hand drawn trolley	12	576	1243	32.2	89.1
Naveen Seed Dibbler	10	50	150	65.62	34.39
CIAE Seed drill	10	29	120	9.07	87.5
Bhindi pluckker	10	148	55	43	50.25
V-Blade Hand Hoe	10	21	9	13	57.1
<b>Total</b>	<b>108</b>				

Name of technology demonstrated	No of farm women	Output (m <sup>2</sup> /kg/hr)		Av. % reduction in drudgery	Av. % increase in efficiency
		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )		
<b>Value Addition</b>					
Name of Technology demonstrated	No of farm women	Cost of input(Rs/kg/q)		Gross income(Rs.)	Net Return (Rs.)
		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )		
Mushroom Products	5	3000	4000	14000	10000
Milk Products	10	25	200	300	100
Quinoa Flour and Dalia	5	-	362.5	1887.5	1525
Dalia(Wheat)	10	5637	7095	30950	23855
Ber powder and squash	12	35	85	310	225
Bael jam and squash	10	58	95	340	245
Vegetable and fruit preservation	4	9350	10200	21250	11050
<b>Total</b>	<b>56</b>				
<b>Income Genration</b>					
Name of Technology demonstrated	No of farm women	Cost of input(Rs/kg/q)		Gross income(Rs.)	Net Return (Rs.)
		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )		
Backyard poultry	5	2000	3000	15000	12000
Bee keeping	5	100	210	224,000	223790
Flower production	20	33450	42500	280880	238380
Fruit & vegetable processing	103	7000	10200	35900	25700
Grain pro super bag	32	80	120	4420	4300
Lac production Technology	25	720	880	3168	2288
Minor millets processing	5	5000	12000	30000	18000
Nursery Management	21	7500	8000	18500	10500
Mushroom cultivation	74	375	1000	3750	2750
Vermi compost production	141	1300	8256	17432	9176
<b>Total</b>	<b>431</b>				
<b>Nutritional Security</b>					
Name of Technology demonstrated	No of farm women	Average per capita consumption of vegetable gm/ day		Iron (mg)	Calcium (mg)
		FP (T <sub>1</sub> )	RP (T <sub>2</sub> )		
Nutrition Garden	1004	85	150	20.4	227
<b>Total</b>					
<b>Grand Total</b>	<b>1599</b>				

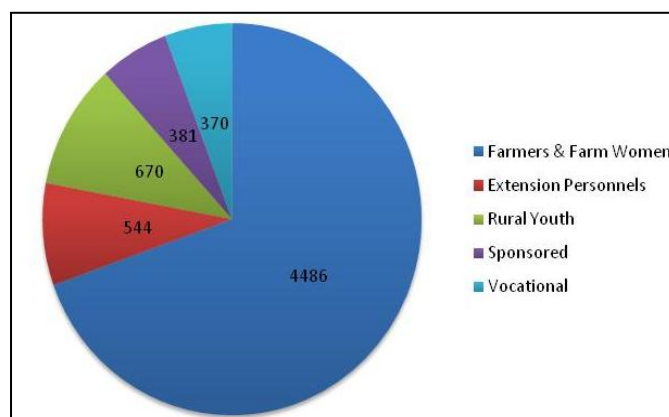
## 4. Training and Capacity Building

Training has been considered a key component for updating the knowledge and imparting the new skill to the participants. There was great emphasis on organizing training both for the farmers as well as for the trainers. During the year 2020, 6451 courses benefitting 1,81,101 participants (including farmers and farm women, rural youth, extension personnel and sponsored from different agencies) were organised (Table 4.1).

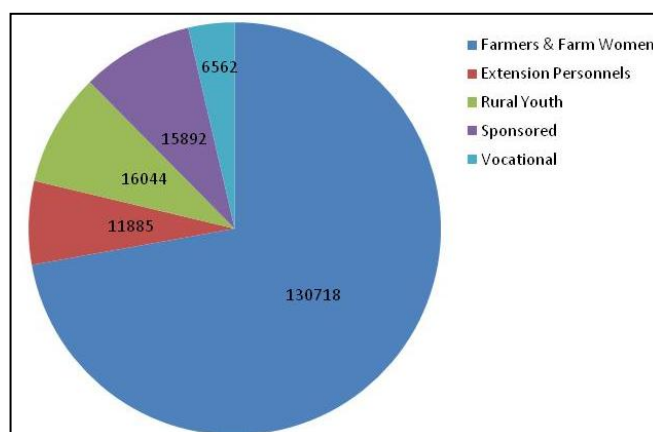
### A. Training organized by KVK

**Table 4.1: State wise, category wise training programmes conducted by KVKs in Zone IX during 2020**

Training	No. of courses			No. of Participants		
	CG	MP	Total	CG	MP	Total
Farmers & Farm Women	1538	2948	4486	47260	83458	130718
Extension Personnels	123	421	544	3603	8282	11885
Rural Youth	244	426	670	6453	9591	16044
Sponsored	145	236	381	7057	8835	15892
Vocational	53	317	370	1344	5218	6562
<b>Total</b>	<b>2103</b>	<b>4348</b>	<b>6451</b>	<b>65717</b>	<b>115384</b>	<b>181101</b>



**Figure- 1. No. of courses**



**Figure- 2. No. of participants**

Table 4.2: Training for Farmers and Farm Women in Zone IX

Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Agril. Engineering</b>																
Farm machinery & its maintenance	52	209	27	236	368	90	458	124	42	166	367	157	524	1068	316	1384
Installation and maintenance of micro irrigation systems	30	143	27	170	239	47	286	92	28	120	134	41	175	608	143	751
Post Harvest Technology	22	35	20	55	201	49	250	52	21	73	171	40	211	459	130	589
Production on small tool and implement	15	30	8	38	108	23	131	58	13	71	43	27	70	239	71	310
Repair and maintenance of farm machinery and implements	34	122	15	137	199	38	237	89	41	130	231	89	320	641	183	824
Small scale processing and value addition	14	16	6	22	76	57	133	18	19	37	66	46	112	176	128	304
Use of Plastic in farming practices	12	33	11	44	80	23	103	14	3	17	22	30	52	149	67	216
Others	21	100	14	114	247	37	284	46	22	68	136	30	166	529	103	632
<b>Agro forestry</b>																
Nursery management	6	16	14	30	28	4	32	4	12	16	24	7	31	72	37	109
Production technologies	52	114	32	146	340	89	429	75	24	99	182	20	202	711	165	876
Integrated Farming System	2	4	0	4	1	0	1	2	0	2	32	13	45	39	13	52
Others	8	69	22	91	104	16	120	17	0	17	441	221	662	631	259	890
<b>Capacity Building and Group Dynamics</b>																
Entrepreneurial development of farmers/youths	34	218	34	252	368	97	465	128	58	186	207	300	507	921	489	1410
Formation and Management of SHGs	56	146	37	183	386	117	503	84	116	200	142	168	310	758	438	1196
Group dynamics	26	205	32	237	277	117	394	112	56	168	128	113	241	722	318	1040
Leadership development	26	111	15	126	239	51	290	76	20	96	115	40	155	541	126	667
Mobilization of social capital	24	100	41	141	202	63	265	60	17	77	40	10	50	402	131	533
WTO and IPR issues	11	44	12	56	64	7	71	31	21	52	41	25	66	180	65	245
Others	105	686	50	736	926	144	1070	330	113	443	453	221	674	2395	528	2923

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Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Crop Production</b>																
Crop Diversification	69	149	14	163	560	150	710	205	38	243	485	294	779	1399	496	1895
Cropping Systems	107	313	78	391	819	135	954	311	156	467	1221	303	1524	2664	672	3336
Integrated Crop Management	165	852	333	1185	1551	179	1730	414	197	611	1424	528	1952	4241	1237	5478
Integrated Farming	68	212	50	262	470	80	550	178	97	275	617	195	812	1477	422	1899
Integrated Nutrient Management	86	405	85	490	547	122	669	276	59	335	917	268	1185	2145	534	2679
Micro irrigation/irrigation	38	147	16	163	268	53	321	171	53	224	560	194	754	1146	316	1462
Nursery management	41	165	53	218	292	101	393	115	227	342	261	113	374	833	494	1327
Production of organic inputs	63	441	608	1049	316	800	1116	675	191	866	407	678	1085	1839	2277	4116
Resource Conservation Technologies	39	207	29	236	281	58	339	124	19	143	310	111	421	922	217	1139
Seed production	156	885	111	996	1147	208	1355	1213	225	1438	1018	268	1286	4263	812	5075
Soil & water conservation	50	385	46	431	317	66	383	165	503	668	500	224	724	1367	839	2206
Weed Management	106	654	142	796	975	185	1160	413	170	583	1175	447	1622	3217	944	4161
Others	81	388	57	445	508	55	563	248	49	297	426	102	528	1570	263	1833
<b>Fisheries</b>																
Carp breeding and hatchery management	1	1	0	1	4	0	4	4	0	4	12	0	12	21	0	21
Carp fry and fingerling rearing	9	16	6	22	23	9	32	19	6	25	76	9	85	134	30	164
Composite fish culture	8	20	7	27	50	11	61	41	20	61	62	25	87	173	63	236
Fish processing and value addition	3	7	0	7	32	2	34	4	1	5	2	28	30	45	31	76
Hatchery management and culture of freshwater prawn	1	1	0	1	16	3	19	5	2	7	7	0	7	29	5	34
Integrated fish farming	30	55	5	60	133	9	142	42	2	44	140	234	374	370	250	620
Pen culture of fish and prawn	2	3	0	3	10	1	11	3	1	4	31	5	36	47	7	54
Portable plastic carp hatchery	1	0	0	0	0	0	0	5	0	5	38	4	42	43	4	47
Ornamental fish farming	11	86	0	86	197	0	197	14	0	14	0	0	0	297	0	297
Others	7	49	22	71	108	44	152	17	50	67	38	117	155	212	233	445
<b>Home Science/Women empowerment</b>																
Design and development of	31	8	112	120	15	311	326	19	75	94	11	162	173	53	660	713

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Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
low/minimum cost diet																
Designing and development for high nutrient efficiency diet	38	49	103	152	24	365	389	24	111	135	41	286	327	138	865	1003
Gender mainstreaming through SHGs	28	26	96	122	31	165	196	33	86	119	11	131	142	101	478	579
Household food security by kitchen gardening and nutrition gardening	78	116	439	555	215	808	1023	90	327	417	241	810	1051	662	2384	3046
Location specific drudgery reduction technologies	18	6	99	105	0	125	125	10	89	99	9	106	115	25	419	444
Location specific drudgery reduction technologies	11	13	40	53	45	74	119	1	23	24	41	81	122	100	218	318
Minimization of nutrient loss in processing	18	16	84	100	22	129	151	9	83	92	4	34	38	51	330	381
Processing and value addition	100	28	419	447	173	640	813	85	365	450	169	667	836	455	2091	2546
Rural Crafts	9	0	32	32	0	45	45	0	73	73	0	67	67	0	217	217
Storage loss minimization techniques	18	30	96	126	26	118	144	22	62	84	17	87	104	95	363	458
Women and child care	72	58	188	246	68	659	727	50	324	374	54	406	460	230	1577	1807
Women empowerment	47	80	163	243	131	393	524	66	176	242	148	274	422	425	1006	1431
Others	33	17	76	93	75	124	199	81	84	165	397	308	705	570	592	1162
<b>Horticulture (Fruits)</b>																
Cultivation of Fruit	41	168	25	193	223	101	324	138	22	160	460	95	555	989	243	1232
Export potential fruits	3	6	0	6	36	3	39	11	0	11	60	3	63	113	6	119
Layout and Management of Orchards	39	133	32	165	244	51	295	88	30	118	247	57	304	712	170	882
Management of young plants/orchards	27	101	35	136	180	49	229	85	24	109	228	45	273	594	153	747
Micro irrigation systems of orchards	18	57	24	81	89	44	133	37	22	59	192	34	226	375	124	499
Plant propagation techniques	29	59	16	75	107	36	143	46	12	58	154	57	211	366	121	487
Rejuvenation of old orchards	14	64	6	70	71	13	84	54	6	60	150	12	162	339	37	376

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Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Training and Pruning	39	103	14	117	148	45	193	117	33	150	166	194	360	534	286	820
Others	4	17	1	18	3	13	16	1	6	7	4	46	50	25	66	91
<b>Horticulture (Ornamental Plants)</b>																
Export potential of ornamental plants	3	13	0	13	14	0	14	5	1	6	39	5	44	71	6	77
Management of potted plants	14	18	0	18	79	26	105	26	7	33	74	19	93	197	52	249
Nursery management	10	35	12	47	53	24	77	59	9	68	84	26	110	231	71	302
Propagation techniques of Ornamental Plants	4	10	0	10	27	2	29	17	0	17	21	17	38	75	19	94
Others	6	14	1	15	19	2	21	11	3	14	46	9	55	90	15	105
<b>Horticulture (Vegetable Crops)</b>																
Exotic vegetables	12	54	7	61	87	16	103	34	6	40	68	14	82	243	43	286
Export potential vegetables	10	39	7	46	63	7	70	45	2	47	41	5	46	188	21	209
Grading and standardization	17	68	36	104	45	36	81	64	16	80	45	16	61	222	104	326
Nursery raising	65	255	102	357	459	214	673	213	276	489	346	305	651	1273	897	2170
Off season vegetables	40	137	121	258	286	161	447	101	61	162	239	117	356	763	460	1223
Production of low volume and high value crops	83	277	49	326	655	120	775	139	53	192	552	140	692	1623	362	1985
Protective cultivation	53	293	53	346	449	139	588	159	29	188	399	142	541	1300	363	1663
Others	40	124	16	140	307	107	414	64	25	89	164	49	213	659	197	856
<b>Horticulture( Medicinal and Aromatic Plants)</b>																
Nursery management	11	6	0	6	22	3	25	12	1	13	166	20	186	206	24	230
Post harvest technology and value addition	3	3	2	5	25	0	25	20	0	20	29	0	29	77	2	79
Production and management technology	10	49	8	57	80	9	89	24	2	26	56	24	80	209	43	252
Others	10	13	0	13	19	0	19	31	0	31	20	0	20	83	0	83
<b>Horticulture(Plantation crops)</b>																
Processing and value addition	11	30	21	51	46	45	91	16	17	33	39	32	71	131	115	246

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Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Production and management technology	45	47	5	52	59	24	83	29	7	36	152	26	178	287	62	349
Others	4	25	0	25	54	0	54	15	0	15	0	0	0	94	0	94
<b>Horticulture(Spices)</b>																
Processing and value addition	5	7	0	7	33	1	34	12	1	13	48	7	55	100	9	109
Production and management technology	44	1254	19	1273	198	24	222	52	14	66	105	73	178	1609	130	1739
Others	10	49	0	49	63	0	63	11	0	11	17	0	17	140	0	140
<b>Horticulture(Tuber crops)</b>																
Processing and value addition	2	2	2	4	11	0	11	9	16	25	1	0	1	23	18	41
Production and management technology	19	78	21	99	120	51	171	59	15	74	131	34	165	388	121	509
Others	3	14	1	15	5	1	6	3	5	8	15	32	47	37	39	76
<b>Livestock Production and Management</b>																
Animal Nutrition Management	23	103	7	110	211	22	233	53	13	66	150	40	190	517	82	599
Dairy Management	58	220	36	256	434	132	566	160	72	232	415	115	530	1229	355	1584
Disease Management	67	250	52	302	1339	88	1427	202	63	265	368	123	491	2159	326	2485
Feed & fodder technologies	49	212	18	230	285	64	349	95	50	145	336	116	452	928	248	1176
Goat Management	14	41	12	53	149	19	168	54	24	78	108	9	117	352	64	416
Piggery Management	3	3	0	3	28	5	33	1	0	1	26	6	32	58	11	69
Poultry Management	64	99	20	119	416	211	627	477	116	593	400	162	562	1392	509	1901
Production of quality animal products	23	30	7	37	154	22	176	47	15	62	202	82	284	433	126	559
Rabbit Management	2	16	0	16	5	0	5	3	0	3	22	0	22	46	0	46
Others	5	18	2	20	53	4	57	30	3	33	9	7	16	110	16	126
<b>Plant Protection</b>																
Bio-control of pests and diseases	57	191	49	240	414	81	495	132	47	179	517	169	686	1254	346	1600
Integrated Disease Management	175	675	99	774	1583	203	1786	353	107	460	828	202	1030	3439	611	4050
Integrated Pest Management	224	1174	142	1316	2575	327	2902	561	98	659	1449	389	1838	5759	956	6715

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Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Production of bio control agents and bio pesticides	31	87	38	125	255	35	290	82	40	122	188	60	248	612	173	785
Others	14	32	2	34	93	19	112	19	9	28	80	3	83	224	33	257
<b>Production of Input at site</b>																
Apiculture	10	33	16	49	82	6	88	22	0	22	109	107	216	246	129	375
Bio-agents production	8	16	4	20	30	3	33	16	11	27	129	25	154	191	43	234
Bio-fertilizer production	7	3	1	4	18	9	27	28	6	34	103	52	155	152	68	220
Bio pesticides production	9	12	2	14	41	41	82	15	5	20	41	8	49	109	56	165
Mushroom production	78	331	131	462	528	475	1003	172	193	365	364	645	1009	1395	1444	2839
Organic manures production	14	14	2	16	65	33	98	28	25	53	106	151	257	213	211	424
Planting material production	10	18	6	24	27	18	45	23	7	30	127	32	159	195	63	258
Production of Bee colonies and wax sheets	2	9	0	9	19	0	19	0	0	0	23	7	30	51	7	58
Production of Fish feed	1	4	0	4	9	6	15	3	0	3	3	0	3	19	6	25
Production of fry and fingerlings	1	0	0	0	0	0	0	0	0	0	32	4	36	32	4	36
Production of livestock feed and fodder	6	5	1	6	9	6	15	5	3	8	33	7	40	52	17	69
Seed production	27	59	17	76	99	25	124	49	25	74	168	56	224	375	123	498
Vermi compost production	39	113	131	244	330	355	685	125	161	286	254	521	775	822	1168	1990
Others	1	10		10	7	5	12	2		2	3	2	5	22	7	29
<b>Soil Health and Fertility Management</b>																
Balance Use of fertilizer	74	349	26	375	405	48	453	117	25	142	530	140	670	1401	239	1640
Integrated Nutrient Management	88	467	49	516	568	169	737	252	58	310	856	293	1149	2143	569	2712
Integrated water management	23	95	42	137	137	39	176	37	10	47	109	34	143	378	125	503
Management of Problematic soils	28	62	29	91	109	16	125	78	17	95	226	96	322	475	158	633
Micro nutrient deficiency in crops	40	163	13	176	269	29	298	109	25	134	118	60	178	659	127	786
Nutrient Use Efficiency	29	146	24	170	167	59	226	68	10	78	215	63	278	596	156	752

Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Organic Farming	57	245	59	304	399	58	457	173	78	251	496	280	776	1313	475	1788
Production and use of organic inputs	56	229	63	292	402	364	766	131	163	294	385	376	761	1147	966	2113
Soil & water testing	53	209	47	256	303	105	408	139	41	180	532	112	644	1183	305	1488
Soil fertility management	70	272	65	337	445	224	669	166	90	256	578	195	773	1461	574	2035
Others	5	9	0	9	47	27	74	5	3	8	160	28	188	221	58	279
<b>Grand Total</b>	<b>4486</b>	<b>17935</b>	<b>5874</b>	<b>23809</b>	<b>30790</b>	<b>12015</b>	<b>42805</b>	<b>12403</b>	<b>6904</b>	<b>19307</b>	<b>29201</b>	<b>15596</b>	<b>44797</b>	<b>90329</b>	<b>40389</b>	<b>130718</b>

Table 4.3: Training for Extension Personnel in Zone IX

Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Capacity building for ICT application	24	147	45	192	121	31	152	83	62	145	86	57	143	437	195	632
Care and maintenance of farm machinery and implements	6	24	1	25	40	6	46	60	5	65	54	17	71	178	29	207
Formation and Management of SHGs	14	19	1	20	42	9	51	9	12	21	55	42	97	125	64	839
Gender mainstreaming through SHGs	1	0	0	0	0	0	0	0	0	0	23	2	25	23	2	25
Group Dynamics and farmers organization	5	32	7	39	49	12	61	13	3	16	26	13	39	120	35	155
Household food security	26	13	178	191	23	429	452	11	97	108	21	108	129	68	812	180
Information networking among farmers	11	54	14	68	74	13	87	36	5	41	95	23	118	259	55	314
Integrated Nutrient management	50	301	42	343	319	57	376	88	24	112	220	85	305	928	208	1136
Integrated Pest Management	61	325	73	398	355	108	463	130	60	190	230	68	298	1040	309	1450
Livestock feed and fodder production	15	51	10	61	100	16	116	37	16	53	76	33	109	264	75	339
Low cost and nutrient efficient diet designing	15	12	81	93	19	133	152	9	105	114	18	79	97	58	398	456
Management in farm animals	11	56	37	93	18	2	20	22	13	35	71	8	79	167	60	795
Production and use of organic inputs	20	49	27	76	128	57	185	47	14	61	147	71	218	371	169	540
Productivity enhancement in field	94	510	79	589	556	124	680	211	74	285	353	113	466	1630	390	2020

Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
crops																
Protected cultivation technology	36	155	12	167	150	26	176	110	37	147	159	32	191	574	107	2560
Rejuvenation of old orchards	8	41	2	43	51	16	67	27	4	31	34	2	36	153	24	177
Women and Child care	93	12	242	254	7	563	570	1	186	187	9	292	301	29	1283	1312
Other	54	298	54	352	452	66	518	103	39	142	178	56	234	1031	215	1489
<b>Grand Total</b>	<b>544</b>	<b>2099</b>	<b>905</b>	<b>3004</b>	<b>2504</b>	<b>1668</b>	<b>4172</b>	<b>997</b>	<b>756</b>	<b>1753</b>	<b>1855</b>	<b>1101</b>	<b>2956</b>	<b>7455</b>	<b>4430</b>	<b>11885</b>

Table 4.4: Training for Rural Youth in Zone IX

Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Bee keeping	21	53	18	71	51	18	69	45	5	50	157	77	234	306	118	424
Commercial fruit production	7	35	4	39	33	16	49	23	12	35	55	11	66	146	43	189
Composite fish culture	3	2	1	3	10	17	27	4	1	5	39	19	58	55	38	93
Dairying	8	13	9	22	63	39	102	17	2	19	47	29	76	140	79	219
Fish harvest and processing technology	4	0	0	0	24	23	47	10	3	13	0	18	18	34	44	78
Fry and fingerling rearing	2	5	1	6	7	0	7	8	0	8	41	0	41	61	1	62
Integrated farming	31	116	17	133	187	30	217	98	21	119	225	82	307	626	150	776
Mushroom Production	86	201	89	290	408	299	707	151	137	288	361	455	816	1121	980	2101
Nursery Management of Horticulture crops	43	200	16	216	196	53	249	98	37	135	277	148	425	771	254	1025
Ornamental fisheries	5	42	4	46	87	2	89	12	0	12	0	0	0	141	6	147
Piggery	1	0	0	0	0	0	0	0	0	0	16	4	20	16	4	20
Planting material production	11	24	8	32	66	18	84	40	21	61	47	22	69	177	69	246
Post Harvest Technology	18	45	5	50	103	41	144	77	6	83	99	25	124	324	77	401
Poultry production	29	78	11	89	142	33	175	102	39	141	283	100	383	605	183	788
Production of organic inputs	71	129	39	168	385	165	550	88	60	148	381	139	520	983	403	1386
Production of quality animal products	13	11	0	11	44	28	72	6	3	9	85	4	89	146	35	181
Protected cultivation of vegetable crops	26	66	11	77	146	28	174	42	14	56	164	25	189	418	78	496

Area of training	No. of Courses	General			Others			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Quail farming	3	11	5	16	19	10	29	3	1	4	14	3	17	47	19	66
Repair and maintenance of farm machinery and implements	36	132	10	142	264	59	323	150	19	169	229	77	306	775	165	940
Rural Crafts	6		41	41	0	13	13	0	47	47		166	166	0	267	267
Seed production	43	177	13	190	281	33	314	109	16	125	204	41	245	771	103	874
Sericulture	1	7	0	7	18	0	18	2	0	2	3	0	3	30	0	30
Sheep and goat rearing	15	26	10	36	88	33	121	55	15	70	142	44	186	311	102	413
Small scale processing	19	93	33	126	109	32	141	29	8	37	105	62	167	336	135	471
Tailoring and Stitching	2	1	4	5	6	9	15	0	13	13	2	6	8	9	32	41
Training and pruning of orchards	19	37	4	41	106	26	132	38	14	52	84	22	106	265	66	331
Value addition	62	137	154	291	159	222	381	68	128	196	372	360	732	736	864	1600
Vermi culture	47	189	19	208	198	88	286	144	57	201	411	209	620	942	373	1315
Others	38	184	36	220	327	84	411	75	38	113	230	90	320	816	248	1064
<b>Grand Total</b>	<b>670</b>	<b>2014</b>	<b>562</b>	<b>2576</b>	<b>3527</b>	<b>1419</b>	<b>4946</b>	<b>1494</b>	<b>717</b>	<b>2211</b>	<b>4073</b>	<b>2238</b>	<b>6311</b>	<b>11108</b>	<b>4936</b>	<b>16044</b>

Table 4.5: Vocational Training in Zone IX

Area of training	Sum of No. of Courses	General			Other			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Agricultural Extension</b>																
Capacity building and group dynamics	2	4	0	4	36	0	36	7	0	7	1	0	1	48	0	48
Others	3	4	0	4	32	4	36	14	7	21	9	0	9	59	11	70
<b>Crop production and management</b>																
Commercial floriculture	5	31	7	38	28	9	37	13	6	19	13	6	19	85	28	113
Commercial fruit production	4	11	2	13	38	7	45	17	4	21	31	5	36	97	18	115
Commercial vegetable production	17	96	6	102	58	15	73	27	3	30	150	28	178	331	52	383

Area of training	Sum of No. of Courses	General			Other			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Integrated crop management	9	35	2	37	63	8	71	45	16	61	22	6	28	165	32	197
Organic farming	20	45	5	50	170	16	186	57	2	59	104	15	119	376	38	414
Others	3	9	2	11	31	4	35	10	1	11	17	2	19	67	9	76
<b>Income generation activities</b>																
Beekeeping	7	12	0	12	95	8	103	67	5	72	11	1	12	185	14	199
Mushroom cultivation	42	67	47	114	204	67	271	71	22	93	126	61	187	468	197	665
Nursery, grafting etc.	12	9	4	13	41	10	51	26	20	46	23	12	35	99	46	145
Production of bio-agents, bio-pesticides,	10	3	4	7	29	29	58	8	4	12	24	21	45	64	58	122
Repair and maintenance of farm machinery & implements	23	27	8	35	118	30	148	49	14	63	74	25	99	268	77	345
Rural Crafts	3	6	22	28	4	17	21	5	38	43	6	5	11	21	82	103
Seed production	18	45	8	53	111	1	112	39	6	45	64	9	73	259	24	283
Tailoring, stitching, embroidery, dyeing etc.	3	0	22	22	0	21	21	0	9	9	0	1	1	0	53	53
Vermi composting	40	36	27	63	232	22	254	69	10	79	220	217	437	557	276	833
Others	37	11	2	13	135	15	150	72	10	82	50	14	64	268	41	309
<b>Livestock and fisheries</b>																
Composite fish culture	3	10	1	11	11	1	12	5	0	5	32	11	43	58	13	71
Dairy farming	23	27	22	49	115	17	132	27	16	43	95	10	105	264	65	329
Poultry farming	34	56	19	75	136	16	152	70	16	86	262	94	356	524	145	669
Sheep and goat rearing	25	45	41	86	122	4	126	44	10	54	90	5	95	301	60	361
<b>Post harvest technology and value addition</b>																
Value addition	27	97	70	167	136	124	260	38	120	158	34	40	74	305	354	659
<b>Grand Total</b>	<b>370</b>	<b>686</b>	<b>321</b>	<b>1007</b>	<b>1945</b>	<b>445</b>	<b>2390</b>	<b>780</b>	<b>339</b>	<b>1119</b>	<b>1458</b>	<b>588</b>	<b>2046</b>	<b>4869</b>	<b>1693</b>	<b>6562</b>

