वार्षिक प्रतिवेदन
ANNUAL REPORT
2015-16

भाकृअनुप
ICAR

ICAR-Agricultural Technology Application Research Institute (ATARI)

(Division of Agricultural Extension)

Jabalpur, Madhya Pradesh

ANNUAL REPORT

2015-16

ICAR- Agricultural Technology Aplication Research Institute (ATARI)

Indian Council of Agricultural Research

JNKVV, Jabalpur – 482004 (M.P.)

Citation

Annual Report 2015-16. ICAR-Agricultural Technology Application Research Institute (ATARI), Zone VII, Jabalpur.

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Year of publication: 2016

Published by

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कार्य सारांश

भा.कृ.अ.प.–कृषि तकनीकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र–7 के अन्तर्गत 100 कृषि विज्ञान केन्द्र, मध्यप्रदेश, छत्तीसगढ़ एवं उड़ीसा राज्यों में स्थित है ।

प्रक्षेत्र परीक्षण के द्वारा तकनीक आंकलन–

विभिन्न कृषि विज्ञान केन्द्रों द्वारा 1267 प्रक्षेत्र आंकलन, 40025 परीक्षण के द्वारा आयोजित किये गये। सर्वाधिक परीक्षण मध्यप्रदेश (626) द्वारा आयोजित किया गया। क्रमशः उड़ीसा (370) एवं छत्तीसगढ़ (271) द्वितीय एवं तृतीय स्थान पर रहे। कुल प्रक्षेत्र परीक्षण (1267) में से (993) प्रक्षेत्र परीक्षण फसल पर व शेष 276 अन्य उद्यमों पर रहा।

प्रथम पंक्ति प्रदर्शन–

प्रगति वर्ष 2015–16 के दौरान, कुल 1164 प्रथम पंक्ति प्रदर्शन विभिन्न फसलों (दलहन, तिलहन, धन धान्य फसलें, सब्जी फसल, मोटे अनाज) पर आयोजित हुए। कुल प्रदर्शन में 7539.8 हे. क्षेत्र में 18359 किसानों के प्रक्षेत्र पर आयोजित हुए थे। मुख्य आय सृजन वाले उद्यम पर भी प्रथम पंक्ति प्रदर्शन आयोजित किये गये। क्षेत्रफल की दृष्टि से 1193.71 हे., 5352 इकाईयाँ एवं 4128 लाभार्थियों की संख्या रही।

प्रशिक्षण एवम् क्षमता संवहन

वर्श 2015–16, कुल आयोजित 7652 प्रशिक्षण 2,18,050 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 24 क्षमता संवहन कार्यक्रम से मध्यप्रदेश, छत्तीसगढ़ एवं उड़ीसा के कृषि विज्ञान केन्द्रों के 1401 विषय वस्तु विशेषज्ञ लाभान्वित हुए।

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

कृषि विज्ञान केन्द्रों द्वारा 17,156.57 कुन्तल बीज, 66.79 लाख रोपण सामग्री (धन–धान्य फसलें, दलहन, तिलहन, सब्जी, औषधीय पौधे, फलदार पौधे) का उत्पादन किया गया। कृषि विज्ञान केन्द्रों द्वारा जैव उत्पाद एवं पशु उपयोगी सामग्री का भी उत्पादन निर्माण किया गया।

मृदा, जल एवं पौधों का परीक्षण

क्षेत्र के कृषि विज्ञान केन्द्रों ने 72439 मृदा एवं 630 जल नमूनों का परीक्षण कर 91200 किसान एवं 3109 गांव लाभान्वित हुए।

प्रसार गतिविधियाँ

वर्ष 2015–16 में कुल 1,19,740 प्रसार गतिविधियों (प्रक्षेत्र दिवस, किसान मेला, कृषक सलाहकारी सेवाएं, प्रदर्शनी, फिल्म शो आदि) के माध्यम से विभिन्न तकनीक का प्रसार कर 21,23,621 किसान एवं प्रसार कर्मी लाभान्वित हुए।

साहित्य एवं जनसंचार माध्यम के द्वारा तकनीक को लोकप्रिय हेतु 2,38,072 कृषि साहित्य की प्रतियों की छपाई की गयी व 2,32,985 प्रतियों का वितरण किया गया।

वैज्ञानिक सलाहकार समिति की बैठक

वर्ष 2015–16 में कुल 150 वैज्ञानिक सलाहकार समिति की बैठकों का आयोजन किया गया। इनमें से म.प्र. के 22 कृषि विज्ञान केन्द्र ऐसे थे जिन्होने वर्ष में दो बार उक्त बैठक आयोजित किये शेष 24 कृषि विज्ञान केन्द्रों में एक बार उक्त बैठक आयोजित किये। छत्तीसगढ़ के 2 कृषि विज्ञान केन्द्रों ने वर्ष में दो बार उक्त बैठक आयोजित किये शेष 18 कृषि विज्ञान केन्द्रों में एक बार उक्त बैठक आयोजित किये। उड़ीसा के 27 कृषि विज्ञान केन्द्रां ने वर्ष में दो बार उक्त बैठक आयोजित किए व 6 कृषि विज्ञान केन्द्रों ने उक्त बैठक वर्ष में एक बार आयोजित किये।

परियोजना एवं प्रकाशन

प्रतिवेदित वर्ष के दौरान, 7 संस्थागत अनुसंधान परियोजनाएं, 16 अनुसंधान प्रकाशन, 24 तकनीकी बुलेटिन, 2 पुस्तकें, 5 पुस्तक अध्याय, 6 तकनीकि प्रस्तुति विभिन्न कॉन्फ्रेंस/सेमीनार इत्यादि व 4 तकनीक प्रसार लेख प्रकाशित हुए।

एटिक वार्षिक प्रगति प्रतिवेदन

अटारी जबलपुर के अन्तर्गत 5 एटिक संस्थान हैं। वर्ष 2015–16 में 15653 कृषकों ने एटिक में भ्रमण किये, तकनीकी सूचनाएं 6951 कृषक लाभान्वित हुए। प्रकाशन के अन्तर्गत 21057 प्रकाशित प्रतियां विक्रय कर कुल 92,48,206 रुपये प्राप्त हुए।

पुरस्कार एवं सम्मान

कृषि विज्ञान केन्द्र, सरगुजा, छत्तीसगढ़ को सर्वश्रेष्ठ (जोनल) पुरस्कार से सम्मानित किया गया। कृषि विज्ञान केन्द्र, मुरैना, म.प्र. ने महिन्द्रा समृद्धि इण्डिया एग्री एवार्ड प्राप्त किया। संस्थान के वरिष्ठ वैज्ञानिक, डॉ. ए.पी. द्विवेदी ने प्रो. जयशंकर तेलंगाना स्टेट एग्रीकल्चर यूनिवर्सिटी पर आयोजित कार्यक्रम में आऊट स्टैंडिंग अचिवमेन्ट अवार्ड प्राप्त किया। संस्थान के ही वैज्ञानिक डॉ. प्रेमचंद ने यंग साइंटिस्ट अवार्ड प्राप्त किया।

कृषि विज्ञान केन्द्रों में आगन्तुको का आगमन

वर्ष 2015–16 जोन–7 के कृषि विज्ञान केन्द्रों में 2,20,147 आगन्तुकों का आगमन हुआ, जिसमें कुल 2,07,940 किसान, 10,734 अधिकारीगण एवं 1473 गणमान्य व्यक्ति शामिल है। राज्यवार आंकड़ो के अनुसार मध्यप्रदेश के कृषि विज्ञान केन्द्रों में सर्वाधिक संख्या 134525 (61.79 प्रतिशत), छत्तीसगढ़ में 46617 (21.41 प्रतिशत) एवं उड़ीसा में 39005 (16.79 प्रतिशत) रहा।

Executive Summary

ICAR-Agricultural Technology Application Research Institute, Zone VII has 100 KVKs located in three Indian states viz., Madhya Pradesh, Chhattisgarh and Odisha.

Technology Assessment through On-Farm Testing

During 2015-16, 1267 technologies were assessed in the Zone through 40025 On-Farm Trials. The highest number of technologies were assessed in the state of Madhya Pradesh (626) followed by Odisha (370) and Chhattisgarh (271). Out of total 1267 technologies assessed, 993 were on crops and remaining 276 technologies on enterprises.

Frontline Demonstrations

During 2015-16, 1164 FLDs were conducted on crops (oilseeds, pulses, cereals, vegetables crops, cash crops, agro-forestry, millets, etc.) covering the total area 7539.58 ha. benefiting 18359 farmers. FLDs were also conducted on important income generating enterprises, covering the 5352 units and 1193.71 ha area among 4128 beneficiaries.

Training and Capacity Building

During 2015-16 there was significant increase in the number of training and participants. In 7652 courses organised 2,18,050 participants (farmers and farm women, rural youth, extension personnel) and those sponsored from different agencies were benefitted. ICAR-ATARI, Jabalpur also organized 24 capacity building programmes in collaboration with ICAR institutes for technical upscaling of 1401 Subject Matter Specialists in the Zone.

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

KVKs of the Zone produced total 17156.57 q of seed and 66.79 lakhs planting material of different crops (cereals, pulses, oilseeds, vegetables), medicinal plants, fruits, etc. and distributed among farmers. Besides, this KVKs of the Zone also produced bio-products and livestock products at their farms.

Soil, Water and Plant Analysis

During 2015-16, 72439 soil samples and 630 water samples were analysed by KVKs of the Zone touching 91200 farmers of 3109 villages.

Extension Activities

A total of 1,19,740 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 21,23,621 farmers and extension personnel in the ICAR-ATARI, Zone-VII.

Technological backstopping

Technological backstopping were carried out through production of 238072 copies of technical literature, newsletters etc. of which 232985 were distributed among the farmers, in Panchayats as well as Line department officials.

Scientific Advisory Committee Meeting

In the Zone, total 150 Scientific Advisory Committee (SACs) meetings were conducted by KVKs. In MP, 22 KVKs SAC meeting was organized twice and once in 24 KVKs during 2015-16. In Chhattisgarh in 2 KVKs SAC was organized twice and once in 18 KVKs. In Odisha 27 KVKs organized SAC twice and once in 6 KVKs.

Project and Publication

During 2015-16, 7 Institute research projects were implemented by the scientists of ATARI, Jabalpur. They also published 16 research articles, 24 technical bulletins / manual, two books, five book chapters, four technical/ popular articles and made six presentations in different Conferences / Symposia / Seminars /other forums.

ATIC Progress

In the Zone, five ATICs are operational under ATARI, Jabalpur. In these ATICs there were 15653 footfalls during 2015-16. Technological information was provided to 6951 farmers. A total 210571 publications (print & electronic media) were sold and generated revenue of Rs. 92,48,206/-.

Awards and Recognitions

KVK Surguja (Chhattisgarh) was conferred with ICAR Best KVK Award 2014 (Zonal). Mahindra Samridhi India Agri-Award was conferred to KVK Morena (M.P.). Dr. A.P. Dwivedi, Senior Scientist, ATARI received Outstanding Achievement Award at PJTSAU, Hyderabad and Dr. Prem Chand, Scientist, ATARI, Jabalpur received Young Scientists Award.

Footfalls in KVKs

In the KVKs of Zone VII, there was 220147 footfalls (207940 farmers, 10734 officials and 1473 dignitaries/VIPs) during 2015-16. In Madhya Pradesh, it was 134525 (61.79%), in Chhattisgarh 46617 (21.41 %), and in Odisha 39005 (16.79%).

CONTENTS

01 INTRODUCTION

Zonal Coordinating Unit established on 11th September, 1979 at Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur campus Madhya Pradesh by ICAR was upgraded to Zonal Project Directorate (ZPD), Zone-VII in March 2009. The Directorate attained to states Institutional, when it ZPD was renamed as Agricultural Technology Application Research Institute (ATARI) in 2015. The Institute coordinates, monitors and evaluates the mandated activities of 100 KVKs spread across three Indian States- Madhya Pradesh, Chhattisgarh and Odisha.

Major activities of ATARI

- To formulate, implement, monitor and evaluate programmes organized by Krishi Vigyan Kendras
- To coordinate project related work of various agencies such as State Agricultural Universities (SAUs), ICAR institutes, Voluntary Agencies and Development Departments
- To serve as feedback point for research and extension systems
- To maintain liaison with research and extension institutions
- To 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 100 KVKs in the three states namely Madhya Pradesh, Chhattisgarh and Odisha, as mentioned below

Table 1.1: KVKs across the three state in the Zone VII

Name of State	No of Districts	No. of of KVKs under			
		SAU	NGO	ICAR	Total
Chhattisgarh	27	20	0	0	20
Madhya Pradesh	51	39	07	01	47
Odisha	30	31	0	02	33
Total	108	90	7	3	100

SAU - State Agricultural 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 the 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, great emphasis was given on the strengthening the physical and human infrastructure of KVKs. The name of the host institution managing the KVKs is given in Table 1.2.

Table 1.2: Institutional set-up for operational KVKs under ATARI, Zone VII.

Host Institution	No. of KVKs
A. Madhya Pradesh	**47**
Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur	20
Rajmata Vijyaraje Scindia Krishi Vishwa Vidyalaya, Gwalior	19
ICAR-Central Institute of Agricultural Engineering, Bhopal	1
Deen Dayal Research Institute, Chitrakut, Satna	1
Kasturba Gandhi National Memorial Trust, Indore	1
Lok Mata 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
Shri Malwa Mahila Vikas Samiti, Sironj, Vidisha (sub-judice)	1

Host Institution	No. of KVKs
B. Chhattisgarh	**20**
Indira Gandhi Agricultural University, Raipur	19
Chhattisgarh Kamdhenu Vishwa Vidyalaya, Durg	1
C. Odisha	**33**
Odisha University of Agricultural & Technology, Odisha	31
ICAR-National Rice Research Institute, Cuttack	1
ICAR-Central Institute of Freshwater Aquaculture, Bhubneswar	1

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 farmwomen 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 technology 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 day, Strategic campaign, Ex-trainees meet, etc.
- Seed and planting materials production for making available to the farmers.

Staff Position

KVKs have sanctioned staff strength of 16 members. The current staff position in KVKs of Zone-VII is given in Table 1.3. Around 66.81 per cent posts are filled while remaining 33.19 per cent are vacant. The percentage of vacant posts is comparatively higher in case technical and administrative category.

Table 1.3. Staff Position in KVKs under ATARI, Jabalpur

State	No. of KVK	PC (1)		SMS (6)		PA (3)		Admn. (6)		Total	
		Sanc.	Filled	Sanc.	Filled	Sanc.	Filled	Sanc.	Filled	Sanc.	Filled
MP	47	47	35	282	180	141	88	282	142	752	445
CG	20	20	11	120	105	60	44	120	75	320	235
Odisha	33	33	19	198	127	99	75	198	168	528	389
Total	**100**	**100**	**65**	**600**	**412**	**300**	**207**	**600**	**385**	**1600**	**1069**

Table 1.4: Budgetary information of KVKs and ICAR- ATARI, Zone VII (Rs. in lakh)

S. No.	State	Budget Estimate (Rs. in lakh)	Revised Estimate (Rs. in lakh)	Total Release/ Expenditure (Rs. in lakh)
1	Madhya Pradesh	4416.10	4403.27	4403.27
2	Chhattisgarh	1940.25	2248.85	2248.85
3	Odisha	3111.65	3147.88	3147.88
4.	ATARI, Zone VII	175.0	162.0	157.66
	Total	9643.0	9962.0	9957.66

Table 1.5: Status of infrastructure facilities in KVKs under Zone-VII

S. No.	State	No. of KVKs	Admn. Building			Trainees Hotel			Staff Quarters		
			Completed	In progress	NA	Completed	In progress	NA	Completed	In progress	NA
1	Madhya Pradesh	47	33	10	4	36	8	3	38	6	3
2	Chhattisgarh	20	15	0	5	10	0	10	6	0	14
3	Odisha	33	27	0	6	27	0	6	22	0	11
Total		**100**	**75**	**10**	**15**	**73**	**8**	**19**	**66**	**6**	**28**

Agro-climatic Zones (ACZ) in ATARI, Jabalpur

ATARI, Zone VII is having 108 rural districts under its jurisdiction, out of which 100 districts have been covered with KVKs. The coverage of KVKs under different agro-climatic zones is as given below.

Table 1.6: Agro-climatic Zones in ATARI, Jabalpur

State	Agroclimatic Zones (ACZ)	KVKs	No. of KVKs
M.P.	Chhattisgarh Plain	Balaghat	01
	North Hills of Chhattisgarh	Shahdol, Umaria, Dindori , Mandla	04
	Bundelkhand Region	Datia, Tikamgarh, Chattarpur	03
	Gird Zone	Guna, Gwalior, Morena, Ashoknagar, Shivpuri, Sheopur, Bhind	07
	Kymore Plateau and Satpura Hills	Satna, Sidhi, Seoni, Jabalpur, Katni, Panna, Rewa	07
	Jhabua Hills	Jhabua	01
	Malwa Plateau	Indore, Dhar, Dewas, Shajapur, Ujjain, Mandsaur, Ratlam, Rajgarh, Neemach	09
	Nimar Valley	Khandwa, Khargone, Badwani, Burhanpur	04
	Satpura Plateau	Chhindwara, Betul	02
	Vindhya Plateau	Sehore, Bhopal, Raisen, Sagar, Damoh, Vidisha	06
	Central Narmada Valley	Narsinghpur, Hoshangabad, Harda	03
Total	**11 ACZs**		**47**
CG	Chhattisgarh Plain	Bilaspur, Durg, Raipur, Raipur-II, Raigarh, Dhamtari, Janjgir-Champa, Mahasamund, Korba, Kanker, Rajnandgaon, Kabirdham	12
	North Hills of Chhattisgarh	Surguja, Jashpur, Korea, Surguja-II	04
	Bastar Plateau	Bastar, Dantewada, Bijapur, Narayanpur	04
Total	**3 ACZs**		**20**

State	Agroclimatic Zones (ACZ)	KVKs	No. of KVKs
Odisha	East and South Eastern Coastal Plain	Cuttack, Jagatsinghpur, Kendrapara, Khurda, Nayagarh, Puri	06
	Eastern Ghat High Land	Koraput, Navarangpur	02
	Mid Central Table Land Zone	Angul, Dhenkanal	02
	North Central Plateau	Keonjhar, Mayurbhanj, Mayurbhanj-II	03
	North Eastern Coastal Plain	Balasore, Jajpur,Bhadrak	03
	North Eastern Ghat	Ganjam, Ganjam-II, Kandhamal, Gajapati, Rayagada	05
	North Western Plateau Zone	Sundergarh, Sundergarh-II, Deogarh	03
	West Undulating Zone	Kalahandi, Nuapada	02
	Western Central Table Land Zone	Bargarh, Jharsuguda, Sambalpur, Boudh Sonepur, Bolangir	06
	South Easterm Ghat	Malkangiri	01
Grand Total		**10 ACZs**	**33**

Thrust Areas of the KVKs under ATARI, Jabalpur

Seven broad thrust areas identified for the KVKs under ATARI are -

- Sustainable production system through location-specific assessment and demonstrations of technology.
- Resource conservation through watershed management, soil and water conservation as well as farm mechanization.
- Development and promotion of crop, enterprise diversification and alternate land use system.
- Integrated pest and disease management.
- Promotion of rural entrepreneurship (livestock, goatery, poultry, fishery, mushroom, etc. by production, processing, value addition and marketing) for additional income.
- Empowerment of farmwomen and youth through income generating activities and drudgery reduction.
- Alternate livelihood support system in rural sector for marginal farmers, landless labourers and farmwomen to check migration.

02 TECHNOLOGY ASSESSMENT THROUGH ON-FARM TESTING

The claimed superiority of location and specific technologies were tested by KVKs through On-Farm Testing (OFTs) and the numbers of technologies tested as well as trials are given in below mentioned tables. Technologies to the tune of 1267 were tested in the Zone through 40025 different trials (Table 2.1). The highest number of technologies were tested in the state of Madhya Pradesh (626) followed by Odisha (370) and Chhattisgarh (271). Of the 1267 technologies assessed 993 were on crops whereas remaining 276 technologies were on enterprises. In crops (cereals, pulses, oilseeds and vegetables) major focus has been on testing of location specific technologies. The focus on 'more crop per drop' through *in situ* moisture conservation, drip irrigation and plastic mulching in vegetables, soil test based nutrient management etc. Among enterprises, Fish production and management, Farm mechanization, Animal husbandry, Poultry production and management were the focus areas.