Table 4.6: Sponsored Training Programme in Zone IX

Area of training	Sum of No. of Courses	General			Other			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Agricultural Extension</b>																
Capacity Building and Group Dynamics	29	107	29	136	199	93	292	49	11	60	575	368	943	930	501	1431
Others	4	37	4	41	43	1	44	22	4	26	23	1	24	125	10	135
<b>Crop production and management</b>																
Commercial production of vegetables	17	22	51	73	36	84	120	10	26	36	147	195	342	215	356	571
Fruit Plants	15	29	16	45	35	32	67	56	19	75	63	47	110	183	114	297
Increasing production and productivity of crops	53	149	48	197	410	115	525	147	35	182	622	177	799	1328	375	1703
Methods of protective cultivation	12	69	3	72	224	10	234	43	5	48	171	77	248	507	95	602
Ornamental plants	2	0	0	0	4	0	4	32	12	44	4	3	7	40	15	55
Production and value addition	12	23	4	27	765	13	778	48	6	54	67	71	138	903	94	997
Production of Inputs at site	29	75	30	105	108	276	384	210	88	298	276	211	487	669	605	1274
Soil health and fertility management	25	266	351	617	535	240	775	193	132	325	487	401	888	1481	1124	2605
Spices crops	1	32	0	32	9	0	9	0	0	0	0	0	0	41	0	41
Others	33	172	68	240	187	78	265	679	327	1006	215	88	303	1253	561	1814
<b>Farm machinery</b>																
Farm machinery, tools and implements	3	18	4	22	34	4	38	25	15	40	16	5	21	93	28	121
Others(Pl. Specify)	2	20	3	23	8	2	10	5	2	7	8	5	13	41	12	53
<b>Home Science</b>																
Drudgery reduction of women	1	6	2	8	11	4	15	3	1	4	5	0	5	25	7	32
Economic empowerment of women	25	42	15	57	169	42	211	87	48	135	270	75	345	568	180	748
Household nutritional security	4	8	4	12	5	22	27	2	6	8	48	29	77	63	61	124
Others	19	42	5	47	210	15	225	214	15	229	128	21	149	594	56	650
<b>Livestock and fisheries</b>																

Area of training	Sum of No. of Courses	General			Other			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Animal Disease Management	5	0	0	0	8	16	24	3	7	10	5	17	22	16	40	56
Animal Nutrition Management	18	22	11	33	71	30	101	98	42	140	125	129	254	316	212	528
Fisheries Management	5	0	0	0	0	0	0	0	0	0	12	82	94	12	82	94
Livestock production and management	34	21	32	53	135	60	195	139	62	201	294	158	452	589	312	901
Others	14	32	0	32	177	1	178	70	0	70	7	0	7	286	1	287
<b>Post harvest technology and value addition</b>																
Processing and value addition	18	22	5	27	43	18	61	62	43	105	143	407	550	270	473	743
Others	1	6	0	6	11	0	11	4	0	4	9	0	9	30	0	30
<b>Grand Total</b>	<b>381</b>	<b>1220</b>	<b>685</b>	<b>1905</b>	<b>3437</b>	<b>1156</b>	<b>4593</b>	<b>2201</b>	<b>906</b>	<b>3107</b>	<b>3720</b>	<b>2567</b>	<b>6287</b>	<b>10578</b>	<b>5314</b>	<b>15892</b>

## Capacity Building Programmes

### B. Capacity Building programmes by DES and ATARI

**Table 4.7: Capacity building activities organized in identified area for KVK Staff by the Directorate of Extension Services 2020**

Training Title	Date	Venue	No. of Participants KVKs	Collaborating Institute, if any
<b>Directorate of Extension Services, JNKVV, M.P.</b>				
Review meeting and technology back stopping of TSP KVKs	24.05.2020	virtual	3	JNKVV, Jabalpur
Review meeting and technology back stopping of FLD programmes	24.05.2020	virtual	4	JNKVV, Jabalpur
Review meeting and technology back stopping of organic farming programme under Paramparagat Krishi Vikas Yojana (PKVY)	26.05.2020	virtual	13	JNKVV, Jabalpur
Review meeting and technology back stopping of organic farming programme under Paramparagat Krishi Vikas Yojana (PKVY)	26.05.2020	virtual	13	JNKVV, Jabalpur
Review meeting and technology back stopping of CFLD oilseeds and pulses	28.05.2020	virtual	21	JNKVV, Jabalpur
Review meeting and technology back stopping of Seed Hub	5.06.2020	virtual	5	JNKVV, Jabalpur
Review meeting and technology back stopping of Nutri smart programmes	12.06.2020	virtual	21	JNKVV, Jabalpur
Review meeting and technology back stopping of KVK Scientist (Horticulture)	15 to 18 June, 2020	virtual	21	JNKVV, Jabalpur
Review meeting and technology back stopping of KVK Scientist (Plant Protection)	25 to 27 June, 2020	virtual	21	JNKVV, Jabalpur
Review meeting and technology back stopping of NICRA KVKs	27.06.2020	virtual	21	JNKVV, Jabalpur
<b>Total</b>			<b>143</b>	
<b>Directorate of Extension Services, Gwalior, M.P.</b>				
On Farm production of organic inputs	February 4-5, 2020	KVK Morena	30	All the line departments

Preparation & dissemination of agromet advisories at Block level under DAMU	February 23-27, 2020	KVK Khandwa	>30	RA who are working in different KVKs under GKMS/DAMU
<b>Directorate of Extension Services, Raipur, C.G.</b>				
Orientation programme-cum-meeting of Sr. Scientist and Head and SMS	3-6 June, 2020	Directorate of Extension	58	No
Orientation programme-cum-Review Meeting regarding Accounts of KVKs	28-29 December, 2020	Directorate of Extension	60	Collaborating with ATARI
Review meeting of KVKs	31st January, 2020	Directorate of Extension	46	No

**Table 4.8: Capacity building activities organized by ATARI in collaboration with ICAR Institutes in identified areas for KVK staff during January to December, 2020**

ICAR-ATARI, Jabalpur organized 25 capacity building programmes in participatory mode for KVK scientists and programme assistants working in the KVKs for farming community. ATARI organized Action Plan Workshops for finalization of the action plan of the KVKs for 2020. This is very important activity as it gives direction to each KVK to move further for planned change through scheduled work plan. Review workshop of ICAR flagship programmes like ARYA and Seed hub was organized to discuss the previous progress as well as future action plan to the concerned KVKs.

S.No	Title of Meeting	Date	Venue	Participants
1	Review workshop of extension experts of KVKs	January 25, 2020	ATARI Jabalpur	54
2	Review workshop on Nutrismart Villages	January 28, 2020	ATARI Jabalpur	43
3	Interface with KVK	May 19, 2020	ATARI Jabalpur	100
4	Review on Status (Migrant Labours)	May 23, 2020	ATARI Jabalpur	132
5	Review Workshop of NICRA Projects	May 26, 2020	ATARI Jabalpur	36
6	Review Workshop of FFP Projects	May 26, 2020	ATARI Jabalpur	36
7	Review Workshop ARYA workshop	May 27, 2020	ATARI Jabalpur	135
8	Interface with KVKs in Tribal populated districts in Madhya Pradesh and Chhattisgarh"	June 05, 2020	ATARI Jabalpur	108
9	Online Interface meeting on Nutri Smart Village of KVKs	June 12, 2020	ATARI Jabalpur	108
10	QRT meeting	June 29, 2020	ATARI Jabalpur	8
11	Review meeting on DAMU KVKs	July 03, 2020	ATARI Jabalpur	63
12	Review meeting of Seed Hub KVKs in Madhya Pradesh and Chhattisgarh	July 04, 2020	ATARI Jabalpur	30
13	"Garib Kalyan Rojgar Yojna" (GKRY)	July 08, 2020	ATARI Jabalpur	59
14	Zonal Workshop 29-31 July 2020	July 29 to 31, 2020	ATARI Jabalpur	221
15	Intrraction with KVKs	July 28, 2020	ATARI Jabalpur	148
16	RAC meeting Jabalpur and Pune	October 12, 2020	ATARI Jabalpur	34
17	Impact of Nutrismart village	October 23, 2020	ATARI Jabalpur	74
18	Webinar of farm bill act 2020	October 29, 2020	ATARI Jabalpur	100

S.No	Title of Meeting	Date	Venue	Participants
19	Intraction ATARI Jabalpur with CoPI of Gender and Nutrismart Project	November 03, 2020	ATARI Jabalpur	13
20	Review of progress on Animal Husbandry	November 23, 2020	ATARI Jabalpur	55
21	Review workshop on Agriculture Engineering	December 17, 2020	ATARI Jabalpur	39
22	Review workshop on Agronomy MP KVKs	December 18, 2020	ATARI Jabalpur	53
23	Intrecaction of KVKs Head with Hon'ble Agriculture Minister Govt of MP	December 26, 2020	ATARI Jabalpur	100
24	Planning workshop on Gender and Nutrition based Mega Project of ICAR	December 29, 2020	ATARI Jabalpur	29
25	Planning workshop on Gender and Nutrition based Mega Project of ICAR	December 30, 2020	ATARI Jabalpur	31



Table 4.9: KVK Visit/Workshop/Training/Symposium attended by the ATARI Staff/Scientist

S. No.	Particulars	No. of Programmes
1	Trainings	3

S. No.	Particulars	No. of Programmes
2	Workshops	5
3	Conferences	2
4	Seminars/Webinar	6
5	KVK Visits	22
6	Any other (Review Meetings, Interface)	26
<b>Total</b>		<b>64</b>

Table 4.10: HRD fund Allocation and Utilization

Particulars	Budget RE (Rs in lakhs) allocated	Actual expenditure (Rs in lakhs)	Utilization (%)
ATARI	0.590	0.588	99.66
<b>Total</b>	<b>0.590</b>	<b>0.588</b>	<b>99.66</b>

Table 4.11: Footfall in KVKs of Zone IX

State	No. of KVKs	No. of Footfalls			
		Farmers	Officials	VIPs	Total
Madhya Pradesh	53	105260	3343	566	110361
Chhattisgarh	28	43132	2671	477	42004
<b>Zone-IX</b>	<b>81</b>	<b>148392</b>	<b>6014</b>	<b>1043</b>	<b>152365</b>



## 5. Seed, Planting Materials, Bio-products and Livestock Material Production

### Seed and Planting Materials

Availability of quality seeds, at the right time in adequate quantity are the major constraints of farmers. Therefore, it was taken as a challenge and appropriate steps were taken by KVKs for helping farmers. Considerable progress has been made and there is increase in seed quantity as well as other planting materials as shown in the following Tables 5.1 and 5.2. KVKs of the Zone produced 18112.84 q of seed and 64.77 lakhs planting material of different crops (cereals, pulses, oilseeds, vegetables, medicinal plants, fruits, etc.) and distributed among farmers. KVKs of the Zone also produced 22291.97 q bio-products and 650843.14 livestock products at their farms.

**Table 5.1: Summary of State- wise seed and planting material produced by the KVKs in Zone-IX**

State	Jan-Dec-2020	
	Seed (q)	Planting material (in lakhs)
Chhattisgarh	5269.69	34.79
Madhya Pradesh	12843.15	29.98
<b>Total</b>	<b>18112.84</b>	<b>64.77</b>

**Table 5.2: State- wise details of seeds produced by the KVKs in Zone-IX**

State	Quantity (q)	Value (Rs)	Provided to no. of Farmers	Expected area coverage (ha)
Chhattisgarh	5269.69	14832732.37	4095	3325.95
Madhya Pradesh	12843.15	81406931.15	16735	13000.58
<b>Zone-IX</b>	<b>18112.84</b>	<b>96239664</b>	<b>20830</b>	<b>16326.53</b>

**Table 5.3: State- wise details of planting material produced by the KVKs in Zone-IX**

State	Nos.	Value (Rs)	Provided to no. of Farmers	Expected area coverage (ha)
Chhattisgarh	3479494	8316860	95069	538.77
Madhya Pradesh	2997854	3514560	24781	462.87
<b>Zone-IX</b>	<b>6477348</b>	<b>11831420</b>	<b>119850</b>	<b>1001.64</b>

**Table 5.4: Status of seed production in Zone-IX**

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
<b>Cereal</b>				
Maize	African Tall	8	13920	*
Paddy	C.G Sugandhi Dhan-1	40	100000	12
Paddy	Chandrahansini	195.76	93400	2
Paddy	CR Dhan-310	2	0	*
Paddy	CR Dhan 311 (Mukul)	8	24000	*
Paddy	DRR-42	50	125000	12
Paddy	Dubraj Salection -1	60.5	121600	5
Paddy	Durgeshwari	3.5	8750	*

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Paddy	IBD1	16.33	32000	*
Paddy	IGKV R-1	718.85	1330500	335
Paddy	IGKV R-2	143.66	377150	8
Paddy	Improved Jeera Shankar	20.02	256960	101
Paddy	Indira Aerobic-1	264.45	754000	52
Paddy	Indira Barani	84.8	125000	3
Paddy	Indira Rajeshwari	1431.1	1384725	871
Paddy	IR 64	156.15	570200	16
Paddy	JR 81	437.6	2189765	1491
Paddy	JR-206	425.85	2676668	*
Paddy	JR-767	3.7	14800	12
Paddy	JRB-1	3.5	14000	8
Paddy	Kranti	80	280000	150
Paddy	Kubari Mohar	1.2	2580	*
Paddy	Lajni super	0.6	1500	*
Paddy	Loktimachi	0.2	500	*
Paddy	Madhuraj 55	4	12000	*
Paddy	MTU 1010	139.48	584720	242
Paddy	Pant Basmati 1	3.89	27230	32
Paddy	Pant Dhan 10	5.7	22800	17
Paddy	Pant sungandh -27	5.47	38290	52
Paddy	Poornima	20	-	*
Paddy	Protezin	8	24000	*
Paddy	Pusa Sugandha-4	18	6975	24
Paddy	Pusa-1637	10	-	*
Paddy	Samleshwari	35.8	89500	16
Paddy	Swarna shreya	1.65	6600	5
Paddy	Unnat Chhinor	333	928510	1000
Paddy	Vishanu bhog	7.5	21750	2
Paddy	Zinco Rice MS	37	24000	*
Paddy	Maheshwari (IGKV-R-1244)	264.6	485000	120
Paddy	Badshah bhog	8.6	49500	25
Wheat	C.G. 02	15.8	292000	6
Wheat	C.G. 04	61	178040	*
Wheat	CG Amber	25.8	81548	*
Wheat	CG Wheat -03	13.4	39664	*
Wheat	GW 322	376.46	2160232	18
Wheat	GW-366	18	54000	24
Wheat	GW- 451	86	301000	100
Wheat	HD-2932	1.2	4800	3
Wheat	HI 1544	187.35	600312	24
Wheat	HI 8759 (Pusa Tejas)	277.24	1488224	160
Wheat	HI- 8777	143.6	480000	125
Wheat	JW 17	3.6	14400	6
Wheat	JW 3173	2.69	10760	7
Wheat	JW 3211	473.58	2682852	9
Wheat	JW 3288	751.1	4971812	1654
Wheat	JW 3382	379.7	2188195	84

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Wheat	JW 8738	96	175751	*
Wheat	Pusa Anmol(HI 8737)	6.5	16900	*
Wheat	C.G. 5016 (Ratan)	37.1	-	*
Wheat	RVW-4106	62.2	231200	9
Wheat	Sujata	33.2	49800	*
Wheat	HI 1605(Pusa Ujala)	21	29100	5
Wheat	HI 8663 (Poshan)	2.9	10150	3
<b>Milles</b>				
Barley	JB-58	24.12	148338	*
Barley	Prakhar	60	-	20
Finger millet	Chhattisgarh-2	36.1	147860	22
Finger millet	Indira Ragi-1	3	14700	*
Kodo millet	JK 41	0.96	9600	39
Oat	JHO-817	10	-	*
Oat	Kent	11.67	113593.37	7
<b>Pulses</b>				
Blackgram	Azad-1	0.56	10800	18
Blackgram	Indira Urd -1	13.47	59820	47
Blackgram	IPU 94-1	2.26	27120	28
Blackgram	IPU 2-43	8.34	172638	*
Blackgram	Pratap Urd-1	259.44	2113300	1310
Blackgram	PU-31	5.84	7920	10
Blackgram	PU-40	1.16	13920	23
Chickpea	RVG-202	4	19940	*
Chickpea	Indira Chana-1	7.9	46060	500
Chickpea	JG 6	2.2	12430	5
Chickpea	JG 11	26	926880	*
Chickpea	JG 12	1402.14	9516198	3365
Chickpea	JG14	81.05	859260	*
Chickpea	JG 30	221	2400000	650
Chickpea	JG 36	389.8	2874120	585
Chickpea	JG 130	4.5	22500	*
Chickpea	Kripa	8	56280	23
Chickpea	PKV-4	7.84	54922	17
Chickpea	RVG 201	474.6	2218600	206
Chickpea	RVG 202	2216.55	15225510	319
Chickpea	RVG 203	538	4811200	126
Chickpea	Vaibhav	21.6	116640	1
Field Pea	Aman	0.52	2080	*
Field Pea	Ambika	6	-	*
Field Pea	Indira Matar-1	11	-	*
Green gram	HUM-16	7.38	54550	8
Green gram	IPM 2-3	0.9	10800	18
Green gram	IPM205-7(VIRAT)	31.72	-	*
Green gram	MH-421	282.99	635700	100
Green gram	Shikha	5.12	107640	*
Horse gram	Indira Kulthi	1	33000	1
Lathyrus	Mahatiwda	4	-	*

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Pigeon pea	ICPH-151	12.17	200805	*
Pigeon pea	JKM 189	7	115200	700
Pigeon pea	Rajeshwari	11	51000	*
Pigeon pea	Rajiv Lochan	157.55	924000	200
Pigeon pea	TJT 501	21.62	201532	910
<b>Oilseed</b>				
Groundnut	Dhrani	10	60000	20
Linseed	Deepika	13.41	50166	35
Linseed	Indira Alsi-32	4	-	*
Linseed	JLS 73	416.16	130096	50
Linseed	JLS 79	6	-	2
Linseed	JLS-66	4	31600	50
Linseed	RLC-133	14.94	90500	*
Mustard	CG Sarson-1	13.86	72070	225
Mustard	Giriraj	2.3	23000	44
Mustard	NRCBH-101	16.4	85605	*
Mustard	NRCDR – 2	11.95	41740	*
Mustard	PM-25	7.5	31500	392
Mustard	Pusa Mustard- 28	1.72	17200	136
Mustard	Pusa Mustard- 30	0.52	5200	11
Mustard	Pusa Tarak	1.3	13000	53
Mustard	RVM-1	4.86	62694	40
Niger	Birsaniger	1.5	75000	*
Niger	JNC-9	1	12420	50
Safflower	AKS-207	12	52290	*
Sesamum	RT 346	0.5	1000	16
Sesamum	RT 351	1.12	22400	29
Sesamum	TKG-21	0.93	18600	28
Sesamum	TKG-306	2.33	51085	12
Soybean	CG Soya-1	178	411000	*
Soybean	Indira Soya	50	250000	150
Soybean	JS – 2034	10	50000	*
Soybean	JS- 1569	5.5	40500	18
Soybean	JS 20-29	89.3	722262	101
Soybean	JS 20 34	281.99	1064652	88
Soybean	JS 20-69	276.6	2797950	259
Soybean	JS 20-98	227.84	2913174.4	270
Soybean	JS 2117	12	-	*
Soybean	JS 335	144	2511000	*
Soybean	JS 95-60	141.5	923166.3	
Soybean	JS-9752	5.2	29120	6
Soybean	RVS- 18	11.1	76800	25
Soybean	RVS 2001-4	722.6	5055637	154
Soybean	RVS-24	312.9	2807200	252
<b>Flower</b>				
Marigold	Pusa Bahar	0.084	41750	350
Marigold	Pusa Narangi	0.005	2500	300
<b>Spice</b>				

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Chilli	Kashi Anmol 2	0.047	14100	129
Chilli	Pusa Jwala	0.5	360	*
Coriander	Pant Haritima	0.43	41800	49
Coriander	RCR 436	0.1	-	*
Fennel	AF-2	2	12000	12
Fenugreek	Kasuri (K1)	0.603	26415	
Fenugreek	PEB, Kasuri methi	0.03	300	3
Fenugreek	RMT-1	106.2	31260	*
Fenugreek	RMT-305	5.5	151500	*
Garlic	G 282, G 313	0.61	6100	44
Garlic	G-282	3.85	45000	8
Ginger	Shurabhi	20	43200	25
Ginger	Suprabha	3	30000	*
Onion	Agri Found Light Red	0.48	33600	48
Turmeric	Indira haldi 1	3	18000	*
Turmeric	Pant Pitambh	0.37	3700	6
Turmeric	Roma	100	600000	35
<b>Vegetable</b>				
Bottle Gourd	Pusa Naveen	3.015	6012	3
Bottle Gourd	Pusa naveen/Smridhi/ N arendra Shivani	0.0072	720	35
Brinjal	Indira Safed	0.072	1440	5
Brinjal	NB 2	0.014	4170	138
Brinjal	Pant Samrat	0.029	580	4
Cholai	Pusa Kiran Hari Cholai	0.34	-	*
Cholai	Pusa Lal Cholai	0.25	-	*
Cucumber	Pusa Barkha	3	9000	*
Okra	Kashi Pragati,	0.64	19200	126
Okra	Kashi Pragati, VRO-22	62.45	66675	*
Green Pea	Arkel	3.09	39735	1
Green Pea	Kashi Nandini	2	20000	*
Pumpkin	Azad Harit	0.003	300	30
Radish	Japanese white/VRR-1	0.23	8050	117
Radish	Pusa Chetki	1.25	75000	*
Sarson sag	Pusa sarson sag 1	0.2	10000	*
Sem	Ganesh	24	44000	*
Spinach	All Green	94.57	75710	113
Sponge Gourd	Pusa Sneha	11	22000	*
Sponge Gourd	S-1	0.005	500	50
Tomato	Kashi Anmol,	0.036	10770	270
Tomato	Pusa rubi	0.05	-	1
<b>Fodder</b>				
Napier grass	COBN-5	10	157500	25
Sorghum	PC-23	5	-	3
Sorghum	PC-23, COFS-29	6	246000	175
<b>Green Manure</b>				
Dhaincha	Local	1	6000	*

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Sunhemp	M-19	10	50000	100
<b>Tuber</b>				
Sweet potato	Indira Nandini	75	450000	*
	<b>Total</b>	<b>18112.84</b>	<b>96239663.52</b>	<b>20830</b>

\* Seeds have been kept by KVK for their use

**Table 5.4.1: Status of seed production in Chhattisgarh**

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
<b>Cereal</b>				
Maize	African Tall	8	13920	
Paddy	C.G Sugandhi Dhan-1	40	100000	12
Paddy	Chandrahansini	195.76	93400	2
Paddy	CR Dhan 311 (Mukul)	8	24000	
Paddy	DRR-42	50	125000	12
Paddy	Dubraj Salection -1	60.5	121600	5
Paddy	Durgeshwari	3.5	8750	
Paddy	IBD1	16.33	32000	
Paddy	IGKV R-1	718.85	1330500	335
Paddy	IGKV R-2	143.66	377150	8
Paddy	Indira Aerobic-1	264.45	754000	52
Paddy	Indira Barani	84.8	125000	3
Paddy	Indira Rajeshwari	1431.1	1384725	871
Paddy	Kubari Mohar	1.2	2580	
Paddy	Lajni super	0.6	1500	
Paddy	Loktimachi	0.2	500	
Paddy	Madhuraj 55	4	12000	
Paddy	MTU 1010	58.4	88400	40
Paddy	Poornima	20		0
Paddy	Protezin	8	24000	
Paddy	Samleshwari	35.8	89500	16
Paddy	Vishanu bhog	7.5	21750	2
Paddy	Zinco Rice MS	37	24000	
Paddy	Maheshwari (IGKV-R-1244)	264.6	485000	120
Paddy	Badshah bhog	8.6	49500	25
Wheat	C.G. 02	15.8	292000	6
Wheat	CG-04	61	178040	
Wheat	CG Amber	25.8	81548	
Wheat	CG Wheat -03	13.4	39664	
Wheat	GW 322	34	68392	
Wheat	GW-366	15	45000	15
Wheat	Pusa Anmol(HI 8737)	6.5	16900	
Wheat	Ratan	37.1		
Wheat	Sujata	33.2	49800	
<b>Milles</b>				
Finger millet	CG Ragi 2	36.1	147860	22
Finger millet	Indira Ragi-1	3	14700	
Oat	JHO	10		
Oat	Kent	11.67	113593.37	7

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
<b>Pulses</b>				
Blackgram	Indira Urd -1	13.47	59820	47
Blackgram	Pratap Urd-1	79	586200	10
Blackgram	PU-31	1.1	0	
Chickpea	GNG-202	4	19940	
Chickpea	Indira Chana-1	7.9	46060	500
Chickpea	JG-14	3.35	20100	
Chickpea	RVG-201	80		
Chickpea	RVG-202	406.6	2520080	100
Chickpea	Vaibhav	21.6	116640	1
Field Pea	Aman	0.52	2080	
Field Pea	Ambika	6		
Field Pea	Indira Matar-1	11		
Green gram	HUM-16	7.38	54550	8
Green gram	MH-421	61	530700	100
Horse gram	Indira Kulthi	1	33000	1
Lathyrus	Mahatiwda	4		
Pigeon pea	Rajiv Lochan	157.55	924000	200
Pigeon pea	TJT 501	14.12	95132	330
<b>Oilseed</b>				
Groundnut	Dhrani	10	60000	20
Linseed	Deepika	13.41	50166	35
Linseed	Indira Alsi-32	4		
Linseed	RLC-133	14.94	90500	
Mustard	CG Sarson-1	12.86	65370	175
Mustard	NRCBH-101	16.4	85605	
Mustard	PM-25	7.5	31500	392
Niger	Birsaniger	1.5	75000	
Safflower	AKS-207	12	52290	
Sesamum	TKG-306	0.25	2725	12
Soybean	CG Soya-1	178	411000	
Soybean	Indira Soya	50	250000	150
Soybean	JS 20-29	27	143100	90
Soybean	JS 20-69	42	222600	100
Soybean	JS-97-52	5.2	29120	6
<b>Spice</b>				
Coriander	Pant Haritima	0.17	34000	
Fennel	AF-2	2	12000	12
Fenugreek	Kasuri (K1)	0.603	26415	
Fenugreek	RMT-1	2		
Fenugreek	RMT-305	5.5	151500	
Ginger	Suprabha	3	30000	
Turmeric	Indira haldi 1	3	18000	
Turmeric	Roma	100	600000	35
<b>Vegetable</b>				
Bottle Gourd	Pusa Naveen	0.015	12	3
Brinjal	Indira Safed	0.072	1440	5
Brinjal	Pant Samrat	0.029	580	4