Table 2.1: State-wise overall technology assessed during 2015-16

State	No. of	
	Technology Assessed	Trials
Chhattisgarh	271	1447
Madhya Pradesh	626	34766
Odisha	370	3812
Total	**1267**	**40025**

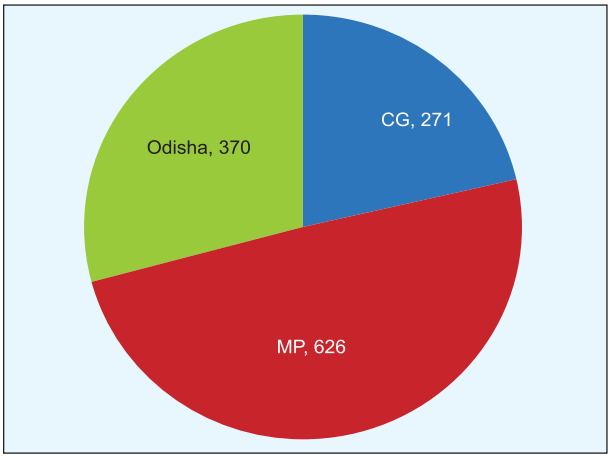


Figure-1: State-wise overall technology assessed during 2015-16

Table 2.2: Crop wise OFTs conducted during 2015-16

Crop Category	No. of							
	Technology Assessed				Trials			
	MP	CG	Odisha	Total	MP	CG	Odisha	Total
Cereals	139	72	82	293	1325	320	770	2415
Oilseeds	112	22	30	164	915	112	286	1313
Pulses	91	21	21	133	855	100	215	1170
Vegetables	87	60	117	264	710	260	1104	2074
Spices	44	3	5	52	367	13	40	420
Fruits	14		21	35	100		173	273
Flowers	4		2	6	32		20	52
Intercropping	3	6	10	19	17	34	51	102
Sugarcane	3		1	4	17		7	24
Medicinal	2	2		4	10	6		16

Crop Category	No. of							
	Technology Assessed				Trials			
	MP	CG	Odisha	Total	MP	CG	Odisha	Total
Fibres	2		2	4	20		14	34
Millets	2			2	15			15
Cereal (cob)	2			2	10			10
Agro Forestry	1	3	5	9	17	13	29	59
Fodder	1		1	2	13		10	23
Total	**507**	**189**	**297**	**993**	**4423**	**858**	**2719**	**8000**

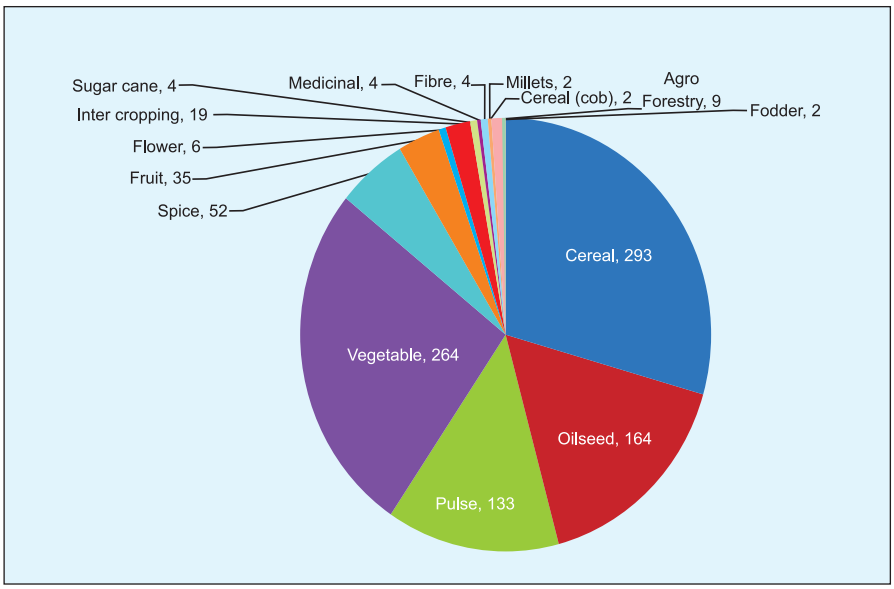


Figure-2 : Crop wise OFTs conducted during 2015-16

Table 2.3: Thematic area wise OFTs conducted on crops during 2015-16

Thematic Area	No. of Technology Assessed				No. of Trials			
	MP	CG	Odisha	Total	MP	CG	Odisha	Total
Agro Forestry	-	-	5	5	-	-	29	29
Crop Diversification	3		3	6	29		23	52
Farm Mechanization	11	1	12	24	84	5	148	237
Feed & Fodder Production	1		1	2	13		10	23
Integrated Crop Management	58	18	26	102	613	90	198	901
Integrated Disease Management	50	30	30	110	415	134	291	840
Integrated Farming System	5	6	2	13	39	36	8	83
Integrated Nutrient Management	89	32	62	183	697	149	592	1438
Integrated Pest Management	57	27	43	127	465	113	427	1005
Integrated Plant Nutrient Management	11	16	3	30	96	67	39	202
Integrated Weed Management	63	20	21	104	522	96	182	800
Resource Conservation Technology	45	10	8	63	525	45	73	643
Soil Fertility Management			5	5			39	39
Value Addition	1			1	5			5
Varietal Evaluation	111	29	76	216	901	123	660	1684
Total	**505**	**189**	**297**	**991**	**4404**	**858**	**2719**	**7981**

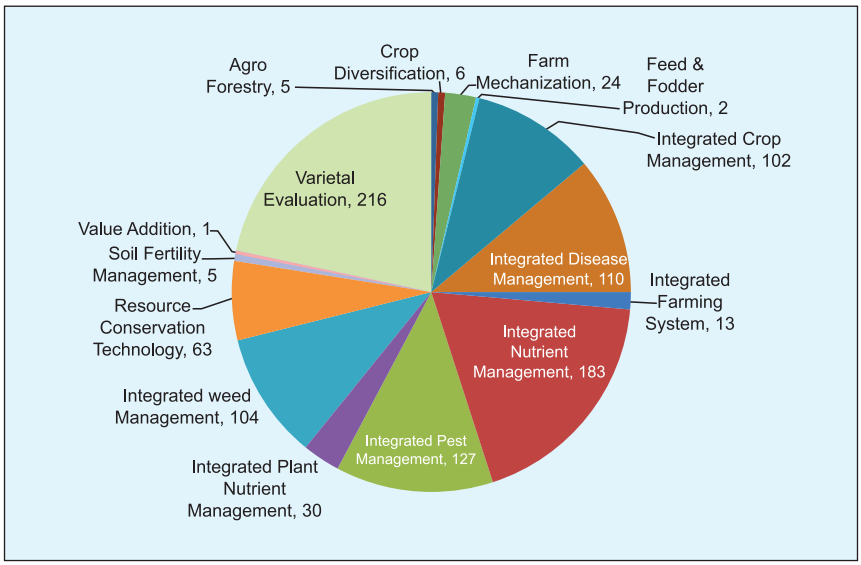


Figure- 3: Thematic area wise OFTs conducted on crops during 2015-16

Table 2.4: Thematic area wise number of technologies assessed on enterprises during 2015-16

Thematic Area	No. of							
	Technology Assessed				Trials			
	MP	CG	Odisha	Total	MP	CG	Odisha	Total
Agriculture Marketing	14		6	20	152		175	327
Animal Disease Management	11	5	4	20	94	38	52	184
Animal Nutrition Management	23		8	31	317		94	411
Breed Evaluation	2	1	6	9	40	5	153	198
Capacity Building Dynamics	2			2	140			140
Dairy Management	4			4	30			30
Drudgery Reduction	3			3	32			32
Farm Mechanization	4	22		26	20	100		120
Feed & Fodder Production	12	3	4	19	100	13	64	177
Fish Production & Management	5	14	23	42	22	56	150	228
Goat Management	1	3		4	5	39		44
Income Generation	1	9		10	10	42		52
Information Communication Technology	26	3	8	37	29281	104	238	29623
Livestock Production and Management	7	7	11	25	68	117	139	324
Malnutrition in Farm women & children	1	1		2	10	5		15
Post Harvest Management			1	1			13	13
Poultry production and management	4	11		15	28	57		85
Resource Conservation Technology			1	1			5	5
Soil Fertility Management	1	2		3	13	10		23
Storage loss minimization technique		1	1	2		3	10	13
Total	**121**	**82**	**73**	**276**	**30362**	**589**	**1093**	**32044**

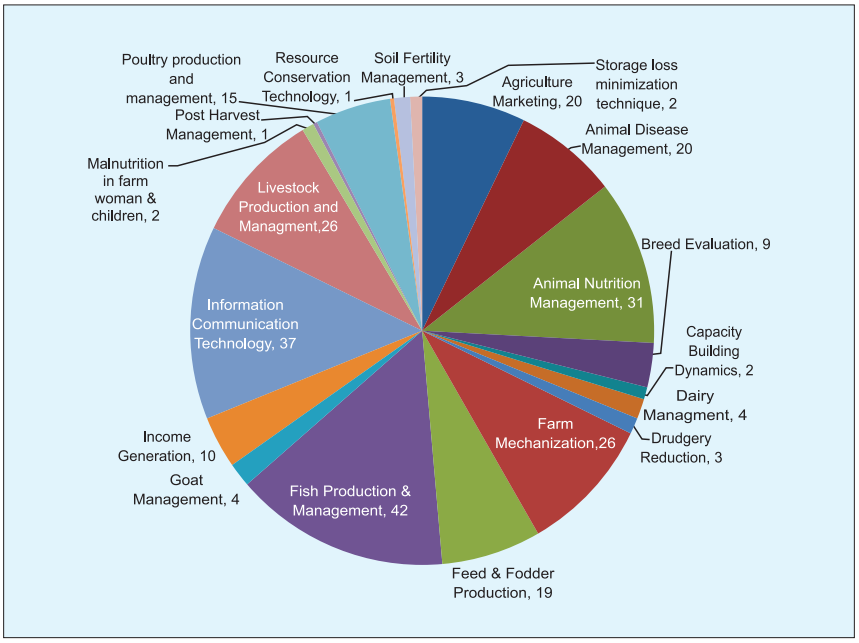


Figure- 4: Thematic area wise number of technologies assessed on enterprises during 2015-16

Technology Assessed for Major Crops/Enterprises

2.5. SOYBEAN

Soybean is an important oilseed crop in India with coverage of 10.91 million ha area. It is important kharif crop of Madhya Pradesh occupying highest acreage of 5.57 million ha. with an average productivity of 1139.0 kg/ha as against 951.0 kg/ha at national level in 2014-15.

Assessment of recent varieties in Soybean

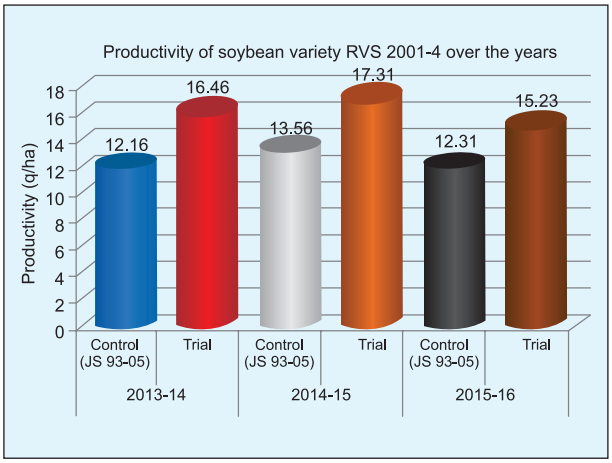
Problem identified: Low yield of soybean due to use of old variety

Technology Assessed: Assessment of soybean variety RVS-2001-4

KVK Dewas, Neemuch, Ratlam and Shajapur conduced 27 OFTs to assess the performance of soybean variety RVS-2001-4. The results of the assessment revealed that the variety gave 23.72 per cent higher yield over the old varieties JS 95-60/JS 93-05. The mean pods per plant also increased by 36.36 per cent. The economic analysis revealed that the net return was Rs 10,704 per ha additional with this variety along with 0.16 higher BC ratio. This variety is noticeably adopted by the farmers in the western district of Madhya Pradesh.

Table 2.5: Performance of soybean variety RVS-2001-4

Details	No. of trials	No. of pods/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Soybean variety JS 95-60/ JS 93-05 (Farmers' practice) T_1	27	22	12.31	22087	2.41
Soybean variety RVS-2001-4 (Recommended practice) T_2		30	15.23	32791	2.57



Soybean variety RVS-2001-4 in farmer field

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

Technology Assessed: Assessment of soybean variety JS 20-34

KVK Shajapur and Ujjain conduced 10 OFTs to assess the performance of soybean variety JS 20-34. The results of the assessment revealed that the variety gave 9.44 per cent higher yield over the old varieties JS 95-60/JS 93-05. The pods per plant also increased by 17.65 per cent. The net return and B:C ratio per ha. were Rs. 2,612 and 0.17 higher respectively then the farmers practice. This variety has been adopted by the farmers in the soybean growing districts of Madhya Pradesh.

Table 2.6: Performance of Soybean variety JS 20-34

Details	No. of trials	No. of pods/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Soybean variety JS 95-60/ JS 93-05 (Farmers' practices) T_1	10	17	9.85	18674	1.92
Soybean variety JS 20-34 (Recommended practice) T_2		20	10.78	21286	2.09

Soybean variety JS 20-34 in farmer field

Integrated Nutrient Management in Soybean

Sulphur Management in Soybean

Problem identified: Low yield of soybean due to sulphur deficiency

Technology Assessed: Assessment of response of sulphur in soybean

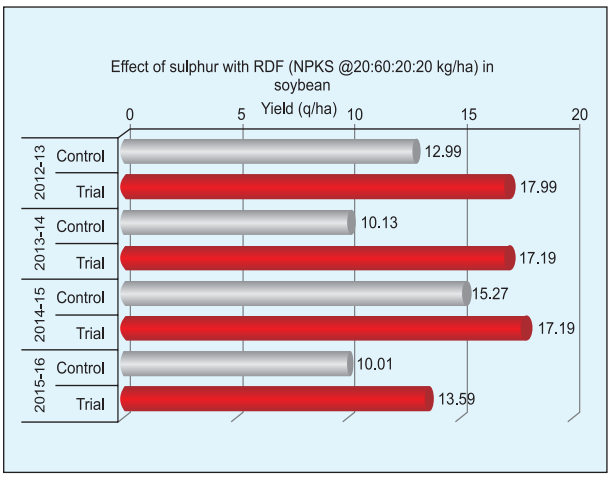
Soybean is an important *Kharif* oilseed crop grown in majority of areas covered by black soil. Imbalanced/indiscriminate use of major plant nutrients, no use of secondary and micronutrients

are the major reasons for declining yield of soybean. Farmers are not using the sulphur containing fertilizers; hence, the status of this nutrient is decreasing in the soil, affecting the crop yield. Sulphur is responsible for synthesis of amino acids and fatty acids which in turn increase the oil content in oilseeds. Looking to the above problem, KVKs of Bhatapara, Dhar, Khandwa, Neemuch, Rajgarh, Ratlam, Sagar and Shahdol of the Zone planned and conducted 91 OFTs to assess the response of sulphur and applied this nutrient @ 20 kg/ha through bentonite sulphur on soil test basis in soybean. The results revealed that the seed yield was 35.71 per cent higher over the farmers' practice (T_1) and 16.18 per cent higher over T_2 (100% NPK and 20 kg S/ha without FYM). The number of pods per plant were also increased by 38.23 and 17.96 per cent respectively over T_1 and T_2 with the assessed technology. Similarly the net return and BC ratio were also found to be higher by Rs. 10,578 and 0.42 over farmer's practice with the assessed technology. On the basis of the above findings it may be concluded that the technology in T_3 is effective as it increases the crop yield and maintains the soil health and fertility.

Table 2.7: Response of sulphur in soybean

Details	No. of trials	No. of pods/ plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
NPKS @ 13:35:0:0 kg/ha (Farmers' practice-T_1)	91	21	10.01	16704	1.63
Rhizobium & PSB @ 5 g/kg as seed inoculation + 100% NPK @ 20:60:40 kg/ha and Sulphur @ 20 kg/ha (T_2)		25	11.70	22466	1.88
FYM (3 t/ha) + Rhizobium & PSB @ 5 g/kg as seed inoculation + 75% NPK @ 20:60:40 kg/ha and Sulphur @ 20 kg/ha (T_3)		29	13.59	27282	2.05

Response of sulphur in soybean



Integrated Pest Management in Soybean

Integrated Management of Girdle beetle in Soybean

Problem Identified: Low yield of Soybean due to heavy infestation of Girdle beetle

Technology Assessed: Assessment of IPM module for management girdle beetle in soybean

Girdle beetle infestation in soybean is a major problem which affects the crop severely, if not managed in time effectively it results in low crop yield. Farmers generally use insecticides with herbicide in combination which works better in weed control not for girdle beetle. Looking the above problem, KVKs of Jhabua, Neemuch, Raisen, Ratlam and Sagar from Madhya Pradesh conducted 37 OFTs for assessing the management of girdle beetle in soybean. The result of these OFTs revealed that the yield increased by 37.19 and 5.18 per cent in the assessed insecticidal treatment (spray of Thiacloprid 21.7 SC @ 750 ml/ha at 25-30 DAS) over farmer's practice (spray of Imazathypre 750 ml + Trizophos 40 EC @ 500 ml/ha at 20-25 DAS-T_1) and spray of Imazathypre + Ranaxypyre 20 SC @100 ml/ha at 20-25 DAS (T_2) respectively. The insect population per plant reduced to 88.63 and 82.56 per cent in the assessed technology over T_1 and T_2 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 2.8: Performance of Integrated management of girdle beetle in soybean

Details	No. of trials	Insect population/ plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Spray of Imazathypre 750 ml + Trizophos 40 EC @ 500 ml/ha at 20-25 DAS (Farmer's practices-T_1)	37	17	7.90	9329	1.59
Spray of Imazathypre + Ranaxypyre 20 SC @100 ml/ha at 20-25 DAS (T_2)		11	10.30	19780	2.14
Spray of Thiacloprid 21.7 SC @ 750 ml/ha at 25-30 DAS (T_3)		2	10.84	21014	2.30

Integrated management of girdle beetle in soybean

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 for management of white fly (vector of YMV) in Soybean.

Yellow vein mosaic virus disease of soybean. White fly is the vector of YMV causes up to 50 percent yield loss due to use of susceptible varieties and non adoption of suitable integrated disease management modules for YMV management. KVKs of Burhanpur, Panna and Umaria from Madhya Pradesh have conducted 26 OFTs on YMV 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 20 DAS T_3)was assessed for YMV management followed by Seed treatment with Imidacloprid 48% + Imidacloprid 17.8% SL @ 100ml/ha 20DAS (T_2). The result of the OFTs revealed that the soybean yield increased by 64.99 and 17.38 percent over T_1 and T_2 respectively. Similarly, disease incidence decreased by 96.28 and 36.13 percent over T_1 and T_2 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 2.9: Performance of IPM module for management YMV in Soybean

Details	No. of trials	Disease incidence (%)	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Sowing without seed treatment by insecticide (Farmer's practice-T_1)	26	46.41	4.98	(-)4833	0.46
Seed treatment with Imidacloprid 48% + Imidacloprid 17.8% SL @ 100ml/ha 20DAS (T_2)		2.70	7.00	1417	1.09
Seed treatment with thiamethoxam 70% WS 3g/kg seed + Spray of thiamethoxam 25% WG @100g/ha 20 DAS (T_3)		1.73	8.22	3762	1.09

Yellow vein mosaic disease free Soybean crop

Resource Conservation Technology in Soybean

Problem identified: Low yield due to poor rainwater management in Soybean

Technology Assessed: Assessment of Furrow Irrigated Raised Bed (FIRB) sowing system for rainwater management in Soybean

Excess rainfall results in water logging in the flat bed soybean fields which adversely affects the germination and growth of the crop. KVKs of Datia, Guna, Panna, Sheopur and Ujjain assessed Furrow Irrigated Raised Bed (FIRB) seed drill and Broad Bed Furrow (BBF) sowing system by BBF planter in soybean as compared to the normal sowing (sowing in furrows on flat bed). In the FIRB sowing system one row of soybean is sown on the raised bed followed by a furrow and in Broad Bed Furrow (BBF) sowing system, four lines of soybean is sown on the raised beds. The furrow after beds made for rainwater management with a depth of 3-6 inches works to conserve rain water within the field and to safe discharge of excess water. It enhances the moisture regime in the root zone in adverse conditions of rainfall. Results of the conducted 43 OFTs showed that the FIRB system of sowing enhanced the yield by 33.74 and 2.62 percent over farmer's practice (T_1) and BBF (T_2) respectively. Similarly, the increase in number of pods per plant was observed by 64.14 and 7.44 per cent over farmer's practice (T_1) and BBF (T_2), respectively. The net return and BC ratio were Rs. 9,702 and 0.65 higher with the assessed technology over farmer's practice.

Table 2.10: Performance of FIRB sowing system in soybean

Details	No. of trials	No. of Pod/ plant	Yield (q/ha)	Net return (Rs/ ha)	B:C Ratio
Sowing in furrows at flat bed (Farmers practice-T_1)	43	26	9.62	16029	1.78
Sowing of soybean on raised bed by Broad Bed Furrow (BBF) planter (T_2)		40	12.54	17294	2.34
Sowing of soybean on raised bed by Furrow Irrigated Raised Bed (FIRB) seed drill (T_3)		43	12.87	25732	2.43

Soybean under FIRB system

Traditionally sown soybean

2.6. RICE

Rice is an important staple food in India with coverage of 44.11 million ha area. It is an important crop in Odisha and cultivated throughout the year i.e. autumn, winter, kharif and summer with acreage of 4.16 mha including *kharif* total (3.86 mha) and summer (0.30 mha) with an average productivity of 1992 kg/ha (including 1886 kg/ha in kharif and 3342 kg/ha in summer). In Chhattisgarh, rice cultivated in *kharif* which covers 3.80 mha area with an average productivity of 1660 kg/ha. In Madhya Pradesh, rice crop has an acreage of 2.15 mha with average productivity of 1684.0 kg/ha as against 2391 kg/ha at national level in 2014-15.

Varietal Assessment in Rice

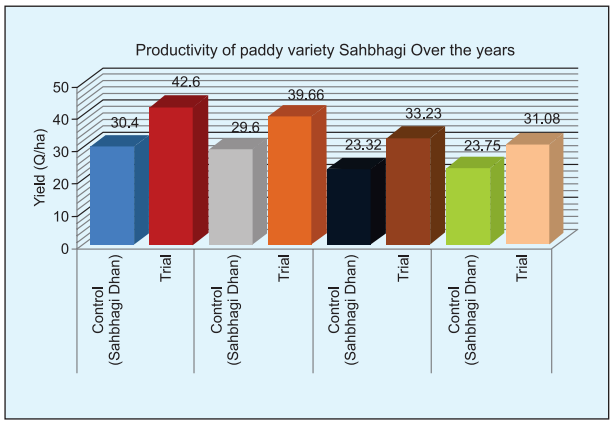
Problem identified: Low yield due to use of medium duration rice variety due to moisture stress during dry spell in rainfed condition

Technology Assessed: Assessment of improved variety Sahbhagi of rice

Use of of appropriate varieties for rainfed upland situations is most important among the various factors responsible for low productivity of rice at farmers' field. With the use of improved early and draught tolerant variety, the productivity of the crop can be increased. Keeping this in view, KVKs of Boudh, Dindori, Ganjam-I, Ganjam-II, Kandhamal, Malkangiri, Mandla and Rayagada of the Zone planned and conducted 57 OFTs to assess the performance of the improved early and draught tolerant rice variety Sahbhagi. The results showed that the yield of this variety was 30.86 and 19.57 per cent higher over the farmers' practice (T_1) and T_2 respectively. The number of effective tillers/hill was recorded higher by 76.48 and 15.26 per cent over T_1 and T_2 respectively. The net return and BC ratio were found Rs 7,946 per ha and 0.39 additional with this variety as compared to the farmers practice respectively. The variety gave very good performance in rain fed situation.

Table 2.11: Performance of improved rice variety Sahbhagi

Details	No. of trials	No. of effective tiller/hill	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Medium duration rice varieties under rainfed situation-IR 36/IR 64 (Farmers' practice-T_1)	57	12	23.75	12220	1.81
Early rice varieties- JR 201/Khandagiri (T_2)		19	28.40	18907	1.97
Improved early and draught tolerant rice variety Sahbhagi (T_3)		22	31.08	20166	2.20



Drought tolerant Rice variety Sahabhagi

Integrated Nutrient Management

Management of zinc in rice

Problem identified: Low yield of rice due to zinc deficiency

Technology Assessed: Assessment of response of zinc in rice

Zinc is an important essential micronutrient which acts sometime as secondary element especially in few crops like rice, soybean etc. It activates various hormonal and enzymatic activities in plants responsible for growth and development. Rice is an important crop grown in low and midlands in all the states of the Zone. Imbalanced/indiscriminate use of fertilizers and no use of zinc are the major reasons for declining yield of rice. Due to no use of zinc containing fertilizers, the status of this nutrient is decreasing in the soil which is affecting the crop yield to the greater extent. Looking the above problem, KVKs of Cuttack, Deogarh, Kanker, Narayanpur and Rewa of the Zone conducted 32 OFTs to assess the response of zinc. Zinc @ 5 kg/ha was applied through zinc sulphate on soil test basis. The results showed that the seed yield was 18.6 per cent higher over the farmers' practice. The number of tillers/hill also increased by 25.33 per cent over farmer's practice with the assessed technology. Similarly the net return and BC ratio were also found to be higher by Rs. 7,019 and 0.13 units over farmer's practice with the assessed technology. On the basis of the above findings it may be concluded that the technology is effective as it increases the crop yield and maintains the soil fertility.

Table 2.12: Response of zinc in rice

Details	No. of trials	No. of tillers/ hill	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
NPKZn @ 32:35:0:0 kg/ha (Farmers' practice-T_1)	32	26	33.38	19312	2.11
NPK @ 80:40:30 kg/ha and Zn @ 5 kg/ ha (Recommended practice-T_2)		32	39.59	26331	2.24

Effect of zinc on rice

Nitrogen Management in rice

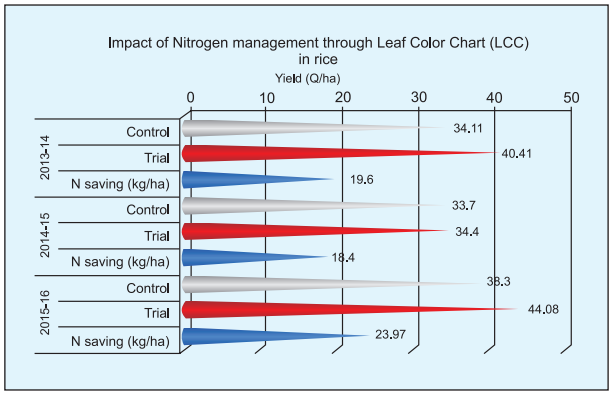
Problem identified: Low yield of rice due to indiscriminate use of Nitrogenous fertilizers

Technology Assessed: Assessment of Leaf Colour Chart (LCC) for management of nitrogen in rice

Several factors are responsible for low yield of rice; but imbalanced/indiscriminate use of nitrogenous fertilizer is one of the major reasons for declining seed yield. In general, farmers do not use the balanced and timely fertilizer application for N; hence, nitrogen losses occur frequently in the soil. Keeping above problem on the priority, KVKs of Bhatapara, Cuttack, Janjgir Champa, Kendrapara, Malkangiri and Sonepur of the Zone conducted 54 OFTs to assess LCC for nitrogen management in rice. The results revealed that the crop yield was 15.08 per cent higher over the farmers' practice. The number of effective tillers per plant was also higher by 21.43 percent in the assessed technology. The technology for nitrogen management through LCC saved 23.97 kg nitrogen per ha. The net return and BC ratio were also found to be higher by Rs. 6,421 and 0.36 with this technology. The technology is effective as it increases the crop yield, saves the fertilizer nutrient, minimizes the N losses and maintains the soil health as well as soil fertility.

Table 2.13: Leaf colour chart (LCC) for nitrogen management for rice production

Details	No. of trials	No. of effective tillers/hill	Yield (q/ha)	Nitrogen saving (kg/ha)	Net Return (Rs/ha)	B:C Ratio
Nitrogen application as per traditional method (Farmers' practice-T_1)	54	20	38.30	0	23544	1.52
Nitrogen management through LCC (Recommended practice- T_2)		25	44.08	23.97	29964	1.88



Scientist interaction with rice farmers for Nitrogen management through leaf colour chart (LCC)

Integrated Disease Management

Sheath Blight Management in rice

Problem Identified: Low yield of rice due to high incidence of sheath blight disease

Technology Assessed: Assesment of hexaconozole for sheath blight management in rice

Rice is the major cereal crop which is widely grown in India. Incidence of sheath blight severely damages the rice crop which results in low crop yield. KVKs of Ashoknagar, Balasore, Bilaspur, Katni, Kendrapara and Nayagarh conducted 46 OFTs on sheath blight management in rice. Spray of Hexaconozole @ 1 lit/ha 50-60 DAT (T_3) and Pseudomonas spp. @ 1.5 kg/ha 50-60 DAT (T_2) were assessed for sheath blight management. The results of OFTs revealed that the yield increased by 42.71 and 13.29 per cent over T_1 and T_2 respectively. Sheath blight incidence decreased by 89.34 and 6.35 per cent over T_1 and T_2 respectively. The net return and BC ratio increased by Rs. 10,921 per ha and 0.23 respectively over farmer's practice. The fungicide used under T_2 also worked better in lowering the disease incidence over farmer's practice.

Table 2.14: Performance of hexaconozole for sheath blight management in rice

Details	No.of trials	Disease incidence (%)	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Indiscriminate use of any fungicide after severe infestation (Farmer's practice-T_1)	46	25.8	32.58	25238	1.88
Spray of Pseudomonas spp. @ 1.5 kg/ha 50-60 DAT (T_2)		7.45	41.04	31239	2.03
Spray of Hexaconozole @ 1 lit/ha 50-60 DAT (T_3)		2.75	46.50	36159	2.11

Sheath blight management in rice

Farmers practice

Integrated Crop Management in Rice

Problem identified: Low yield of rice due to dense transplantation of older nursery of long duration rice varieties

Technology Assessed: Assessment of system of rice intensification with improved varieties

Among the various factors responsible for low productivity of rice at farmers' field, traditional transplanting techniques and use of seeds of old/ unidentified varieties are important factor. Use of improved variety with system of rice intensification (SRI) with 12 days old of nursery, the productivity of the crop can be increased. In view of above problems, KVKs of Chhindwara, Dindori, Hoshangabad, Panna, Sagar and Umaria of the Zone conducted 96 OFTs to assess SRI with improved varieties (MTU 1010 and Swarna). The results revealed that the crop yield under the assessed technology (SRI-transplanting of 12 days old nursery @ one seedling/ hill at 25x25 cm with improved varieties MTU 1010 and Swarna) was 73.01 and 13.63 per cent higher over the farmers' practice (T_1) and SRI-transplanting of 14 days old nursery @ one seedling/hill at 20x20 cm (T_2) with improved varieties MTU 1010 and Swarna (T_2) respectively. The effective tillers/hill also increased by 59.04 and 6.75 per cent over T_1 and T_2 respectively. Similarly the net return and B:C ratio was also found to be higher by Rs. 25933 per ha and 1.37 units with the assessed technology (T_3) technology over farmer's practice. These findings indicate that the assessed technology is effective as it increases the crop yield and the net return per unit area followed by the technology under T_2 which also performed better over farmer's practice.

Table 2.15: Performance of improved rice varieties under SRI

Details	No. of trials	Effective tillers/hill	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Traditional transplanting (30-35 days old nursery @ 4-5 seedling/hill) with use of old/unidentified varieties (Farmers' practice-T_1)	96	9.45	27.67	21185	2.07
System of rice intensification (transplanting of 14 days old nursery @ one seedling/hill at 20x20 cm) with improved varieties MTU 1010 and Swarna (T_2)		14.08	42.13	41383	2.83
System of rice intensification (transplanting of 12 days old nursery @ one seedling/hill at 25x25 cm) with improved variety MTU 1010 and Swarna (T_3)		15.03	47.87	47118	3.44

Improved variety MTU-1010 under SRI

Integrated Plant Nutrient Management in Rice

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

Technology Assessed: Assessment of STCR based IPNM in Rice

Productivity of transplanted rice in the region is affected by several factors like non-adoption of package of practices, poor crop management and imbalanced/inadequate uses of NPK fertilizers. Balance dose of NPK fertilizers even dose not serve the purpose to get the desired yield, when the soils have very low in nutrients. Looking the above problem, KVKs of Balrampur, Bijapur, Durg, Ganjam-II, Jashpur and Korba of the Zone conducted 34 OFTs to assess the Soil Test Crop Response (STCR) base IPNM setting the target yield of 45 q/ha. The NPK doses were calculated by STCR equation and accordingly the fertilizers were applied to supply the nutrients to crop as per requirement. The results revealed that the crop yield was 26.11 per cent higher over the farmers' practice. The number of effective tillers per hill was also increased by 22.64 per cent. Similarly the net return and BC ratio were also found to be higher by Rs. 8,683 and 0.28 with the assessed technology. The technology is effective as it serves the purpose in getting the targeted yield as the yield under trials was slightly less (<10 per cent) from the target. Simultaneously the technology also helped in maintaining the soil health and fertility.

Table 2.16: Performance of STCR based IPNM increasing rice productivity

Details	No. of trials	No. of effective tillers/hill	Yield (q/ha)	Net Return (Rs/ ha)	B:C Ratio
NPK @ 41:46:0 kg/ha (Farmers' practice-T_1)	34	11	32.48	19788	1.91
NPK as per STCR equation (target yield 45 q/ha) (Recommended practice- T_2)		13	40.96	28470	2.20

Rice under STCR based IPNM

Weed Management in Rice

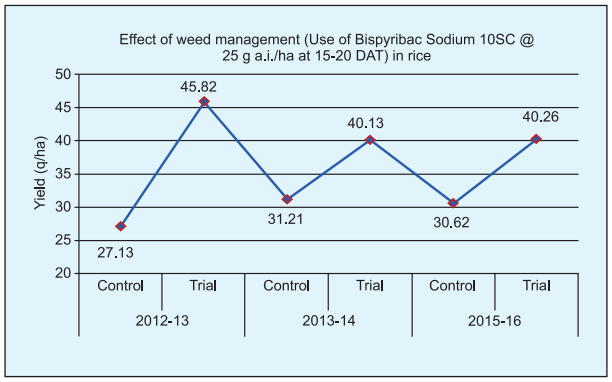
Problem identified: Low yield of Rice due to heavy weed infestation

Technology Assessed: Assessment of Bispyribac sodium for weed management in Rice

Infestation of narrow and broad leaved grassy weeds reduce yield of rice up to 35-40 percent. Farmers are either not using herbicide for weed management timely or applying pre-emergence herbicides; hence the crop yield is adversely affected due to high weed infestation. Looking the above problem, KVKs of Angul, Ganjam-I, Ganjam-II, Gwalior, Korea, Rayagada, Satna and Sidhi of the Zone conducted 64 OFTs to assess the response of Bispyribac sodium 10 SC for weed management in rice. The results revealed that the yield under the assessed herbicide was 31.48 and 2.94 per cent higher over T_1 (farmers' practice) and T_2 (Use of Bensulfuron Methyl - 0.6% + Pretilachlor - 6% @ 660 g/ha at 3 DAT) respectively. The number of weeds per m2 reduced by 66.64 and 52.55 per cent over T_1 and T_2 respectively. Similarly the net return and BC ratio were also found to be higher by Rs. 9,268 and 0.38 with the assessed herbicide (Bispyribac sodium) over farmer's practice followed by the herbicide used in T_2 which also performed well in control of weeds over farmer's practice.

Table 2.17: Performance of Bispyribac sodium for weed management in Rice

Details	No. of trials	No. of weeds/ m2	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
No weed control/ use of Butachlor @ 1.5 kg/ha (Farmers' practice-T_1)	64	71.13	30.62	21070	1.99
Use of Bensulfuron methyl (0.6%) + Pretilachlor (6%) @ 660 g/ha at 3 DAT (T_2)		49.38	39.11	27321	2.22
Use of Bispyribac sodium 10 SC - 25 g a.i./ha at 15-20 DAT(T_3)		23.43	40.26	30338	2.37



Weed management in rice by Bispyribac sodium

2.7. WHEAT

Wheat is an important staple food in India after rice with coverage of 31.46 million ha area. In Madhya Pradesh, it is an important rabi crop having acreage of 6.00 mha with an average productivity of 2850 kg/ha as against 2750 kg/ha at national level in 2014-15. Chhattisgarh state with limited wheat area of 0.097 mha (97500 ha) have an average productivity of 1388 kg/ha. In Odisha, wheat crop occupies 400 ha. and the productivity 1650 kg/ha.

Varietal assessment in Wheat

Problem identified: Low yield of wheat due to use of old variety- Lok 1

Technology Assessed: Assessment of improved variety of wheat HI 8713 (Pusa Mangal) in irrigated condition

Among the various factors responsible for low productivity of wheat at farmers' field, use of local/ old varieties is one of the most important factors. Use of improved varieties, the productivity of the crop can be increased. Keeping this in view, KVKs of Indore, Khargone, Sehore and Shajapur of the Zone conducted 32 OFTs to assess the performance of the improved varieties HI 8663 (Malwa Shakti)-T_2 and HI 8713 (Pusa Mangal)-T_3 of wheat. The results revealed that the yield of HI 8713 variety was 22.55 and 9.30 per cent higher over the farmers' old variety (T_1) and HI 8663 (T_2) respectively. The number of effective tillers per plant was higher by 33.91 and 9.30 per cent over T_1 and T_2 respectively. The net return and BC ratio were found Rs 12,794 per ha and 0.48 additional with this variety as compared to the farmers variety, respectively. The variety performed better in irrigated condition followed by HI 8663 which also performed better over farmer's practice.

Table 2.18: Performance of improved wheat variety HI 8713 (Pusa Mangal)

Details	No. of trials	No. of effective tiller/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Wheat old variety i.e. Lok 1 (Farmers' practice-T_1)	32	14.83	38.44	36729	2.55
Improved wheat variety HI 8663(Malwa Shakti) - T_2		18.17	43.10	44016	2.85
Improved wheat variety HI 8713 (Pusa Mangal) - T_3		19.86	47.11	49522	3.03

Wheat variety HI 8713 (Pusa Mangal) in farmer's fields

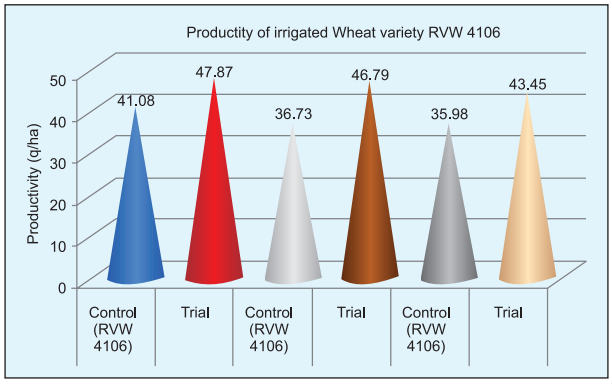
Problem identified: Low yield of wheat due to use of old varieties

Technology Assessed: Assessment of improved variety of wheat RVW 4106 in irrigated condition

Use of seeds of local/ old varieties is one of the most important factors responsible for low productivity of wheat. Use of improved variety, the productivity of the crop can be increased. Keeping this in view, KVKs of Bhind, Burhanpur, Gwalior, Rewa, Shivpuri and Ujjain planned and conducted 48 OFTs to assess the performance of the improved varieties MP 1203 (T_2) and RVW 4106 (T_3) of wheat under irrigated condition. The results revealed that the yield of RVW 4106 variety was 20.75 and 4.0 per cent higher over the farmers' old variety (T_1) and MP 1203 (T_2) respectively. The number of effective tillers per plant recorded higher by 38.48 and 2.9 per cent over T_1 and T_2 respectively. The net return and BC ratio were found Rs 10,945 per ha and 0.80 additional with RVW-4106 as compared to the farmers variety, respectively. The assessed variety RVW 4106 gave very good performance in irrigated situation followed by MP 1203 which also performed better over farmer's practice.

Table 2.19: Performance of improved wheat variety RVW 4106

Details	No. of trials	No. of effective tiller/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Wheat old variety-Lok 1 (Farmers' practice-T_1)	48	14.32	35.98	33309	2.15
Improved wheat variety MP 1203 (T_2)		19.27	41.77	41114	2.36
Improved wheat variety RVW 4106 (T_3)		19.83	43.45	44254	2.95



Wheat variety RVW 4106 in farmer's field

Integrated Nutrient Management in Wheat

Problem identified: Low yield of wheat due to imbalanced/indiscriminate use of nutrients

Technology Assessed: Assessment of integrated nutrient management in wheat

Among the cereals, wheat crop ranks second in uptake of major nutrients. Imbalanced/ indiscriminate use of plant nutrients are one of the major reasons for declining yield of wheat. Farmers are not using the organic resources for nutrient supplement and applying less/imbalanced fertilizers; leading to soil fertility decline. Looking the above problem, KVKs of Burhanpur, Dhar, Gwalior, Khandawa, Korea, Neemuch and Sehore of the Zone conducted 56 OFTs to assess the INM (Biofertilizers-Azatobactor & PSB @ 10 g/kg as seed inoculation + NPK @ 100:60:40 kg/ha + 5 kg Zn/ ha) on soil test value basis in wheat. The results revealed that the crop yield was 23.55 and 6.84 per cent higher over the farmers' practice (T_1) and RDF (T_2) respectively. The number of effective tillers per plant also increased by 14.86 and 3.85 per cent over the farmers' practice (T_1) and RDF (T_2) respectively. Similarly the net return and BC ratio were also found to be higher by Rs. 12,498 and 0.32 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 and fertility for sustainable crop production.