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Pea	Arkel	3.09	39735	1
Pea	Kashi Nandini	2	20000	
Radish	Pusa Chetki	1.25	75000	
Sarson sag	Pusa sarson sag 1	0.2	10000	
Spinach	All Green	1.64	41000	
Tomato	Pusa rubi	0.05	0	1
<b>Fodder</b>				
Napier grass	COBN-5	10	157500	25
Sorghum	PC-23	5	0	3
Sorghum	PC-23, COFS-29	6	246000	175
<b>Green Manure</b>				
Dhaincha	Local	1	6000	
<b>Tuber</b>				
Sweet potato	Indira Nandini	75	450000	
<b>Grand Total</b>		<b>5269.69</b>	<b>14832732.37</b>	<b>4095</b>

**Table 5.4.2: Status of seed production in Madhya Pradesh**

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
<b>Cereal</b>				
Paddy	CR Dhan-310	2	0	0
Paddy	Jeera Shankar	20.02	256960	101
Paddy	IR64	156.15	570200	16
Paddy	JR81	437.6	2189765	1491
Paddy	JR-206	425.85	2676668	0
Paddy	JR-767	3.7	14800	12
Paddy	JRB-1	3.5	14000	8
Paddy	Kranti	80	280000	150
Paddy	MTU 1010	81.08	496320	202
Paddy	Pant Basmati 1	3.89	27230	32
Paddy	Pant Dhan 10	5.7	22800	17
Paddy	Pant Sungandh -27	5.47	38290	52
Paddy	Pusa Sugandha-4	18	6975	24
Paddy	Pusa-1637	10	0	0
Paddy	Swarna shreya	1.65	6600	5
Paddy	Unnat Chhinor	333	928510	1000
Wheat	GW 322	342.46	2091840	18
Wheat	GW 451	86	301000	100
Wheat	GW-366	3	9000	9
Wheat	HD-2932	1.2	4800	3
Wheat	HI 1544	187.35	600312	24
Wheat	HI 3382	100	400000	10
Wheat	HI 8759 (Pusa Tejas)	277.24	1488224	160
Wheat	HI- 8777	143.6	480000	125
Wheat	JW 17	3.6	14400	6
Wheat	JW 3173	2.69	10760	7
Wheat	JW 3288	751.1	4971812	1654
Wheat	JW 3382	279.7	1788195	74

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Wheat	JW 8738	96	175751	0
Wheat	JW 3211	473.58	2682852	9
Wheat	RVW 4106	62.2	231200	9
Wheat	HI – 1605(Pusa Ujala)	21	29100	5
Wheat	HI-8663 (Poshan)	2.9	10150	3
<b>Milles</b>				
Barley	JB 58	24.12	148338	0
Barley	Prakhar	60		20
Kodo millet	JK 41	0.96	9600	39
<b>Pulses</b>				
Blackgram	Azad-1	0.56	10800	18
Blackgram	IPU 94-1	2.26	27120	28
Blackgram	IPU2-43	8.34	172638	
Blackgram	Pratap Urd-1	180.44	1527100	1300
Blackgram	PU 31	4.74	7920	10
Blackgram	PU 40	1.16	13920	23
Chickpea	JG 6	2.2	12430	5
Chickpea	JG 11	26	926880	0
Chickpea	JG 12	1402.14	9516198	3365
Chickpea	JG 30	221	2400000	650
Chickpea	JG 36	389.8	2874120	585
Chickpea	JG 14	77.7	839160	0
Chickpea	JG 130	4.5	22500	0
Chickpea	Kripa	8	56280	23
Chickpea	PKV 4	7.84	54922	17
Chickpea	RVG 201	394.6	2218600	206
Chickpea	RVG 202	1809.95	12705430	219
Chickpea	RVG 203	538	4811200	126
Green gram	IPM 2-3	0.9	10800	18
Green gram	IPM205-7(VIRAT)	31.72		
Green gram	MH-421	221.99	105000	
Green gram	Shikha	5.12	107640	
Pigeon pea	ICPH-151	12.17	200805	0
Pigeon pea	JKM 189	7	115200	700
Pigeon pea	Rajeshwari	11	51000	0
Pigeon pea	TJT 501	7.5	106400	580
<b>Oilseed</b>				
Linseed	JLS 73	416.16	130096	50
Linseed	JLS 79	6		2
Linseed	JLS 66	4	31600	50
Mustard	CG Sarson-1	1	6700	50
Mustard	Giriraj	2.3	23000	44
Mustard	NRCDR – 2	11.95	41740	0
Mustard	Pusa Mustard- 28	1.72	17200	136
Mustard	Pusa Mustard- 30	0.52	5200	11
Mustard	Pusa Tarak	1.3	13000	53
Mustard	RVM-1	4.86	62694	40
Niger	JNC-9	1	12420	50

Crop	Variety	Quantity (q.)	Value (Rs.)	Beneficiaries
Sesamum	RT 346	0.5	1000	16
Sesamum	RT 351	1.12	22400	29
Sesamum	TKG-21	0.93	18600	28
Sesamum	TKG-306	2.08	48360	
Soybean	JS – 20 34	291.99	1114652	88
Soybean	JS- 1569	5.5	40500	18
Soybean	JS 20 29	62.3	579162	11
Soybean	JS 20 69	234.6	2575350	159
Soybean	JS 20 98	227.84	2913174.4	270
Soybean	JS 2117	12	0	0
Soybean	JS 335	144	2511000	
Soybean	JS 95-60	141.5	923166.3	0
Soybean	RVS- 18	11.1	76800	25
Soybean	RVS 2001-4	722.6	5055637	154
Soybean	RVS-24	312.9	2807200	250
<b>Flower</b>				
Marigold	Pusa bahar	0.084	41750	350
Marigold	Pusa Narangi	0.005	2500	300
<b>Spice</b>				
Chilli	Kashi Anmol 2	0.047	14100	129
Chilli	Pusa Jwala	0.5	360	0
Coriander	Pant Haritima	0.26	7800	49
Coriander	RCR 436	0.1	0	0
Fenugreek	PEB, Kasuri methi	0.03	300	3
Fenugreek	RMT-1	104.2	31260	0
Garlic	G 313	0.61	6100	44
Garlic	G 282	3.85	45000	8
Ginger	Shurabhi	20	43200	25
Onion	Agri Found Light Red	0.48	33600	48
Turmeric	Pant Pitambh	0.37	3700	6
<b>Vegetable</b>				
Bottle Gourd	Pusa Naveen	3.0072	6720	35
Brinjal	NB 2	0.014	4170	138
Cholai	Pusa Kiran Hari Cholai	0.34	0	0
Cholai	Pusa Lal Cholai	0.25	0	0
Cucumber	Pusa Barkha	3	9000	0
Okra	Kashi Pragati	63.09	85875	126
Pumpkin	Azad Harit	0.003	300	30
Radish	Japanese white	0.23	8050	117
Sem	Ganesh	24	44000	0
Spinach	All Green	92.93	34710	113
Sponge Gourd	Pusa Sneh	11	22000	0
Sponge Gourd	S-1	0.005	500	50
Tomato	Kashi Anmol	0.036	10770	270
<b>Green Manure</b>				
Sunhemp	M-19	10	50000	100
<b>Total</b>		<b>12843.15</b>	<b>81406931.15</b>	<b>16735</b>

**Table 5.7: Status of Planting Material production in Zone-IX**

Crop Category	Crop	Nos.	Value (Rs.)	Provided to no. of Farmers
Aquatic crop	Makhana	50000	62500	15
Aquatic crop	Waterchest nut	50000	62500	16
Fodder	Napier Grass	425122	405547	144
Forest species	Amaltash	521	12510	11
Forest species	Arjun	50007	500195	0
Forest species	Bamboo	5291	26455	344
Forest species	Beal	123	3057	0
Forest species	Cheduphool	28	560	8
Forest species	Chironjee	12	300	12
Forest species	Duranta	655	3275	67
Forest species	Durenta	3400	17000	200
Forest species	Eucalyptus	12	240	3
Forest species	Gulmohar	51076	42310	2
Forest species	Kachnar	2000	50000	0
Forest species	Karanj	136	1360	62
Forest species	Kesiasama	59	590	23
Forest species	Khamer	881	22025	0
Forest species	Khamhar	55000	150000	400
Forest species	Khejadi	27	1080	0
Forest species	Kumut	7	220	0
Forest species	Neem	368	8910	27
Forest species	Peepal	12	300	0
Forest species	Pepal, Sagon	159	3180	0
Forest species	Phycus	12	50	3
Forest species	Salfi	250	15000	0
Forest species	Semiyalata	3000	30000	5
Forest species	Sesam	151	590	77
Forest species	Shami	27	1080	
Forest species	Silver oak	2500	4000	3
Forest species	Siris	45	1125	0
Forest species	Subabool	50000	500000	0
Forest species	Teek	49	980	15
Fruits	Almond	700	20000	100
Fruits	Aonla	21415	278515	1677
Fruits	Aonla Budded	12	480	10
Fruits	Banana	505	1500	208
Fruits	Bel	4422	48460	30
Fruits	Ber	54000	60000	75
Fruits	Cashew nut	6591	144500	360
Fruits	Citrus	11800	49420	571
Fruits	Custard apple	18618	147337	1909
Fruits	Datepalm	3	120	3
Fruits	Dragon fruit	600	12000	200
Fruits	FIG	1000	40000	35
Fruits	Guava	55144	870950	10771
Fruits	Guava and Aonla	1700	51000	

Crop Category	Crop	Nos.	Value (Rs.)	Provided to no. of Farmers
Fruits	Jackfruit	68018	231545	9550
Fruits	Jamun	5921	80995	436
Fruits	Karonda	82557	661095	6092
Fruits	Karounda seedling	356	7120	265
Fruits	Lemon	6350	122500	530
Fruits	Lemon Budded	298	11920	206
Fruits	Lemon seedling	204	480	184
Fruits	Lime	2722	38910	185
Fruits	Litchi	1450	65050	283
Fruits	Mango	18946	261840	1731
Fruits	Mango graft	27	1050	7
Fruits	Mango Seedling	290	7250	198
Fruits	Neem	3110	2745	0
Fruits	Orange	1546	61150	230
Fruits	Papaya	240085	1894645	13224
Fruits	Papaya seedling	726	10890	257
Fruits	Pear	1000	20000	0
Fruits	Pomegranate	20883	426321	7431
Fruits	Strawberry	200	5000	200
Fruits	Tamarind	14342	100050	335
Fruits	Watermelon	20000	16000	30
Fruits	Mango, Karonda, Jamun, Guava, Papaya, Drum Stick, Jackfruit, Lime, Custard apple etc	15987	635664	296
Medicinal	Aloevera, Tulsi	245	4900	0
Medicinal	Gilloy	66	1435	8
Medicinal	Lemongrass	50000	50000	3
Medicinal	Pamaroja	50000	50000	3
Ornamental Plant	Ashok	297	10030	26
Ornamental Plant	Bargad	2	50	0
Ornamental Plant	Bottle palm	38	1140	20
Ornamental Plant	Chameli	96	1920	40
Ornamental Plant	Champa	17	340	9
Ornamental Plant	Chandani	110	2200	76
Ornamental Plant	Chandni, Mongra, Gulab, Champa	673	13460	0
Ornamental Plant	Croton	239	5975	161
Ornamental Plant	Eklipha	2400	12000	200
Ornamental Plant	Gaillardia	4000	4000	585
Ornamental Plant	Gladiolus	5000	25000	15
Ornamental Plant	Gudhal	103	1885	58
Ornamental Plant	Har Shringar	6	60	2
Ornamental Plant	Jasmin	17	360	13
Ornamental Plant	Kaner	23	400	15
Ornamental Plant	Manokamani	41	820	21
Ornamental Plant	Marigold	227770	77955	1104
Ornamental Plant	Mogra	14	140	10
Ornamental Plant	Ornamental	1104	2475	15

Crop Category	Crop	Nos.	Value (Rs.)	Provided to no. of Farmers
Ornamental Plant	Raatrani	5	100	3
Ornamental Plant	Rose	165	4184	22
Ornamental Plant	Sevanti	4	40	2
Ornamental Plant	Tuberose	1000	1000	2
Ornamental Plant	Vidya	19	60	4
Ornamental Plant	Zinia	5000	5000	200
Spices	Chilli	79773	74162.5	177
Spices	Onion	125000	30000	43
Vegetable	Beans	10	100	1
Vegetable	Beet Root	5000	2500	200
Vegetable	Brinjal	529256	221292	9275
Vegetable	Brinjal ,Tomato, Chilli, Muskmelon and Water melon	336145	148645	1385
Vegetable	Broccoli	8400	4800	68
Vegetable	Cabbage	208038	121387	1708
Vegetable	Capsicum	57160	90800	600
Vegetable	Cauliflower	234730	120596	1634
Vegetable	Chilli	541685	230022	10244
Vegetable	Cucurbits	150	600	38
Vegetable	Drumstick	212576	922068	16011
Vegetable	Jack Fruit	766	19150	0
Vegetable	KnolKhol	108000	4000	410
Vegetable	Kundru	400	4000	200
Vegetable	Lasoda	200	6000	0
Vegetable	Onion	169670	58035	496
Vegetable	Red Cabbage	1800	1800	202
Vegetable	Sweet Potato	577100	543000	3546
Vegetable	Tomato	793351	450232	10408
Vegetable	Tomato, brinjal, chilli , cabbage, cauliflower,cucurbits etc	701861	154100	1442
Vegetable	Curry Leaf	365	8760	49
Medicinal and Ornamentals	Medicinal and Ornamentals	5000	25000	0
	<b>Total</b>	<b>6477348</b>	<b>11831420</b>	<b>119850</b>

**Table 5.7.1: Status of Planting Material production in Chhattisgarh**

Crop Category	Crop	Nos.	Value (Rs)	Provided to no. of farmers
Aquatic crop	Makhana	50000	62500	15
Aquatic crop	Waterchest nut	50000	62500	16
Fodder	Napier Grass	265000	375000	42
Forest species	Amaltash	500	12500	0
Forest species	Arjun	50000	500000	0
Forest species	Durenta	3400	17000	200
Forest species	Gulmohar	51040	41600	0
Forest species	Kachnar	2000	50000	0
Forest species	Khamhar	55000	150000	400

Crop Category	Crop	Nos.	Value (Rs)	Provided to no. of farmers
Forest species	Neem	350	8750	20
Forest species	Salfi	250	15000	0
Forest species	Semiyalata	3000	30000	5
Forest species	Silver oak	2500	4000	3
Forest species	Subabool	50000	500000	0
Fruits	Almond	700	20000	100
Fruits	Aonla	21000	270000	1500
Fruits	Banana	505	1500	208
Fruits	Bel	4400	48000	10
Fruits	Ber	54000	60000	75
Fruits	Cashew nut	6500	140000	360
Fruits	Citrus	11600	48000	440
Fruits	Custard apple	12500	130000	1655
Fruits	Dragon fruit	600	12000	200
Fruits	Drum Stick, Papaya, Guava, Lime, Jack fruit	10000	500000	242
Fruits	FIG	1000	40000	35
Fruits	Guava	45375	403565	10247
Fruits	Jackfruit	65400	220500	8775
Fruits	Jamun	5500	72500	330
Fruits	Karonda	82460	660125	6047
Fruits	Lemon	6150	112500	450
Fruits	Lime	400	0	
Fruits	Litchi	1450	65050	283
Fruits	Mango	17780	246500	1323
Fruits	Neem	3000		
Fruits	Orange	1500	60000	200
Fruits	Papaya	201600	1318550	11054
Fruits	Pear	1000	20000	0
Fruits	Pomegranate	20000	370000	7370
Fruits	Strawberry	200	5000	200
Fruits	Tamarind	14300	99000	335
Medicinal	Lemongrass	50000	50000	3
Medicinal	Pamaroja	50000	50000	3
Ornamental Plant	Ashok	250	10000	12
Ornamental Plant	Eklipha	2400	12000	200
Ornamental Plant	Marigold	8000		200
Ornamental Plant	Zinia	5000	5000	200
Vegetable	Beet Root	5000	2500	200
Vegetable	Brinjal	369000	64500	7240
Vegetable	Cabbage	137500	21000	945
Vegetable	Capsicum	10000	5000	200
Vegetable	Cauliflower	147500	19000	910
Vegetable	Chilli	305000	42000	7285

Crop Category	Crop	Nos.	Value (Rs)	Provided to no. of farmers
Vegetable	Drumstick	181484	658220	14108
Vegetable	KnolKhol	108000	4000	410
Vegetable	Kundru	400	4000	200
Vegetable	Lasoda	200	6000	0
Vegetable	Onion	30000	18000	112
Vegetable	Sweet Potato	577000	542000	3546
Vegetable	Tomato	320500	44500	7105
Vegetable	Curry Leaf	300	7500	10
	<b>Total</b>	<b>3479494</b>	<b>8316860</b>	<b>95069</b>

**Table 5.7.2: Status of Planting Material production in Madhya Pradesh**

Crop Category	Crop	Nos.	Value (Rs)	Provided to no. of farmers
Fodder	Napier Grass	160122	30547	102
Forest species	Amaltash	21	10	11
Forest species	Arjun	7	195	0
Forest species	Bamboo	5291	26455	344
Forest species	Beal	123	3057	0
Forest species	Cheduphool	28	560	8
Forest species	Chironjee	12	300	12
Forest species	Duranta	655	3275	67
Forest species	Eucalyptus	12	240	3
Forest species	Gulmohar	36	710	2
Forest species	Karanj	136	1360	62
Forest species	Kesiasama	59	590	23
Forest species	Khamer	881	22025	0
Forest species	Khejadi	27	1080	0
Forest species	Kumut	7	220	0
Forest species	Neem	18	160	7
Forest species	Peepal	12	300	0
Forest species	Pepal, Sagon	159	3180	0
Forest species	Phycus	12	50	3
Forest species	Sesam	151	590	77
Forest species	Shami	27	1080	
Forest species	Siris	45	1125	0
Forest species	Teek	49	980	15
Fruits	Aonla	415	8515	177
Fruits	Aonla Budded	12	480	10
Fruits	Bel	22	460	20
Fruits	Cashew nut	91	4500	0
Fruits	Citrus	200	1420	131
Fruits	Custard apple	6118	17337	254
Fruits	Datepalm	3	120	3
Fruits	Guava	9769	467385	524

Crop Category	Crop	Nos.	Value (Rs)	Provided to no. of farmers
Fruits	Guava and Aonla	1700	51000	
Fruits	Jackfruit	2618	11045	775
Fruits	Jamun	421	8495	106
Fruits	Jamun, Sitaphal, Jackfruit, Lemon, Karonda & Forest Plants	3182	79564	54
Fruits	Karonda	97	970	45
Fruits	Karounda seedling	356	7120	265
Fruits	Lemon	200	10000	80
Fruits	Lemon Budded	298	11920	206
Fruits	Lemon seedling	204	480	184
Fruits	Lime	2322	38910	185
Fruits	Mango	1166	15340	408
Fruits	Mango graft	27	1050	7
Fruits	Mango Seedling	290	7250	198
Fruits	Neem	110	2745	0
Fruits	Orange	46	1150	30
Fruits	Papaya	38485	576095	2170
Fruits	Papaya seedling	726	10890	257
Fruits	Pomegranate	883	56321	61
Fruits	Tamarind	42	1050	0
Fruits	Watermelon	20000	16000	30
Fruits	Mango, Karonda, Jamun, Guava, Papaya etc	2805	56100	0
Medicinal	Aloevera, Tulsi	245	4900	0
Medicinal	Gilloy	66	1435	8
Ornamental Plant	Ashok	47	30	14
Ornamental Plant	Bargad	2	50	0
Ornamental Plant	Bottle palm	38	1140	20
Ornamental Plant	Chameli	96	1920	40
Ornamental Plant	Champa	17	340	9
Ornamental Plant	Chandani	110	2200	76
Ornamental Plant	Chandni, Mongra, Gulab, Champa	673	13460	0
Ornamental Plant	Croton	239	5975	161
Ornamental Plant	Gaillardia	4000	4000	585
Ornamental Plant	Gladiolus	5000	25000	15
Ornamental Plant	Gudhal	103	1885	58
Ornamental Plant	Har Shringar	6	60	2
Ornamental Plant	Jasmin	17	360	13
Ornamental Plant	Kaner	23	400	15
Ornamental Plant	Manokamani	41	820	21
Ornamental Plant	Marigold	219770	77955.5	904
Ornamental Plant	Mogra	14	140	10
Ornamental Plant	Ornamental	1104	2475	15

Crop Category	Crop	Nos.	Value (Rs)	Provided to no. of farmers
Ornamental Plant	Raatrani	5	100	3
Ornamental Plant	Rose	165	4184	22
Ornamental Plant	Sevanti	4	40	2
Ornamental Plant	Tuberose	1000	1000	2
Ornamental Plant	Vidya	19	60	4
Spices	Chilli	79773	74162.5	177
Spices	Onion	125000	30000	43
Vegetable	Beans	10	100	1
Vegetable	Brinjal	160256	156792	2035
Vegetable	Brinjal, Tomato, Chilli Muskmelon and Water melon	25500	15000	845
Vegetable	Broccoli	8400	4800	68
Vegetable	Cabbage	70538	100387	763
Vegetable	Capsicum	47160	85800	400
Vegetable	Cauliflower	87230	101596	724
Vegetable	Chilli	236685	188022	2959
Vegetable	Chilli, Tomato, Brinjal	310645	133645	540
Vegetable	Cucurbits	150	600	38
Vegetable	Drumstick	31092	263848	1903
Vegetable	Jack Fruit	766	19150	0
Vegetable	Onion	139670	40035	384
Vegetable	Red Cabbage	1800	1800	202
Vegetable	Sweet Potato	100	1000	
Vegetable	Tomato	472851	405732	3303
Vegetable	Tomato, brinjal, chilli , cabbage, cauliflower, cucurbits etc	701861	154100	1442
Vegetable	Curry Leaf	65	1260	39
Medicinal and Ornamentals	Medicinal and Ornamentals	5000	25000	0
	<b>Total</b>	<b>2997854</b>	<b>3514560</b>	<b>24781</b>

### Production of Bio-products

**Table 5.10: Production of bio-agents, pesticides, fertilizers by KVKs in Zone-IX**

Category	Name of the Product	Qty (in Kg)	Qty (in No)	Value (Rs)	Provided to no. of Farmers
Bio Fertilizers	Acetobactor	128	128	34048	40
Bio Fertilizers	Azatobactor	4078	134	1078148	1492
Bio Fertilizers	Azolla	62530.7	98	135678	1089
Bio Fertilizers	Compost	43536	0	201500	101
Bio Fertilizers	Earthworms	17026.68	0	857550	1092
Bio Fertilizers	NADEP	191712	41	560400	5
Bio Fertilizers	KSB	122		35868	112
Bio Fertilizers	ZSB	147	87	43677	105

Category	Name of the Product	Qty (in Kg)	Qty (in No)	Value (Rs)	Provided to no. of Farmers
Bio Fertilizers	Phosphate solublizing Bacteria	7082	1804	840131	2529
Bio Fertilizers	Rhizobium	2234	1213	576621	1236
Bio Fertilizers	Vermicompost	642515.9	5543	3585089	2032
Bio Fertilizers	Other (Beejamruth)	1000		6000	
Bio Fertilizers	Other (Biofertilisol)	132		38808	132
Bio Fertilizers	Other (Jeevamrit.)	200	0	40	2
Bio Fertilizers	Other (Bio decomposer)	265		5000	107
Bio Pesticides	Aganistra	1000		40000	
Bio Pesticides	Beauveria bassiana	205	3411	994700	3355
Bio Pesticides	Bramstra	1000		40000	
Bio Pesticides	Metarhizium anisopliae	2032	32	14000	10
Bio Pesticides	Neem extract	1310		43000	425
Bio Pesticides	Neem powder	400			400
Bio Pesticides	Panchagavya	200	2	5000	0
Bio Pesticides	Pseudomonas fluorescens	3476	202	126474	341
Bio Pesticides	Trichoderma harjinum	3000			
Bio Pesticides	Trichoderma viride	24723	2128	2168390	7959
Bio Pesticides	Trichogramma chilonis	2		60	
Bio Agents (Tricho card)	Other(Waste decomposer)	6000	0		4500
Bio Agents (Worms)	Earth worm	5868	0	929390	451
Bio Agents (Worms)	Eisenia fetida	1010.18	0	241212	1066
Bio-Food	Honey	740	0	511000	80
Others	Cow dung (dry)	1184039.8	0	161736	67
Others	FYM	18000	0	8700	1
Others	Mineral Mixture	50		500	10
Others	Mushroom spawn	2914.17	692	757865	988
Others	other	517.72	1500	24766	88
	<b>Total</b>	<b>2229197.15</b>	<b>17015</b>	<b>14065291</b>	<b>29815</b>

Table 5.10.1: Production of bio-agents, pesticides, fertilizers by KVKs in Chhattishgarh

Category	Name of the Product	Qty (in Kg)	Qty (in No)	Value (Rs)	Provided to no. of Farmers
Bio Fertilizers	Azolla	1520.8	0	3050	0
Bio Fertilizers	Compost	10036	0	39000	45
Bio Fertilizers	Earthworms	1016.18	0	430612	769
Bio Fertilizers	NADEP	153712	36	520400	5
Bio Fertilizers	Vermicompost	156352	75	1067822	713
Bio Pesticides	Beauveria bassiana	100	0		
Bio Pesticides	Metarhizium anisopliae	2000	0		

Category	Name of the Product	Qty (in Kg)	Qty (in No)	Value (Rs)	Provided to no. of Farmers
Bio Pesticides	Neem extract	200	0		200
Bio Pesticides	Neem powder	400	0		400
Bio Pesticides	Pseudomonas fluorescens	3000	0		
Bio Pesticides	Trichoderma harjinum	3000	0		
Bio Pesticides	Trichoderma viride	8305	500	276590	2944
Bio Pesticides	Trichogramma chilonis	2		60	
Bio Agents (Worms)	Earth worm	5710	0	903990	164
Bio Agents (Worms)	Eisenia fetida	443.18	0	145112	758
Bio-Food	Honey	740	0	511000	80
Others	Cow dung (dry)	37339.8		79376	67
Others	FYM	18000	0	8700	1
Others	Mineral Mixture	50		500	10
Others	Mushroom spawn	1989.17	692	631615	962
Others	Other	517.72	0	22166	78
	<b>Total</b>	<b>404433.85</b>	<b>1303</b>	<b>4639993</b>	<b>7196</b>

Table 5.10.2: Production of bio-agents, pesticides, fertilizers by KVKs in Madhya Pradesh