Table 2.20: Assessment of INM in irrigated wheat

Details	No. of trials	No. of effective tillers/ plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
NPKZn @ 41:46:0:0 kg/ha (Farmers' practice-T_1)	56	14	34.18	32605	2.50
RDF-NPK @ 100:60:40 kg/ha (T_2)		15	39.53	41425	2.70
Biofertilizers-Azatobactor & PSB @ 10 g/kg as seed inoculation + NPK @ 100:60:40 kg/ha + 5 kg Zn/ha (T_3)		16	42.23	45103	2.83

Integrated Nutrient Management in Wheat in farmers field

Integrated Nutrient Management in late sown wheat

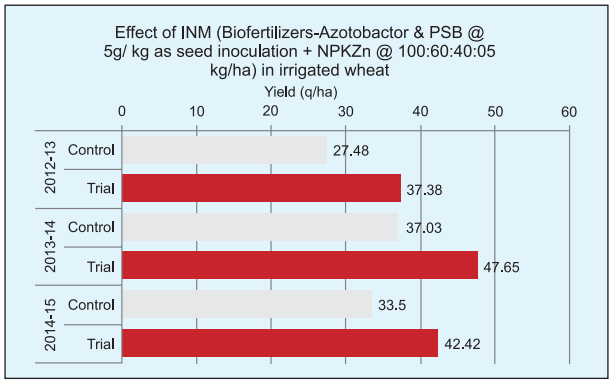
Problem identified: Low yield of late sown wheat due to imbalanced/indiscriminate use of nutrients

Technology Assessed: Assessment of integrated nutrient management in late sown wheat

In irrigate black cotton soil, due to delay in the harvest of *kharif* crop, wheat sowing is also delayed. Farmers do not follow INM as a nutrient wheat productivity is declining. Looking the above problem, KVKs of Chhatarpur, Gariyaband, Katni, Tikamgarh and Sagar of the Zone conducted 38 OFTs to assess the INM (FYM-3t/ha + NPK @ 60:40:20 kg/ha + 5 kg Zn/ha) on soil test value basis in late sown wheat. The results revealed that the crop yield was 54.80 and 9.47 per cent higher over the farmers' practice (T_1) and RDF (T_2) respectively. The number of effective tillers per plant also increased by 31.90 and 14.43 per cent over the farmers' practice (T_1) and RDF (T_2) respectively. Similarly the net return and BC ratio were also found to be higher by Rs. 15,402 and 0.69 with the assessed technology over farmer's practice. The technology is effective for irrigated situation under late sown condition as it increases the crop yield and maintains the soil health and fertility.

Table 2.21: Assessment of INM in late sown wheat

Details	No. of trials	No. of effective tillers/ plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
NPKZn @ 32:35:0:0 kg/ha (Farmers' practice-T_1)	38	10	21.49	19119	2.03
RDF-NPK @ 60:40:20 kg/ha (T_2)		12	30.38	30599	2.43
FYM-3t/ha + NPK @ 60:40:20 kg/ha + 5 kg Zn/ ha(T_3)		13	33.26	34521	2.72



Wheat crop under INM in farmers field

Integrated Plant Nutrient Management in Wheat

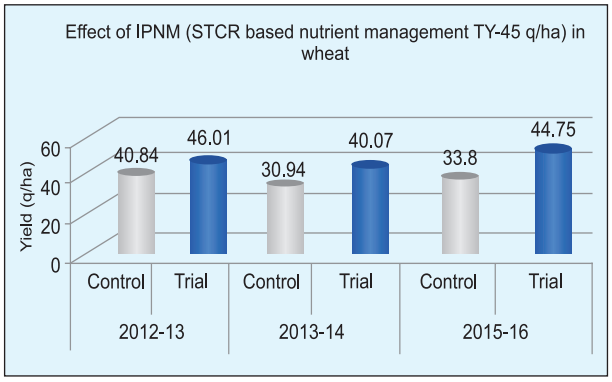
Problem identified: Low yield of wheat due to imbalanced and inadequate use of fertilizers

Technology Assessed: Assessment of STCR based IPNM in wheat

Cultivation of wheat in irrigated situation affected by several factors under crop management practices; imbalanced/inadequate uses of NPK fertilizers are the major reasons for declining yield of wheat. Farmers are not using balanced doses of NPK fertilizers; hence, the status of these nutrients is declining in the soil which is in turn affecting the crop yield. Balance dose of NPK fertilizers even dose not serve the purpose to get the desired yield, when the soils are low or very low in soil fertility. Looking the above problem, KVKs of Dewas, Guna, Korba, Raisen and Rajnandgaon of the Zone conducted 33 OFTs to assess the Soil Test Based Crop Response (STCR) Integrated Plant Nutrient Management (IPNM) based setting the target yield 45 q/ha. The NPK doses were calculated by STCR equation and accordingly the fertilizers were applied to supply the nutrients to crop as per requirement. The results revealed that the yield was 32.38 per cent higher over the farmers' practice. The number of tillers per plant also increased by 30.38 per cent. Similarly the net return and BC ratio were also found to be higher by Rs. 8,592 and 0.34 with the assessed technology. The technology is effective as it serves the purpose in getting the targeted yield and maintains the soil health and fertility.

Table 2.22: Response of STCR based IPNM in wheat productivity

Details	No. of trials	No. of effective tillers/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
NPK @ 41:46:0 kg/ha (Farmers' practice –T_1)	33	14	33.80	33273	2.30
NPK as per STCR equation (target yield 45 q/ha) (Recommended practice-T_2)		18	44.75	41866	2.64



STCR based IPNM in wheat

Weed Management in Wheat

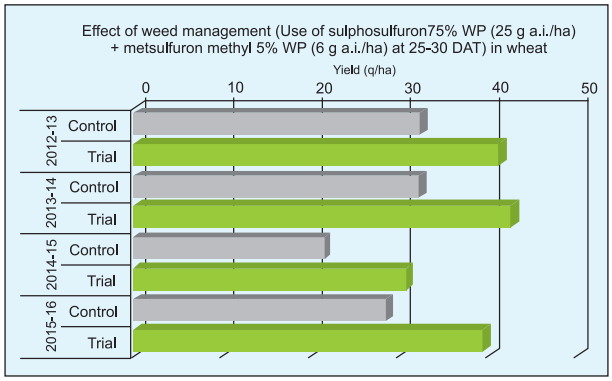
Problem identified: Low yield of wheat due to heavy weed infestation of mono and dicot weeds

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

Narrow and broad leaved grassy weeds infestation in wheat drastically restricts the crop growth and reduces the seed yield by 35-40 percent. Farmers are not following proper weed management practices; due to which the crop yield is adversely affected. Looking the above problem on priority, KVKs of Gwalior, Jashpur, Jhabua, Raigarh, Sheopur, Shivpuri and Sidhi of the Zone conducted 53 OFTs to assess the response of sulphosulfuron75% WP (25 g a.i./ha) + metsulfuron methyl 5% WP (6 g a.i./ha) at 25-30 DAS (T_3) and Clodinafop15% (60 g a.i./ha) + metsulfuron methyl 1% (4 g a.i./ha) at 25-30 DAS (T_2) for weed management in wheat. The results showed that the yield under T_3 was 38.40 and 6.42 per cent higher over the farmers' practice (T_1) and T_2 respectively. The number of weeds per m2 reduced to 82.43 and 59.61 per cent with the assessed technology over T_1 and T_2 respectively. The net return and BC ratio were also found to be higher by Rs. 12,795 and 0.64 with the assessed herbicides under T_3 followed by T_2 which also restricted the weed population per sq. m and 30.05 per cent higher yield was found over farmer's practice.

Table 2.23: Response of sulphosulfuron + metsulfuron methyl for weed management in wheat

Details	No. of trials	No. of weeds/m2	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
One manual weeding (Farmers' practice-T_1)	53	68	28.44	29128	2.30
Use of Clodinafop15% (60 g a.i./ha) + metsulfuron methyl 1% (4 g a.i./ha) at 25-30 DAS (T_2)		30	36.98	38662	2.78
Use of sulphosulfuron75% WP(25 g a.i./ha) + metsulfuron methyl 5% WP (6 g a.i./ha) at 25-30 DAS (T_3)		12	39.36	41923	2.94



Weed management in wheat with Sulphosulfuron + Metsulfuron Methyl

2.8 CHICKPEA

Varietal Assessment in Chickpea

Problem identified: Low yield of chickpea due to use of degenerated seeds of old and disease susceptible varieties

Technology Assessed: Assessment of chickpea variety RVG 202

Various biotic and abiotic factors are responsible for the low yield of chickpea including pest infestation and disease occurrence. Most of these are the associated factors with the seed of the variety selected for crop production. Farmers are using degenerated seeds of old varieties which are mainly responsible for the low yield. Looking the above problem KVKs of Balaghat, Shajapur, Sheopur, Shivpuri and Ujjain conducted 28 OFTs to assess the performance of the improved variety JG 16 (T_2) and RVG 202 (T_3). The results showed that the yield of RVG 202 was 40.32 and 6.72 per cent higher over the farmers' variety JG 315 (T_1) and JG 16 (T_2) respectively. The number of pods per plant also increased by 37.40 and 3.01 per cent over T_1 and T_2 respectively. Similarly the net return and BC ratio were found to be higher by Rs 15,621 and 0.47 with this variety over farmer's practice. RVG 202 variety performed better due to its tolerance to major pests and diseases and good production potential followed by JG 16 which also performed better over farmer's practice.

Table 2.24: Performance of chickpea variety RVG 202

Details	No. of trials	Pods/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Use of old variety JG 315 (Farmers' practice-T_1)	28	78.37	11.21	25272	2.62
Improved variety JG 16 (T_2)		104.55	14.74	38049	2.93
Improved variety RVG 202 (T_3)		107.68	15.73	40893	3.09

Scientists intracting with farmers

Chickpea variety RVG 202 in farmers field

Crop Management using molybdenum in Chickpea

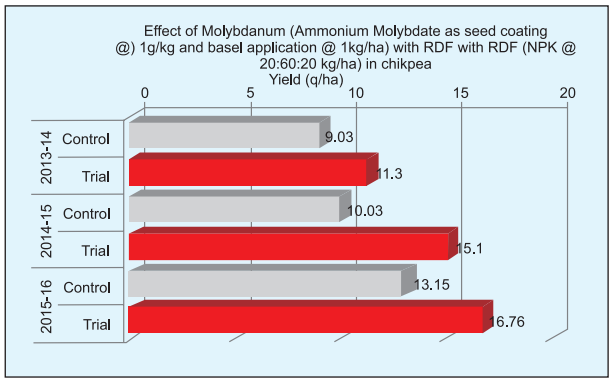
Problem identified: Poor nodulation causes low yield of chickpea due to no use of molybdenum

Technology Assessed: Assessment of response of molybdenum in nodulation in chickpea

Chickpea is an important pulse crop grown across the Zone. Imbalanced/indiscriminate use of plant nutrients and no use of micronutrients especially molybdenum which is responsible for nodulation in roots for N fixing microorganisms are the major reasons for declining yield of chickpea. Farmers are not using molybdenum and applying imbalanced dose of NPK fertilizers; hence, the status of these nutrients is declining in the soil which is otherwise affecting the crop yield. Looking the above problem, KVKs of Dhar, Indore, Khargone and Morena of the Zone planned and conducted 37 OFTs to assess the the response of molybdenum applied through ammonium molybdate @ 1.0 gram/kg seed as seed coating and 75% NPK @ 20:50:20 kg/ha along with FYM 2.5t/ha in chickpea. The results revealed that the crop yield was 27.5 and 9.33 per cent higher over the farmers' practice (T_1) and FYM + 75% RDF (T_2) respectively. The number of nodules per plant increased by 33.08 and 14.63 per cent over the farmers' practice (T_1) and FYM + 75% RDF (T_2) respectively. Similarly the net return and BC ratio were also found to be higher by Rs. 13,051 and 0.55 with the assessed technology over farmer's practice. The technology is effective as it increases the crop yield and maintains the soil microbial biomass for soil health.

Table 2.25: Response of molybdenum in chickpea nodulation

Details	No. of trials	No. of nodules/ plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
No use of molybdenum and use of NPK @ 13:35:0 kg/ha (Farmers' practices- T_1)	37	20	13.15	35572	2.95
FYM-2.5t/ha + 75% NPK @ 20:50:20 kg/ha (T_2)		23	15.33	43578	3.30
FYM-2.5t/ha + 75% NPK @ 20:50:20 kg/ha + Use of Ammonium molybdate @ 1.0 g/kg seed for seed coating (T_3)		26	16.76	48622	3.50



Molybdenum treated chickpea field

Integrated Disease Management

Wilt Management in Chickpea

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

Technology Assessed: Assessment of Integrated wilt management in chickpea

Remarkable reduction in yield has been observed due to heavy fusarium wilt, root rot and collar rot incidence in chickpea. KVK Morena and Panna from Madhya Pradesh had conducted OFTs on wilt management in chickpea. IDM modules i.e. summer ploughing + summer ploughing + seed treatment by Carboxin + Thiram @ 3 g/kg seed + Trichoderma viridae @ 10g/kg seed (T_2) and summer ploughing + seed treatment by Carboxin + Thiram @ 3 g/kg seed and Trichoderma viridae @ 10g/kg seed + soil treatment with Trichoderma viridae @ 2.5 kg/ha with 100 kg vermicompost (T_3) were assessed for wilt management at 18 locations. The result of the OFT showed that the yield of T_3 treatment increased by 28.44 and 8.91 percent over T_1 and T_2 respectively. Wilt incidence decreased by 52.8 and 44.41 percent over T_1 and T_2 respectively. The net return and BC ratio increased by Rs. 23,383 per ha and 0.49 respectively over farmer's practice. Farmers were satisfied with both the technologies assessed for wit management in chickpea and they realized that IDM module is only option for wilt management.

Table 2.26: Performance of Integrated wilt management module in chickpea

Details	No.of trials	Disease incidence (%)	Yield (q/ha)	Net Return	B:C Ratio
Seed treatment with Thiram @ 2g/ kg seed (Farmer's practice-T_1)	18	16.44	15.71	35148	2.47
Summer ploughing + seed treatment by Carboxin + Thiram @ 3 g/kg seed + Trichoderma viridae @ 10g/kg seed (T_2)		13.96	18.53	43787	2.72
Summer ploughing + seed treatment by Carboxin + Thiram @ 3 g/kg seed and Trichoderma viridae @ 10g/kg seed + soil treatment with Trichoderma viridae @ 2.5 kg/ha with 100 kg vermicompost (T_3)		7.76	20.18	58531	2.96

IDM for wilt in Chickpea

Wilt free chickpea

2.9 BLACKGRAM

Integrated Crop Management in Blackgram

Problem identified: Low yield of Blackgram sown traditionally on flat bed by sweep seed drill

Technology Assessed: Assessment of raised bed planting in Blackgram

The germination and growth of blackgram sown by flat bed method get adversely affected due to water logging during excess rain. Broad Bed Furrow (BBF) sowing system may be adopted for efficient water management. In this sowing system, four lines of the crop are sown on the raised beds followed by 3-6 inch deep furrows for water management. It manages the moisture regime in the root zone in adverse conditions of rainfall. Keeping in view the above, KVK, Chhatarpur, Katni, Panna, Sagar and Tikamgarh assessed Broad Bed Furrow (BBF) system sowing system for sowing of black gram compared to the normal sowing (sowing in furrows on flat bed). Results of these trials conducted at 49 locations revealed that BBF system of sowing IPU 94-1 variety enhanced the yield by 52.06 and 13.47 per cent over farmer's practice (T_1) and PU 35 (T_2) respectively. Similarly, the number of pods per plant increased by 70.54 and 24.35 per cent over farmer's practice (T_1) and PU 35 (T_2) respectively. The net return and BC ratio were Rs. 14238 and 0.79 higher with the assessed technology in IPU 94-1 over farmer's practice. Blackgram variety PU 35 also performed well over the farmer's practice.The blackgram variety PU 35 also performed well over the farmer's practice.

Table 2.27: Performance of BBF sowing system in blackgram

Details	No. of trials	No. of pods/ plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Sowing in furrows at flat bed and use of old variety degenerated seeds (Farmers practice-T_1)	49	11	5.60	16098	2.28
Sowing of blackgram cv. PU 35 on raised bed by BBF planter (T_2)		15	7.50	24337	2.73
Sowing of blackgram cv. IPU 94-1 on raised bed by BBF planter (T_3)		19	8.51	30336	3.07

Assessment of raised bed planting in blackgram

Integrated Nutrient Management in Blackgram

Problem identified: Low yield of Blackgram due to imbalance use of fertilizers

Technology Assessed: Assessment of INM in Blackgram

Integrated nutrient management is the important component which plays key role in crop production. Blackgram is an important pulse crop grown among all the states of the Zone in uplands and midlands under rain fed situation. Imbalanced/indiscriminate use of fertilizers, no use of biofertilizers and manures are the major reasons for declining yield of this crop. Looking the above problem, KVK Bhadrak, Gariyaband, Keonjhar, Raigarh, Rewa and Shahdol of the Zone conducted 46 OFTs to assess the response of INM (FYM-3t/ha + seed inoculation by Rhizobium and PSB @ 10g/kg seed +75% NPK @ 20:50:20 kg/ha) on soil test basis in blackgram. The results revealed that the seed yield increased by 30.38 per cent higher over the farmers' practice. The number of pods/plant also increased by 49.55 per cent over farmer's practice with the assessed technology. Similarly the net return and BC ratio were found to be higher by Rs. 7,621 and 0.39 units over farmer's practice with the assessed technology. On the basis of the above findings it may be concluded that the technology is effective as it increases the crop yield and maintains the soil fertility.

Table 2.28: Performance of soil test based INM in Blackgram

Details	No. of trials	No. of pods/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
NPK @ 9:23:0 kg/ha (Farmers' practice-T_1)	46	22	6.87	16928	2.55
FYM-3t/ha + seed inoculation by Rhizobium and PSB @ 10g/kg seed +75% NPK @ 20:50:20 kg/ha (Recommended practice-T_2)		33	8.96	25549	2.93

Soil test based INM in Blackgram var. PU-19

2.10 PIGEON PEA

Integrated Crop Management in Pigeon pea

Problem identified: Low yield of Pigeon pea by traditional sowing method on flat bed

Technology Assessed: Assessment of system of Pigeon pea intensification (SPI)

Pigeon pea is the important kharif pulse crop which is wide consumed for daal; however the production is quite low due to traditional method of sowing on flat beds. The crop sown on flat bed suffers from water logging due to excess rain water and results in low yields. System of pigeonpea intensification (SPI) may be increased crop growth and yield increase crop growth and yield. Pigenpea plant of 30 days are transplanted on the raised beds and nipping of growing tip is done after 30 DAT. KVK, Betul, Chhindwara, Hosangabad, Panna, Satna, Shahdol and Umaria assessed system of pigeon pea intensification (SPI) over the normal sowing of pigeonpea (sowing of seed in furrows on flat bed). Results of these trials conducted at 65 locations revealed that SPI in Asha, ICPL 88039 and ICPH 2671 varieties increased the yield by 76.24 per cent over farmer's practice. Similarly, the increase in number of pods per plant was observed by 87.20 per cent over farmer's practice. The net return and BC ratio were Rs. 34592 and 0.51 higher with the assessed technology.

Besides above, KVK, Balaghat, Damoh, Sagar and Seoni also assessed SPI using pigeon pea variety TJT 501 over normal sowing (sowing of seed in furrows on flat bed). Results of these trials conducted at 29 locations revealed that with SPI there was an increase in the crop yield by 95.93 per cent over farmer's practice. Similarly, the increase in number of pods per plant was 85.53 per cent over farmer's practice. The net return and BC ratio were Rs. 30518 and 1.35 higher with the assessed technology in pigeon pea variety TJT 501.

Table 2.29: Performance of system of Pigeon pea intensification (SPI)

Details	No. of trials	No. of pods/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Sowing in furrows at flat bed and use of old/ unidentified variety (Farmers practice-T_1)	65	61.5	10.10	33961	1.56
Transplanting of 30 days old nursery of pigeon pea varieties Asha, ICPL 88039 and ICPH 2671 at 90 cm plant to plant spacing & 150 cm row to row spacing, nipping at 30 DAT + Application of NPK@ 20:50:20 kg/ha + 20 kg S + 5 kg Zn/ha (Assessed technology-T_2)		115.13	17.80	68553	2.07

Flowering initiation stage of Pigeonpea under SPI

Table 2.30: Performance of TJT 501 under SPI

Details	No. of trials	No. of pods/plant	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Sowing in furrows at flat bed and use of old/ unidentified variety (Farmers practice-T_1)	29	58.75	8.60	23711	2.77
Transplanting of 30 days old nursery of pigeon pea variety TJT 501 at 90 cm plant to plant spacing & 150 cm row to row spacing, nipping at 30 DAT + Application of NPK@ 20:50:20 kg/ha + 20 kg S + 5 kg Zn/ha (Assessed technology-T_2)		109.0	16.85	54229	4.12

TJT 501 under Pigeon pea intensification (SPI)

Vegetable Crops

Varietal Assessment in Tomato

Problem identified: Low yield of tomato due to use of old/traditional variety

Technology Assessed: Assessment of Tomato variety Swarna sampada

Among several factors responsible for lowering the yield of tomato, use of old/traditional varieties is an important one. KVKs of Bargarh, Bhadrak, Gajapati, Ganjam-II, Jajpur, Koraput, Puri of Zone planned and conducted OFTs to assess the performance of the improved variety Swarna sampada. Results revealed that the yield of this variety was 23.63 per cent higher over the farmers' variety. Similarly the net return and BC ratio were found to be higher by Rs. 72415.6 and 0.24 with swarna sampada.

Table 2.31: Performance of tomato variety Swarna sampada

Details	No. of trials	Yield (q/ha)	Net Return (Rs./ha)	B:C Ratio
Farmers' local / old variety (Farmers' practice- T_1)	73	326.88	122369.3	3.05
Improved variety Swarna sampada (Recommended practice- T_2)		428.07	194784.9	3.28


Tomato variety Swarna sampada

Varietal Assessment in Onion

Problem identified: Low yield of Onion due to use of old/traditional variety

Technology Assessed: Assessment of Onion variety NHRDF Red - 3

Among the several factors are responsible for lowering the yields of Onion, use of old/traditional varieties are important one. KVK Dewas, Bhopal and Ratlam of Zone conducted 34 OFTs to assess the performance of the improved variety NHRDF Red - 3. Results revealed that the yield of this variety was 78.41 percent higher over the farmers' variety. Similarly the net return and BC ratio were also found to be higher by Rs. 46775.16 and 0.58 with this variety.

Table 2.32: Performance of Onion variety NHRDF Red - 3

Details	No. of trials	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Farmers' local / old variety (Farmers' practice- T_1)	34	204.44	59654	2.23
Improved variety NHRDF Red - 3 (Recommended practice- T_2)		268.13	106429	2.81


Onion variety NHRDF Red - 3

Varietal Assessment in Turmeric

Problem identified: Low yield of Turmeric due to use of local/unidentified varieties

Technology Assessed: Assessment of Turmeric variety Roma

Farmers are using local/ low yield turmeric varieties. KVK Shajapur, Mahasamund and Narayanpur conducted trials to assess the performance of the improved turmeric variety Roma. The results revealed that the rhizome weight per plant was 59.89 percent more than farmer variety; similarly the yield of this variety was 52 per cent higher over the farmers' variety. The net return and BC ratio with Roma variety was found to be higher by Rs. 74300 and 0.70 with this variety.

Table 2.33: Performance of Turmeric variety Roma

Details	No. of trials	Rhizome wt./plant (g)	Yield (q/ ha)	Net Return (Rs/ha)	B:C Ratio
Local/unidentified variety (Farmers' practice- T_1)	14	158	214.48	210672	3.59
Improved variety Roma (Recommended practice- T_2)		240	245.89	244117	3.82

Integrated Disease Management

Wilt Management in Brinjal

Problem Identified: Low yield due to infestation of wilt in Brinjal

Technology Assessed: Assessment of *Trichoderma viride* against fusarium wilt in Brinjal crop

Remarkable reduction in yield has been observed due to heavy wilt incidence in Brinjal. KVK Bhatapara, Bijapur and Korea from Chhattisgarh conducted 13 OFTs on wilt management in Brinjal. Soil application of *Trichoderma viridae* @ 5 kg/ ha with 50 kg vermicompost was assessed for wilt management. Results of the OFT revealed that the yield was increased by 41.25 percent and wilt incidence decreased by 57 percent. The net return and BC ratio were increased by Rs. 19127.11 per ha and 0.32 respectively. Farmers were satisfied with this technology for wilt management in brinjal and they realized that *Trichoderma viridae* effective and econolical in wilt management.

Table 2.34: Performance of *Trichoderma viridae* enchriched vermicopost for wilt management in Brinjal

Details	No. of trials	Disease incidence (%)	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
No seed treatment / seed treatment with Thiram @ 2g/ kg seed (Farmer's practice -T_1)	13	44.73	218.29	42190	1.82
Trichoderma viridae @ 5 kg/ha with 50 kg vermicompost (Recommended practice- T_2)		18.94	308.35	61317	2.14

Wilt disease affected Brinjal plants

Leaf Curl Management in Chilli

Problem Identified: Low yield of Chilli due to incidence of leaf curl

Technology Assessed: Assessment of Thiomethoxam (seed treatment) and folior application of NSKE and imidacloprid for management of leaf curl in chilli

KVK Raisen, Sehore, Damoh, Rewa from Madhya Pradesh and Ganjam-I, Nayagarh, Sambalpur from Odisha conducted 51 OFTs on leaf curl management in chilli. Seed treatment with Thiomethaxom -75WG @3 g/ kg + one spray of NSKE (@ 5 %)and one spray of Imidacloprid @ 125 ml/ ha before flowering at 15 days interval was assessed for leaf curl management. Result of the OFT revealed that the green chilli yield was increased by 32.13 percent while disease incidence was decreased by 60.58 percent. The net return and BC ratio were increased by Rs. 28516 per ha and 0.44 respectively. Farmers were satisfied with this technology to control leaf curl in chilli.

Table 2.35: Leaf curl management in Chilli

Details	No.of trials	Disease incidence (%)	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Spray of insecticides (Farmer's practice-T_1)	51	16.36	89.128	88728	2.45
Thiomethoxam -75WG @3 g/ kg + one spray of NSKE @ 5 % and one spray of Imidacloprid -17.8SL @ 125 ml/ ha before flowering at 15 days interval (Recommended practice- T_2)		6.45	111.86	117244	2.89


Healthy Chilli crop

Integrated Crop Management

Integrated Crop Management in Tomato

Problem identified: Low productivity of Tomato

Technology Assessed: Assessment of stacking in Tomato crop (open field)

Stacking practice directly influences the yield of the tomato crop by improving fruit quality and weight. KVKs of Bhind, Sagar, Hoshangabad, Tikamgarh and Katni conducted 49 OFTs to assess the effect of stacking in tomato. Results revealed that the fruit weight and yield was 8.14 and 58.79 per cent respectively higher over the farmers' practice. Similarly the net return and BC ratio were also found to be higher by Rs. 116280.6 and 1.03 with the technology. This technology is effective as it increases the yield and net return per unit area.

Table 2.36: Performance of stacking in Tomato

Details	No. of trials	Fruit wt (g)	Yield (q/ha)	Net return (Rs/ha)	B:C ratio
Without stacking (Farmers practice- T_1)	49	36.8	241.94	133907	2.95
Plant with stacking (Recommended practice- T_2)		39.79	384.18	250188	3.98


Stacking of Tomato crop (open field)

Drudgery Reduction of Farm Women

Drudgery Reduction through Twin wheel hoe

Problem identified - High drudgery and low efficiency of farm women involved in weeding manually

Technology Assessed: Assessment of efficiency of Twin wheel hoe for weed management

Soybean is an importance crop of *kharif* season in MP which from high infestation of weeds. Among small and marginal soybean grower weeding is generally a manual operation preformed by women. Farm women suffer from pain of wrist and waist due to force exerted during manual weeding. This results into low weeding efficiency. KVKs of Jabalpur, Rewa, Sagar, Dewas, Gwalior, Rajgarh, Bhopal (M.P); Bargarh, Bolangir (Odisha) conducted 71 trials on assessment of Twin wheel hoe for farm women to address the problem of manual weeding. Results revealed that use of Twin wheel hoe increase work efficiency 116.34 percent with 30.28 percent reduction in drudgery; eliminates pain avoids bending and squatting postures. Productivity of farm women increased more than three times.

Twin wheel hoe operation

Skill training on Twin wheel hoe

Table 2.37: Performance of Twin wheel hoe for weeding in Soybean

Details	No. of trials	Output (m^2/ hour)	WHR (beat/ min)	Energy (kj/ min)
Mannual weeding (Farmers practice) T_1	71	37.81	82.15	8.69
Twin wheel hoe (Recommended practice) T_2		81.80	96.85	6.67

Small Scale Income Generating Enterprises

Nursery Raising for Income generation

Problem identified: Low income due to high mortality of seedlings in open field

Technology Assessed: Assessment of Improved nursery management for income generation (vegetable)

Nursery management is important for vegetable production. Involvement of farm women in vegetable production is higher than any other agricultural crops. Healthy seedlings are necessary for high production of vegetables. Unfortunately poor nursery management leads in higher mortality of seedling, resulting in low income of farm women involved in the nursery selling. KVKs of Harda, Shahdol, Sidhi, Tikamgarh, Guna, Gwalior, Khandwa, Neemuch, Ratlam, Bilaspur, Kandhamal conducted 96 OFTs on pro tray to address the problem of high mortality of seedlings with improved method of nursery raising, cocopit mixture for increasing germination with reduced mortality. The results revealed that 38 per cent more seedlings over farmers practice with reduction damping off and

weed incidence by 98 and 78 percetnt respectively. Result revealed the performance of low cost plastic tray technique for nursery raising was more profitable than the farmers practice.

Table 2.38: Performance of improved nursery in plastic trays

Details	No. of trials	Germination (%)	Increase in sapling survival
Flat bed nursery (Farmers practice -T_1)	96	60	-
Nursery raising in plastic tray (Recommended practice- T_2)		98	38

Skilled training cum demonstration of nursery raising

Problem identified: Low yield due to non-adoption of high yielding species of Mushroom

Technology Assessed: Assessment of yield potential of Oyster mushroom and Paddy straw mushroom.

Non availability of suitable and improved oyster mushroom & paddy straw mushroom species influences greatly its production. Introduction of high yielding species the Oyster mushroom and Paddy straw mushroom can improve productivity and net returns. KVKs of Jagatsinghpur, Bargarh, Bolangir, Puri, Nuapada, Sambalpur, Dhenkanal, Hoshangabad, Morena, Ganjam-II, Kandhamal, Jajpur, Kendrapara, Keonjhar, Koraput conducted 160 trails on Oyster mushroom spices like *Pleurotus pulmonarious*, *P.sajarkaju*, *H.ulmarius*, *Hypsizy gousulmarius* (Blue Oyster), *P. florida*, *P. eryngii* and *P. ostreatus*. Similarly KVKs of Bhadrak, Cuttack, Balasore, Jajpur, Khordha, Jabalpur, Sundargarh-II, Mayurbhanj-II, Deogarh, Dhenkanal, Nayagarh, Puri , Sonepur conducted 140 trials on paddy straw mushroom spices like OSM-II , *V.volvaceaeto* to assess their performance. Results revealed that higher mushroom yield was obtained over farmers practice with Oyster mushroom species; net return per bag was Rs. 95 higher over farmers practice. The trials revealed that the performance of Oyster mushroom *(Pulmonarious)* was more profitable than the local mushroom species. Similarly Paddy straw gave 178 percent higher mushroom yield over farmers practice, and the net return was Rs. 231.4/ bag higher. The trials revealed that the performance of Paddy straw mushroom (OSM-II , *V.volvaceaeto)* was more profitable than the local mushroom species.

Table 2.39: Performance of Oyster mushroom and Paddy straw mushroom for high net returns

Details	No. of trials	Yield per Unit (kg/ bag)	Cost of Input (Rs./ bag)	Incremental Income (Rs./ bag)	Net return (Rs/bag)	Savings in Rs.	B: C Ratio
Local mushroom species (Farmers practice- T_1)	160	0.9	25	72	47	22	6.68
Oyster mushroom (Pleurotus pulmonarious) (Recommended practice- T_2)		1.67	25	167	142	117	
Local mushroom species	140	1	60	130	70	10	6.02
Paddy straw mushroom (OSM-II , V. volvaceaeto)		2.78	60	361.4	301.4	241.4	

Paddy straw mushroom production

Oyster mushroom production

Problem identified: Low income of farm women involved in flower selling due to small size and low yield of local variety.

Technology Assessed: Assessment of improved Marigold variety for income generation of farm women.

Cultivation of local marigold species results in less return due to small flower size and low yield. Keeping above problem, KVKs of Mayurbhanj II, Ganjam II (Odisha) assessed variety of *Pusa narangi, Bengal* yellow; Tikamgarh, Guna, Katni (MP), Raigarh (CG) assessed variety of *African marigold* through 57 trials. Results indicated that increase in flower yield was 40.46 percent higher with improved variety over farmers practice. Similarly the net return and BC ratio were Rs. 63000 and 2.3 units higher respectively with the improved variety.

Table 2.40: Performance of improved varieties of Marigold for income generation

Details	No. of trials	Production per unit (q/50 m²)	Cost of Input (Rs./unit)	Incremental income (Rs/unit)	Net Return (Rs./ha)	Saving (in Rs.)	B:C ratio
Local marigold (Farmers practice- T_1)	57	5.0	55000	99000	44000	11000	1.8
Improved marigold variety (Recommended practice -T_2)		9.0	82000	189000	107000	25000	2.3

Improved variety of Marigold

Problem identified: Food and nutritional insecurity of farm women due to low availability of fruits and vegetables at household level.

Technology Assessed: Assessment of backyard nutritional kitchen garden for household nutritional security

The main aim of kitchen or nutritional garden is to meet the daily fruits and vegetables requirements of family throughout the year. Kitchen garden plays an important role in increasing vegetable production and to provide balanced nutrition. KVKs of Raisen, Ashoknagar (MP) ; Dantewada (CG); Cuttack (Odisha) conducted 43 trials on assessment of backyard nutritional gardening for farm women. Results revealed that there was an increase in the yield of vegetables (373 kg/400m²) along with saving of Rs.12635 per/ 400m² along with increase nutrient intake.

Table 2.41: Performance of Nutritional Kitchen Garden in backyard

Details	No. of Trials	Yield kg/plot	Net Return (Rs)
Unplanned (Farmers practice- T_1)	43	100	1100
Availability of nutritive vegetables & fruits in the backyard garden (400 m²) throughout the year (Recommended practice- T_2)		473	13735


Farm women in their backyard nutritional kitchen garden

Problem identified: Household food insecurity among farm women.

Technology Assessed: Assessment of soybean products (Protein Rich Foods) for household food security of farm families.

Inspite of the fact the farm women have to perform variety of hard work from field to home management, their food intake is proportionate of low nutrient status recommendaed dietary allowances. KVKs of Harda, Morena, Neemuch, Ratlam and Ujjain conducted 34 OFTs on assessment of value addition of soybean products in diet for household food security. The results revealed that 0.8 percent BMI physical fit with good nutrition. The farm women involved in the study were satisfied with value added product of soybean.

Table 2.42: Assessment of Soybean products

Details	No. of Trials	Increase in body wt. (kg)	Increase in BMI (%)	Cost of input (Rs)
No use of Soybean in diet (Farmers practice- T_1)	34	-	-	-
Soybean products (Recommended practice -T_2)		0.64	0.8	85


Farm women preparing value added product of Soybean

Farm Machinery

Problem identified: Low production in Soybean due to water logging

Technology Assessed: Assessment of Broad bed seed cum fertilizer drill for ridge and furrow method of soybean cultivation

Sowing in soybean crop were conducted by Broad bed seed cum fertilizer drill. Broad bed Seed cum fertilizer drill place seed at proper distance and fertilizer just below or nearby the seed for its efficient utilization. It saves seed, fertilizer and time of operation besides inter-culture operations. Seed cum fertilizer drill assessed by KVK Bhatapara and Dantewada for sowing of soybean and greengram.

Soybean crop sown by Broad bed seed cum fertilizer drill

Table 2.43: Soybean production with Broad bed seed cum fertilizer drill

Details	No. of trials	Crop	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio
Sowing with bullock-drawn sowing implements (Farmers' practice) T_1	9	Soybean	13.7	20818	1.79
		Greengram	4.0	5450	1.8
Sowing with Broad bed seed cum fertilizer drill for ridge and furrow method (Recommended practice)T_2		Soybean	19.6	21610	3.13
		Greengram	5.7	10720	2.68

Problem identified: Labour shortage and high cost of manual harvesting.

Technology Assessed: Assessment of Self propelled vertical conveyor reaper for harvesting of wheat

Harvesting operation is highly labour intensive and shortage of labour at harvest time is a general problem. To overcome the labour shortage during wheat harvesting KVKs of Kawardha and Korba assessed Self propelled vertical conveyor reaper. This machine can be easily operated even by women. Results revealed it is more labour effecient over the traditional harvesting system.

Table 2.44: Performance of improved implement Self propelled vertical conveyor reaper

Details	No. of trials	Field capacity (ha/hr)	Net Return (Rs/ha)	B:C Ratio
Manually harvesting (Farmers' practice) T_1	15	0.005	21635	2.75
Self propelled vertical conveyor reaper (Recommended practice) T_2		0.375	25575	3.02

Wheat harvesting by Self propelled vertical conveyor reaper

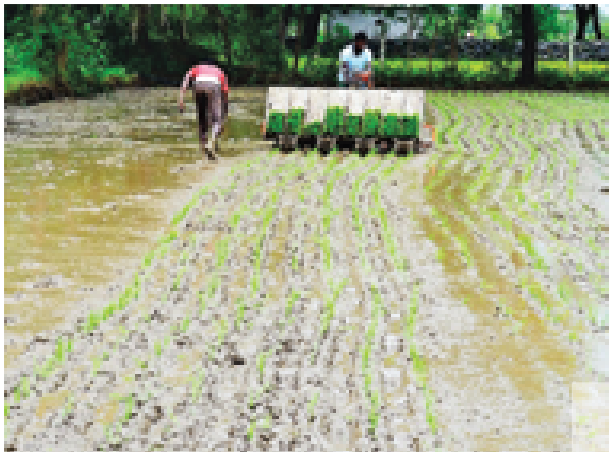
Problem Identified: High labour cost and time involved in manual transplanted rice

Technology Assessed: Assessment of 8-row Self propelled rice transplanter

Manual transplanting of rice is common in Chhattisgarh and Odisha. Though manual transplanting gives uniform crop stand it is quite expensive and involves lot of drudgery. Manual transplanting takes about 250-300 man hours/ha which is roughly 25 per cent of the total labour requirement of the crop. Further, due to rapid industrialization and migration to urban areas is the main reason for shortage labours during transplantation. Keeping above view KVKs Mayurbhanj-I and Bastar assessed transplanting of rice by 8-row Self propelled Rice Transplanter as it saves labour, ensures timely transplanting and attains optimum plant density that contributes to high productivity. The field capacity of the Self-propelled rice transplanter was 0.19 ha/hr against that (0.00375 ha/hr) by manual transplanting. The performance of the Self propelled transplanter was quite satisfactory and the labour requirement was just 3 man days/ha as against 33 man days /ha in case of manual transplanting. Thus, a saving of 30 man days of labour /ha was observed.

Table 2.45: Performance of 8-row Self propelled rice transplanter

Details	No. of trials	Yield (q/ ha.)	Field capacity (ha/ hr)	Labour Requirement (MDs/ha)	Net Return (Rs/ha)	B:C ratio
Manual Transplanting of Rice (Farmers' practice) T_1	10	38.8	0.00375	33.5	27804	1.52
Use of 8-row Self propelled Rice Transplanter (Recommended practice) T_2		41.6	0.196	3	35369	1.97



Rice transplanting by Self propelled 8-row Rice Transplanter

Problem identified: Low production in soybean due to water logging in black soil

Technology Assessed: Assessment of Broad bed seed cum fertilizer drill for ridge and furrow method for soybean sowing.

Ridge and furrow system changes soil temperature and water patterns compared to flat sowing. These changes lead to an improvement in soil environment for crop emergence and early growth due to warmer soil temperatures in cool climate and better water relations in both poorly-drained and moderately well-drained soils. Besides, providing adequate surface drainage to soybean crop, the land configurations were also useful during prolonged dry spell there by, minimizing any adverse effect of soil moisture stress at flowering and seed development stages of rainy season crops. Keeping these points in view KVKs Dewas, Mandsaur, Chhindwara and Kawardha assessed the different sowing methods of soybean crop. Net return of Rs. 19690/- was found to be highest in FIRBS method of planting along with the yield of 14.62 q/ha.

Table 2.46: Performance of different sowing methods of soybean

Details	No. of trials	Yield	Field capacity (ha/hr)	Net Return (Rs/ ha)	B:C ratio
T_1: Local seed drill	33	9.83	0.45	15243	2.12
T_2: FIRBS		14.62	0.22	19690	1.63
T_3: BBF		11.67	0.3	19090	2.4

Soybean crop sown by Broad bed seed cum fertilizer drill

Animal Feed Management

Problem diagnosed: Low milk production due to unavailability of green fodder in the diet of milch animal.