Category	Name of the Product	Qty (in Kg)	Qty (in No)	Value (Rs)	Provided to no. of Farmers
Bio Fertilizers	Acetobactor	128	128	34048	40
Bio Fertilizers	Azatobactor	4078	134	1078148	1492
Bio Fertilizers	Azolla	61009.9	98	132628	1089
Bio Fertilizers	Compost	33500	0	162500	56
Bio Fertilizers	Earthworms	16010.5	0	426938	323
Bio Fertilizers	NADEP	38000	5	40000	0
Bio Fertilizers	KSB	122		35868	112
Bio Fertilizers	ZSB	147	87	43677	105
Bio Fertilizers	Phosphate solublizing Bacteria	7082	1804	840131	2529
Bio Fertilizers	Rhizobium	2234	1213	576621	1236
Bio Fertilizers	Vermicompost	486163.9	5468	2517267	1319
Bio Fertilizers	Other (Beejamruth)	1000		6000	
Bio Fertilizers	Other (Biofertisol)	132		38808	132
Bio Fertilizers	Other (Jeevamrit.)	200	0	40	2
Bio Fertilizers	Other (Bio decomposer)	265		5000	107
Bio Pesticides	Aganistra	1000		40000	
Bio Pesticides	Beauveria bassiana	105	3411	994700	3355
Bio Pesticides	Bramstra	1000		40000	
Bio Pesticides	Metarhizium anisopliae	32	32	14000	10
Bio Pesticides	Neem extract	1110		43000	225
Bio Pesticides	Panchagavya	200	2	5000	0
Bio Pesticides	Pseudomonas fluorescens	476	202	126474	341
Bio Pesticides	Trichoderma viride	16418	1628	1891800	5015

Category	Name of the Product	Qty (in Kg)	Qty (in No)	Value (Rs)	Provided to no. of Farmers
Bio Agents (Tricho card)	Other(Waste decomposer)	6000	0		4500
Bio Agents (Worms)	Earth worm	158	0	25400	287
Bio Agents (Worms)	Eisenia fetida	567	0	96100	308
Others	Cow dung (dry)	1146700	0	82360	0
Others	Mushroom spawn	925	0	126250	26
Others	Other	0	1500	2600	10
	<b>Total</b>	<b>1824763.3</b>	<b>15712</b>	<b>9425358</b>	<b>22619</b>

## Production of Livestock Materials

Table 5.13: Status of Livestock Production in KVKs in Zone-IX

Thematic Area	Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (Number/ kg/liter)	Value (Rs)	No. of Beneficiaries
Dairy animals	Breeding bull	Gir	Breeding bull(no.)	1	60000	
Dairy animals	Breeding bull	Sahiwal	Breeding bull(no.)	3	54000	0
Dairy animals	Breeding bull	Sahiwal	In herd (no.)	35	35000	16
Dairy animals	Buffaloes	Murrah	Buffaloe(no.)	1	34050	1
Dairy animals	Buffaloes	Murrah	Milk(Liter)	1902	66570	47
Dairy animals	Calves	Gir	Calves(no.)	21	20000	2
Dairy animals	Calves	Gir & Frieswal	Calves(no.)	8	40000	
Dairy animals	Calves	Gir, Sahiwal	Calves(no.)	3	15000	
Dairy animals	Calves	Sahiwal	Breed(no.)	9	90000	
Dairy animals	Calves	Sahiwal	Calves(no.)	34	490000	31
Dairy animals	Calves	Sahiwal	Cowdung, Urine(kg)	45000	90000	
Dairy animals	Cow	Desi	Cow Urine(Liter)	100	400	2
Dairy animals	Cow	Freezwal	Milk(Liter)	2953.5	88605	45
Dairy animals	Cow	Gir	Cow dung(kg)	1200	2400	0
Dairy animals	Cow	Gir	Heifers(no.)	9	360000	9
Dairy animals	Cow	Gir	Milk(Liter)	42538.75	1331809	248
Dairy animals	Cow	Gir & Frieswal	Milk(Liter)	8732.5	240234	23
Dairy animals	Cow	Gir, Sahiwal	Milk(Liter)	4892	195680	
Dairy animals	Cow	Holstein Frozen	Milk(Liter)	17247	300782	59
Dairy animals	Cow	Holstein Frozen	Vermin Compost(kg)	9000	12800	24
Dairy animals	Cow	Sahiwal	Milk(Liter)	65708	1224707	87
Dairy animals	Cow	Sahiwal	Milk, Cowdung, Urine(Liter)	2889	144450	
Dairy animals	Cow	Sahiwal	Cow(no.)	5	50000	2
Dairy animals	Cow	Holstein Friesian & Sahiwal	Milk(Liter)	8713	348520	32
Dairy animals	Goats	Barbari	Adult & Kid(no.)	40	314000	6
Dairy animals	Goats	Barbari	Meat(kg)	177	39825	18
Dairy animals	Goats	Barbari & Sirohi	Meat (kg)	30	129750	10
Dairy animals	Goats	Black Bengal	Adult & Kid(no.)	20	120000	0

Thematic Area	Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (Number/ kg/liter)	Value (Rs)	No. of Beneficiaries
Dairy animals	Goats	Black Bengal	Meat (kg)	98.5	22330	20
Dairy animals	Goats	Jamanapari & Barbari	Adult & Kid(no.)	12	120000	40
Dairy animals	Goats	Jamunapari	Adult & Kid(no.)	5	10000	0
Dairy animals	Goats	Jamunapari	Kids(no.)	1	2000	
Dairy animals	Goats	Osmanabadi	Breed(no.)	18	76418	18
Dairy animals	Goats	Sirohi	Breed(no.)	3	12000	3
Dairy animals	Goats	Sirohi	Doe and buck(no.)	6	36000	2
Dairy animals	Goats	Sirohi	Dual purpose(no.)	15	100000	0
Dairy animals	Goats	Sirohi	Kids(no.)	4	8000	
Dairy animals	Goats	Sirohi	Meat(kg)	18	5000	1
Dairy animals	Goats	Sirohi	Buck(no.)	5	7500000	5
Dairy animals	Goats	Sirohi	Breeding and selling(no.)	46	536000	8
Poultry	Ducks	White Cambel	Ckicks(no.)	704	7940	2
Poultry	Ducks	White pekin	Birds(no.)	300	150000	0
Poultry	Ducks	White pekin	Ckicks(no.)	16	4800	6
Poultry	Ducks	White pekin	Duckligs(no.)	80	4000	0
Poultry	Ducks	White pekin, Khakhee Campbell	Duckligs(no.)	105	5250	
Poultry	Ducks	Khakhhi Cambel	Meat, Egg, Chicks(no.)	24	4800	
Poultry	Japanese quail	Japanese quail	Chicks(no.)	18924	229980	90
Poultry	Japanese quail	Japanese quail	Eggs(no.)	686	8918	9
Poultry	Japanese quail	Japanese quail	Meat(kg)	393	23580	
Poultry	Poultry	Aseel	Chicks(no.)	500	37500	42
Poultry	Poultry	Bundelkhandi	Birds(no.)	10	8500	35
Poultry	Poultry	Bundelkhandi	Eggs(no.)	250	3750	
Poultry	Poultry	Chebro	Chicks(no.)	320	16000	12
Poultry	Poultry	Desi	Adult(no.)	227	33000	38
Poultry	Poultry	Desi	Chicks(no.)	840	51924	10
Poultry	Poultry	Gramapriya	Live birds(no.)	249	74952	106
Poultry	Poultry	Kadaknath	Adult(no.)	154	69250	44
Poultry	Poultry	Kadaknath	Birds(no.)	84	60700	38
Poultry	Poultry	Kadaknath	Breeder, Chicks & Eggs(no.)	5536	575730	232
Poultry	Poultry	Kadaknath	Chick & Meat(no.)	660	44050	170
Poultry	Poultry	Kadaknath	Chicken(kg)	270.89	139635	290
Poultry	Poultry	Kadaknath	Chicks(no.)	108137	6474810	582
Poultry	Poultry	Kadaknath	Chicks & Birds(no.)	85	22000	21
Poultry	Poultry	Kadaknath	Egg & Chicken(kg)	50	36490	40
Poultry	Poultry	Kadaknath	Eggs(no.)	2577	23375	44
Poultry	Poultry	Kadaknath	Meat(kg)	691	269374	100
Poultry	Poultry	Kadaknath	Meat, Egg, Chicks(no.)	2567	264500	

Thematic Area	Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (Number/ kg/liter)	Value (Rs)	No. of Beneficiaries
Poultry	Poultry	Kadaknath, Narmada Nidhi	Meat(kg)	55	17000	2
Poultry	Poultry	Narmada Nidhi	Chicken (kg)	46	14700	28
Poultry	Poultry	Vanraja	Chicks(no.)	1032	74000	47
Fisheries	Indian carp	Rohu, Katla	Fish(kg)	630	94000	16
Fisheries	Indian carp	Rohu, Catla, Mrigal	Fingerling(no.)	61840	102400	22
Fisheries	Indian carp	Rohu, Catla, Mrigal	Fish(kg)	297	45400	
Fisheries	Indian carp	Rohu, Catla, Mrigal	Fry(no.)	230000	363750	180
Fisheries	Ornamental fish	Common Carp	Fingerling(no.)	1000	1000	
	<b>Total</b>			<b>650843.14</b>	<b>23683388</b>	<b>2965</b>

Table 5.14: Status of Livestock Production in KVKs under Chhattishgarh

Thematic Area	Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/qt/litre)	Value (Rs)	No. of Beneficiaries
Dairy animals	Breeding bull	Gir	Breeding bull(no.)	1	60000	
Dairy animals	Breeding bull	Sahiwal	Breeding bull(no.)	3	54000	0
Dairy animals	Calves	Gir	Calves(no.)	17	0	0
Dairy animals	Calves	Gir, Sahiwal	Calves(no.)	3	15000	
Dairy animals	Calves	Sahiwal	Breed(no.)	9	90000	
Dairy animals	Calves	Sahiwal	Cowdung, Urine(kg)	45000	90000	
Dairy animals	Cow	Gir	Cow dung(kg)	1200	2400	0
Dairy animals	Cow	Gir	Milk(Liter)	8181	172400	148
Dairy animals	Cow	Gir, Sahiwal	Milk(Liter)	4892	195680	
Dairy animals	Cow	Sahiwal	Milk(Liter)	62787	1224707	77
Dairy animals	Cow	Sahiwal	Milk, Cowdung, Urine(Liter)	2889	144450	
Dairy animals	Cow	Sahiwal	Cow(no.)	5	50000	2
Dairy animals	Cow	Holstein Friesian & Sahiwal	Milk(Liter)	8713	348520	32
Dairy animals	Goats	Barbari	Adult & Kid(no.)	18	116000	1
Dairy animals	Goats	Barbari	Meat(kg)	177	39825	18
Dairy animals	Goats	Black Bengal	Adult & Kid(no.)	20	120000	0
Dairy animals	Goats	Black Bengal	Meat (kg)	98.5	22330	20
Dairy animals	Goats	Osmanabadi	Breed(no.)	18	76418	18
Dairy animals	Goats	Sirohi	Breed(no.)	3	12000	3
Dairy animals	Goats	Sirohi	Doe and buck(no.)	6	36000	2
Dairy animals	Goats	Sirohi	Kids(no.)	4	8000	
Dairy animals	Goats	Sirohi	Meat(kg)	18	5000	1
Poultry	Ducks	White Cambel	Ckicks(no.)	704	7940	2
Poultry	Ducks	White pekin	Birds(no.)	300	150000	0

Thematic Area	Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/qt/litre)	Value (Rs)	No. of Beneficiaries
Poultry	Ducks	White pekin	Chicks(no.)	16	4800	6
Poultry	Ducks	White pekin	Ducklings(no.)	80	4000	0
Poultry	Ducks	White pekin, Khakhee Campbell	Ducklings(no.)	105	5250	
Poultry	Ducks	Khakhhi Cambel	Meat, Egg, Chicks(no.)	24	4800	
Poultry	Japanese quail	Japanese quail	Chicks(no.)	18909	228480	90
Poultry	Japanese quail	Japanese quail	Eggs(no.)	686	8918	9
Poultry	Japanese quail	Japanese quail	Meat(kg)	393	23580	
Poultry	Poultry	Aseel	Chicks(no.)	500	37500	42
Poultry	Poultry	Kadaknath	Chick & Meat(no.)	660	44050	170
Poultry	Poultry	Kadaknath	Chicken(kg)	42	25200	100
Poultry	Poultry	Kadaknath	Chicks(no.)	77367	3898570	318
Poultry	Poultry	Kadaknath	Eggs(no.)	2220	17760	19
Poultry	Poultry	Kadaknath	Meat(kg)	691	269374	100
Poultry	Poultry	Kadaknath	Meat, Egg, Chicks(no.)	2567	264500	
Poultry	Poultry	Vanraja	Chicks(no.)	200	6800	25
Fisheries	Indian carp	Rohu, Katla	Fish(kg)	130	19000	10
Fisheries	Indian carp	Rohu, Catla, Mrigal	Fingerling(no.)	61840	102400	22
Fisheries	Indian carp	Rohu, Catla, Mrigal	Fish(kg)	297	45400	
Fisheries	Indian carp	Rohu, Catla, Mrigal	Fry(no.)	50000	3750	28
Fisheries	Ornamental fish	Common Carp	Fingerling(no.)	1000	1000	
	<b>Total</b>			<b>352793.50</b>	<b>8055802</b>	<b>1263</b>

Table 5.15: Status of Livestock Production in KVKs under Madhya Pradesh

Thematic Area	Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/qt/litre)	Value (Rs)	No. of Beneficiaries
Dairy animals	Breeding bull	Sahiwal	In herd (no.)	35	35000	16
Dairy animals	Buffaloes	Murrah	Buffaloe(no.)	1	34050	1
Dairy animals	Buffaloes	Murrah	Milk(Liter)	1902	66570	47
Dairy animals	Calves	Gir	Calves(no.)	4	20000	2
Dairy animals	Calves	Gir & Frieswal	Calves(no.)	8	40000	
Dairy animals	Calves	Sahiwal	Calves(no.)	34	490000	31
Dairy animals	Cow	Desi	Cow Urine(Liter)	100	400	2
Dairy animals	Cow	Freezwal	Milk(Liter)	2953.5	88605	45
Dairy animals	Cow	Gir	Heifers(no.)	9	360000	9
Dairy animals	Cow	Gir	Milk(Liter)	34357.75	1159409	100
Dairy animals	Cow	Gir & Frieswal	Milk(Liter)	8732.5	240234	23
Dairy animals	Cow	Holstein Frozen	Milk(Liter)	17247	300782	59
Dairy animals	Cow	Holstein Frozen	Vermin Compost(kg)	9000	12800	24

Thematic Area	Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/qt/litre)	Value (Rs)	No. of Beneficiaries
Dairy animals	Cow	Sahiwal	Milk(Liter)	2921	0	10
Dairy animals	Goats	Barbari	Adult & Kid(no.)	22	198000	5
Dairy animals	Goats	Barbari & Sirohi	Meat (kg)	30	129750	10
Dairy animals	Goats	Jamanapari & Barbari	Adult & Kid(no.)	12	120000	40
Dairy animals	Goats	Jamunapari	Adult & Kid(no.)	5	10000	0
Dairy animals	Goats	Jamunapari	Kids(no.)	1	2000	
Dairy animals	Goats	Sirohi	Dual purpose(no.)	15	100000	0
Dairy animals	Goats	Sirohi	Buck(no.)	5	750000	5
Dairy animals	Goats	Sirohi	Breeding and selling(no.)	46	536000	8
Poultry	Japanese quail	Japanese quail	Chicks(no.)	15	1500	
Poultry	Poultry	Bundelkhandi	Birds(no.)	10	8500	35
Poultry	Poultry	Bundelkhandi	Eggs(no.)	250	3750	
Poultry	Poultry	Chebro	Chicks(no.)	320	16000	12
Poultry	Poultry	Desi	Adult(no.)	227	33000	38
Poultry	Poultry	Desi	Chicks(no.)	840	51924	10
Poultry	Poultry	Gramapriya	Live birds(no.)	249	74952	106
Poultry	Poultry	Kadaknath	Adult(no.)	154	69250	44
Poultry	Poultry	Kadaknath	Birds(no.)	84	60700	38
Poultry	Poultry	Kadaknath	Breeder, Chicks & Eggs(no.)	5536	575730	232
Poultry	Poultry	Kadaknath	Chicken(kg)	228.89	114435	190
Poultry	Poultry	Kadaknath	Chicks(no.)	30770	2576240	264
Poultry	Poultry	Kadaknath	Chicks & Birds(no.)	85	22000	21
Poultry	Poultry	Kadaknath	Egg & Chicken(kg)	50	36490	40
Poultry	Poultry	Kadaknath	Eggs(no.)	357	5615	25
Poultry	Poultry	Kadaknath, Narmada Nidhi	Meat(kg)	55	17000	2
Poultry	Poultry	Narmada Nidhi	Chicken (kg)	46	14700	28
Poultry	Poultry	Vanraja	Chicks(no.)	832	67200	22
Fisheries	Indian carp	Rohu, Katla	Fish(kg)	500	75000	6
Fisheries	Indian carp	Rohu, Catla, Mrigal	Fry(no.)	180000	360000	152
	<b>Total</b>			<b>298049.64</b>	<b>15627586</b>	<b>1702</b>

## 6. Soil, Water and Plant Analysis

Soil and water testing is an important activity of KVK for improving the soil fertility and sustainability of agricultural production in the region. During the reporting year, KVKs of Madhya Pradesh and Chhattisgarh analyzed 31157 soil samples benefitting 31505 farmers of 7555 villages (Table 6). The highest numbers of samples were tested in the state of Madhya Pradesh followed by Chhattisgarh. The KVK-wise details of soil samples tested are given in Table 6.

**Table 6: Summary of soil samples tested by the KVKs in Zone-IX**

State	Soil Testing Kits sanctioned	Soil Testing Kits Procured	No of soil samples		Number of Soil Samples Analysed		Total	Number of Soil Health Cards distributed		Total	No. of farmers benefitted		Total	Village Covered
			Collected by KVKs	Provided by Dept. / DDA	Through Mini Soil Testing kit/labs	Through Soil testing laboratory		Through Mini Soil Testing kit/labs	Through Soil testing laboratory		Mini Soil Testing kit	Soil testing laboratory		
CG	36	36	4769	8357	4273	800	5073	12053	880	12933	8058	595	8653	1641
MP	78	75	23128	15620	14418	11666	26084	14400	11649	26049	14081	8771	22852	5914
<b>Zone-IX</b>	<b>114</b>	<b>111</b>	<b>27897</b>	<b>23977</b>	<b>18691</b>	<b>12466</b>	<b>31157</b>	<b>26453</b>	<b>12529</b>	<b>38982</b>	<b>22139</b>	<b>9366</b>	<b>31505</b>	<b>7555</b>

KVKs of Chhattisgarh analyzed 16 water samples benefitting 16 farmers of 16 villages and KVKs of Madhya Pradesh analyzed 174 water samples benefitting 109 farmers of 22 villages (Table 6.1). Total 190 water samples analyze by KVKs.

**Table 6.1: Summary of water samples tested by the KVKs in Zone-IX**

State	Details	No. of Samples	No. of Farmers	No. of Villages covered
Chhattisgarh	Water Samples	16	16	16
Madhya Pradesh	Water samples	174	109	22
	<b>Total</b>	<b>190</b>	<b>125</b>	<b>38</b>

## 7. Extension Activities

Transfer of technology holds the key to rapid development and transformation of rural society. Krishi Vigyan Kendras, having districts as their jurisdiction, are playing crucial role in transfer of technology and thereby enhancing productivity and income of the farming community. The various extension activities include demonstration for farmers group and exhibition reaching large number of farmers. To reach to wider masses, different means of information dissemination from traditional ones like poster, exhibition to new ICT tools like mobile messaging and social media are used. Broadly, extension activities conducted by KVK include– (i) Advice based like farm advisory services; lectures delivered as resource person; method demonstration, etc. (ii) Animal related like animal health and vaccination camp (iii) Literature based like exhibition, extension literature and popular article (iv) Media based like production of CD/DVD, Film show, Newspaper coverage, radio talks and TV talks (v) Meeting based like ex-trainee sammelan, celebration of important days, club meet, farmers' seminar, field day, group meet, gosthi, mela, SHG meeting and workshops (vi) Soil related activities like soil health camp and soil test campaign (vii) Visit based activities like diagnostic visits, exposure visits, farmers visit to KVK and scientists visits to farmers field. In all **83243** activities were conducted and **32,74,619** farmers, farm women, rural youth and extension workers were benefited (Table 7.1).

**Table 7.1 : Details of extension activities organized by the KVKs of Zone-IX**

Activity	No. of activities	Details of participants										
		Farmers (Other)		Farmers (SC)		Farmers (ST)		Extension Officials		Total Farmers & Extension personnel		
		M	F	M	F	M	F	M	F	M	F	Total
Advisory Services	3696	14068	3049	3276	785	25991	5549	497	132	43832	9515	53347
Advisory Services (KMA)	403	603952	32974	95672	14117	113605	15489	1073	90	814302	62670	876972
Agri mobile clinic	491	1453554	214700	300688	42966	107551	23680	5849	628	1867642	281974	2149616
Awareness programme *	884	9639	2957	2956	1382	5832	2655	1091	414	19518	7408	26926
Celebration of important days **	835	16334	16062	5156	2487	7256	3896	1191	596	29937	23041	52978
Diagnostic visits	1959	7473	1430	3177	939	4783	1525	734	165	16167	4059	20226
Exhibition	217	25585	5480	8160	3646	16855	10304	1724	532	52324	19962	72286
Exposure visits	225	2073	362	736	234	1227	510	314	121	4350	1227	5577
Extension literature	342	31813	4253	8320	2323	12199	5550	1579	520	53911	12646	66557
Extrainees Sammelan	268	5838	1130	1303	762	1899	679	509	175	9549	2746	12295
Farm advisory Services	1272	47033	962	17475	1393	89589	5380	511	98	154608	7833	162441
Farm Science Club	25	273	49	205	48	198	45	59	10	735	152	887
Farmers Seminar/Workshop	149	1726	378	521	197	1517	634	418	114	4182	1323	5505
Farmers visit to KVK	42023	49271	6940	9818	3416	27038	11986	2869	766	88996	23108	112104
Field Day	533	6919	1222	1783	575	3863	1262	526	132	13091	3191	16282
Film Show	517	6103	1527	1717	532	3320	2350	529	240	11669	4649	16318
Group Discussion	385	2785	849	1244	381	1588	868	368	155	5985	2253	8238
Group meetings	91	583	174	338	112	362	114	66	39	1349	439	1788
Kisan Ghosthi/Sammelan	491	9241	1643	2679	850	4724	1653	574	222	17218	4368	21586

Activity	No. of activities	Details of participants										
		Farmers (Other)		Farmers (SC)		Farmers (ST)		Extension Officials		Total Farmers & Extension personnel		
		M	F	M	F	M	F	M	F	M	F	Total
Kisan Mela	67	13773	4080	2886	1182	11384	3644	1601	612	29644	9518	39162
Krishi Mahotsav	32	1947	571	693	254	607	274	94	42	3341	1141	4482
Lectures delivered as resource persons	1592	52518	3248	6765	2622	7622	3096	1469	373	68374	9339	77713
Mahila Mandals conveners meetings	117	188	597	145	711	234	819	131	262	698	2389	3087
Method Demonstrations	452	2494	966	1183	594	1973	1013	338	158	5988	2731	8719
Plant/Animal Health Camp	191	1396	256	701	159	1233	490	236	68	3566	973	4539
Pradhanmantri phasal beema yojana	137	2289	582	802	310	1762	613	316	119	5169	1624	6793
Scientific visit to farmers field	4444	11518	2459	5614	2197	7723	3649	741	244	25596	8549	34145
Self Help Group conveners meetings	308	1196	538	621	478	1035	849	230	106	3082	1971	5053
Soil health Camp	92	3150	481	990	278	1453	415	488	197	6081	1371	7452
Soil test campaigns	85	2598	416	1180	392	1857	462	208	44	5843	1314	7157
Swachhta Pakhwada	103	2034	362	347	57	225	56	185	56	2791	531	3322
Technology Week	119	6119	1604	2078	832	2285	765	418	169	10900	3370	14270
Others	1229	15464	5865	14543	6159	6686	4029	754	309	37447	16362	53809
<b>Grand Total</b>	<b>63671</b>	<b>2408913</b>	<b>317804</b>	<b>503425</b>	<b>93313</b>	<b>475251</b>	<b>114247</b>	<b>27505</b>	<b>7852</b>	<b>3415094</b>	<b>533216</b>	<b>3948310</b>

Note: M-Male, F-Female

\* Awareness programmes (Nutrition awareness month, Swachchhata Pakhwada, Honey bee production, Parthenium Week, Farm bill Awareness, Poshan Maah etc )

\*\* Celebration of important days (International Womens Day, Agriculture Education Day, Kisan Diwas, Kisan Vigyan Diwas, Mahila Krishak Diwas, World Soil Day, Balram Jaynti, World food day, World soil health day, Republic Day, Independence Day etc)

**Table 7.2: Details of extension activities organized by the KVKs of Chhattisgarh**

Activity	No. of activities	Details of participants										
		Farmers (Other)		Farmers (SC)		Farmers (ST)		Extension Officials		Total Farmers & Extension personnel		
		M	F	M	F	M	F	M	F	M	F	Total
Advisory Services	290	7798	1918	1794	360	16940	5073	181	72	26713	7423	34136
Advisory Services (KMA)	97	296732	27942	54069	12567	59185	14089	496	50	410482	54648	465130
Agri mobile clinic	91	113	60	75	23	143	69	46	22	377	174	551
Awareness programme *	408	1755	797	855	591	2094	1256	364	151	5068	2795	7863
Celebration of important days**	307	1872	1150	615	493	2130	1572	397	134	5014	3349	8363
Diagnostic visits	1091	2261	781	1026	566	2191	1095	318	95	5796	2537	8333
Exhibition	103	6665	2154	4012	1382	5739	3979	405	209	16821	7724	24545
Exposure visits	84	548	150	288	123	676	368	145	46	1657	687	2344
Extension literature	68	5300	296	1827	764	4820	2494	627	233	12574	3787	16361
Extranees Sammelan	49	2707	724	640	496	855	409	174	103	4376	1732	6108
Farm advisory Services	10	2	0	8	4	10	5	0	0	20	9	29