Technology assessed: Assessment of *Azolla* as feed supplement for sustaining milk production

Azolla is a floating fern and belongs to the family of Azollaceae. High protein content, essential amino acids, vitamins, growth promoter intermediaries and minerals like calcium, phosphorus, potassium, ferrous, copper, magnesium etc. makes Azolla very nutritive to milch animals. The carbohydrate and fat content of *Azolla* is very low. It is very easy to cultivate and ideal feed for cattle and other animals.

Eleven KVKs (09 from MP and one each from CG & Odisha) from the Zone conducted OFT to assessed the effect of *Azolla* as green fodder for sustaining milk production when there is unavailability of green fodder during lean period. The results revealed that there was an increase in mean milk yield net return by 17.32 percent and 21.06 percent receptively.

Table 2.47: Performance of *Azolla* as feed supplement on milk production

Details	No. of trials	Mean milk yield (l/day)	Net returns (Rs.)	B:C ratio
Feeding dry fodder (Farmers' practice) T_1	82	5.14	2075	2.5
Feeding dry along with *Azolla* (500 g)/animal/day (Recommended practice) T_2		6.03	2512	2.7

Azolla production by farm women

Azolla as feed supplement

Animal Health Management

Problem identified: Poor body weight gain due to heavy worm infestation of parasites in livestock

Technology assessed: Management of parasite by broad spectrum antihelmentic drug

Parasites are a major cause of disease and production loss in livestock, frequently causing significant economic loss and impacting on animal health. To combat this problem, planned preventative operations are necessary to minimize

the risks of parasitic disease outbreaks and sub-clinical losses of animal production.

Eighteen KVKs (08 - MP, 07- CG and 03 -Odisha) of the Zone conducted trials on assessment of different antihelmentic drug as well as herbal drugs (Neem leaves, Karanj oil) for the control of parasites in livestock. This resulted in reduction of incidence of parasite along with increase in body weight by 14.49 percent and 16.08 percent in net return.

Table 2.48: Performance of broad spectrum anthelmintic drugs Fenbendazole for endo parasite management

Details	No. of trials	Mean milk yield (l/day)	Mean Net Returns (Rs.)	B:C Ratio
No deworming of milch animals (Farmers' practice) T_1	18	6.8	5982	2.1
Management of endo parasite by following schedule of broad spectrum anthelmintic drugs Fenendazole @ 5mg/kg body weight (Recommended practice) T_2		7.9	6944	2.4

Deworming of Buffalo calf

Deworming of Goat

Backyard Poultry Production

Problem identified: Low income of Farm women due to low productivity of local breed in backyard/ semi range system

Technology assessed: Assessment of improved dual purpose birds in free range (backyard poultry system)

Backyard poultry production being practiced by the farmers in rural areas and most often comprises rearing indigenous birds with poor production performances. However, the backyard poultry production can be easily boost up with improved varieties of chicken/ducks and can promise a better production of meat and eggs.

Seventeen KVKs (08 - CG, 04 – MP and 05 -Odisha) conducted 300 OFT on assessment of improved dual purpose bird (Kadaknath, Black Plymouth Rock, Vanaraja, Gramapriya, RIR, Giriraja, Red Cornish and Jabalpur dwikaji) in backyard free range system with better management. The results revealed that there was an increase in the mean body weight by 55.14 percent and egg production by 60 percent with net return by 41.28 percent.

Table 2.49: Performance of improved dual purpose bird in backyard free range system better management

Technology Details	No. of trials	Mean body Weight (kg.)	Mean Eggs/ month	Return (Rs.)
Local coloured bird (poor in egg and meat production) (Farmers' practice) T_1	300	1.07	15	2437
Improved dual purpose colour bird (Kadaknath, Black Plymouth Rock, Vanaraja, Gramapriya, RIR and Red Cornish) with better health and feeding management (Recommended practice) T_2		1.66	24	3443

Backyard poultry farming in cage system

Backyard poultry free range

Fish-cum-Duck Farming

Problem diagnosed: Low fish yield due to lack of natural feed in village ponds

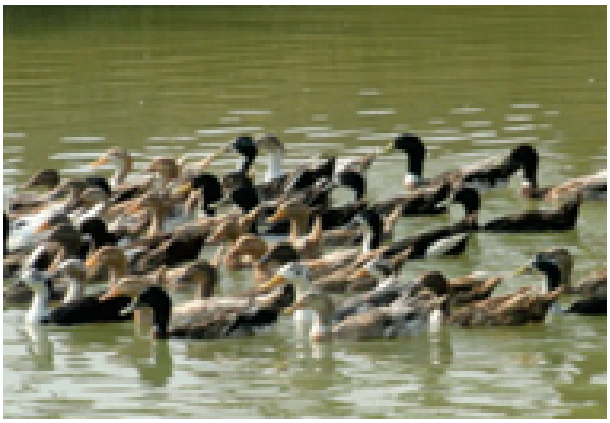
Technology assessed: Assessment of fish cum duck farming at village ponds

Village ponds are being utilized for domestic purposes and no inputs are allowed into it for fear of killing the aesthetic value of the pond. So only fish seed as input is being allowed and any other input is taken as a cognizance offence by the villagers hence fish production is very low. To overcome this problem, integration of fish with duck farming is a suitable alternative for which the villagers do not object. Duck droppings is organic manure, which induces the growth of plankton- a high protein natural feed for fishes and finally enhance production of fish.

KVKs of Ambikapur, Balaghat, Bastar, Garyiaband and Raigarh conducted 20 OFTs on assessment of integrated fish duck farming system at village ponds. Significant production was found 24.03 q/ha against the traditional production of 14.95 q/ha. Farmers also benefited with nutritional duck meat and eggs along with fish.

Table 2.50: Performance of Integrated fish duck farming system

Details	No of trials (Nos.)	Mean Yield (q/ha)	Cost of cultivation (Rs)	Net Return (Rs/ha)	B:C ratio
Stocking of fingerlings and traditional practice management was involved (Farmers' practice) T_1	20	14.95	67681	81090	1.75
Stocking of fingerlings @6000-8000 nos/ ha and stocking of 90 days old ducks @ 300-350nos/ha (Recommended practice) T_2		24.03	94548	192289	2.64



Ducks in pond

Stocking of fish

Fingerling Production in Seasonal Ponds

Problem diagnosed: Low survival rate and growth of fingerlings due to poor management practice and traditional supplementary feeds

Technology assessed: Production of fingerlings (IMC) in seasonal ponds

Production of quality fish seed is the key factor in aquaculture production. Growth and survival rate of fingerlings depends on management practice of seasonal ponds. Farmers use traditional feeds i.e. rice bran and mustard oil cake but there is urgent demand to use floating feed and slow sinking crumble feed as supplementary feeds which increase survival rate as well as growth of fingerlings.

KVKs of Puri, Kawardha, Nayagarh and Ambikapur conducted 04 OFTs on assessment for production of fingerlings in seasonal ponds. Maximum survival rate (73.7%) was recorded by KVK Nayagarh, whereas mean survival rate of 61.05 percent was achieved in the seasonal ponds.

Table 2.51: Performance of production of fingerlings in seasonal ponds

Details	No of trials	Survival rate (%)	Cost of cultivation (Rs/ha)	Net Return (Rs/ha)	B:C ratio
Stocking of fry @2-3 lakh/ha and feeding rice bran and oil cake 2:1 as supplementary feed (Farmers' practice – T_1)	25	42.95	112890	118802	2.11
Stocking of fry @2-3 lakh/ha and feeding floating feed or slow sinking crumble feed (CP 32%) as supplementary feed @ 5% total biomass (Recommended practice-T_2)		61.05	147537	1944875	2.69

Harvested fingerlings

Floating feed supplement

03 FRONTLINE DEMONSTRATIONS

Frontline demonstration (FLD) is conducted to demonstrate the superiority of frontier and location specific proven technologies of agriculture and allied sector 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 2015-16, 1164 FLDs were conducted on oilseeds, pulses, cereals, vegetables crops, cash crops, agro-forestry, millets, etc covering the total area 7539.58 ha and benefitting 18359 farmers. FLDs were also conducted on important income generating enterprises, covering the total area of 1193.71 ha in Zone VII including, 5352 units and 4128 beneficiaries (Table -3).

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

State	Categories	No. of FLDs	Area (ha)/ Unit (no.)	Beneficiaries
Chhattisgarh	Crops	219	1857.38	4089
	Entreprises	77	170.52/130	473
Madhya Pradesh	Crops	596	4352.7	9488
	Entreprises	200	356.83/426	1644
Odisha	Crops	349	1329.51	4782
	Entreprises	215	666.36/4796	2011
Total	**Crops**	**1164**	**7539.58**	**18359**
	Entreprises	**492**	**1193.71/5352**	**4128**

Table 3.1: Summary of FLDs (Crop wise) conducted in by KVKs of Zone-VII

Categories	No. of FLDs	Area (ha)	Beneficiaries
Cereals	285	1621.99	4094
Pulses	260	2887.35	5962
Oilseeds	238	2089.35	4583
Millets	14	103.8	274
Fibre	6	19.3	62
Sugarcane	2	7	22
Intercropping	6	12.4	85
Vegetables	294	639.25	2767
Fruits	20	37.4	168

Categories	No. of FLDs	Area (ha)	Beneficiaries
Flowers	12	27.3	74
Spices	21	70.64	193
Medicinals	4	22	60
Plantation crops	2	1.8	15
Total	**1164**	**7539.58**	**18359**
Enterprises (Units)			
Agro Forestry, Farm Mechanization, Fodder, Fish production, vegetable production, Women empowerment	492	1193.71	2775
Cattle, Dairy, Goatry, Poultry, Vermi compost, Duckery, Quail		5352	1353
Total	**492**	**1193.71/5352**	**4128**
Grand Total	**1656**	**8733.29/5352**	**22487**

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

Categories	No. of FLDs	Area (ha)	Beneficiaries
Cereals	119	903.3	2162
Pulses	172	1804.45	3494
Oilseeds	146	1074.25	2221
Millets	10	95.4	239
Fiber	4	13.3	44
Vegetables	117	347.4	1063
Fruits	4	12.4	38
Flowers	5	13.2	29
Spices	15	67	138
Medicinals	4	22	60
Total	**596**	**4352.7**	**9488**
Enterprises (Units)			
Agro Forestry, Farm Mechanization, Fodder, Fish production, vegetable production, Women empowerment	200	356.83	885
Cattle, Dairy, Goatry, Poultry, Vermi compost, Duckery, Quail		426	759
Total	**200**	**356.83/426**	**1644**
Grand Total	**796**	**4709.53/426**	**11132**

Table 3.3: Summary of FLDs conducted by KVKs of Chhattisgarh

Categories	No. of FLDs	Area (ha)	Beneficiaries
Cereals	82	563.25	1193
Pulses	49	729.9	1512
Oilseeds	34	417.005	781
Sugarcane	1	5	12
Vegetables	52	140.225	579
Spices	1	2	12
Total	**219**	**1857.38**	**4089**
Enterprises (Units)			
Agro Forestry, Farm Mechanization, Fodder, Fish production, vegetable production, Women empowerment	77	170.52	320
Cattle, Dairy, Goatry, Poultry, Vermi compost, Duckery, Quail		130	153
Total	**77**	**170.52/130**	**473**
Grand Total	**296**	**2027.9/130**	**4562**

Table 3.4: Summary of FLDs conducted in different areas by KVKs of Odisha

Categories	No. of FLDs	Area (ha)	Beneficiaries
Cereals	84	155.44	739
Fibre	2	6	18
Flowers	7	14.1	45
Fruits	16	25	130
Intercropping	6	12.4	85
Millets	4	8.4	35
Oilseeds	58	598.1	1581
Sugarcane	1	2	10
Pulses	39	353	956
Vegetables	125	151.63	1125
Spices	5	1.64	43
Plantation crops	2	1.8	15
Total	**349**	**1329.51**	**4782**
Enterprises (Units)			
Agro Forestry, Farm Mechanization, Fodder, Fish production, vegetable production, Women empowerment	215	666.36	1570
Cattle, Dairy, Goatry, Poultry, Vermi compost, Duckery, Quail		4796	441
Total	**215**	**666.36/ 4796**	**2011**
Grand Total	**564**	**1995.87 /4796**	**6793**

Table 3.5: Summary of FLDs under Integrated Crop Management

Crops	No. of FLDs	Area (ha)	No. of Farmers	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Cereals							
Barley	1	13	12	36.58	39.66	20554	23558
Lythyrus	1	2	10	3	6.42	24649	38809
Maize	7	22.2	81	83.28	101.11	21812	29932
Rice	29	173.5	382	29.13	35.85	20266	30304
Wheat	13	206.8	370	32.5	36.56	26472	34340
Flowers							
Marigold	1	0.5	10	110	132.6	51650	93905
Fruits							
Banana	4	4	40	51511.5	85677.85	202491	259654
Millets							
Kodo	1	40	100	8.3	10.5	29880	38270
Kutki	1	5	12	7.3	10.2	12110	19640
Pearl millet	1	5	10	11	14.75	112500	66000
Oilseeds							
Groundnut	18	294.1	739	13.11	17.45	28121	41533
Linseed	16	210.85	440	15.85	20.1	6933	10806
Mustard	28	332.7	785	15.5	16.28	38817	50399
Niger	4	14	60	6.67	7.94	40853	52666
Safflower	2	10	28	7.33	9.58	12952	18300
Sesame	9	71	188	6.73	8.47	17983	23845
Soybean	29	316.8	309	10.14	15.68	48731	55961
Sunflower	2	15	35	10.61	15.59	21270	30521
Toria	1	20	59	4.3	6.8	8300	20800
Pulses							
Blackgram	18	82	241	5	6.7	22755	46063
Chickpea	40	578	1337	17.78	23.76	26413	39582
Field Pea	5	75	167	7.92	11.89	19585	35775
Greengram	18	229.05	611	16.66	20.96	26347	38000
Lentil	9	163.9	334	4.79	8.76	9703	20880

Crops	No. of FLDs	Area (ha)	No. of Farmers	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Pigeon pea	23	413.2	308	27.9	40.44	30254	93928
Spices							
Coriander	1	4	10	13.55	16.1	41875	53425
Turmeric	1	0.4	10	23.5	70.57	3850	95965
Ginger	1	2	5	38.3	45.8	37480	47980
Vegetables							
Bitter gourd	3	1.8	22	96.5	126.5	59267	90167
Bottle gourd	1	1	8	118	186	124800	74400
Brinjal	1	0.4	5	167.6	232.4	77700	93250
Cabbage	2	7	30	253.45	342.45	85638	123510
Capsicum	3	10	35	111.6	175.8	85170	156743
Carrot	1	10	10	200.2	276.66	146000	258260
Cassava	1	0.4	10	179	257	87200	133600
Chilli	4	5.5	21	170.19	221.91	122211	188172
Cowpea	1	0.2	10	40.12	55.54	50345	78085
Green Pea	3	18	80	53.42	76.67	59000	93707
Knolkhol	2	10.02	15	80	100	90000	117500
Okra	1	2.2	6	139	179.1	48950	74460
Onion	3	7.5	40	155.6	226.4	71512	129315
Raikia bean	1	5	25	81.4	139.3	78600	151850
Tomato	10	35.42	72	405.88	930.17	103446	220485
Water melon	1	0.4	1	216	262.4	58270	74390
Total	**322**	**3418.84**	**7083**				

Case Study: KVK Burhanpur

High returns from cut Rose cultivation under protected condition

Background: Shri Gajendra Nayke of village Sirsoda, Burhanpur district is a progressive farmer owning has 18 acres of land. Shri Nayke cultivates Banana, Cotton, Maize, Redgram and Greengram in *Kharif* while Maize, Gram, and wheat in *Rabi* with improved technology. Burhanpur is largest producer of Banana in the M.P. producing 14400 metric tons from an area of around 17200 ha. Presently farmers are getting low income due to fluctuating market price and increase in acreage of banana in UP, Bihar and Punjab. Due to extreme weather situation production of different field and horticulture crops are decreasing consequently income per unit area is also decreasing.

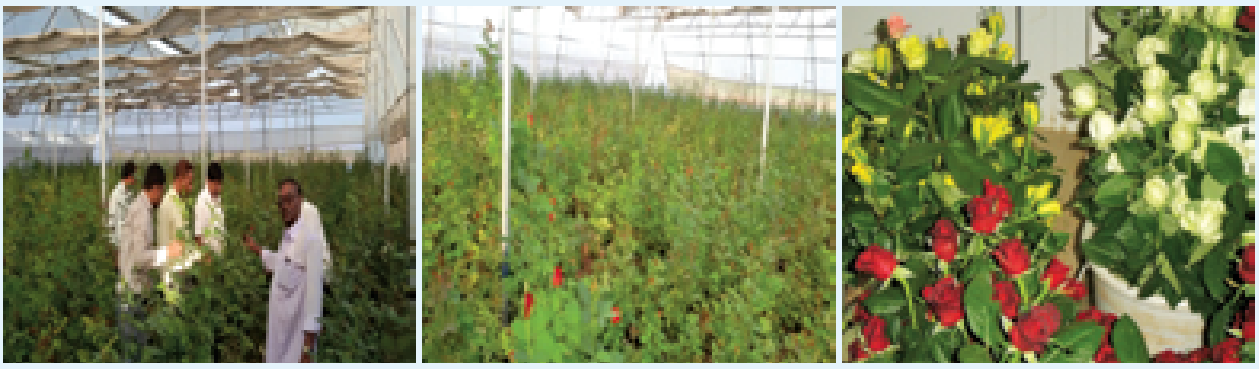
KVK Intervention: Shri Gajendra Nayke contacted Krishi Vigyan Kendra Burhanpur in search other alternative enterprise so as to earn more to per unit area. KVK scientists advised him to try cut flower in view of his resources. On advice of KVK scientists he visited Pune for a week for advanced training in this field. KVK, also helped him for getting government subsidy through Horticulture Department. Shri Nayke started rose cultivation in protected condition and seeks advice of KVK regularly.

Outcome: The annual income of Shri Gajendra Nayke touched Rs. 5.93 lakh through rose cultivation in his polyhouse of 1000 m^2 area against his previous earling of Rs. 64650 per ha from field crop cultivation.

Impact: He was awarded with ATMA award for the year 2015-16. The success of Shri Nayke in floriculture under protected cultivation has attracted many others to follow the enterprises.

Output after intervention through rose cultivation under protected condition

Sr. No.	Name of the crop & Variety	Area	Production/day (for 244 day) (8month)	Gross Cost (Rs)	Gross Income (Rs.)	Net income (Rs.)	B. C. Ratio
1.	Rose	1000 m^2	158600	120000	713700	593700	5.94



Cut rose production by Shri Gajendra Nayke

Table 3.6: Summary of FLDs on Integrated Disease Management

Crops	No. of FLDs	Area (ha)	No. of farmers Total	Results (q/ha)		Net Return (Rs./ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Cereals							
Rice	18	105	315	34.17	41.11	24246	42056
Wheat	1	13	12	39.16	43.8	29740	35700
Fruit							
Banana	1	1	10	342.4	466.8	243000	388500
Oilseeds							
Groundnut	7	56.4	60	13.03	14.27	23841	30454
Linseed	1	2	10	5.5	7.8	10500	18600
Mustard	1	5	13	4.1	7.1	10450	
Sesame	1	1	10	13.33	15.66	26781	33762
Soybean	2	9	22	10.06	13.44	14847	27554
Pulses							
Blackgram	1	2	13	5.2	7.6	15500	24200
Chickpea	3	8.8	22	9	10.97	15452	20887
Greengram	3	76	108	4.77	6.31	29451	45887
Pigeon pea	1	5.6	61	8.87	12.68	14759	24654
Spices							
Coriander	1	5	10	10	13.25	18450	27055
Garlic	1	5	12	95.9	109.05	293350	336175
Ginger	1	2	5	9.05	11.39	34213	46084
Sugarcane							
Sugarcane	1	5	12	765	880	99850	128200
Vegetables							
Beans	1	2	10	78	93	148800	96500
Brinjal	4	6	41	187.8	234.15	97727	133793
Capsicum	1	1	5	156	244	73600	127400
Cauliflower	1	2	7	237.5	267.18	130625	156821
Chilli	2	8	20	100.5	132.5	149840	80900
Green pea	1	1	10	14.8	17.4	24240	29820
Okra	2	3	18	96.05	119.35	194075	242125
Onion	6	7.8	37	102.59	126.76	87492	112562
Potato	4	16	42	166.55	225.8	70180	109535
Tomato	5	3.1	35	165.33	228.17	99849	143258
Total	**71**	**351.7**	**920**	**82.46**	**103.33**	**61536**	**82406**

Table 3.7: Summary of FLDs on Integrated Nutrient Management

Crops	No. of FLDs	Area (ha)	No. of farmers Total	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Cereals							
Maize	7	31.6	65	23.32	36.34	31937	39375
Rice	30	97.64	309	34.14	41.03	20971	28993
Wheat	21	135.8	337	30.78	38.35	30278	40167
Fibre							
Cotton	2	10.5	35	130.7	149.35	87094	172880
Flowers							
Chrysanthemum	1	2	5	11.65	15.66	21180	33212
Marigold	1	0.4	5	88.6	119.4	51400	84162
Fruit							
Papaya	1	1	10	218	314	188400	129800
Millets							
Pearl millet	1	5	20	10.46	15.81	54370	89200
Finger millet	3	4	25	26	35.8	14655	24755
Oilseeds							
Groundnut	6	16.8	55	15.44	19.57	33388	47146
Mustard	6	40	118	6.74	10.65	14028	25002
Sesame	2	3	20	3.9	5.55	10328	18397
Soybean	22	72.5	186	15.14	19.71	39359	53797
Toria	3	14	70	7.15	8.56	10860	16265
Pulses							
Blackgram	5	22	57	4.57	6.1	48424	66681
Chickpea	14	45.6	105	10.17	13.5	24043	36165
Greengram	5	34	55	6.09	8.27	20023	29173
Pigeon pea	4	19.2	51	7.89	10.94	18790	30123
Spices							
Garlic	6	33	67	81.47	99.45	154342	180172
Ginger	1	0.4	10	93.6	120	148910	208150
Vegetables							
Bitter gourd	1	2	10	150	200	78500	127335
Bottle gourd	1	1	10	208.6	255.7	112354	156213
Brinjal	3	2.2	27	293	372	123133	170903

Crops	No. of FLDs	Area (ha)	No. of farmers Total	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Cabbage	4	3.8	43	220.88	270.53	98750	131925
Carrot	1	1		121.2	142.8	110090	135110
Cauliflower	9	18	73	193.73	249.21	102196	133406
Chilli	2	4	15	81.6	99.4	113525	149012
Cucumber	1	0.8	10	208.2	244.3	150500	180195
Green pea	1	2	10	45.95	51.02	46977	55023
Maize	1	1	5	45	58	24500	34700
Okra	1	0.4	10	99	128	47126	66600
Onion	7	20.4	62	130.68	158.47	90716	114254
Potato	6	23.52	79	516.97	732.95	45904	82628
Spine gourd	1	1	5	88.44	111.73	97798	182078
Tomato	9	12.8	59	148.42	204.59	75513	87215
Water melon	3	3.4	25	232.27	290.5	55370	89502
Total	**192**	**685.76**	**2048**				

Table 3.8: Summary of FLDs on Integrated Pest Management

Crops	No. of FLDs	Area (ha)	No. of farmers Total	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Cereals							
Maize	1	1	10	42.9	51.8	32937	39875
Rice	24	59.05	211	33.25	40.67	20701	28719
Wheat	6	47.4	113	31.78	36.2	31163	37384
Fibre							
Cotton	3	7.8	22	123.42	155.32	25058	54994
Flower							
Chrysanthemum	1	2	4	12.5	15	66250	80500
Fruits							
Cashew	2	5.8	20	8.45	11.6	53550	44600
Guava	1	4.8	12	500	900	450000	1000000
Mango	1	5	10	96	118	196000	248400
Millet							
Kodo	1	2	5	4.7	9.4	62640	83840

Crops	No. of FLDs	Area (ha)	No. of farmers Total	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Oilseeds							
Linseed	2	15	15	14.45	12.8	50	67
Mustard	10	156.01	377	11.63	14.67	25747	33315
Sesame	1	2	5	7.85	9.9	7200	10100
Soybean	11	44	107	80.07	111.82	41311	59875
Plantation crop							
Betel vine	1	0.8	10	8.82	10.5	157000	235600
Pulses							
Blackgram	1	2	5	8	9.5	48000	56250
Chickpea	17	80.2	200	10.67	15.02	30202	44890
Greengram	2	3	15	7.6	9.3	25000	38250
Pigeon pea	4	25.4	69	52.68	66.1	56913	81700
Spice							
Garlic	2	12	15	42.75	54.8	6511	8898
Vegetables							
Brinjal	11	35.2	93	328.88	404.81	107118	131389
Cabbage	3	6.9	28	260.73	330.62	280723	369365
Cauliflower	3	3.4	21	114.9	129.12	77416	95545
Chilli	8	16.6	68	94.9	105.86	161002	207325
Cluster bean	1	2	10	181.9	225.8	164220	250660
Colocasia	1	2	10	12.46	10.68	63716	52668
Cowpea	1	1	10	67.35	86.95	51420	71540
Okra	1	1	10	156.8	187.5	104600	132815
Onion	5	8.4	32	79.36	80.89	68305	97756
Pointed gourd	1	1	13	102	135	93000	132000
Potato	3	2.2	52	90	258	45000	129000
Tomato	7	9.81	44	184.81	216.12	71621	75137
Watermelon	2	4	15	114.97	139.95	59561	79397
Total	**138**	**568.76**	**1631**				

Case Study: KVK Surguja

Kharif Tomato Production a profitable business: Success story of Chhittarpur Village

Background: Chhittarpur village is situated 65 km away from district headquarter Ambikapur in Lundra Block. In Chhittarpur farming is the main source of livelihood of about 415 farm families, they mostly grow Rice, Maize, *kharif* potato, Niger, Groundnut, Pigeon pea, Blackgram and Vegetables. Low productivity in the area is mainly due to lack of technical knowledge. Since last 6-7 years farmers in village were self motivated towards cultivation of *Kharif* tomato due its higher price during rainy season. The productivity of tomato in the initial few years was very low and not remunerative for farmers.

KVK intervention: Tomato growers of Chhittarpur came in contact with KVK, Ambikapur (Surguja) with problem of low productivity. Technical knowledge on use of healthy seed material, seed treatment, sowing in furrow, mulching, use of bamboo and wire for stacking, timely use of balanced fertilizer dose and crop protection technique was provided by KVK. These farmers were regularly trained formerly as well was informally on various production aspects of tomato.

Output: Farmers started the tomato cultivation using recommended package of practices by KVK. As a result their tomato productivity and income increased substantially with the package of practice, they refined their skill and adopted options that reduced cost of tomato cultivation.

Outcome: Around 150-200 farm families are involved tomato production and earning good profit. At present Kharif tomato production is one crore rupees business on this village.

Impact: Kharif tomato cultivation has brought prosperity in village Chhattarpur. The income from tomato is invested in diversion of enterprises and among children's health and education.

Production, harvesting and selling kharif tomato

Table 3.9: Summary of FLDs on Integrated Weed Management

Crops	No. of FLDs	Area (ha)	No. of farmers Total	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Cereal							
Maize	3	6	22	12.09	15.43	25602	35970
Rice	6	12	67	25.55	30.93	12509	21851
Wheat	15	105.6	234	33.87	40.04	33007	44079
Fibre							
Cotton	1	1	5	34	41	56100	82800
Millet							
Pearl millet	2	10	13	9.7	12.53	23285	32417
Oilseeds							
Groundnut	2	6	23	10.8	13.4	17770	23900
Soybean	12	47.8	128	10.6	13.9	53000	69500
Pulses							
Blackgram	3	9.4	18	6.35	8.54	14947	22555
Chickpea	4	15.2	38	13.38	17.21	62117	76828
Spice							
Garlic	1	0	4	8.6	10.7	17200	21400
Vegetables							
Cluster bean	1	2	12	106.54	162.13	104024	158174
Green pea	1	5	13	12.91	16.14	71854	94464
Okra	2	5	20	165.74	223.88	91892	146019
Onion	2	2.8	17	81.88	96.68	56106	72538
Tomato	1	2	5	39.27	43.9	41868	49045
Total	**56**	**229.8**	**619**				

Table 3.10: Summary of FLDs on Varietal Evaluation

Crops	No. of FLDs	Area (ha)	No. of farmers	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Cereals							
Barley	2	11.4	30	33.66	41.25	25877	35723
Maize	7	16.6	82	35.84	54.36	28709	64939
Maize (Cob)	2	2	15	54530	55730	27636	82900
Rice	42	216.4	548	32.17	41.57	24024	36592
Sweet corn	5	8.4	23	23.05	36	16076	113750
Wheat	35	318.2	796	35.55	43.86	37371	49663

Crops	No. of FLDs	Area (ha)	No. of farmers	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Flower							
Marigold	7	12.4	50	61.96	80.3	65744	95042
Medicinal							
Chandrasoor	1	1	5	11.63	16.09	28845	43280
Kalmegh	1	10	25	6.03	8.87	10320	24535
Kalonji	1	10	30	14	19.45	106975	59000
Safed musali	1	1	4	12.62	14.5	24084	29450
Millets							
Kodo	3	28.4	79	32.78	40.02	44602	56919
Ragi	2	5.4	15	16.02	16.31	7865	10498
Oilseeds							
Groundnut	3	34	55	11.53	15	18641	29416
Linseed	5	50	72	4.8	5.69	4262	7272
Mustard	13	137.2	340	9.53	11.14	42390	48501
Niger	3	8.8	42	7.5	10.95	77500	90117
Sesame	4	10	28	7.73	10.06	13999	25676
Soybean	7	32.4	69	9.4	13	47000	65000
Toria	2	2	5	2.8	3.7	16800	22200
Plantation crop							
Betel vine	1	1	5	31	40	93901	178778
Pulses							
Blackgram	7	66.4	139	6.38	18.99	15770	26340
Chickpea	46	697.8	1452	10.3	14.58	27886	39772
Field pea	2	19	35	15.25	30.81	37750	136614
Greengram	7	86.4	245	10.54	14.1	30163	59134
Horsegram	2	10	15	2.7	4.65	13650	23508
Lentil	1	30	76	3.83	7.15	1621	8337
Lathyrus	1	5	10	6.28	8.98	1194	4200
Pigeon pea	9	51	97	9.6	12.2	76813	101753
Spices							
Coriander	1	4	10	12.24	15.42	38061	49536
Ginger	3	0.84	23	157.67	186.33	215913	272280
Turmeric	1	2	12	83	127	43877	205322
Vegetables							
Bitter gourd	2	1.4	10	41.46	59.56	24635	41963
Bottle gourd	2	1.1	11	160.59	201.2	96458	136010

Crops	No. of FLDs	Area (ha)	No. of farmers	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Brinjal	9	16.9	84	187.4	252.28	123386	157535
Broccoli	1	0.4	10	104	131	63100	86800
Cabbage	2	6	60	190	292.5	86500	143500
Capsicum	4	13.8	27	130.99	163.18	74953	115941
Cauliflower	2	2	10	166.2	218.05	86017	140857
Chilli	8	11.8	83	130.34	179.65	109011	162087
Cluster bean	2	4	10	11.98	14.45	45225	57670
Colocasia	3	1.8	24	141.93	184.57	104361	131273
Cowpea	7	7.96	58	45.45	83.33	65740	95047
Cucurbits	1	5	10	14.2	19.1	43085	64015
Elephant footyam	2	0.8	8	209	340	51300	106800
Fenugreek	3	44	101	10.63	61.87	18467	24074
French bean	1	1	10	178.28	218.64	74724	105412
Green pea	5	17.4	52	60.32	82.57	56501	90296
Indian spinach	1	2	12	52	87	52000	87000
Okra	2	4	20	174.02	193.57	202823	245920
Onion	16	46.8	169	108.63	135.21	65405	93808
Pointed gourd	5	1.3	43	191.68	198.28	229418	243435
Potato	7	12.8	101	144.97	193.37	102637	153009
Radish	2	0.41	11	72.4	96.45	109665	158994
Red cabbage	1	0.4	5	212	242	109725	127575
Sweet potato	1	1	5	226	284	125800	165200
Tomato	18	24.16	172	183.76	257.88	98422	314064
Watermelon	4	3.6	33	182.59	217.61	82674	99900
Yam bean	2	1.4	15	124.5	168	41850	61125
Total	**340**	**2122.27**	**5586**				

Table 3.11: Summary of FLDs on Inter cropping

Crop	No. of FLDs	Area (ha)	No. of farmers	Results (q/ha)		Net Return (Rs/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Maize + cowpea	3	2.4	15	18.47	160.23	9567	21023
Pointed gourd + onion	1	4	25	173.2	197.1	88494	103090
Total	**4**	**6.4**	**40**				

Table 3.12: Summary of FLDs on Livestock Production

Crops/Particulars	No. of FLDs	Area (ha) / No. of Animals	No. of farmers	Results		Net Return (Rs)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Dairy							
Animal Nutrition (milk yield-l/day)	24	229	344	8.29	10.23	373	460
Shelter Management (milk yield-l/day)	2	22	9	3.51	4.8	158	216
Animal Health Management (milk yield-l/day)	30	231	276	6.04	6.9	272	311
Fodder							
Azolla (milk yield-l/day)	12	110	109	4.83	5.77	217	260
Barley (q/ha)	1	0.4	4	330	430	28800	40400
Berseem (q/ha)	6	28.8	53	392.23	443.4	43951	54674
Maize (q/ha)	1	5	5	-	250	-	2875
Oat (q/ha)	1	2	12	109.16	160.33	61064	45496
Sorghum(q/ha)	3	6	15	9.45	11.28	10329	19431
Total	**80**	**42.2 ha (592 unit)**	**827**				

Table 3.13: Summary of FLDs on Small Scale Income Generation

Crop	No. of FLDs	Area (ha)	No. of farmers	Results		Net Return (Rs)	
				FP(T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Income Generation							
SHG (q/ha)	1	2	10	4.49	5.02	17960	20080
Vegetable production (q/ha)	6	54.1	125	21.27	57.25	17189	69209
Processing technology for finger millet (Product Value Rs./q)	2	25	18	2500	4500	100	1490
Cow urine based eco-phenyl	1	500	20	-	800	-	300
Duck Farming (Kg/bird)	3	159	24	0.823	1.43	284	542
Mushroom production							
Oyster mushroom (kg/bed)	7	17	84	3.4	4.5	6895	9811
Paddy straw mushroom (kg/bed)	2	500	30	1.3	1.7	55	175
Vermicompost							
Vermicompost (production kg/bed)	4	32	40	4.8	11.2	18800	52200
Lac production							
Kusum/Ber plant (q/ha)	1	12	14	14.5	26.4	71725	130589
Lac production (q/ha)	6	59.1	34	26.2	28.46	129600	148500
Total	**33**	**152.2**	**399**				

Case Study: KVK Seoni

Empowering rural women through small-scale Papad processing Unit

Background: Seoni District in Madhya Pradesh has limited food processing facilities and Entrepreneur had no option except to sell their produce at local level. Keeping this in view, KVK Seoni took an initiative to support to small scale *papad* processing unit. Initially Mahamaya women self-help group, was engage in internal thrift and credit functions. Mrs. Lakshmi Soni took interest and gathered the women who are working individually and discussed with Food Scientist of KVK, Seoni on the process of *papad* making.

KVK intervention: The women SHG group were facilitated and incubated to develop themselves as entrepreneurs, through several capacity building programme and training, with technical support from Bank officials and Food Officers, in the year 2011. The training ensured a common platform for all stakeholders. The first round of training focused on aspects of *Papad* making technology, maintaining the hygiene protocol system, hygiene kit was provided to SHG group members.

Outcome: Mahamaya self help group developed *Papad* Convenience mix from the fortification of Green gram *dal* up to 25 percent with Black gram *dal* and spices which increase the dough characteristics also soft and elastic. *Papad* Convenience mix could also be used for the snack prepration like *Chakli*, *Mathari* etc. The group also developed hand

operated *Papad* cutting machine (3 inch diameter.) using the galvanized sheet 22 gauge thickness for the uniform shape and size of *papad*. SHG group is registered under cooperative societies at Jabalpur bearing registration 04/18/01/115 72/10.

Impact: SHG members sell their *Papad*, Potato chips in local market and also linked with Nagpur market. At present the group is producing 50 to 70 kg of finished products per month through new *papad* making machine. The SHG members also get better returns and employment, making their living standards better and earn Rs. 14500/- per month and supply the products to Nagpur and Jabalpur city.

Table 3.14: Summary of FLDs on Farm Mechanization

Crop	No. of FLDs	Area (ha)	No. of farmers	Results (q/ha)		Net Return (q/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Axial Flow Thresher	1	1	5	42.8	42.8	27450	28761
Blackgram	1	2	5	5.5	6.2	22000	29600
Cabbage	1	2	5	227.68	449.8	92500	149400
Cauliflower	1	4	10	201.4	231.8	46667	80249
Chickpea	5	24	86	11.15	15.8	34053	48251
Combine Harvester	1	1	5	42.6	42.6	22500	28000
Garlic	2	7	15	47.3	58.2	109900	143850
Greengram	1	2	5	5.1	5.6	18800	22800
Groundnut	3	5	30	17.73	18.3	35287	40093
Linseed	1	5	5	5.84	6.22	9500	14280
Maize	2	6	20	94	106.75	53429	41245
Mustard	4	36	87	10.12	10.27	24372	24906
Rice	22	89.85	184	29.53	34.03	24832	31267
Potato	1	35.2	89	5.2	6.8	14560	22040
Power operated maize Sheller	1	2	10	20.8	110	8500	10885
Power sprayer	1	2	10	34.1	34.7	14300	15600
Power tiller	1	5	12	41.26	45.72	36677	42465
Rotovator	1	1	5	42.7	43.4	24565	26940
Soybean	12	42.25	119	7.77	9.96	10691	16773
Wheat	13	50.2	128	31.08	38.88	30606	41512
Zero till seed drill	1	2	10	19.8	23.5	10920	14900
Total	**76**	**324.5**	**845**				

Table 3.15: Summary of FLDs on Fish Production and Management

Particulars	No. of FLDs	Area (ha)	No. of farmers	Results		Net Return (Rs)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Nutritional Management (mean body wt. of fish in kg.)	9	20.3	48	0.63	0.785	98693	162607
Integrated fish farming yield (no./ha)	37	107.35	260	516000	681000	67386	111992
Disease Management (yield q/ha)	8	29	51	31.25	33.85	66924	89336
Total	**54**	**156.65**	**359**				

Table 3.16: Summary of FLDs on Integrated Farming System

Particulars	No. of FLDs	Area (ha)	No. of farmers	Results (q/ha)		Net Return (q/ha)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Pond based farming system	4	26.3	15	27.58	39.38	89900	133245
Total	**4**	**26.3**	**15**				

Case Study: KVK Angul

Integrated farming system along with Ornamental fish rearing as a successful enterprise

Background: Shri Lambodar Sahu of Dandasingha Village of Angul district in Odisha is a 70 year old retired teacher practicing traditional fish farming since 2005. He could not earn that much profit for his family and was searching a newer method to support livelihood for his family. This eagerness brought to KVK, Angul. Considering his farm resouces KVK, Angul provided training on IFS to help him acquire adequate knowledge and skill in this technology.

KVK intervention: KVK guided and facilitated Shri Sahu start integrated farming system in seven acre consisting of fishery, horticultural crops like papaya, mango (Amarapalli and Mallika variety), banana, lemon, guava, ginger, turmeric, installation of honey bee box for honey production, raising of arhar at the pond dyke and rearing of poultry birds inculding Banaraja (Broiler variety). KVK's regular backstopping and handholding helped Shri Sahu to diversify and earn more income from seven acre land.

Outcome: Adoption of Integrated Farming System approach increased his income fivefolds from Rs. 30,000 – 40,000 per year to Rs. 1,50,000 – 2,00,000 per year. During his several visits to KVK Shri Sahu's interaction on ornamental fish rearing demonstation inspired him to establish colour fish unit. He attended training and with KVK help, he established the unit of Ornamental fish rearing. He was also sent to CIFA, Bhubaneswar to learn more on rearing colour fishes.

Impact: Shri Lambodar Sahu supplies all the produce to market and earns handsome money. As the production increased he faced marketing problem. KVK scientists linked him to different Aquashop owners for ease of the sale of his produce. Recently he was also awarded by Directorate of Fisheries, Odisha as a successful entrepreneur of the district.