Activity	No. of activities	Details of participants										
		Farmers (Other)		Farmers (SC)		Farmers (ST)		Extension Officials		Total Farmers & Extension personnel		
		M	F	M	F	M	F	M	F	M	F	Total
Farm Science Club	6	50	4	35	19	86	29	45	8	216	60	276
Farmers Seminar/Workshop	64	272	98	146	52	823	463	252	75	1493	688	2181
Farmers visit to KVK	16953	6632	2713	1839	638	12026	7370	1664	419	22161	11140	33301
Field Day	191	1018	277	435	184	1174	537	143	44	2770	1042	3812
Film Show	133	1193	680	395	127	1187	1428	351	140	3126	2375	5501
Group Discussion	143	501	162	322	104	692	510	183	78	1698	854	2552
Group meetings	5	5	3	25	10	20	8	5	1	55	22	77
Kisan Ghosthi/Sammelan	123	962	393	364	149	1595	534	149	82	3070	1158	4228
Kisan Mela	17	2813	1332	706	422	6896	1885	840	297	11255	3936	15191
Krishi Mahotsav	20	611	38	204	91	363	188	52	22	1230	339	1569
Lectures delivered as resource persons	328	996	471	392	284	2033	1039	307	124	3728	1918	5646
Mahila Mandals conveners meetings	53	80	143	25	156	54	330	54	147	213	776	989
Method Demonstrations	153	845	434	281	172	798	597	135	40	2059	1243	3302
Plant/Animal Health Camp	116	503	94	253	58	709	352	104	39	1569	543	2112
Pradhanmantri phasal beema yojana	20	420	119	76	34	122	50	40	23	658	226	884
Scientific visit to farmers field	1729	1464	554	1527	1110	2677	2496	150	66	5818	4226	10044
Self Help Group conveners meetings	202	436	228	145	204	470	373	104	51	1155	856	2011
Soil health Camp	16	197	43	126	49	166	68	80	37	569	197	766
Soil test campaigns	32	134	49	154	68	330	92	44	9	662	218	880
Technology Week	44	1070	586	244	171	536	183	59	24	1909	964	2873
Others	53	478	252	201	86	418	198	66	34	1163	570	1733
<b>Grand Total</b>	<b>22999</b>	<b>346433</b>	<b>44645</b>	<b>73104</b>	<b>21557</b>	<b>127958</b>	<b>49139</b>	<b>7980</b>	<b>2875</b>	<b>555475</b>	<b>118216</b>	<b>673691</b>

Note: M-Male, F-Female

\* Awareness programmes (Nutrition awareness month, Swachchhata Pakhwada, Honey bee production, Parthenium Week, Farm bill Awareness, Poshan Maah etc )

\*\* Celebration of important days (International Womens Day, Agriculture Education Day, Kisan Diwas, Kisan Vigyan Diwas, Mahila Krishak Diwas, World Soil Day, Balram Jaynti, World food day, World soil health day, Republic Day, Independence Day etc)

**Table 7.3: Details of extension activities organized by the KVKs of Madhya Pradesh**

Activity	No. of activities	Details of participants										
		Farmers (Other)		Farmers (SC)		Farmers (ST)		Extension Officials		Total Farmers & Extension personnel		
		M	F	M	F	M	F	M	F	M	F	Total
Advisory Services	3406	6270	1131	1482	425	9051	476	316	60	17119	2092	19211
Advisory Services (KMA)	306	307220	5032	41603	1550	54420	1400	577	40	403820	8022	411842
Agri mobile clinic	400	1453441	214640	300613	42943	107408	23611	5803	606	1867265	281800	2149065
Awareness programme *	476	7884	2160	2101	791	3738	1399	727	263	14450	4613	19063

Activity	No. of activities	Details of participants										
		Farmers (Other)		Farmers (SC)		Farmers (ST)		Extension Officials		Total Farmers & Extension personnel		
		M	F	M	F	M	F	M	F	M	F	Total
Celebration of important days **	528	14462	14912	4541	1994	5126	2324	794	462	24923	19692	44615
Diagnostic visits	868	5212	649	2151	373	2592	430	416	70	10371	1522	11893
Exhibition	114	18920	3326	4148	2264	11116	6325	1319	323	35503	12238	47741
Exposure visits	141	1525	212	448	111	551	142	169	75	2693	540	3233
Extension literature	274	26513	3957	6493	1559	7379	3056	952	287	41337	8859	50196
Extranees Sammelan	219	3131	406	663	266	1044	270	335	72	5173	1014	6187
Farm advisory Services	1262	47031	962	17467	1389	89579	5375	511	98	154588	7824	162412
Farm Science Club	19	223	45	170	29	112	16	14	2	519	92	611
Farmers Seminar/Workshop	85	1454	280	375	145	694	171	166	39	2689	635	3324
Farmers visit to KVK	25070	42639	4227	7979	2778	15012	4616	1205	347	66835	11968	78803
Field Day	342	5901	945	1348	391	2689	725	383	88	10321	2149	12470
Film Show	384	4910	847	1322	405	2133	922	178	100	8543	2274	10817
Group Discussion	242	2284	687	922	277	896	358	185	77	4287	1399	5686
Group meetings	86	578	171	313	102	342	106	61	38	1294	417	1711
Kisan Ghosthi/Sammelán	368	8279	1250	2315	701	3129	1119	425	140	14148	3210	17358
Kisan Mela	50	10960	2748	2180	760	4488	1759	761	315	18389	5582	23971
Krishi Mahotsav	12	1336	533	489	163	244	86	42	20	2111	802	2913
Lectures delivered as resource persons	1264	51522	2777	6373	2338	5589	2057	1162	249	64646	7421	72067
Mahila Mandals conveners meetings	64	108	454	120	555	180	489	77	115	485	1613	2098
Method Demonstrations	299	1649	532	902	422	1175	416	203	118	3929	1488	5417
Plant/Animal Health Camp	75	893	162	448	101	524	138	132	29	1997	430	2427
Pradhanmantri phasal beema yojana	117	1869	463	726	276	1640	563	276	96	4511	1398	5909
Scientific visit to farmers field	2715	10054	1905	4087	1087	5046	1153	591	178	19778	4323	24101
Self Help Group conveners meetings	106	760	310	476	274	565	476	126	55	1927	1115	3042
Soil health Camp	76	2953	438	864	229	1287	347	408	160	5512	1174	6686
Soil test campaigns	53	2464	367	1026	324	1527	370	164	35	5181	1096	6277
Technology Week	75	5049	1018	1834	661	1749	582	359	145	8991	2406	11397
Others	1176	14986	5613	14342	6073	6268	3831	688	275	36284	15792	52076
<b>Grand Total</b>	<b>40672</b>	<b>2062480</b>	<b>273159</b>	<b>430321</b>	<b>71756</b>	<b>347293</b>	<b>65108</b>	<b>19525</b>	<b>4977</b>	<b>2859619</b>	<b>415000</b>	<b>3274619</b>

Note: M-Male, F-Female

\* Awareness programmes (Nutrition awareness month, Swachchhata Pakhwada, Honey bee production, Parthenium Week, Farm bill Awareness, Poshan Maah etc )

\*\* Celebration of important days (International Womens Day, Agriculture Education Day, Kisan Diwas, Kisan Vigyan Diwas, Mahila Krishak Diwas, World Soil Day, Balram Jaynti, World food day, World soil health day, Republic Day, Independence Day etc)

**Mass Media based activities organized by the KVKs of Zone-IX**

Name of media	Number of events/activities		
	Madhya Pradesh	Chhattisgarh	Total
CD/DVD	83	25	108
Extension Literature	361	71	432
Kisan Mela	28	21	49
Newspaper coverage	1694	1055	2749
Radio talks	170	125	295
TV talks	101	171	272
Social media (Whats App, Facebook, Instagram, Twitter etc.)	10190	5061	15251
Internet (Youtube)	95	321	416
<b>Grand Total</b>	<b>12722</b>	<b>6850</b>	<b>19572</b>

## 8. Technology Week

Technology week concept is promoted among KVKs for showcasing the available technologies to the district level extension functionaries and farmers. During technology week, farmers could directly interact with KVK experts, technology generators and extension personnel which results in higher adoption of the technology. Status of Technology week organized by KVKs in Zone IX is given in Table 8.

**Table 8 : Details of Technology week organized by the KVKs of Zone-IX**

Types of Activities	No. of Activities	Number of Participants
Gosthies	266	8201
Lectures organized	505	7954
Exhibition	109	19305
Film show	243	5505
Fair	45	11686
Farm/ Field Visit	754	11636
Diagnostic Practical's	467	4032
Distribution of Literature (No.)	15767	57822
Distribution of Seed (q)	1408	9118
Distribution of Seed (packets)	50	50
Distribution of Planting materials (No.)	684727	53691
Bio Product distribution (Kg)	57724	37635
Distribution of Bio-Fertilizers (q)	2090	7763
Distribution of fingerlings	1003	84
Distribution of Livestock specimen (No.)	299	1481
Total number of farmers visited the technology week	811	14927
Animal health camp	46	2534
Awareness programme	260	17635
Demonstration	476	6046
Exposure visit	141	3943
Ex-trainees Meet	42	6451
Farmer scientist interaction	561	4382
Farmers Training	710	22786
Gajarghans Unmulan Pakhwada	139	6572
Group Meeting	146	2994
Jai Kisan Jai Vigyan Sangoshthi	23	824
Plant Protection Week	28	1080
Seed treatment campaign	59	2735
Self Help Group convener meet	102	2449
Soil health Camp	47	2753
Swachha Bharat Abhiyan	604	11841
<b>Other Activities</b>		
Celebration of important days (Parthenium eradication week, Swachhata Abhiyan, International Women Day, National Integrity Day, World Soil Health Day, World environment day, World forestry day, World Water Day)	20	8040
Field Day	20	409
News Paper/Mass Media	54	-
Scientists visits in farmers field	85	220
Others	29	1098
<b>Total</b>	<b>769860</b>	<b>355682</b>

**Table 8.1 : Details of Technology week organized by the Chhattisgarh KVKs**

Types of Activities	No. of Activities	Number of Participants
Gosthies	126	3222
Lectures organized	266	3617
Exhibition	68	9660
Film show	92	2537
Fair	22	2991
Farm/ Field Visit	464	7830
<b>Diagnostic Practicals</b>	264	2186
Distribution of Literature (No.)	14619	22411
Distribution of Seed (q)	471	3152
Distribution of Planting materials (No.)	653879	29494
Bio Product distribution (Kg)	892	729
Distribution of Bio-Fertilizers (q)	170	1107
Distribution of fingerlings	2	29
Distribution of Livestock specimen (No.)	35	510
Total number of farmers visited the technology week	44	2576
Animal health camp	15	962
Awareness programme	145	13735
Demonstration	105	2956
Exposure visit	61	2577
Ex-trainees Meet	19	5684
Farmer scientist interaction	477	2019
Farmers Training	375	9144
Gajarghans Unmulan Pakhwada	80	4249
Group Meeting	77	1744
Jai Kisan Jai Vigyan Sangoshthi	5	172
Plant Protection Week	15	616
Seed treatment campaign	27	1192
Self Help Group convener meet	82	1781
Soil health Camp	21	1390
Swachha Bharat Abhiyan	313	6628
Others	1	38
<b>Total</b>	<b>673232</b>	<b>146938</b>

**Table 8.2 : Details of Technology week organized by the Madhya Pradesh KVKs**

Types of Activities	No. of Activities	Number of Participants
Gosthies	140	4979
Lectures organized	239	4337
Exhibition	41	9645
Film show	151	2968
Fair	23	8695
Farm/ Field Visit	290	3806
Diagnostic Practical's	203	1846
Distribution of Literature (No.)	1148	35411
Distribution of Seed (q)	940	5966
Distribution of Seed (q)	50	50
Distribution of Planting materials (No.)	30848	24197
Bio Product distribution (Kg)	56832	36906

Types of Activities	No. of Activities	Number of Participants
Distribution of Bio Fertilizers (q)	1920	6656
Distribution of fingerlings	1001	55
Distribution of Livestock specimen (No.)	264	971
Total number of farmers visited the technology week	767	12351
Animal health camp	31	1572
Awareness programme	115	3900
Demonstration	371	3090
Exposure visit	80	1366
Ex-trainees Meet	23	767
Farmer scientist interaction	84	2363
Farmers Training	335	13642
Gajarghans Unmulan Pakhwada	59	2323
Group Meeting	69	1250
Jai Kisan Jai Vigyan Sangoshthi	18	652
Plant Protection Week	13	464
Seed treatment campaign	32	1543
Self Help Group convener meet	20	668
Soil health Camp	26	1363
Swachha Bharat Abhiyan	291	5213
<b>Other Activities</b>		
Celebration of important days (Parthenium eradication week, Swachhata Abhiyan, International Women Day, National Integrity Day, World Soil Health Day, World environment day, World forestry day, World Water Day)	20	8040
Field Day	20	409
News Paper/Mass Media	54	0
Scientists visits in farmers field	85	220
Others	32	1145
<b>Total</b>	<b>96635</b>	<b>208829</b>

## 9. TECHNOLOGICAL BACKSTOPPING THROUGH LITERATURE AND MEDIA

### 9.1 Newsletters

Table 9.1: State wise Newsletter published by the KVKs

State	No. of KVKs	No. of issues	Number of copies printed	Number of copies distributed
Chhatisgarh	21	4	37180	35446
Madhya Pradesh	47	4	104157	100318
<b>Grand Total</b>	<b>68</b>		<b>141337</b>	<b>135764</b>

### 9.2. Publications

Table 9.2: Category wise literature published and distributed by the KVKs of Zone IX

Type	Number	Number of copies printed	No. of KVKs
Abstract	174	7178	41
Book	16	1613	12
Book Chapter	63	1383	25
Booklet	93	14175	29
CD/DVD	107	2509	23
Leaflets/ Folder/ Pamphlet	326	141650	61
Popular article	352	55926	47
Research Paper	187	5217	49
Technical Bulletin	98	22337	26
Technical Report	371	1934	44
Training Manual	66	5395	22
Year Planner	60	12058	53
Others (cost of cultivation of two hort. Crop,-District Profile, Crop Cafeteria Result, Contingent Plan, Nutri Village-APR, Sansad Gram-APR, Satellite Village-APR, CFLD-APR, DFI-AAP etc)	70	316	9
<b>Grand Total</b>	<b>1983</b>	<b>271691</b>	

## 10. Scientific Advisory Committee Meetings

Scientific Advisory Committee meetings were conducted by KVKs to get advice and feedback on the mandated activities of KVK in planned and systematic manner by the participating members from ICAR institutions, ATARI, line department, farmers, etc. The Committee monitors progress and facilitate exchange of views on the specific tasks. The Committee reviews periodically and takes further course of action deemed fit for further validation on application by the KVK. Therefore, all KVKs were mandated to conduct the meetings on the periodical basis (twice in a year).

Total 117 SAC meetings were conducted during 2020 in 81 functional KVKs (Table 13.1)

**Table 13.1: Status of SAC conducted by KVKs**

S. No.	Name of KVKs	No. of SACs conducted	Name of KVKs	No. of SACs conducted	Name of KVKs	No. of SACs conducted
	<b>IGKV, Raipur , C.G.</b>		<b>JNKVV, Jabalpur, M.P.</b>		<b>RVSKVV, Gwalior, M.P.</b>	
1	Balrampur	1	Anuppur	1	Agarmalwa	2
2	Bastar	1	Balaghat	1	Alirajpur	2
3	Balod	1	Betul	1	Ashoknagar	2
4	Bemetara	1	Chhatarpur	2	Barwani	2
5	Bhatapara	1	Chhindwara	1	Bhind	2
6	Bijapur	1	Damoh	2	Datia	2
7	Bilaspur	1	Dindori	1	Dewas	2
8	Dantewada	-	Harda	1	Dhar	2
9	Dhamtari	1	Jabalpur	2	Guna	2
10	Durg-I	1	Katni	2	Gwalior	2
11	Durg-II	1	Mandla	1	Jhabua	2
12	Gariyaband	1	Narsinghpur	2	Khandwa	2
13	Janjgir-Champa	1	Panna	2	Khargone	2
14	Jashpur	-	Rewa	1	Manawar	2
15	Kanker	1	Sagar	1	Mandsaur	2
16	Kawardha	1	Sagar-II	2	Morena	2
17	Korba	1	Seoni	2	Neemuch	2
18	Korea	1	Shahdol	2	Rajgarh	2
19	Mainpat	1	Sidhi	2	Shajapur	2
20	Mahasamund	1	Singrauli	2	Sheopur	2
21	Mungeli	1	Tikamgarh	1	Shivpuri	2
22	Narayanpur	1	Umaria	2	Ujjain	2
23	Raigarh	1	Tamia (Chhindwara-II)	1	Bhopal (ICAR)	-
24	Raipur	1	Hoshangabad (NGO)	2	Burhanpur (NGO)	2
25	Rajnandgaon	1	Raisen (NGO)	2	Indore (NGO)	2
26	Surguja	1	Satna (NGO)	1	Ratlam (NGO)	2
27	Kondagaon	-			Sehore (NGO)	2
28	Sukma	1				
	<b>Total</b>	<b>25</b>		<b>40</b>		<b>52</b>
			<b>Grand Total- 117</b>			

## 11. Success Story/Case Study

### Success Story

#### KVK Tikamgarh

#### IDM of Phytophthora blight management in colocasia

**Introduction:** Shri Suresh Kumar Kushwaha, Village- Hasgora, Block- Jatara, District- Tikamgarh (M.P), Age- 32 and educated up to 10<sup>th</sup>. He was using old variety of colocasia from many years of his vegetable cultivation but local and old varieties were found diseases prone from Phytophthora blight during rainy season. The diseases management strategies were motivated through OFT under plant protection to minimized the losses from the blight diseases.

**KVK intervention:** Technological intervention was taken as Improved high yielding Colocasia variety Indra Arbi-1 and moderate resistant Phytophthora Blight diseases + Seed treatment of rhizome with of Ridomil MZ 78 (Mancozeb 64% WP + Metalaxyl 4% WP) @ 3 gm/lit of water and need based drenching. This technology variety was developed from IGKV, Raipur in 2016-17

**Output:** Increase in rhizome number/plant by 67.1%, increase in weight of rhizome by 22.9%, increase in yield by 46.9%, and while decreasing in diseases incidence by 88.2% were recorded, The farmer invested more cost as Rs./ha 12000 and got net extra income Rs./ha 44800 with great B:C ration as 3.2 in comparison to farmer local practices and old varieties as B: C ration was 2.8

**Outcome:** The farmer was convenience with the technological intervention and he agreed to done cultivation of with scientifically again. His income brings him motivation and he could purchase more agricultural implements and other his family and children's needs.

**Impact:** The village farmers were influence and they will learn good vegetables cultivation and spread of the variety and technological intervention among the others farmers



#### KVK Burhanpur

#### High yield in chilli using improved technology

**Introduction:** Horticulture play a very important role in economy of the Burhanpur district. Among horticulture, Banana is the main fruit crops occupying maximum area adding very high revenue to the district. Besides banana other horticultural crop like chilli is also gaining momentum in the district and exiting an area of approx. 700 ha. Previously chilli farmers

were not able to harvest potential yield due to lack of knowledge of scientific POP with latest technology. Pest and disease management is the serious issue which intern reduce the income per unit area. Keeping above concern in view KVK demonstrated different technology through mandated activities among the chilli growing area of the district in last 4-5 years and no. of the farmers adopted the technology. Mr. Subhash Mahajan of Khatala village adopted the technology and laid the path to other chilli growers of the district.

**Background:** Mr. Subhash Mahajan of Khatala village, Burhanpur district adopted the following technology

- Seed treatment with Vitavax Power and disease free nursery raising.
- Raised bed planting with drip irrigation.
- Plastic mulching.
- Use of yellow sticky trap (10 nos ./acre) .
- Balance nutrient management.
- Integrated Pest Management.

**KVK intervention:**

- Trainings & exposure visits.
- Demonstration of latest technology.
- Improved POP , Disease & Pest management and mulching.
- Field Day

**Use of organic formulations:** Use of Panchagavya at flowering stage to control the flower drop.

**Output:**

Practice used	Yield q/ha.	Total cost cultivation	Gross Income	Net Income	Cost benefit ratio
Progressive Farmer	450	115000	405000	290000	3.52
Other farmers	325	100000	292500	192500	2.98

**Outcome:** Mahajan earned the net income 2,90,000 through chilli cultivation with Full POP whereas Rs. 1,92,500 per ha from traditionally cultivation .

**Impact:** The technology demonstrated among the farmers to create awareness about benefits of poly mulch to save the water, fertilizer and low incidence of sucking insect pest.



## KVK Bastar

### Dragon Fruit Farming - An Innovative Business

**Introduction:** Farmer Mr. Rohit Chavda, Village- Pandanar Development Block- Bakwand, District- Bastar has started dragon fruit cultivation as an innovative agribusiness in the year 2018 along with his father Mr. Bharat Chavda on a commercial scale under the technical guidance of the Krishi Vigyan Kendra, Bastar. The farmer has started cultivating it in his 7 acres of land, in which the profit starts to accrue from the second working year of the crop on the basis of cost.

#### KVK intervention:

- Provided the information regarding profit, availability of plants for cultivation of dragon fruit.
- Information for propagation and planting technique of dragon fruit.
- Marketing linkage for sale of the cultivated fruit.

#### Output:

Year	Production (q/acre)	Price (12000/q)	Cultivation Cost (₹/year)	Net Profit/acre
First year	25	300000.00	600000.00	--
Second year	50	600000.00	150000.00	450000.00
Third year	90	1080000.00	150000.00	930000.00
Fourth year	120.00	1440000.00	150000.00	1290000.00

**Outcome:** Presently, the value of its fruit is easily available from 120 to 150 rupees per kg, resulting in a net income of 450000 /- per acre. Since the increase in production every year with time, in the fourth phase i.e., after four years, this net income will increase to 1290000/-. Thus, the farmer will continue to receive this income regularly.

#### Impact:

- Awareness about the income generating fruit cultivation technology.
- Availability of nutritious fruits at local market at reasonable price.



## KVK Govindnagar, Bankhed

### Azolla cultivation: A supplementary livestock feed production

**Introduction:** Shrinking grazing lands and expanding cities in India lead the dairy farmers to depend more and more on commercial cattle feed resulting in increased costs of milk production. Based on the above fact, a need analysis was conducted among a dairy farmer of Hoshangabad District of Madhya Pradesh and found that, shortage of green fodders and high cost of concentrate feed were considered as significant factors which affecting milk production level. Hence, the Azolla cultivation technology is considered as an intervention to meet their dairy farmers' needs. Azolla, an aquatic floating fern, holds promise as a nutritive supplemental feed. It is rich in crude protein (over 20 %), essential amino acids like lysine (about 1 %) and minerals but very low in carbohydrate and fat content. It is widely used as a bio-fertilizer in many rice growing regions of the world. Azolla is responsible for nitrogen fixation. Under ideal conditions it grows exponentially, doubling its biomass in early three days

**Background:** Mr. Narendra Purviya is a progressive farmer of Sobhapur and volunteered came for dairy training in KVK Govindnagar, he saw the Azolla demonstration unit in KVK . In order to enhance the milk yield, Fat percentage and increase the productivity of different crops of the village. Narendra Purviya adopt the low cost technology in his land to harvest green manure Narendra started this technology in 1 pit and present time he has constructed 8 Azolla pit

**KVK intervention:** Krishi Vigyan Kendra, Govindnagar has intervened and demonstrated low cost azolla cultivation at farm of Narendra Purviya of Sobhapur village. In this technology, a small water tank was constructed at his own farm by digging a pit of 8 x 3 x 2 feet and covered with a plastic lining.

**Output:** Narendra has cultivated 12 kg.Azolla/pit in 10 days having Azolla pit size 8 x 3 x 2 feet. Narendra drawn 1.5 kg Azolla daily for each lactating animals. Narendra has 3 lactating animals so 8 Azolla pit is sufficient.

**Outcome:** The low cost supplementation of *Azolla* can also improve the mean economic returns from single cow (through additional milk yield) per month in the village. Feeding of fresh green *Azolla* has increases in milk yield 15-20% and and save the feeding cost 20-25%. Farmers felt that the technology is highly useful because of easy to adopt and the results are also visible within a short period of time. It is concluded that the improvement in health and physical condition of animals and also increase in milk yield and Fat percent in milk.

**Impact:** The supplementary feed like Azolla improves the health of milch animals. Extra milk can be obtained from the milch animals by feeding them with Azolla. The cost of feeding can be decreased by the production of Azolla. So, it is necessary to promote the cultivation of Azolla as cattle feed among the Indian villagers. Before the intervention, Narendra Purviya hardly used to fulfill his requirement more conc. Feed so increased the feeding cost. Now he is producing sufficient quantity of azolla which he feeds to his cattle, and reduces the cost. From 2019 to till date more than 150 farmers started cultivation of Azolla to see the success of Narendra



### KVK Surguja

#### Income generation through Hi-Tech Vegetable production

**Introduction:** Mr. Anil Minz, a marginal farmer belongs to village khairbar, district-Surguja. He has only 2 acre cultivated land in which he use to cultivate only cereal crops like rice in kharif and wheat or mustard in rabi season. His annual income was 90 thousand.

#### KVK intervention:

- High yielding hybrid variety.
- Fertigation through drip system.
- Polymulching.
- Staking.

#### Output:

Season	Crops	Cropped area (acre)	Production (q)	Total Income (Rs.)	Expenditure (Rs.)	Net return (Rs.)
Rabi	Tomato	0.50	75.00	75000	34400	40600
	Cucumber	0.50	100.00	100000	50250	49750
	Mustard	1.00	4.00	12800	7100	5700
<b>Total</b>		<b>2.00</b>	<b>179.00</b>	<b>187800</b>	<b>91750</b>	<b>96050</b>
Zaid	Okra	0.10	6.00	12000	2690	9308
	Water melon	0.60	70.00	70000	30000	40000
	Bottle gourd	0.20	50.00	50000	20000	30000
	Pumpkin	0.10	10.00	10000	3897	6102
	Tomato	0.50	75.00	90000	34400	40600
	cucumber	0.50	100.00	120000	50250	49750
<b>Total</b>		<b>2.00</b>	<b>311.00</b>	<b>317000</b>	<b>141237</b>	<b>175760</b>
<b>Grand Total</b>		<b>4.00</b>	<b>490.00</b>	<b>504800</b>	<b>232987</b>	<b>271810</b>

#### Outcome:

- Higher productivity increased by 3 times more.
- Total annual income increased.
- Export vegetables in other state also.

#### Impact:

- His Socio economic condition has increased; he brought a new bike through this income.
- Other farmers of this village and nearby villages showing their interest for hi tech

vegetable production.

- Unemployed youths are also motivated to adopt farming as source of income instead of escape in city for jobs.



Growing vegetable with staking



Using improved variety



### Case Study

#### KVK Jabalpur

#### Production of biofortified wheat in zero till system

**Introduction:** Rice-wheat is the predominant cropping system of Jabalpur district. Most of the farmers cultivate medium duration rice varieties in *kharif* season which is usually harvested in 11<sup>th</sup> fortnight of November. Due to late harvesting of rice, sowing of wheat crop delayed around 20-25 days which results in low yield due to forced maturity of the crop because of temperature rise in February-March.

**KVK intervention:** KVK introduced the biofortified wheat variety WB 02 (rich in protein, zinc and iron) with INM package. The crop had sown in harvested rice field during 15<sup>th</sup> to 20 November 2019 in residual moisture by zero tillage technique in 4 ha area at 10 farmer's field in Dehri Khurd village (Block-Kundam) of the district.

**Output:** Farmers harvested the significant production of biofortified wheat (52 q/ha) over the traditional practice (36.73 q/ha) by adopting the INM technology in zero till system provided by KVK. Rs. 3450/ha saved as average cultivation cost by saving two ploughings and two irrigations with 20 valuable days.

**Outcome:** Demonstrated technology was adopted by the other farmers and it disseminated in additional 50 ha in neighboring villages which resulted in increase in the average productivity which was 13.16q/ha higher over the traditional practice with additional production of 65.8 t/annum. The technology generated 0.127 crore/annum added revenue in the district.

**Impact:** With cost saving the technology saved 20 valuable days which used in other farm and domestic activities which attracted the farmers for its rapid adoption. Besides the above it saved two irrigations i.e. one before sowing and another in standing crop as the previous crop residues conserved the moisture for the extended period. Most importantly, the technology helped in reduction of the emission of harmful gases by fossil fuel saving and protected the environment.



**Sowing of Wheat cv. WB 2 by happy turbo seeder on 15.11.2019**



**Demonstration on INM in wheat (WB 2) in zero till system**



### Case Study: KVK Kawardha

#### Badi Cultivation: Improving Nutritional Security of Marginal Farmers

**Introduction:** Badi cultivation popularly called as “Badi” was a traditional farming practice to majority of rural farmer’s in Kabirdham District of Chhattisgarh. This is a well-established system of land use where different crops, vegetables and fruit trees, are grown in combination with small ruminants and livestock. A judicious mix of crop as well as animal components like dairy, poultry, goatary, fishery, etc. suited to the given agro-climatic conditions not only supplement the income of the farmers but also help in increasing the family labour employment. The farm wastes are better recycled for productive purposes in such integrated system. The system of Badi cultivation helps to improve the resources of poor farmers and also meets several socio-economic, nutritional and ecological conditions which contribute to their better living and sustainability. Low input cost, stable yield every year, application of simple technology, and intensive management practices are the main feature of Badi which helps to increase the nutritional and daily livelihood security of farm families.

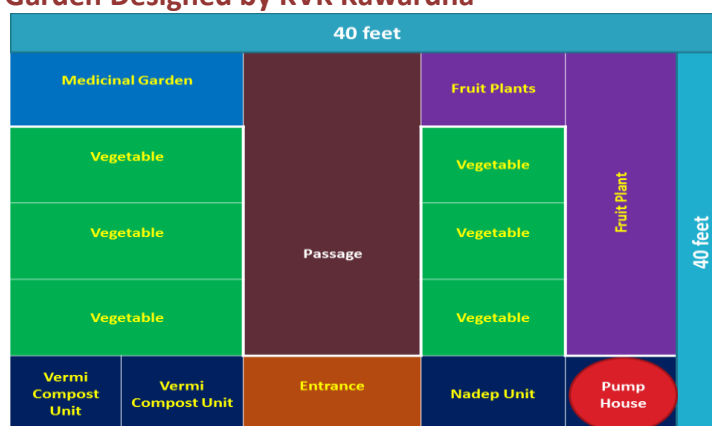
**KVK intervention:** Previously Badi cultivation was practiced in an unorganized manner, without any scientific base leading to low returns and poor quality production. There were only limited components mainly some vegetables only. Seen all these problems and technology gaps Krishi Vigyan Kendra Kawardha through its scientifically planeestablishes homestead gardens, so as to earn more profit as well as better nutritional security on same per unit area of land.

**Table 1: Crop Suggested for Badi Farming**

S. No.	Area	Kharif season	Rabi Season
1	Sunny Space	Bitter gourd, Cow pea, Sem, Brinjal, Coriander. Chillie, Tomato, Cucumber, Okra, Amaranthus, Amorphophallus	Knol khol, Cauliflower, Cabbage, all solanaceous crops, Cluster bean, Palak, Radish, Amaranthus, Methi, Onion, Amorphophallus
2	House roof	All cucurbits	All cucurbits
3	Trellis	Perennial-Ivy gourd, pumpkin, bitter gourd, bottle-gourd, ridge gourd, sponge gourd	Perennial-Sponge gourd, Ridge gourd, Bottle gourd

S. No.	Area	Kharif season	Rabi Season
4	Land below trellis	Ginger, turmeric, colocasia,	Perennial leafy vegetables
5	Pond bank	Cucurbits	Water melon, Cucumber, Musk melon
6	Slightly Marshyland	Banana, mint	Banana, mint
7	On trees	Annual cucurbitaceous vegetables	Perennial-black pepper ,Annual cucurbitaceous, vegetables

### Layout of Kitchen Garden Designed by KVK Kawardha



**Output:** Results of the study shows that the mean sold quantity was found to be 2463.0 Kg per plot whereas percentage surplus was found to be about 44.78 % in total produce. Along with regular livelihood farmer's was also benefitted with nutrients security and was able to meet the nutritional demand as per recommendations of Indian Council of Medical Research for a normal male adult

**Outcome:** Initially Smt. Pushpa Patel and 10 other women farmer got training and farm demonstration from KVK on year round cultivation of Vegetables, mushroom production, Vermicompost, pulse and oilseed production etc. She established her model at the household with the help of KVK. Initially KVK provides seeds of Vegetables, fruit crop planting material, mushroom spawn, and one Vermicompost unit. She works on her farm along with cereal and pulse production and marketing of farm produce.

Prior to the Demonstration by the KVK, crop production, vegetable production at village was very low; Production was meant only for household consumption. As a result of the demonstration, the lives of the farm families in the village Barpelatola have been now transformed. Focus was made on Off season vegetable cultivation with improved varieties of Okra, cowpea, Tomato, Brinjal, Chillie, Potato, pea, Rainy season production of cabbage and cauliflower, Cucurbits like Bitter gourd, sponge gourd, pumpkin, bottle gourd, and Tuber crops – colocasia and Amorphophallus, spice crops like turmeric, Ginger, off season Coriander cultivation and Mushroom production helps to increase their income. Every month she earns additional income of Rs. 5000 per month from Badi farming and Mushroom production. From 0.4 ha of Badi she earns Net profit of Rs. 74,000.

After the successful Badi establishment model at Pushpa's house, 10 other field demonstrations are conducted by the KVK to scale up the existing Badi of the village. Participating farmers and farm women are trained on round the year Badi farming and

improved pulse and oilseed production through training module

**Impact:** Now the technology is adopted by 100 farm families by establishing Badi cultivation. Distant people also visited the farmer's field to adopt the technology.



Location Map of Study Area



Training Programme



### KVK Satna

#### Vegetable based cropping pattern for round the year cultivation in Cluster approach

**Introduction:** The productivity of vegetables in Satna district of Madhya Pradesh are very low due to diverse climatic condition viz., erratic rainfall during rainy season, moisture stress, frost during winter season, poor soil nutrient. Farmers who produce vegetables like cucumber, cowpea, brinjal tomatoes etc during their main season also get poor price to market glut. The cropping pattern is the best alternative for regulating the above factors as per requirement of the crops in order to realize the maximum potential of the available resources. It also helps in raising good quality crops and also reduces the risk of crop failure due to extreme and unseasonal weather conditions. Round the year production of vegetables also help in providing employment to farm family, increases production and minimize disease and pests attacks.

**KVK intervention: Plan, Implement and Support:** KVK Satna introduced various vegetable based cropping pattern for year round production of vegetables in Pagarkala village. Farmers were imparted training on year round production of vegetables by following suitable cropping patterns. Farmers were well supported by organizing demonstrations on improved production technologies of vegetable production. During the last 5 years 18 demonstrations on improved production techniques of vegetables and spices were organized by involving more than 105 farmers. The farmers were advised to follow the cropping pattern by following the standard production technologies and cultivating the high yielding varieties/hybrids. The literature and technical support in terms of consultancy, advisories, training, exposure visits to KVK vegetable demonstration farm, farmer and scientist interactions, field days were organized to showcase the technologies to the farmers and villagers for large scale adoption.

#### Promising characteristics of technology:

- Intensification of rice wheat cropping system to vegetable based cropping system.
- Selection of high yielding varieties.
- Planting Seeds/ seedlings on raised beds/ridges/basins
- Nutrient management- Recommended Dose of Fertilizers and Foliar application of water soluble fertilizers (NPK- 19:19:19(1%) and micronutrient (agromin 0.2 %) 30, 45 and 60 days after planting

- Improved Crop Management Practices( Water management- Drainage & irrigation, weeding, Change in cropping Pattern, Staking & training of vegetables)
- Management of insectpests( Removal of disease infested leaves, Prophylactic Spray there after need based spray of chemicals)

**Output:** The concerted efforts by KVK in promoting farmers to adopt most profitable cropping pattern resulted in year round production of vegetables in the villages increasing the cropping intensity from 1.76 to 2.89 %, and production by 169 per cent as compared to traditional cultivation . Similarly the net return, profitability was also increased by double in the technology demonstrated during last five years (Table 2).

**Table 2. Economic performance of Cropping pattern for round the year vegetable production**

Cropping Pattern (Kharif- Rabi- Zaid)	Cost of cultivation (Rupees/acre/year)	Gross Returns (Rupees/acre/year)	Net Returns (Rupees/acre/year)	B:C ratio
Tomato - Cauliflower - Cowpea	75470	201825	126355	2.67
Cowpea -Potato - Okra	71550	170200	98650	2.38
Chilli- Onion – leafy coriander	83420	231250	147830	2.77
Okra- Pea – Bottle Gourd	66140	169625	103485	2.56
Zinger - Cowpea	73350	193775	120425	2.64
Cowpea - Garlic– Spinach	74410	233775	159365	3.14
Cauliflower - Pea - Tomato	82360	237575	155215	2.88
Onion– Cauliflower - Cowpea	82215	225975	143760	2.75
Bitter gourd Pea - Muskmelon	69325	207000	137675	2.99

Of the various cropping patterns tested/demonstrated in the village, cowpea- garlic-spinach, bittergourd- pea- muskmelon and cauliflower- pea-tomato, which gave net return of Rs. 159365, Rs.137675 and Rs. 155215/acre and benefit : cost ratio (3.11, 2.99 and 2.88) respectively, are the best cropping sequences for upland irrigated production system.

**Outcome:** The farmers were very happy with the adoption of cropping sequences as their income from vegetable production has increased significantly. Each farm family income has been observed to increase by 169 percent on an average. The off season vegetables provided good prices to the farmer. Horizontal spread to 105 farmers in the village along with in 3 adjoining villages covering 89.5 ha area under vegetable cultivation

**Impact:** This technology provides job opportunity and income round the year for the farm families and also more income per unit of land. The adoption of appropriate cropping pattern resulted in year round production of vegetables thus increasing the productivity and income of farm families which definitely will help in doubling the farmers income. The area under vegetable has also increased significantly in the village. Overall following changes were observed in the village.



### KVK Anjora Durg Super Food Moringa: Anaemic Adolescent Girl

**Introduction:** Anemia is major problem is worldwide adolescent girls are the most vulnerable group of the population due to different reasons .The aim of the OFT study was to assess the prevalence of anemia among school adolescent girls in Nutri Smart Village Mohlai. The technology was disseminated through OFT program in adolescent girls who participated in training program. 20 moderate anemic adolescent girls (13 to 20 years) age group were selected from Mohlai. Their anthropometric measurements height, weight, BMI, and biochemical estimation hemoglobin level. This group provided 25 gm dried drumsticks leaves powder for 3 months. Than the anthropometric measurements height, weight, BMI and HB level of the subject was changed after the conduct the study.

**KVK Intervention:** Dietary Supplement Dried Drumsticks leaves Powder.

**Output:** The best result was found by Jagriti Yadav. The height before the intervention was 166 cm and weighed 39.8 kg, and the hemoglobin was found to be 9.8 g/dl. The age and height being less weight. After incorporating dried moringa leaves powder in food continuously for three months, after improving food related habits, her weight increased by a total of 3.2 kg to 43 kg resulting in a 2.30% increase in BMI and 0.9% increase in hemoglobin.

**Outcome:**

**Before and After Intervention**

Intervention	Energy (kcal)	Protein (g)	Iron (mg)	Calcium (mg)	Weight (kg)	Height (cm)	BMI (kg/m <sup>2</sup> )	HB (g/dl)
Before	45	2.2	3.2	230	39.8	165	14.6	9.8
After	67.75	5.61	6	860	43	165	15.8	10.2

**Impact:**

**Primary outcome measures:** Improvement in hemoglobin status, comparison of hemoglobin (HB) level pre and post intervention.

**Secondary outcome measure:** Change in BMI, after improvement in hemoglobin (HB) status



Distributing moringa,lemon and jackfruits plants to adolescent girls

### KVK Raigarh

#### Nutrition garden –Alternate to combat malnutrition

**Introduction:** Raigarh is one of the most important potential district of Chhattisgarh in terms of area, production and productivity of different crops. But 23.18 % preschool children is under weight. Around 41.6 % women age 15-49 years who are anaemic and women whose Body Mass Index (BMI) is below normal (BMI < 18.5 kg/m<sup>2</sup>) is 28.4% .Our adopted Nutrismart village Bhaigadhi aasrit gram of Badgaon Papulation is 261 and 71 households. Homestead production of fruits and vegetables help combat malnutrition and diversify diets. Improved nutritional garden is better than traditional homestead garden as it involves many crops that can be repeatedly harvested to meet a family's vegetable needs and economic return. Hence, nutritional garden is an important Alternate to combat malnutrition.

**KVK intervention:** Krishi Vigyan Kendra, Raigarh (C.G.) 2017-18 adopted Nutrismart village more than 50% women is an anemic 12 preschool children is under weight and 2 SAM Children in year 2017 so KVK adopted this village.

The demonstration of Nutrition garden was successfully conducted at Aganwadi center, School and backyard space of farmwomen. Plantation of Papaya, Drumstick, lemon and sweet potato and seven type of leafy vegetable (Sat din Sat bhaji chkra) was developed with roots and other vegetable.

**Output:** Women, preschool children adolescence they get knowledge about growing vegetable as well as importance of nutrients.

**Outcome:** Per capita availability of nutrients/day increased after establishment of nutritional garden intervention. Establishment of nutritional garden as a community level strategic intervention programme revealed that the percent intake of Calcium, Iron, Vitamin A and Vitamin C at the end of the intervention showed an increase of 89%, 61%, 83% and 65% respectively.

**Impact:** The Nutrition Garden concept, Sat din Sat bhaji chkra become more popular in our district, Our district collector and CEO visited our KVK and appreciated this concept and instructed this replicate in all aganwadi of Raigarh district.



### KVK, Kanker

#### Kadaknath rearing for enhancing farmer's income

**Introduction:** Kadaknath is one of the famous poultry breed. It has unique nutritive value i.e. Protein content in kadaknath is higher than 25% in an ordinary bird it varies between 18-20%. Research has shown that this species has lower cholesterol (0.73-1.05%) than white chicken (13-25%) High levels of 18 amino acids out of which 8 are essential for the human and rich in hormone. Vitamins B1,B2,B6, B12, C and E, niacin, protein, fat, calcium, phosphorus, iron, nicotinic acids, etc.

#### Interventions by KVK:

- Bringing 1,000 Kadaknath chicks from origin place Jhabua (M.P.).
- Started rearing unit at KVK Farm Kanker.
- Establish Hatchery unit at KVK Farm and started production.
- Providing Skill training to farmers for rearing and management.
- Convergence with Animal husbandry department at district level for supplying Kadaknath chicks in place of other breed to farmers under livelihood scheme.
- Convergence with district administration for construction of poultry shade under MGNREGA at the site of willing farmers.
- Providing technical support to farmers for establishing commercial Kadaknath rearing unit.
- Providing low cost hatching machine for commercial production of Chicks and adult birds.



Low cost hatching machine designed by KVK, Kanker

**Output:** With an objective of providing quality breed of poultry bird Kadaknath, a hatchery unit of 500 egg capacity was established during 2013-14 and during 2015-16 another 5000 egg capacity hatchery was established at KVK Kanker with financial support by Indira Gandhi

Krishi Vishvavidhyala, Raipur under State plan.



Hatchery Unit established at KVK, kanker

**Outcome:** After three years, District administration convinced that more production of chicks is required to meet out the demand of farmers in the district and other places and provide financial assistance of Rs. 3.00 lakh from District Mining Fund for establishing another hatchery unit of 3000 egg capacity at KVK Kanker.

### KVK Indore

#### Promotion of local storage model of onion for doubling farmers income

**Introduction:** Indore ranks first in area and production of onion in Madhya Pradesh and being cultivated at 14.74 thousand hectare with production of 440.26 thousand Tonnes contributing 18 % of total state production. Out of 440.29 thousand tonnes of total production hardly 20 % (88.05 Thousand Tonnes ) was store under different storage structure and 72 % ( 316.98.Thousand Tonnes) onion were sold out directly to the market within 15 days of harvesting. Due to lack of proper storage facilities farmers were compelled to unload their produce direct to the market after harvest. As a result, during this period prices rule very low due to glut situation. Keeping above in view, feasible onion storage structure were laid out by Krishi Vigyan Kendra, Kasturbagram, Indore for enhancing the farmers income and mitigate the glut situation in the market.

**KVK intervention and Details of Technology:** KVK provided technical knowledge and other information related to storage of onion.Promotion of onion storage with the help of locally developed onion storage structure (Indore model) were laid out at village Makoriya in Indore district. This type of onion storage structure can be installed within the available space at farmer's house or any covered room. Major Components required are wire mesh, Bricks, Exhaust fan and drum like structure.Onion was laid at 6 inch above the ground along with enclosed wall cooledwith exhaust fans. It keeps onions dry and cool by air circulation andprevents them from rotting. It cost around Rs 170/quintalwhich is cheaper to install and easy to handle and can be uninstal after disposal of onion.

**Output:** Total area under onion cultivation at village Makoriya was 62.00 ha with production of 22320.00 qt (2016-17). Out of the total production, 70% onion (15624.00 qt) was stored and remaining 30% (6696.00 qt) were sold out directly after harvest. Other details are as follows:

- By adoption of Indore model onion storage, farmers succeeded to fetch an additional income of Rs 268560.00/ha from onion cultivation (yield 360q/ha).
- At the time of harvest (April - May) onion price range between Rs 600.00-800.00/qt .

- It raised up to Rs 2500 -3000/qt during October - November (2019).

Consequently, from stored onion, farmers net income raised up to Rs 403560.00/ha. while it was hardly Rs 135000.00/ha in case of direct selling after harvesting.

**Outcome:** Farmers of village Makodia are satisfied by this enterprise and motivating other farmers to use this type of onion storage for increasing their income by which they would be economically sound.

**Impact:** Many farmers (onion growers) of the district are using this model of onion storage and fetching higher income.



## 12. FLAGSHIP PROGRAMMES

### 1. Kisan Mobile Advisory (KMA)

*Incharge: Dr. S.R.K. Singh, Principal Scientist (AE)*

Kisan Mobile Advisory (KMA) is the easiest ICT tool working successfully for dissemination of latest information to the farmers and farm women in the states of Madhya Pradesh and Chhattisgarh. This ICT-based alternate agricultural information and rural delivery mechanism through mobile phone was initiated during 2007 in ATARI, Zone IX, Jabalpur and promoted at national level in 2010. It is based on the linear model of communication. This is the unique programme for making linkages between different stakeholders who are the key players for making Indian agriculture sustainable in the coming future through intensive use of ICT tools like mobile phone. Short Message Service (SMS) is being provided by KVKs to the farmers. KVKs implemented the programme and during 2020, total 3795 text messages were sent which benefitted 47,15,525 users in 66,062 villages by the operational KVKs in the Zone.

**Table 10.1: Details of KMA during 2020 by KVKs of Zone IX**

State	No. of KVK	No. of Villages covered	No. of messages sent	No. of Farmers	No. of Ext. Pers.	Beneficiaries
CG	27	16826	1439	1336670	3055	<b>1339725</b>
MP	53	49236	2356	3362927	12873	<b>3375800</b>
<b>Total</b>	<b>80</b>	<b>66062</b>	<b>3795</b>	<b>4699597</b>	<b>15928</b>	<b>4715525</b>

### 2. Climate Resilience Agriculture through KVKs under NICRA

**Project: Technology Demonstration Component under National Innovations on Climate Resilient Agriculture (NICRA)**

*Nodal Scientist: Dr. S.R.K. Singh, Principal Scientist (AE)*

NICRA is operational in 12 KVKs in the states of Madhya Pradesh and Chhattisgarh under ATARI, Jabalpur, which monitors the performance of NICRA KVKs namely Balaghat, Chhattarpur, Datia, Guna, Jhabua, Morena, Ratlam, Satna and Tikamgarh in Madhya Pradesh; Bhatapara, Bilaspur and Dantewada in Chhattisgarh. During 2020-21, through various planned activities, total 14607 farmers were benefitted including 3646 farmers by technological interventions and 10961 farmers by capacity building and extension activities.

Under Natural Resource Management Module, total 1884 farmers were benefitted covering 4495.46 ha area. Demonstrations were focused on in-situ moisture conservation, water harvesting and recycling for supplemental irrigation, water saving irrigation method, conservation tillage, etc.

In Crop Production Module, a total of 1188 farmers were benefitted through demonstrations conducted in 461.65 ha area focused on drought tolerant varieties, advancement of planting dates of rabi crops to escape for terminal heat stress etc. of chickpea, wheat, barley, green gram, pigeonpea and vegetable crops.

In Livestock and Fisheries Module, a total of 1995 animals of 574 farmers were benefitted by the demonstrations conducted focusing on preventive vaccination, de-worming of animals, animal health camp and nutrition management.

### Glimpses of NICRA activities by concerned KVKs



### 3. Tribal Sub Plan (TSP) on pulses

**Incharge: Dr. A.A. Raut, Scientist (Agril. Extension)**

Tribal Sub Plan (TSP) scheme is aimed for 'Enhancing Pulses Production for Food, Nutritional Security and livelihoods of Tribal Community through Demonstration and Training'. Participatory demonstration programme on pulses under TSP pulses was implemented by ATARI, Zone-IX, Jabalpur in collaboration with IIPR Kanpur. Under ATARI, Jabalpur eight KVKs located in the tribal region namely Anuppur, Mandla, Barwani, Dhar, Jhabua, Dindori and Shahdol in Madhya Pradesh and Balrampur, Bastar, Narayanpur, Surguja, Jashpur, Kanker, Dantewada and Bijapur in Chhattisgarh.

Under Tribal Sub Plan, during *Kharif* 2020-21, in states Madhya Pradesh and Chhattisgarh crops Blackgram, Greengram and Pigeonpea were the major crops demonstrated by 8 KVKs in total 385 ha area with 870 number of demonstrations. In state Madhya Pradesh, total 69 demonstration of crop Blackgram were conducted in 28 ha area by 02 KVKs and productivity obtained was 6.82qha<sup>-1</sup> with net return of Rs 31307/ha. Whereas, crops Greengram and Pigeonpea were demonstrated by only 1 KVK in 16 ha and 12 ha area through 40 and 30 demonstrations respectively. Average yield and net return obtained under both the crops Greengram and Pigeonpea were 6.42 qha<sup>-1</sup> with net return of Rs 22082 /ha and 9.89 qha<sup>-1</sup> with net return of Rs 37840 q/ha respectively.

Similarly, in state Chhattisgarh, major crops Blackgram and Pigeonpea covered total 56 ha area with 139 demonstrations. Individually crop Blackgram was demonstrated by 03 KVKs in 44 ha area with 107 numbers of demonstrations and the average productivity obtained was 7.40 qha<sup>-1</sup> with net return of Rs 23596/ha. Whereas, 12 ha area with 30 demonstrations was covered under crop Greengram resulting to productivity of 7.66 qha<sup>-1</sup> with net return of Rs 32276/ha.



#### 4. Cluster Frontline Demonstrations of Oilseeds

**Incharge: Dr. S.R.K.Singh, Principal Scientist (AE)**

Cluster Frontline Demonstration on Oilseeds 2020-21 under the “National Food Security Mission” was implemented by ICAR ATARI Jabalpur in Madhya Pradesh and Chhattisgarh. Under the project major crops taken under were soybean, niger, sesame, rapeseed & mustard, linseed and groundnut in Kharif and Rabi seasons in Madhya Pradesh and Chhattisgarh states.

In Kharif season during 2020-21 soybean, sesame niger and groundnut, major crops were taken in Madhya Pradesh and Chhattisgarh. In Madhya Pradesh, 1484 demonstration were conducted in 608.4 ha area by 36 KVKs under soybean and obtained productivity was 11.75 q/ha with net return 22502.24 Rs/ha, whereas in niger 269 demonstrations were conducted in 110 ha area by 6 KVKs with obtained productivity 4.83 q/ha and net return 18204.5 Rs/ha. Sesame was demonstrated in 110 ha area by 7 KVK through 246 demonstrations and obtained productivity was 5.69 q/ha with net return of 21477.02 Rs/ha and groundnut was conducted in 60 ha with 150 demonstrations by 3 KVKs at farmers’ field with obtained yield 13 q/ha and net return of 39787. Similarly in Chhattisgarh, 140 ha area covered with 263 demonstration in soybean crop by 7 KVKs which obtained productivity 11.22 q/ha and net return of 52 Rs/ha. Further, 181 ha area was covered under crop niger with 394 demonstration by 9 KVKs and obtained yield was 4.31 q/ha, with net return of 13309.30 Rs/ha. Also sesame crop was laid out in 76.8 ha area in 5 KVKs through 150 demonstration and obtained productivity 4.95 q/ha with net return 16535.11 Rs/ha and groundnut crop was laid out in 105 ha area by 5 KVKs through 247 demonstration with 11 q/ha, 34780.1 Rs/ha average yield and net return respectively.

**Table : State-wise & Season-wise outcome of Cluster Frontline Demonstrations on Oilseed of Kharif 2020-21**

State	Season	Crop	No of KVK	Conducted		
				Area (ha)	Demo (No.)	Yield q/ha
MP	Kharif 2020-21	Soybean	36	608.4	1484	11.75
		Niger	6	110	269	4.83
		Sesame	7	110	246	5.69
		Groundnut	3	60	150	13
		<b>Sub Total</b>		<b>888.4</b>	<b>2149</b>	
CG	Kharif 2020-21	Soybean	7	140	263	11.22
		Niger	9	181	394	4.31
		Sesame	5	76.8	150	4.95
		Groundnut	5	105	247	11
		<b>Sub Total</b>		<b>502.8</b>	<b>1054</b>	
<b>Total kharif 2020-21</b>				<b>1391.2</b>	<b>3203</b>	

During rabi 2020-21 season mustard, linseed and safflower were demonstrated as major crop in Madhya Pradesh and Chhattisgarh. In Madhya Pradesh, mustard covered 640 ha area with 1575 demonstrations by 28 KVKs and linseed was demonstrated in 335 ha with 833 demonstrations by 16 KVKs. Similarly in Chhattisgarh, mustard crop was laid out in 643 ha area with 1381 demonstrations by 23 KVKs and linseed was laid out in 360 ha area through 818 demonstrations in 17 KVKs. Also

Safflower covered 50 ha area with 104 demonstrations by two KVKs.

**Table : State-wise & Season-wise outcome of Cluster Frontline Demonstrations on Pulses of Rabi 2020-21**

State	Season	Crop	No of KVK	Conducted	
				Area (ha)	Demo (No.)
MP	Rabi 2020-21	Mustard	28	640	1575
		Linseed	16	335	833
		<b>Sub Total</b>		<b>975</b>	<b>2408</b>
CG		Mustard	23	643	1381
		Linseed	17	360	818
		Safflower	2	50	104
		Groundnut	2	38	95
<b>Sub Total</b>		<b>1091</b>	<b>2398</b>		
<b>Total Rabi 2020-21</b>				<b>2066</b>	<b>4806</b>

### Performance of Rabi 2019-20

In Rabi 2019-20, the obtained productivity under of mustard crop was 15.73 q/ha with net return of 46961.65Rs/ha, and obtained productivity under of linseed crop was 12.08 q/ha with net of return 31779.75 Rs./ha in Madhya Pradesh and in Chhattisgarh obtained productivity under of mustard crop 7.75 q/ha with net return 17534.86 Rs./ha, and obtained productivity under of linseed crop was 5.86q/ha with net return 14377.45 Rs./ha, and obtained productivity under of sunflower crop was 7.45 q/ha with net return 25856.75 Rs./ha and obtained productivity under of safflower 5.03 q/ha with net return 12152.91 Rs./ha.

In summer 2019-20 the obtained productivity under of Sesame crop was 5.33 q/ha. with net return 25436.5 Rs/ha. and obtained productivity under of groundnut crop was 9.55 q/ ha. with net return of 1907 Rs /ha in Chhattisgarh state .

State	Season	Crop	No of KVK	Conducted		
				Area (ha)	Demo (No.)	Yield q/ha
MP	Rabi 2019-20	Mustard	26	333	812	15.73
		Linseed	10	190	475	12.08
		<b>Sub Total</b>		<b>523</b>	<b>1287</b>	
CG		Mustard	18	180	373	7.75
		Linseed	14	180	353	5.86
		Safflower	3	30	52	5.03
		Sunflower	1	20	50	7.45
<b>Sub Total</b>		<b>410</b>	<b>828</b>			
<b>Total Rabi 2019-20</b>				<b>1391.2</b>	<b>3203</b>	
CG	Summer 2019-20	Sesame	2	20	30	5.33
		Groundnut	1	10	13	9.55
		<b>Total</b>		<b>30</b>	<b>43</b>	



## 5. Cluster Frontline Demonstration on Pulses

**Incharge: Dr. A.A. Raut, Scientist (Agril. Extension)**

Cluster Frontline Demonstration on pulses under “National Food Security Mission” was implemented by ICAR-ATARI, Zone-IX, Jabalpur in state Madhya Pradesh and Chhattisgarh. Under the project, major crops taken in *Kharif and Rabi* season were Blackgram, Greengram, Pigeonpea and Horsegram and Chickpea, Fieldpea, Laythrus, Lentil, and Pigeonpea respectively.

Under CFLD pulses, during *Kharif* 2020-21, major crops demonstrated in states Madhya Pradesh and Chhattisgarh were Blackgram, Greengram, Horsegram and Pigeonpea and covered total 1074.40 ha area with total 2618 number of demonstrations. In state Madhya Pradesh, total 887 demonstration of crop Blackgram was conducted in 355.20 ha area by 22 KVKs and productivity obtained was 6.73qha<sup>-1</sup> with net return of Rs 22783/ha. Whereas, 30 ha area was covered by 3 KVKs under crop Greengram with 75 number of demonstrations with productivity and net return of 6.77qha<sup>-1</sup> and Rs 31333/ha, respectively. Also, crop Pigeonpea was demonstrated in 285.20 ha area by 19 KVKs through 703 demonstrations with productivity of 12.55 qha<sup>-1</sup> and net return of Rs 48063/ha.

Similarly, in state Chhattisgarh, total 334 numbers of demonstrations were conducted by 12 KVKs in 140 ha area under crop Blackgram and the average productivity obtained was 7.73 qha<sup>-1</sup> with net return of Rs 26134/ha. Whereas, 40 ha area with 95 demonstrations was covered under crop Greengram by 4 KVKs, resulting to productivity 7.66 qha<sup>-1</sup> and net return of Rs 32276/ha. Crop Pigeonpea was demonstrated by 13 KVKs covering 174 ha area through 415 demonstrations, with productivity and net return 11.68 qha<sup>-1</sup> and Rs 43717/ha, respectively. Also, 5 KVKs of state Chhattisgarh conducted 109 demonstrations in 50 ha area under Horsegram and the average productivity and net return obtained was 5.31 qha<sup>-1</sup> and Rs 15050/ha respectively.

**Table: State-wise & Season-wise outcome of Cluster Frontline Demonstrations on Pulses of Kharif 2020-21**

State	Season	Crop	No of KVK	Conducted			
				Area (ha)	Demo (No.)	Yield q/ha	Net return/ha
MP	Kharif 2020-21	Blackgram	22	355.20	887	6.73	22783
		Greengram	3	30	75	6.77	31333
		Pigeonpea	19	285.20	703	12.55	48063
		<b>Sub Total</b>		<b>670.40</b>	<b>1665</b>		
CG		Blackgram	12	140	334	7.73	26134
		Greengram	4	40	95	7.66	32276
		Pigeonpea	13	174	415	11.68	43717
		Horsegram	5	50	109	5.31	15050
	<b>Sub Total</b>		<b>404</b>	<b>953</b>			
<b>Total Kharif 2020-21</b>				<b>1074.40</b>	<b>2618</b>		

Also, during *Rabi* 2020-21 in states Madhya Pradesh and Chhattisgarh crops Chickpea, Fieldpea, Lentil, Laythrus and Pigeonpea were the major crops demonstrated in 1438 ha area with total 3361 number of demonstrations. Under crop Chickpea, 768 ha area with 1934 number of demonstrations were demonstrated by 45 KVKs in state Madhya Pradesh. Whereas, crops Fieldpea and Lentil were laid out in 50 ha by 4 KVKs and 100 ha area by 09 KVKs with 123 and 247 number of demonstrations respectively.

Similarly, in state Chhattisgarh crop Chickpea and Fieldpea were demonstrated in 255 ha and 145 ha with 539 and 309 number of demonstrations by 18 and 11 KVK's respectively. Also, demonstrations of crops Laythrus, Lentil and Pigeonpea were conducted in 90 ha, 20 ha and 10 ha area with 150, 46 and 13 number of demonstrations by 08, 02 and 01 KVK's respectively.

**Table: State-wise & Season-wise outcome of Cluster Frontline Demonstrations on Pulses of Rabi 2020-21**

State	Season	Crop	No of KVK	Area (ha)	Demo (No.)
MP	Rabi 2020-21	Chickpea	45	768	1934
		Fieldpea	04	50	123
		Lentil	09	100	247
		<b>Sub Total</b>		<b>918</b>	<b>2304</b>
CG		Chickpea	18	255	539
		Fieldpea	11	145	309
		Laythrus	08	90	150
		Lentil	02	20	46
	Pigeonpea	01	10	13	
	<b>Sub Total</b>		<b>520</b>	<b>1057</b>	
<b>Total Rabi 2020-21</b>				<b>1438</b>	<b>3361</b>

**Performance of Rabi and Summer 2019-20**

In Rabi season during 2019-20, Chickpea, Fieldpea, Lentil, Laythrus and Pigeonpea

were the major crops demonstrated in Madhya Pradesh and Chhattisgarh. In state Madhya Pradesh, the productivity obtained under Chickpea covering 966 ha area with 2361 demonstrations was 16.54 qha<sup>-1</sup> with net return of Rs. 52576/ha. Whereas, productivity obtained by fieldpea covering 60.20 ha area with 151 demonstrations was 15.87 qha<sup>-1</sup> with net return of Rs 44844/ha. Also, 130 ha area with 300 demonstrations was covered under crop lentil and obtained productivity was 13.35 qha<sup>-1</sup> with net return of Rs 41989/ha.

Whereas, in Chhattisgarh, crops Chickpea and Fieldpea were demonstrated in 255 ha and 145 ha area with 469 and 286 number of demonstrations respectively. The productivity obtained from these crops were 7.17 qha<sup>-1</sup> with net return of Rs 20175/ha and 7.11 qha<sup>-1</sup> with net return of Rs 18809/ha, respectively. Also, crops lathyrus, Lentil and Pigeonpea were demonstrated in 100 ha, 30 ha and 30 ha area with total 216, 63 and 52 demonstrations, respectively. The productivity obtained from crops lathyrus, Lentil and Pigeonpea were 4.90 qha<sup>-1</sup> with net return of Rs 12382/ha, 6.04 qha<sup>-1</sup> with net return of Rs 13379/ha and 6.18 qha<sup>-1</sup> with net return of Rs 16646 /ha, respectively.

Similarly, during summer 2019-20, in Madhya Pradesh and Chhattisgarh, crops Blackgram and Greengram were demonstrated in total 320 ha area with total 731 demonstrations. In state Madhya Pradesh crops Blackgram and Greengram were laid out in 30 ha and 160 ha area with 75 and 400 number of demonstrations, respectively. The obtained productivity of these crops viz. Blackgram and Greengram were 9.43 qha<sup>-1</sup> and 11.91 qha<sup>-1</sup> with net return Rs. 34789/ ha and Rs 36297/ ha respectively.

Whereas, in state Chhattisgarh, crops Blackgram and Greengram covered 30 ha and 100.32 ha area with 47 and 209 number of demonstrations respectively. Further, productivity obtained by these crops were 6.74 qha<sup>-1</sup> with net return Rs. 24838/ha and 7.42 qha<sup>-1</sup> with net return Rs 26704/ha respectively.

**Table: State-wise & Season-wise outcome of Cluster Frontline Demonstrations on Pulses Performance of Rabi and Summer 2019-20**

State	Season	Crop	No of KVK	Conducted			
				Area (ha)	Demo (No.)	Yield q/ha	Net return/ha
MP	Rabi 2019-20	Chickpea	45	966	2361	16.54	52576
		Fieldpea	04	60.20	151	15.87	44844
		Lentil	09	130	300	13.35	41989
		<b>Sub Total</b>		<b>1156.20</b>	<b>2812</b>		
CG		Chickpea	17	255	469	7.17	20175
		Fieldpea	12	145	286	7.11	18809
		Laythrus	09	100	216	4.90	12382
		Lentil	03	30	63	6.04	13379
		Pigeonpea	03	30	52	6.18	16646
		<b>Sub Total</b>		<b>560</b>	<b>1086</b>		
<b>Total Rabi 2019-20</b>				<b>1716.20</b>	<b>3898</b>		
MP	Summer 2018-19	Blackgram	03	30	75	9.43	34789
		Greengram	11	160	400	11.91	36297
		<b>Sub Total</b>		<b>190</b>	<b>475</b>		
CG		Blackgram	03	30	47	6.74	24838
		Greengram	10	100.32	209	7.42	26704
		<b>Sub Total</b>		<b>130.32</b>	<b>256</b>		
<b>Total Summer 2019-20</b>				<b>320.32</b>	<b>731</b>		



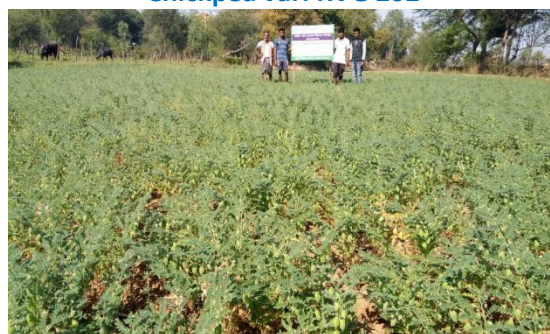
**Pigeonpea var. Rajeshwari**



**Chickpea var. RVG 202**



**Greengram var. MH 421**



**Chickpea var. JAKI 9218**

### 13. New Initiatives

With the changing scenario, new initiatives are required to tackle emerging problems of the farming community with the latest technological solutions vis-à-vis methodological blending for providing the real benefits of the scientific endeavours. KVK is performing well in the farmers' condition through its various activities under the guidance of Division of Agricultural Extension and monitoring system of the ICAR-ATARI with Director Extension of SAUs. As a result, KVK efforts are being recognised and appreciated at various platforms.

Some of the important initiatives taken/continued during the period are being presented here.

#### a. *Mera Gaon Mera Gaurav* (MGMG)

**Nodal Scientist: Dr. S.R.K. Singh, Principal Scientist (AE)**

Mera Gaon Mera Gaurav is operational in 10 institutions including ICAR institutes (6) and SAU's (04) under Zone IX. It is monitored by ATARI, Jabalpur. DWR, Jabalpur, IISS, Bhopal, CIAE, Bhopal, IISR, Indore, NIBSM, Raipur, JNKVV, Jabalpur and NDVSU, Jabalpur, IGKVV, Raipur, CGKV, Raipur, RVSKVV, Gwalior are institutes working under MGMG programme.

##### ICAR institutes and SAUs activities:

During 2020-21, total 29 groups were formed by involving 103 scientists under ICAR institutes and SAUs. Through training, demonstration, literature distribution, general awareness and linkages created with other Departments/ Organizations total of 88086 farmers of 280 villages were benefited under MGMG programme.

Two groups involving 13 scientists of the ICAR- DWR, Jabalpur conducted total 82 demonstrations, trainings and field activities by covering 9 villages. Training, demonstration, literature distribution, general awareness and linkages created with other Departments/ Organizations benefited total 20540 farmers.

NIBSM, Raipur laid out 15 demonstrations, 4 training programme and conducted other extension activities and involving 3 groups of 15 scientists in 15 villages and total 452 farmers were benefited.

In IISR, Indore, 5 groups were formed in which 31 scientists were involved covering 25 villages. Total 200 farmers were benefitted through one extension activity.

JNKVV, Jabalpur conducted total 575 demonstration and other extension activities in 231 adopted villages by which 66894 farmers were benefited under MGMG programme.

In IISS- Bhopal, CIAE, Bhopal, IGKV-Raipur, CGKV- Durg, NDVSU, Jabalpur and RVSKVV-Gwalior report not submitted during the year.

**Table 11.1: Institute- wise progress under *Mera Gaon Mera Gaurav***

S. No.	Name of Institute	Total Number 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.)
1	ICAR-Directorate of Weed Research, Jabalpur (MP)	2	13	9	62	18	20540
2	ICAR- National Institute of Biotic Stresses Management , Raipur (CG)	3	15	15	30	1350	452

S. No.	Name of Institute	Total Number 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.)
3	ICAR- Indian Institute of Soybean Research, Indore (MP)	5	31	25	1	25	200
4	Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (MP)	19	44	231	503	595	66894
<b>Total</b>		<b>29</b>	<b>103</b>	<b>280</b>	<b>596</b>	<b>1988</b>	<b>88086</b>



Interaction with fish farmer



Herbicide application in wheat crop



Training on Integrated Farming System (IFS)

## b. Attracting and Retaining Youth in Agriculture (ARYA)

**Nodal Officer: Dr. A.A. Raut, Scientist (Agril. Extension)**

ARYA project is being implemented in 12 KVKs in Madhya Pradesh and Chhattisgarh. ARYA project is aimed towards entrepreneurship skill development among rural youth. Each KVK has Agro-Technology Park having different demonstration units viz. vermi-compost unit, poultry unit, shed net house, mushroom unit, hatchery unit, and Blue Green Algae unit for demonstration of improved agricultural technologies for rural youth. The training and capacity building activities are undertaken in convergence modes through linkages established with various line departments, Govt. organizations & NGOs for successful implementation of the programme. After the training the participants are encouraged to start their enterprises. Technical and advisory support is provided for establishment of the entrepreneurial ventures by the KVKs.

**Selection of youths:** KVKs selected 200 rural youths having age less than 35 years from villages of district on the basis of gender and social status in cluster form and provided training under ARYA project in different enterprises i.e. vermi-composting, nursery management, mushroom production and poultry production, value addition of aonla products, spices and medicinal processing, Processing and Value addition of NTFPs, Biofortified Rice Seed Production and Promotion and Ornamental Fish Production Pearl millet , Goat keeping etc.

**Table: Activities and youth selected under ARYA**

Name of State	Name of KVKs	Number of Enterprises	No. of Beneficiary/Youths	No. of beneficiaries started enterprises (Unit established)
MP	Gwalior	5	200	53
CG	Dantewada	5	168	19
MP	Dhar	4	200	56
	Jhabua	4	200	52
	Morena	3	185	17
	Neemuch	3	199	3
	Satna	4	200	65
	Hoshangabad	4	145	11
	Sheopur	2	69	19
CG	Kanker	4	165	39
	Raipur	3	150	6
	Sarguja	4	200	7
<b>Total</b>		<b>45</b>	<b>2081</b>	<b>347</b>

**Bio fortified Rice Production and Promotion KVK Raipur****Processing of scented rice KVK Kanker****Bee Keeping KVK Morena****Nursery management****Tomato production KVK Jhabua****Processing and Value addition of NTFPs KVK Dantewada**

### c. Farmer FIRST Programme

**Nodal Scientist: Dr. S.R.K. Singh, Principal Scientist (AE)**

'Farmer FIRST' programme is an ICAR initiative to move beyond the production and productivity, to privilege the small holders agriculture and complex, diverse and risk prone realities of majority of the farmers through enhancing farmers-scientist interface. The programme is operational in 03 ICAR institutes and 04 SAUs which is monitored by ATARI, Jabalpur. ICAR-DWR, Jabalpur, ICAR-IISS, Bhopal, ICAR-NIBSM, Raipur and JNKVV, Jabalpur, RVSKVV-ZARS, Morena, NDVSU, Jabalpur, IGKV-SKS College of Agriculture and Research

Station, Rajnanadgaon (C.G.) are institutes working under Farmer FIRST programme and covered total 32 villages.

Modules	Particulars	ICAR-IISS Bhopal	ICAR- DWR Jabalpur	ICAR- NIBSM Raipur	JNKVV, Balaghat	RVSKVV Gwalior	IGKV, Rajnand- goan	NDVSU Jabalpur	Total
Crop module	Area (ha)	124.69	483.24	155.8	70.8	512.4	142.45	14.8	<b>1504.18</b>
	No. of household	396	520	567	177	1632	631	37	<b>3960</b>
Horti-culture module	Area (ha)	23.24	2	21.2	2.8	134.42	11.66	3.8	<b>199.12</b>
	No. of household	346	245	498	15	444	228	445	<b>2221</b>
Livestock module	No. of household	124	150	60	239	39	117	461	<b>1190</b>
	No. of animal	100	468	147	1113	163	79	526	<b>2596</b>
	No. of chicks	600	0	2294	0	0	2840	636	<b>6370</b>
NRM module	Area (ha)	72.49	10.4	1	34	645.6	26.01	0	<b>789.5</b>
	No. of household	246	34	43	180	1614	78	0	<b>2195</b>
Enterprize module	Vermi-compost unit/Bee keeping unit/other unit	50	25	5	0	17	14	0	111 (553 palash Plants lac cultivation, 63000 fish fries)
	No. of household	50	58	24	95	51	304	15	<b>597</b>
IFS module	Area (ha)	10	0	0	0	92	17.76	0	<b>119.76</b>
	No. of household	10	0	0	0	30	49	0	<b>89</b>



#### d. World Soil Health Day Celebration

**Nodal Scientist: Dr. S.R.K. Singh, Principal Scientist (AE)**

World Soil Health Day was celebrated on December 5, 2020 in 81 KVKs of Zone IX in Madhya Pradesh and Chhattisgarh. Exhibitions were organized by KVKs on this occasion including distribution of soil health cards, displaying seeds, planting materials and various soil health conservation technologies, etc. KVKs received support from other line departments of state governments in organizing of World Soil Health Day Programme.

Table: Summary Report of World Soil Health Day

Name of State	No. of participants							
	KVKs	Hon'ble Union Ministers	Hon'ble State Ministers	Hon'ble MPs	MLAs	Senior Officers	Farmers	Total
Madhya Pradesh	53	0	1	2	5	438	2959	3405
Chhattisgarh	28	0	0	0	17	268	1158	1443
<b>Total</b>	<b>81</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>22</b>	<b>706</b>	<b>4117</b>	<b>4848</b>



### e. Seed Hub for increasing production of pulses

**Nodal Scientist: Dr. A. A. Raut, Scientist (AE)**

Under ATARI, Zone-IX, Seed Hub on pulses programme is implemented in 15 KVKs Betul, Damoh, Narsinghpur, Harda, Tikamgarh, Morena, Datia, Dewas, Ujjain in Madhya Pradesh and Bhatapara, Surguja, Rajnandgaon, Kawardha, Kanker, Janjgir Champa in Chhattisgarh. Under this project, major crops taken in *kharif* season were blackgram, pigeonpea and horsegram and the programme was implemented in total **315.80 ha area** with total production of **990.43 q**.

State	No. of KVKs	Area (ha.)	Production (q)
Madhya Pradesh	07	157.80	503.84
Chhattisgarh	06	158	486.59
<b>Total</b>	<b>13</b>	<b>315.80</b>	<b>990.43</b>

On the other hand, during *Rabi* and summer 2019-20, Seed Hub Project on pulses was functional in total 15 KVK's of states Madhya Pradesh and Chhattisgarh. In *Rabi* season, 605.71 ha area was demonstrated under this project with total seed production of 4260.25 q, covering major crops chickpea, fieldpea and laythrus. Similarly, crops blackgram and greengram were demonstrated in summer season, covering 121.80 ha area with 721.24 q of seed production. Under this Project, seed godown with processing unit were established inkvks of both the states Madhya Pradesh and Chhattisgarh.

State	No. of KVKs	Rabi 2019-20		Summer 2019-20	
		Area (ha.)	Production (q)	Area (ha.)	Production (q)
Madhya Pradesh	09	331.20	3383.58	87.20	596.20
Chhattisgarh	06	274.51	876.67	34.60	125.04
<b>Total</b>	<b>15</b>	<b>605.71</b>	<b>4260.25</b>	<b>121.80</b>	<b>721.24</b>



Pigeonpea var. Rajeev lochan



Fieldpea var. IPFD 10-12



Chickpea var. JG 12

## f. Skill Development Programme

**Nodal Scientist: Dr. A. A. Raut, Scientist (AE)**

Skill development programme is the flagship scheme of ICAR being implemented at ICAR Institutes, SAUs and KVKs. The Agriculture Skill Council of India (ASCI) have prepared various Qualification Packs (QPs) & Model Curricula in agriculture and allied areas. The objective of this programme is to enable a large number of Indian youth to take up agriculture related skill training that will help them in securing a better livelihood. The programme is operational in 61 Krishi Vigyan Kendras, 5 SAUs and 1 ICAR Institutes namely, NIHSAD in Madhya Pradesh and Chhattisgarh under ATARI, Jabalpur. The orientation programme of master trainers at KVK was held at ATARI Jabalpur, ATARI Kanpur and ATARI Jodhpur and the assessment of master trainers in respective QPs was conducted by ASCI.

During 2020 the skill training programme was provided in various QPs viz. Micro Irrigation Technician, Freshwater Aquaculture Farmer, Mushroom Grower, Aquaculture Worker, Supply Chain Field Assistant and Small poultry farmer were the identified job roles by KVKs and institutes as per the skill needs of farmers, rural youth and women in their districts. The training programmes were conducted at KVKs as per National Occupational Standards (NOS) developed by ASCI.

**Table: Skill Training Programme under ATARI Zone IX:**

Name of state / UT	No of KVK/SAU/ICAR Institute	Number of Job Role/QPs of trainings	Number of farmers trained
Madhya Pradesh	50	101	1786
Chhattisgarh	16	37	596
<b>Total</b>	<b>66</b>	<b>138</b>	<b>2382</b>





### g. Nutrition Sensitive Agriculture through Nutri-SMART Village

**Nodal Scientist: Dr.S.R.K Singh Principal Scientist (AE)**

The initiative in this regard was taken by ICAR-ATARI, Jabalpur in Madhya Pradesh and Chhattisgarh through a novel concept of Nutri-SMART village establishment in 2016 by KVKs for promoting Nutrition Sensitive Agriculture in India. The activities under Nutri-SMART Village intensified by KVKs for evolving new extension methodologies and approaches for long lasting effect of the efforts in this direction. Nutri-SMARTvillage established in 42 blocks in Madhya Pradesh and 15 blocks of Chhattisgarh. Therefore this programme will result into following specific outcome addressing the ultimate goal of health and well-being of farm women, adolescent girls and children (0-5 year):

- Increased availability, accessibility and utilization of nutritious crops/vegetables/fruits etc through Nutrition gardens.
- Crop diversification along with cultivation of Biofortified varieties will result improvement in nutritional and health status of farm family in Nutri-SMART Villages.
- Improving dietary diversity by standardizing traditional recipes incorporating locally available food materials through value addition.
- To enhance the economic status of farm family through income generation activities.

State	No of KVKs	No of activity	No. of farmers/ beneficiaries
<b>Technology Assessment on</b>			
<b>Madhya Pradesh</b>			
Nutrition Garden	13	40	290
Bio-fortified Crops	17	26	188
Drudgery reduction	11	13	84
Income generation	20	49	391
Value addition	11	17	129
<b>Total</b>		<b>145</b>	<b>1082</b>
<b>Chhattisgarh</b>			
Nutrition Garden	7	7	55
Bio-fortified Crops	3	3	27
Income generation	5	7	42
Value addition	4	6	49
<b>Total</b>		<b>23</b>	<b>173</b>

State	No of KVKs	No of activity	No. of farmers/ beneficiaries
<b>Grand Total</b>		168	1255
<b>Technology Demonstrated</b>			
<b>Madhya Pradesh</b>			
Nutrition Garden	32	48	700
Bio-fortified Crops	9	9	84
Drudgery reduction	2	2	15
Income generation	17	24	206
Value addition	16	22	233
<b>Total</b>		<b>105</b>	<b>1238</b>
<b>Chhattisgarh</b>			
Nutrition Garden	11	66	335
Bio-fortified Crops	4	6	90
Income generation	6	18	215
Value addition	3	3	45
<b>Total</b>		<b>93</b>	<b>685</b>
<b>Grand Total</b>		<b>198</b>	<b>1923</b>
<b>Training</b>			
Madhya Pradesh	39	305	8407
Chhattisgarh	19	107	2326
<b>Total</b>		<b>412</b>	<b>10733</b>
<b>Extension Activities</b>			
Madhya Pradesh	38	428	10409
Chhattisgarh	8	38	1011
<b>Total</b>		<b>985</b>	<b>24479</b>



Income of Self Help Group of farm women



Durum wheat HI 8713 at farm women's field



Mahua seed Decortication by Mahua seed Decorticator



Distribution of Weaning foods to mother



Chila and Roti fortified with drumstick leaves powder.



Flower Cultivation

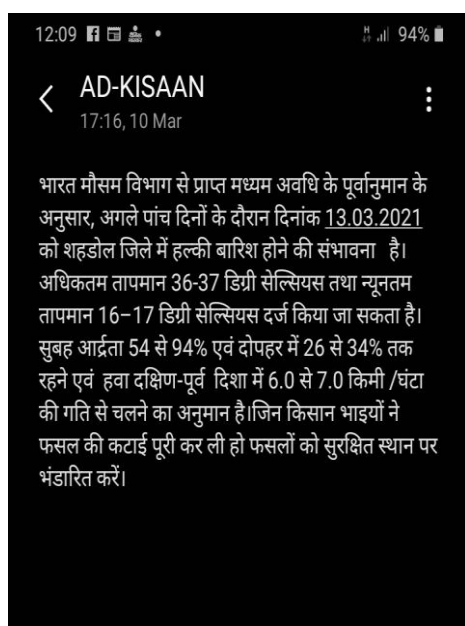
## h. District Agro-Met Units (DAMU)

**Nodal Scientist: Dr. A. A. Raut, Scientist (AE)**

IMD and ICAR signed MOU to establish District AgroMet Units (DAMU) under which DAMU established in 23 KVKs (14 in Madhya Pradesh and 09 in Chhattisgarh) under Gramin Krishi Mausam Sewa. Agromet observatories as well as Automated Weather Stations (AWS) record Agromet observations to generate agro-meteorological information for use in studies on crops, pests & diseases, soil, agro-forestry, livestock, horticulture, Agricultural Physics, Soil Science etc. Each District Agro-Met Unit utilizes the relevant output products including weather data to generate specific advisories for agricultural management for the respective districts in Agro-climatic Zones identified under the area of its jurisdiction and disseminate the same to the farming community. Such data help to study crop-weather relationship, relationship between crop-weather and pest/disease and develop region/location specific agromet predictive models. During 2020, total 72 training programmes were organised under DAMU at KVKs with participation of 5020 participants.

**Table: Details of advisories sent by DAMU staff at KVK**

Details	No. of advisory sent	No. of farmers
Weather Advisory on KMA	266	1152558
General Advisory on KMA	364	1239031
Crop Specific Advisory on KMA	286	1382217
Horticulture Specific Advisory on KMA	165	1055830
Other agril related advisory on KMA	276	1170711
Social media /Whtats app advisories on Weather	3207	292395
Social media /Whtats app advisories on agriculture	3029	293527
Horticulture Specific Advisory on Whtats app/ Social media	2775	292213
Other agril related advisory on Whtats app/ Social media	2104	291124



**DAMU Outreach: Extension and farmer outreach programmes organized by DAMU staff**

Details	No.programme organized	No of participants / farmers benefited
Awareness programme on DAMU	277	9844
Filed Day/ Exhibition / Mela	2092	16092
Visit to farmers field	280	1805

## 14. Research Projects and Publications

### Research Project at ICAR-ATARI, Jabalpur

S. No.	Title	Name of Scientist	Designation	Responsibility
1.	Assessing dietary diversity, consumption pattern and nutritional security in Nutri-SMART Villages –A step towards vocal for local	Dr. S.R.K. Singh	Principal Scientist (AE) & Director (A)	PI
2.	Impact of climate resilient technologies demonstrated through National Innovations in Climate Resilient Agriculture (NICRA) across different agro-ecological regions of India	Dr. S.R.K. Singh	Principal Scientist (AE) & Director (A)	Co-PI
3.	Network project on analysis of agricultural programmes conducted in Aspirational Districts in India	Dr. Dwaipayan Bardhan	Principal Scientist (Agril.Eco.)	Co-PI
4.	Impact Assessment of Selected Interventions by KVK under Doubling Farmers' Income for Enhancing Farmers' Income	Dr. Dwaipayan Bardhan	Principal Scientist (Agril.Eco.)	Co-PI
5.	Impact of ARYA on promotion of agri-preneurship and alternative livelihoods	Dr. A. A. Raut	Scientist (AE)	Co-PI
6.	Impact assessment of popular pulses varieties and technologies disseminated by KVKs through Cluster Frontline Demonstration of Pulses (CFLD-Pulses) in India	Dr. A. A. Raut	Scientist (AE)	Co-PI
7.	Impact of Technological interventions of KVKs on Socio-Economic Empowerment and Sustainable Livelihood security of Tribal Farmers	Dr. T.R. Athare	Scientist (AE)	Co-PI

**Papers in research journals (National /International)**

1. S.R.K.Singh, A.Mishra, Alok Suryavanshi, S.Singh (2020). Enhancing yield and income from mustard cultivation by technological interventions using cluster approach. *Indian Journal of Extension Education*, Vol. 56 (1), 66-69.
2. S.R.K. Singh, A.Mishra, V.Jallaraph, A.A.Raut, R.K.Singh, S.Kumar (2020). Efficacy of Kisan Mobile advisory Service for dissemination of agricultural information in Madhya Pradesh. *Journal of Community Mobilization and Sustainable Development*, Vol. 15 (1), 99-102, Jan. – April, 2020.
3. N.Patel, A.K.Dixit, S.R.K.Singh (2020). Effectiveness of whatsapp messages regarding improved agricultural production technology. *Indian Journal of Extension Education*, Vol. 56 (1), 54-58.
4. Parvez Rajan, Nalin Khare and S.R.K. Singh (2020). A scale to measure attitude of farmers towards technological demonstration. *Journal of Community Mobilization and Sustainable Development*, Vol. 15 (2), 377-380, May-August, 2020.
5. A.K.Singh, S.Nayak, S.R.K.Singh, Y.R. Khare, N.Singhai and D.P.Sharma (2020). Impact of greengram demonstrations in Jabalpur district of Madhya Pradesh. *Journal of Food Legumes* 33(2): 112-117.
6. M.Meshram, N.K.Khare, S.R.K.Singh and H.L.Sharma (2020). Constraints faced by tribal farmers apropos integrated farming system (IFS) in Madhya Pradesh. *Indian Journal of Extension Education*, Vol. 56 (1), 181-185.
7. M.Meshram, N.K.Khare, S.R.K.Singh and H.L.Sharma (2020). Analysis of inherent variability among livelihood security indices in tribal block in Madhya Pradesh. *Journal of Community Mobilization and Sustainable Development*, Vol. 15 (2), 289-291, May-August, 2020.
8. M.Meshram, N.K.Khare, and S.R.K.Singh (2020). Socio-economic profile of integrated farming system practicing farmers in Madhya Pradesh state. *The Pharma Innovation Journal*, 2020: SP-9 (4): 155-159.
9. M.Meshram, N.K.Khare, and S.R.K.Singh (2020). Analyzing farmers' perception towards integrated farming system in Madhya Pradesh. *The Pharma Innovation Journal*, 2020: SP-10 (3): 90-92.
10. R.K.Singh, U.K.Tripathi and S.R.K.Singh (2020). Performance of herbicides on effective weed management in soybean (*Glycine max*) crop. *Indian Journal of Agricultural Sciences* 90 (10): 1883-7, October 2020.
11. R.K.Singh, U.K.Tripathi, S.R.K.Singh and Anay Rawat (2020). Efficient management of wild oat (*Avena fatua*) and canary grass (*Phalaris minor*) in chickpea (*Cicer arietinum*) for higher productivity and profitability under irrigated condition. *Indian Journal of Agricultural Sciences* 90 (10): 2019-23, October 2020.
12. Tushar Ramchandra Athare, Prajal Pradhan, Juergen P. Kropp (2020). Environmental implications and socioeconomic characterisation of Indian diets. *Science of The Total Environment*, Volume 737.

### Technical/popular articles

1. S.R.K.Singh, Anupam Mishra and V. Shrivastava (2020). Resource conservation technologies in rainfed areas of Central India. *Indian Farming* 70(04): 33-36, April 2020.
2. S.R.K.Singh and Anupam Mishra (2020). *Bahuuddesiye bhartiye krishi prasar pranali*. Kurukshetra, Sept. 2020: 46-51.
3. Dhruv Juyal, S.R.K.Singh and Anupam Mishra (2019). Potato Processing in India. *Agribusiness and Food Industry*. October 2019. Pp. 40-41.

### Books (Authored/edited)

1. A.K.Singh, S.R.K.Singh, Jai Singh, R.Shukla and Om Gupta (2021). *Aay Duguni Karne Hetu Adhunik Krishi Awam Labhkari Udyamita Vikas – Madhya Bharat ke Paridrishya Mein*. ISBN 10:81-7019-698-4, ISBN 13: 9788170196983. *Today and Tomorrow's Printers and Publishers P, New Delhi*.

### Book chapters/technical bulletins/manuals

1. M.Meshram, N.K.Khare, and S.R.K.Singh (2020). Integrated farming system apropos livelihood improvement of tribal farmers in Madhya Pradesh. Pp. 163-172. *In: Entrepreneurial Challenges during COVID-19 Recent Trends and Innovations*, Eds. Saha et.al., ISBN: 978-93-90423-42-2. Global Vision Publishing House, N.Delhi. Pages-472.
2. A.A. Raut (2020). Community Organizations and Development. In M.P.D.D. UOU (Eds.) *Extension Program Management and Sustainable Development* (pp 171-192). Uttarakhand Open University. Haldwani, Uttarakhand
3. A.A. Raut (2020). Media in extension and Communication. In M.P.D.D. UOU (Eds.) *Extension Program Management and Sustainable Development* (pp 193-235). Uttarakhand Open University. Haldwani, Uttarakhand
4. A.A. Raut (2020). Programs for Sustainable Development. In M.P.D.D. UOU (Eds.) *Extension Program Management and Sustainable Development* (pp 236-252). Uttarakhand Open University. Haldwani, Uttarakhand
5. V.P.Chahal, RPS Ratan, A.Mishra, M.S.Nain, S.R.K.Singh (2021). Participatory Approaches for Technology Development and Extension. Pp. 299-353. *In: Handbook of Agricultural Extension*, Eds. A.K.Singh, P.Adhiguru, R.R.Burman, R.N.Padaria.

## 15. Awards and Recognitions

### Pandit Deen Dayal Upadhyay Krishi Vigyan Protshahan Puraskar (National) - (KVK Datia)

Krishi Vigyan Kendra Datia has been awarded Pt. Deen Dayal Upadhyay Krishi Vigyan Protsahan Award – 2019 (National) under ATARI, Jabalpur by Indian Council of Agricultural Research, during ICAR Foundation day towards their outstanding contribution in promoting agricultural for the welfare of farming Community.



Krishi Vigyan Kendra, Datia is working for livelihood security and enhancement of productivity and profitability through increase in net farm income in district. The KVK has taken many initiatives under its mandatory



activities OFT, FLDs, CFLDs technology demonstrations and capacity building programmes on farmers' fields in adopted villages. As a result of execution of these different activities the adoption of improved technologies has been increased by the targeted farmers. The yield of rice, maize, wheat, black gram, chickpea, field pea, sesame, groundnut and mustard increased by 16.38, 93.00, 97.46, 52.00,

36.05, 36.31, 57.60, 18.24 and 23.87 percent under improved technologies in comparison to farmers practice. The yield of vegetable crops was also increased by 21.64 to 44.44 percent under improved technologies.

### Pandit Deen Dayal Upadhyay Krishi Purotsahan Puraskar (Zonal)- (KVK Ujjain)

Krishi Vigyan Kendra, Ujjain, Madhya Pradesh has been awarded Pandit Deen Dayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2019 for Zone IX. The organizational development in KVK led to establishment of Instructional Farm and Progeny Orchard, Hi- tech Horticulture Unit, Water Technology Park, Integrated Farming System Unit and Seed Godown. The KVK conducted 246 training programmes in different disciplines of agriculture benefited 5665 practicing farmers & farm women. Similarly 42 special training



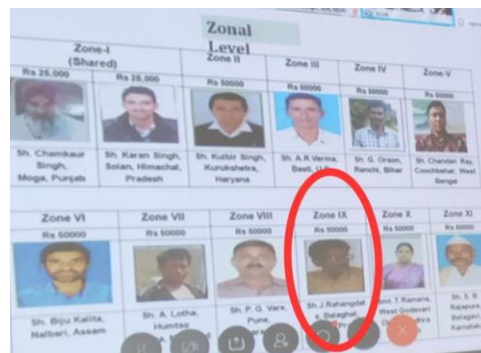
programmes for rural youths either

practicing farmers or school dropouts were organised and were attended by 753 participants. The KVK also organised 33 in-service trainings programmes of varying duration benefiting 721 extension functionaries & vocational trainings of medium duration (one week to onemonth) either independently or with the help of Agriculture

Department, Ujjain. Under this mandatory work OFT, FLDs, CFLDs technology demonstrations and capacity building programmes were organized on famers field.

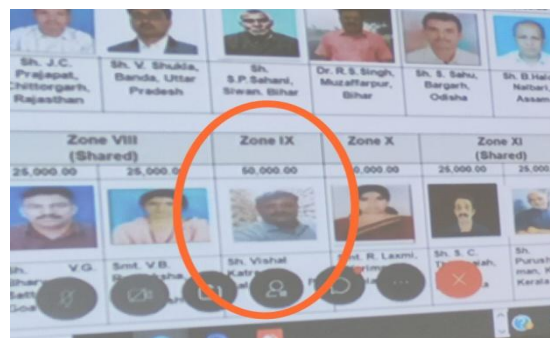
### Pandit Deen Dayal Upadhyay Antoday Krishi Puruskar (KVK Balaghat)

On 16 July 2020, Indian Council of Agricultural Research, New Delhi celebrated his 92nd foundation day through online YouTube, video conference and Google meet. On this occasion the farmers of Krishi Vigyan Kendra, Balaghat got the award of "Pandit Deen Dayal Upadhyay Antodiya Puraskar" for farmer *shri Jiyalal Raghdale*. Farmer were selected by the committee on the basis of work done by his in the field of agriculture and allied sector. Awardee farmer *shri Jiyalal Rahangdale* awarded with cash prize of Rs. 25,000.00 and appreciation certificate. The award was given by Chaired by Shri Narendra Singh Tomar, Union Minister of Agriculture & Farmers' Welfare and chief guest of programme Shri Parshottam Rupala, Union Minister of State for Agriculture & Farmers' Welfare addressed the gathering through video conferencing.



### Jagjivan Abhinav Krishak Puruskar (Zonal) to Sh. Vishal Katre, KVK Balaghat

On 16 July 2020, Indian Council of Agricultural Research, New Delhi celebrated his 92nd foundation day through online YouTube, video conference and Google meet. On this occasion the farmers of Krishi Vigyan Kendra, Balaghat got the award of "Jagjivan Ram Abhinav Kisan Puraskar" for Farmer *Shri Vishal Katre*. Farmers were selected by the committee on the basis of work done by his in the field of agriculture and allied sector. Awardee farmer *Shri Vishal Katre* awarded with cash prize of Rs. 25,000.00 and appreciation certificate. The award was given by Chaired by Shri Narendra Singh Tomar, Union Minister of Agriculture & Farmers' Welfare and chief guest of programme Shri Parshottam Rupala, Union Minister of State for Agriculture & Farmers' Welfare addressed the gathering through video conferencing.



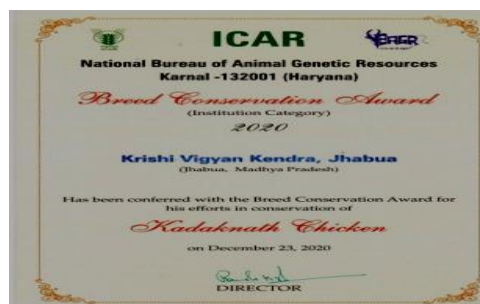
### Best KVK Award-2020 (KVK Morena)

KVK Morena received "Best KVK Award" on February 24.02.2020 by Outlook agriculture conclave and Swaraj Awards at NASC Complex, ICAR, New Delhi. Award given by Shri Narendra Singh Tomar ji, Hon'ble Minister of Agricultural & Farmer Welfare, Rural Development & Panchyati Raj, Govt. of India.



### Breed Conservation Award 2020 for Kadaknath Chicken

Breed Conservation Award 2020 for Kadaknath Chicken of National Bureau of Animal Genetic Resources (ICAR), Karnal (Haryana) given to KVK Jhabua on December 23, 2020 given by ADG, ICAR, New Delhi Dr. V.K. Saxena through online on December 23, 2020 and received by Dr. I. S. Tomar, Principal Scientist & Head, KVK Jhabua. This award was given for conservation of indigenous breed of Chicken Kadaknath and its popularization.



### Innovative Farmer Award 2020 (KVK Khandwa)

Dhanuka Agritech Limited, New Delhi has awarded Sh. Suresh Chand Rathore, Village- Bhandariya, District- Khandwa as Innovative Farmer Award on Jan 9, 2020 at New Delhi for his farming activities of Farm mechanization and water conservation.



### ICAR Innovative Farmer Award 2020 (KVK Bhopal) awarded by IARI, Pusa, New Delhi

Shri Shyam Singh Kushawaha, Village- Gol khedi, Bhopal received "ICAR Innovative Farmer Award 2020", at IARI Kisan Mela, Pusa, New Delhi. Er. D.K . Dwivedi, CTO (Eng.) of KVK Bhopal has been participated in Pusa Krishi Vigyan Mela at IARI, New Delhi on March 03, 2020.



### Fakhruddin Ali Ahmed Award (KVK Bastar)

Dr. Adikant Pradhan (Team leader/Chief Scientist AICRPDA, S.G. CARS, I.G.K.V Bastar), Dr.S.K.Nag (Senior Scientist and Head KVK, Bastar), Dr. Anil Dixit (Principal Scientist NIBSM) Dr. Abhinav Sao (Scientist I.G.K.V. Raipur), has been awarded Fakhruddin Ali Ahmed Award for outstanding research in Tribal Farming System. The team has worked in the region having more 60% tribal population on which 70% population completely depend on agriculture.



## 16. Distinguished Visitors

**KVK Bastar- QRT Team Dr. Y.P.S. Dabas (Ex DES), Dr. Ramchandra Singh, Dr. O.P. Singh, Dr. Anupam Mishra (Director ATARI), Dr.Om Gupta (DES, Jabalpur) visit KVK Bastar**

QRT Team members Dr.Y.P.S.Dabas (Ex D.E.S), Dr. Ramchand, Dr.O.P.Singh, Dr. Anupam Mishra (Director ATARI), Dr. Om Gupta (DES, Jabalpur) visited KVK Batar on 07 January 2020. QRT Team Visited KVK Bastar Green house unit, Kadaknath hatchery unit, Duckery unit, Dairy unit, Quail unit, Mushroom unit, Fish seed procuring unit, minor millet processing unit etc. QRT team facilitated the promotion of fish production. QRT Team appreciated the minor millet processed products.



Visit of KVK Bastar



Honour of Respected Dignitaries



Visit of fishery pond

**KVK Mahasamund - Quinquennial Review Teams (QRT) visited KVK**

Quinquennial Review Team of ICAR, New Delhi reviews the work done of all the KVKs under the Chhattisgarh Plain agro climatic zone on 08 January 2020. The chairman of QRT team Dr. Gaya Prasad, Ex-Vice Chancellor, SVBPUAT, Meerut and other members Dr. O. P. Singh Ex - Director Extension Services, SVBPUAT Meerut, Dr. Y. P. S. Dabas, Ex - Director Extension Services GBPUAT, Pantnagar, Dr. Ram Chandra, Ex- Assistant Director General (Agriculture Extension), ICAR, New Delhi, Dr. S.R.K. Singh, Principal Scientist, ICAR- Agriculture Technology Application Research Institute, Jabalpur alongwith Dr. S. C. Mukherjee, Director Extension Services, IGKV, Raipur after the review meeting, visited Krishi Vigyan Kendra, Mahasamund, and lookup the demonstration unit/facilities viz. Nutritional Garden, Crop Cafeteria, Integrate Farming System Model, Mother Orchard, Kadaknath Poultry cum hatchery unit, Quail farming, Animal unit, Vermicompost Production unit, Mushroom and Spawn Production unit, Soil and Water Testing Laboratory, Food Processing Labs etc. The Senior Scientist and Heads, Scientist from office of DES, IGKV Raipur and all the KVKs under Chhattisgarh plain agro climatic zone is also visited KVK farm along with QRT team. During visit the member of QRT team appreciate the excellent work done by KVK in their farm under adverse condition particularly establishment of mother orchard in barren/ stony land, Initiative and expansion of Quail farming in district, promotion of mushroom production in district to support livelihood by additional income generation. During the visit team also gives valuable suggestion for improvement of KVK farm and farmers field by application of demonstrated technology in nearby farmer's field. The all Senior Scientist and Heads from other KVKs also appreciate the efforts made by KVK team for farm development and establishment of demonstration unit with limited resources in adverse condition



QRT Team with staff of KVK, Mahasamund



Visit of QRT team at KVK farm

### KVK Bhopal- Quinquennial review team (QRT) visited KVK Bhopal

The quinquennial review team under the chairmanship of Dr. Gaya Prasad, Former Vice Chancellor, SVPUA&T Meerut along with other respective members like Dr. Ramchand, Former ADG, (AE), ICAR, New Delhi, Dr. Y.P.S. Dabas, Former Director of Extension, GBPUA&T, Pantnagar, Dr. O.P. Singh, Former Director Extension, SVPUA&T Meerut and Dr. Mathura Rai, Former Director, ICAR-IIVR, Varanasi visited on February 04, 2020 to Custom Hiring Centre at Kachhibarkheda and Nutri-smart village Prempura developed by ICAR-KVK Bhopal.



### KVK Ujjain- Quinquennial Review Teams (QRT) visited KVK

Quinquennial Review Team monitor and review the activities of KVK after every 5 year. QRT delegates Dr. Gaya Prasad, Former VC, SVPUA&T, Meerut, Dr. Y.P.S. Dabas, Former Director Extension, Pantnagar, Dr. Ramchandra, Former Assistant Director, New Delhi, Dr. Mathura Rai, Former Director, Indian Vegetable Research Institute, Varanasi, Dr. S.N. Upadhyay, DES, RVSKVV, Gwalior, Dr. S.R.K. Singh, Principal Scientist, ATARI, Jabalpur visited KVK Ujjain on 5.02.2020. They have visited the Dairy Unit, Goatry Unit, Crop Cafeteria of Ujjain unit and review the activities of KVK Ujjain and applaud the work. They also review the work of KVKs of RVSKVV Jurisdiction. Dr. Gaya Prasad has given his remark i.e. "The KVK is doing substantial work in showcasing the new technologies of agriculture & allied sectors".



**KVK Dhar- Quinquennial Review Teams (QRT) visited KVK Dhar**

The quinquennial review team under the chairmanship of Dr. Gaya Prasad, Former Vice Chancellor, SVPUA&T Meerut, Dr. Ramchand, Former ADG, (AE), ICAR, New Delhi, Dr. Y.P.S. Dabas, Former Director of Extension, GBPUA&T, Pantnagar, Dr. O.P. Singh, Former Director Extension, SVPUA&T Meerut, Dr. Mathura Rai, Former Director, ICAR-IIVR, Varanasi and Dr. S.R.K. Singh, Director (Acting) , ICAR-ATARI, Jabalpur visited KVK Dhar on 05 -06 February 2020 and they also visited farmer’s field in the district.



**Quinquennial Review Teams (QRT) visited KVK Dhar**

**KVK Betul- Member of Parliament Seoni Balaghatand Board Member JNKVV Jabalpur visited KVK Betul**

Hon'ble Member of Parliament, Shri Dhal Singh Bisen, District -Balaghat & Seoni and Shri. Om Thakur, Board member visited different Demonstration Units (Azolla, Vermi composting, Crop Cafeteria and others Units ) of Krishi Vigyan Kendra Betul on 17.02.2020.



**Visit of Hon'ble MP and Board Member JNKVV**

**Jila Panchayat CEO, Betul**

**KVK Raipur, Jora- Dr. S. R. K Singh, Director ATARI Zone-IX, visited KVK.**

Director ATARI Zone-IX Dr. S. R. K Singh visited different units like farm, biofloc unit, horticulture farm, IGKV Sale counter of KVK Raipur during 29 Dec 2020.



**Fish Farm Biofloc Unit visit on 29/12/20**



**Sale counter visit on 29/12/20**

## 17. ATIC Progress Report

### A. Details on ATIC

S. No	Name of the ATIC	Name of the Host Institute	Name of the ATIC Manager
1.	ATIC, Jabalpur	JNKVV., Jabalpur (M.P.)	Dr. Dinkar Prasad Sharma
2.	ATIC, Raipur	IGKV, Raipur	Dr. Neeta Khare
3.	ATIC, CIAE, Bhopal	Central Institute of Agricultural Engineering, Bhopal, M.P.	Dr. Umesh Chandra Dubey

### B. Details of farmers visit

S. No	Purpose of visit	Number of farmers visited
1	Technology information	4741
2	Technology products	322
3	Diagnostic services	142
4	Others	187
	<b>Total</b>	<b>5392</b>

### C. Facilities in the ATIC

S. No	Particulars	Availability (Please v mark)	Number of ATICs
1	Reception counter	√	3
2	Exhibition / technology museum	√	3
3	Touch screen Kiosk	√	3
4	Cafeteria	√	2
5	Sales counter	√	3
6	Farmers' feedback register	√	3
7	Others (Visitors register, Stock store register, Telephone etc.)	√	3

### D. Technology information provided

#### D.1. Details on technology information

S. No	Information category	Total number of farmers benefited	Category of information						
			Varieties / hybrids	Pest management	Disease management	Agro-techniques	Soil and water conservation	Farm Mechanization and Value addition	Animal Husbandry and fisheries
1	Crop & Livestock	556	93	203	96	41	67	56	0
2	Kisan Call Centre / other Phone calls from farmers	226	4	178	6	0	3	3	32
3	Training to farmers / technocrats / students	327	16	122	71	50	36	20	12
4	Video shows	6	0	2	0	2	1	1	0
5	Letters received	4	-	-	-	-	-	4	

S. No	Information category	Total number of farmers benefited	Category of information						
			Varieties / hybrids	Pest management	Disease management	Agro-techniques	Soil and water conservation	Farm Mechanization and Value addition	Animal Husbandry and fisheries
6	Letters replied	2	-	-	-	1	-	1	
7	Others (Machinery)	12	-	-	-	-	-	12	
	<b>Total</b>	<b>1133</b>	<b>113</b>	<b>505</b>	<b>173</b>	<b>94</b>	<b>107</b>	<b>97</b>	<b>44</b>

**D.2. Publications (Print & Electronic media)**

S. No	Particulars	Numbers sold	Revenue generated (in Rs. lakh)	Number of farmers benefited
1	Books & Technical Bulletins	1348	0.16600	4853
2	<b>Others</b> Krishi Panchang, Farm magazine & booklets	57236	18.93400	53143
	<b>Total</b>	<b>58584</b>	<b>19.100</b>	<b>57996</b>

**E. Technology Products provided : Nil**

**E. Technology services provided**

S. No	Particulars	Number of farmers benefited
1	Details about the services to line Departments	-
2	Farmers' visited ATIC	4988
3	Mechanization Planning Advisory	179
4	Plant diagnostics	186
5	Soil and water testing	-
6	Soil Health Cards issued & Farmers' training conducted in KVKs & NGOs	1000
7	Technologies on freshwater aquaculture ( hatchery management, grow out culture and post harvest technology)	-
8	Through Kisan Call Centre	47
9	Through Letters	-
10	Others (Krishi Gyan Portal)	4733
	<b>Total</b>	<b>11133</b>

## 18. List of Scientific, Technical and Administrative Staff

### **Director**

Dr. S.R.K.Singh, Director (Acting)

### **Scientific**

Dr. S.R.K.Singh, Principal Scientist (Agrl. Extension)

Dr. Dwaipayan Bardhan, Principal Scientist (Agri. Economics)

Dr. A.A. Raut, Scientist (Agrl. Extension)

Sh. T.R.Athare, Scientist (Agrl. Extension)

### **PME Cell**

Dr. S.R.K.Singh, Principal Scientist (Agrl. Extension)

### **Technical**

Sh. Ashok Kumar Dubey, Driver

### **Administration**

#### **Assistant Administrative Officer**

Sh. Sunil Kumar Gupta

#### **Finance and Accounts Section**

Sh. Rajeev Kulshrestha, Assistant Finance and Account Officer

Shri Ram Sandesh Gupta, LDC

#### **PS to Director**

Sh. A.K.Bhowal

#### **Programme Assistant**

Sh. R.K.Soni

#### **Supporting**

Sh. Sukhchain Das