Integrated farming system along with "Ornamental fish rearing" as a successful intervention

Table 3.17: Summary of FLDs on Poultry Management

Particulars	No. of FLDs	No. of birds	No. of farmers	Results		Net Return (Rs)	
				FP (T_1)	RP (T_2)	FP (T_1)	RP (T_2)
Poultry Nutritional Management (Avg. body wt. - kg./ bird)	1	25	4	1.27	1.38	108	112
Cage rearing (Egg production)	4	614	94	165	192	2775	5810
Backyard poultry management (Avg. body wt. - kg./ bird)	12	2854	121	1.753	2.239	11531	23245
Poultry health Management (Avg. body weight - g/ bird after 2 month)	2	8	28	236.73	345.6	154	164
Total	**19**	**3501**	**247**				

04 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 the organizing training both for the farmers as well as for the trainers so that updated knowledge and its dissemination could be done at regular basis particularly for the newly developed technolgy involving new setup of skills and understanding. During the year 2015-16, 7652 courses benefitting to 2,18,050 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 VII during 2015-16

Training	No. of courses				No. of Participants			
	CG	MP	Odisha	Total	CG	MP	Odisha	Total
Farmers & Farm Women	990	2536	1492	**5018**	31803	71652	38806	**142261**
Extension Personnels	91	271	194	**556**	2557	8227	2790	**13574**
Rural Youth	171	118	252	**541**	4618	3135	4764	**12517**
Sponsored	183	381	538	**1102**	6854	32015	1830	**40699**
Vocational	56	207	172	**435**	1326	5537	2136	**8999**
Total	**1491**	**3513**	**2648**	**7652**	**47158**	**120566**	**50326**	**218050**

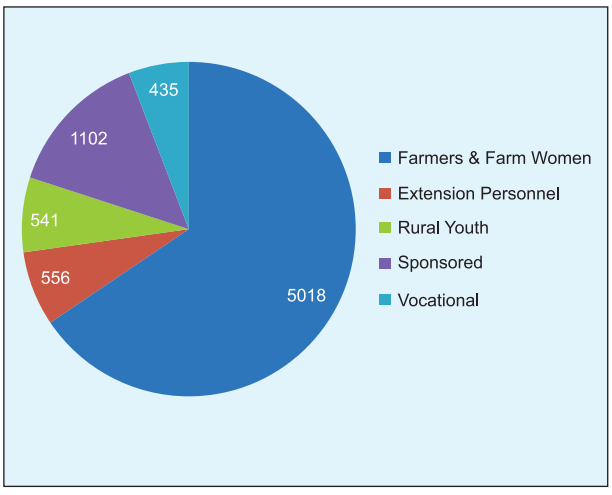


Figure- 1. No. of courses

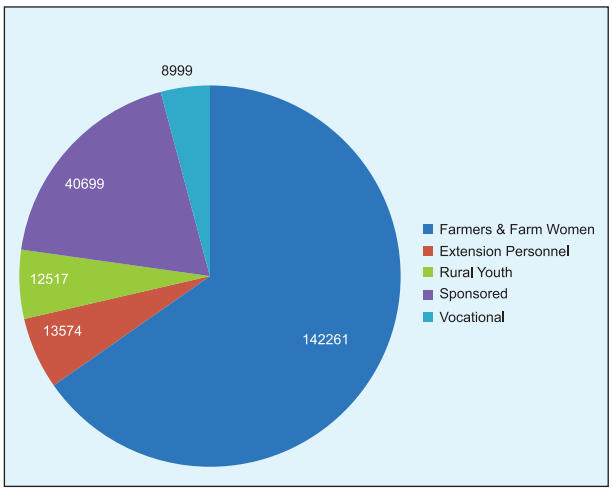


Figure- 2. No. of participants

Table 4.2: Training for Farmers and Farm Women in Zone VII during 2015-16

Major Theme	No. of Course	Duration	Gen			SC			ST			Others			Grand Total		
			M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Agril. Engineering	292	303	1480	166	1646	1250	357	1607	2321	533	2854	3025	382	3407	8076	1438	9514
Agroforestry	90	93	530	47	577	325	37	362	374	186	560	762	123	885	1991	393	2384
Capacity Building and Group Dynamics	263	326	1222	198	1420	690	248	938	1093	738	1831	2347	523	2870	5352	1707	7059
Crop Production	1097	1150	6382	516	6898	3060	700	3760	8053	3012	11065	10042	1304	11346	27537	5532	33069
Drudgery Reduction	1	1	16	0	16	7	0	7	6	0	6	11	0	11	40	0	40
Fisheries	138	149	1052	71	1123	321	81	402	509	122	631	978	283	1261	2860	557	3417
Women Empowerment	574	904	508	2253	2761	245	1707	1952	664	3381	4045	664	4515	5179	2081	11856	13937
Honey Bee	3	1	9	0	9	2	0	2	48	63	111	11	1	12	70	64	134
Fruits	113	140	622	81	703	253	111	364	747	262	1009	882	183	1065	2504	637	3141
Spices	57	62	342	25	367	152	32	184	369	91	460	603	68	671	1466	216	1682
Medicinal and Aromatic Plants	7	7	20	0	20	17	1	18	55	2	57	96	2	98	188	5	193
Plantation crops	5	8	6	1	7	4	3	7	55	10	65	44	2	46	109	16	125
Tuber crops	29	34	239	21	260	81	39	120	295	192	487	133	40	173	748	292	1040
Ornamental Plants	23	23	134	35	169	20	6	26	105	74	179	38	24	62	297	139	436
Vegetable Crops	472	534	2287	315	2602	1214	306	1520	2844	1048	3892	4420	848	5268	10765	2517	13282
Income Generation	5	6	21	0	21	6	8	14	28	7	35	44	10	54	99	25	124
Information and Communication Technology	16	16	100	10	110	30	8	38	57	54	111	154	4	158	341	76	417
Integrated Farming System	4	4	24	0	24	34	4	38	62	11	73	30	11	41	150	26	176
Livestock Production and Management	364	425	2041	354	2395	1032	309	1341	1808	752	2560	2629	510	3139	7510	1925	9435
Micro Irrigation	1	1	0	0	0	0	1	1	0	7	7	0	17	17	0	25	25
Nursery Management	3	1	1	0	1	4	1	5	0	0	0	15	0	15	20	1	21
Nutritional security	1	2	0	0	0	0	0	0	9	16	25	0	0	0	9	16	25
Plant Protection	796	962	4161	387	4548	2185	601	2786	4472	1712	6184	7373	1419	8792	18191	4119	22310
Production of Inputs at Site	56	64	222	13	235	160	25	185	340	119	459	608	97	705	1330	254	1584
Resource Conservation Techniques	4	4	28	6	34	10	0	10	3	0	3	54	3	57	95	9	104
Seed Production	1	1	0	0	0	0	0	0	25	0	25	0	0	0	25	0	25

Major Theme	No. of Course	Duration	Gen			SC			ST			Others			Grand Total		
			M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Soil Health and Fertility Management	534	653	2720	288	3008	1422	278	1700	3537	1175	4712	5531	618	6149	13210	2359	15569
Integrated Nutrient Management	6	6	0	5	5	18	12	30	55	14	69	90	32	122	163	63	226
Other	63	63	280	32	312	249	23	272	734	183	917	1132	134	1266	2395	372	2767
Total	**5018**	**5943**	**24447**	**4824**	**29271**	**12791**	**4898**	**17689**	**28668**	**13764**	**42432**	**41716**	**11153**	**52869**	**107622**	**34639**	**142261**

Table 4.3: Training for Extension Personnel in Zone VII during 2015-16

Major Theme	No. of Course	Duration	Gen			SC			ST			Others			Grand Total		
			M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Agril. Engineering	25	33	193	40	233	55	7	62	75	23	98	134	37	171	457	107	564
Agroforestry	9	13	41	13	54	12	4	16	24	7	31	69	10	79	146	34	180
Capacity Building and Group Dynamics	62	76	277	64	341	136	20	156	151	80	231	616	24	640	1180	188	1368
Crop Production	104	126	578	67	645	234	39	273	756	111	867	1035	96	1131	2603	313	2916
Fisheries	11	19	74	17	91	7	2	9	45	6	51	36	8	44	162	33	195
Women Empowerment	47	66	40	137	177	23	103	126	22	168	190	59	348	407	144	756	900
Fruits	19	26	107	34	141	43	41	84	49	19	68	120	19	139	319	113	432
Spices	8	10	33	5	38	23	7	30	76	3	79	69	9	78	201	24	225
Medicinal and Aromatic Plants	1	2	0	5	5	0	2	2	0	5	5	0	3	3	0	15	15
Plantation crops	1	1	0	0	0	3	4	7	0	1	1	1	1	2	4	6	10
Tuber crops	1	2	3	1	4	1	1	2	2	3	5	2	2	4	8	7	15
Ornamental Plants	5	8	8	1	9	11	1	12	54	19	73	26	1	27	99	22	121
Vegetable Crops	45	57	294	51	345	83	18	101	160	93	253	247	32	279	784	194	978
Information and Communication Technology	4	4	41	1	42	15	5	20	11	5	16	36	4	40	103	15	118
Integrated Farming System	4	5	7	6	13	4	1	5	5	2	7	19	1	20	35	10	45
Livestock Production and Management	28	43	345	39	384	69	21	90	116	29	145	186	29	215	716	118	834
Micro Irrigation	1	2	1	7	8	7	2	9	12	4	16	40	25	65	60	38	98
Plant Protection	92	117	495	120	615	265	106	371	437	142	579	824	166	990	2021	534	2555
Production of Inputs at Site	6	7	67	8	75	28	6	34	52	9	61	50	15	65	197	38	235
Soil Health and Fertility Management	51	62	291	41	332	108	24	132	204	38	242	385	49	434	988	152	1140
Other	32	37	201	32	233	31	2	33	140	52	192	151	21	172	523	107	630
Total	**556**	**716**	**3096**	**689**	**3785**	**1158**	**416**	**1574**	**2391**	**819**	3210	4105	900	5005	10750	2824	13574

Table 4.4: Training for Rural Youth + Vocational in Zone VII during 2015-16

Major Theme	No. of course	Duration days	Gen			SC			ST			Others			Grand Total		
			M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Agril. Engineering	25	119	62	7	69	68	16	84	211	36	247	153	19	172	494	78	572
Agroforestry	13	56	88	0	88	31	0	31	101	15	116	108	4	112	328	19	347
Bio Agent	1	5	0	4	4	1	6	7	3	9	12	3	4	7	7	23	30
Capacity Building and Group Dynamics	62	222	314	63	377	121	75	196	137	116	253	469	126	595	1041	380	1421
Crop Production	111	335	446	59	505	195	63	258	807	199	1006	530	95	625	1978	416	2394
Dairy Management	6	12	61	33	94	18	2	20	2	5	7	71	32	103	152	72	224
Farm Machanization	3	13	12	3	15	15	2	17	6	0	6	21	3	24	54	8	62
Fisheries	70	125	242	33	275	148	21	169	300	46	346	374	45	419	1064	145	1209
Fruits and Vegetables	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Goatry	1	5	3	3	6	3	2	5	6	7	13	3	3	6	15	15	30
Women Empowerment	103	626	131	344	475	91	216	307	178	416	594	243	695	938	643	1671	2314
Fruits	17	48	49	10	59	21	23	44	132	76	208	113	31	144	315	140	455
Spices	1	3	18	10	28	4	5	9	8	3	11	10	3	13	40	21	61
Medicinal and Aromatic Plants	1	1	9	0	9	11	0	11	0	0	0	6	0	6	26	0	26
Plantation crops	2	2	1	0	1	0	0	0	18	4	22	2	0	2	21	4	25
Tuber crops	3	7	24	2	26	6	1	7	33	15	48	3	4	7	66	22	88
Ornamental Plants	18	28	81	22	103	62	12	74	222	72	294	76	4	80	441	110	551
Vegetable Crops	51	142	263	43	306	114	13	127	222	60	282	407	60	467	1006	176	1182
Income Generation	83	357	251	36	287	64	23	87	340	153	493	258	56	314	913	268	1181
Integrated Farming System	6	22	32	8	40	5	5	10	39	8	47	29	7	36	105	28	133
Lac Cultivation	5	54	14	2	16	20	16	36	30	16	46	12	4	16	76	38	114
Livestock Production and Management	68	199	279	53	332	194	58	252	442	138	580	443	125	568	1358	374	1732
Mushroom Cultivation	22	132	35	86	121	24	33	57	14	106	120	47	61	108	120	286	406
Nursery Management	1	1	5	2	7	7	2	9	7	2	9	5	2	7	24	8	32
Plant Protection	74	144	219	39	258	181	53	234	447	188	635	497	73	570	1344	353	1697
Poultry	2	2	12	3	15	1	0	1	22	2	24	5	0	5	40	5	45
Production of Inputs at Site	48	150	175	19	194	89	19	108	176	94	270	192	64	256	632	196	828
Seed Production	4	24	27	7	34	12	3	15	13	3	16	43	11	54	95	24	119
Soil Health and Fertility Management	35	129	96	15	111	73	15	88	287	91	378	296	34	330	752	155	907
Value Addition	14	55	56	25	81	3	12	15	17	45	62	51	22	73	127	104	231
Water Management	1	1	4	0	4	2	0	2	0	0	0	19	0	19	25	0	25
Enterpreneurship development	80	411	331	127	458	165	84	249	425	153	578	542	271	813	1463	635	2098
Other	44	71	129	41	170	73	24	97	463	92	555	131	24	155	796	181	977
Total	**976**	**3506**	**3469**	**1099**	**4568**	**1822**	**804**	**2626**	**5108**	**2170**	**7278**	**5162**	**1882**	**7044**	**15561**	**5955**	**21516**

Table 4.5: Sponsored Training Programme in Zone VII during 2015-16

Major Theme	No. of course	Duration	Gen			SC			ST			Others			Grand Total		
			M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Agril. Engineering	36	30	341	107	448	497	255	752	512	267	779	406	206	612	1756	835	2591
Agroforestry	6	27	37	12	49	33	5	38	1103	52	1155	95	3	98	1268	72	1340
Bio Fertilizer	6	6	0	0	0	0	5	5	0	6	6	0	15	15	0	26	26
Capacity Building and Group Dynamics	86	201	990	115	1105	6261	1223	7484	4526	610	5136	2996	338	3334	14773	2286	17059
Crop Production	289	325	1411	269	1680	1277	710	1987	2256	850	3106	2418	908	3326	7362	2737	10099
Entrepreneurship Development	9	16	49	2	51	105	4	109	67	2	69	313	8	321	534	16	550
Farm Machanization	3	2	20		20	70		70			0			0	90	0	90
Fisheries	10	89	41	2	43	84	1	85	139	41	180	62	0	62	326	44	370
Goat Management	1	1	4	1	5	3	0	3	2	0	2	8	1	9	17	2	19
Women Empowerment	22	24	29	53	82	36	70	106	189	271	460	148	100	248	402	494	896
Fruits	7	6	5	0	5	0	0	0	121	42	163	13	1	14	139	43	182
Medicinal and Aromatic Plants	1	1	0	0	0	63	0	63	1	0	1	5	0	5	69	0	69
Plantation crops	1	1	0	0	0	0	0	0	52	0	52	0	0	0	52	0	52
Tuber crops	2	4	25	1	26	4	0	4	55	10	65	1	22	23	85	33	118
Ornamental Plants	16	16	94	19	113	76	26	102	98	26	124	71	15	86	339	86	425
Vegetable Crops	19	22	64	8	72	47	5	52	245	85	330	244	40	284	600	138	738
Improved Horticultural Technology	1	1	0	2	2	7	0	7	6	1	7	0	2	2	13	5	18
Integrated Farming System	1	2	0	0	0	0	0	0	36	0	36	37	0	37	73	0	73
Livestock Production and Management	269	159	42	4	46	72	5	77	246	64	310	65	0	65	425	73	498
Mushroom Cultivation	95	92	14	1	15	31	0	31	32	6	38	41	11	52	118	18	136
Plant Protection	41	46	95	14	109	88	5	93	637	94	731	313	53	366	1133	166	1299
PPV&FRA	11	4	75	0	75	196	6	202	70	5	75	46	2	48	387	13	400
Production of Inputs at Site	9	35	30	6	36	84	10	94	16	2	18	139	14	153	269	32	301
Soil Health and Fertility Management	50	87	435	42	477	193	38	231	271	68	339	757	56	813	1656	204	1860
Other	111	111	243	34	277	214	35	249	212	120	332	538	94	632	1207	283	1490
Total	**1102**	**1308**	**4044**	**692**	**4736**	**9441**	**2403**	**11844**	**10892**	**2622**	**13514**	**8716**	**1889**	**10605**	**33093**	**7606**	**40699**

B. Capacity Building programmes by DES and ATARI

Table 4.6: Capacity building activities organized in identified area for KVK Staff by the Directorate of Extension Services during 2015-16

Training Topic	Date	Venue	No. of Participants
Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur , M.P.			
Skill Development Programme (VTP)	April 15 2015	DES, JNKVV, Jabalpur	20
Pre -Zonal Workshop	June 18-19, 2015	DES, JNKVV, Jabalpur	22
Execution of XIIth Fifth Year Plan	August 21-22, 2015	DES, JNKVV, Jabalpur	22
Status of GPS/Preparation of Soil Health Card/Purchase of Soil Testing Kit	November 2, 2015	DES, JNKVV, Jabalpur	30
Implementation of e-governance at KVKs	December 16-17, 2015	DES, JNKVV, Jabalpur	45
Total			**139**
Rajmata Vijyaraje Sindhiya Krishi Vishwa Vidyalaya, Gwalior , M.P.			
Approach of PRA tools in Agricultural Extension	February 2-5, 2016	BM College of Agri., Khandwa	31
Human resource development	November 22-24, 2015	RVSKVV, Gwalior	30
Role of market intelligence in economic sustability of farming systems	November 18-19, 2015	RVSKVV, Gwalior	24
Climate resilient technologies for sustainable agriculture production	December 22-23, 2015	RVSKVV, Gwalior	29
Website management and online reporting	January 15-17, 2016	College of Agri., Gwalior	33
Integrated approach on management of insect, pest disease and weeds	February 26-27, 2016	RVSKVV, Gwalior	23
Improving quality of agricultural produce through organic farming for economic sustainability	February 27-29, 2016	BM College of Agriculture, Khandwa	31
Importance of soil health card for soil health management	January 27-28, 2016	ICAR-IISS, Bhopal	27
Total			**228**
Indira Gandhi Agricultural University, Raipur (Chhattisgarh)			
Training on Terrace Gardening	May 3, 2015	Directorate Extension Services, IGKV, Raipur	33
Review Meeting	August 06, 2015	Directorate Extension Services, IGKV, Raipur	36
Mass multiplication of *Trichoderma* and composting of crop residues	September 15, 2015	Directorate Extension Services, IGKV, Raipur	34
Group meeting cum orientation workshop on cluster demonstrations on oilseeds	October 08, 2015	Directorate Extension Services, IGKV, Raipur	62
Group meeting cum orientation workshop on cluster demonstrations on pulses	October 21, 2015	Directorate Extension Services, IGKV, Raipur	45
Value Addition and Processing of Agricultural and Horticultural Crops	February 16-17, 2016	Directorate Extension Services, IGKV, Raipur	82
Orientation programme for farm managers	February 4, 2016	Directorate Extension Services, IGKV, Raipur	33

Training Topic	Date	Venue	No. of Participants
Review meeting cum training programme on *Pradhan Mantri Fasal Bima Yojna*	March 11, 2016	Directorate Extension Services, IGKV, Raipur	34
Total			**359**
Orissa University Agricultural & Technology, Bhubaneswar (Odisha)			
Execution of XII plan proposal of KVKs, Odisha	August 13-14, 2015	DEE, OUAT, Bhubaneswar	62
Strategies to increase production and productivity of Pulses and oilseeds in Odisha	October 6-9 2015	DEE, OUAT, Bhubaneswar	62
Progress of soil testing by KVKs of Odisha	October 30, 2015	DEE, OUAT, Bhubaneswar	59
Preparation of soil health card and its recommendations to the farmers of Odisha	November 21, 2015	DEE, OUAT, Bhubaneswar	49
Issues and opportunities in agriculture on present climate change sceneries	January 29 -30, 2016	DEE, OUAT, Bhubaneswar	54
Standard operational procedures for KVKs of Odisha	March 2-4, 2016	DEE, OUAT, Bhubaneswar	47
Total			**333**
Grand Total			**1059**

Table 4.7: Capacity bulding activities organized by ATARI in collaboration with ICAR Institutes in identified areas for KVK staff during 2015-16

S. No.	Training/Workshop Title	Date	Venue	No. of Participants	Collaborating Institute
1	Orientation Course on IPM in Major Crops	April 16-17, 2015	Jabalpur	102	NCIPM, New Delhi
2	Review-cum- Action Plan Workshop on Soil and Fertility Management	April 20-21, 2015	Bhopal	63	IISS, Bhopal
3	Review-cum- Action Plan Workshop on Soybean Technology	April 22-23, 2015	Indore	55	DSR, Indore
4	Review-cum- Action Plan Workshop on Fishery Technology	April 23-25 2015	Kolkata	35	CIFE, Kolkata Centre
5	Review-cum- Action Plan Workshop on Rice Technology	April 27-28, 2015	Cuttack	60	NRRI, Cuttack,
6	Action Plan Workshop for Chhattisgarh	April 25-26, 2015	Raipur	36	IGKV, Raipur
7	Action Plan Workshop for M.P.	April 28-29, 2015	KVK Ujjain, M.P.	60	RVSKVV, Gwalior
8	Review-cum- Action Plan Workshop on Livestock Production	May 1-2, 2015	ATARI Jabalpur	36	NDVSU, Jabalpur
9	Review Workshop of NICRA KVKs	May 5-7, 2015	ATARI, Jabalpur	35	CRIDA, Hyderbad
10	Action Plan Workshop for Odisha	May 18-19, 2015	OUAT Bhubaneswar	42	CIFA, Bhubaneswar
11	Review-cum- Action Plan Workshop on Weed Management	May 19-20, 2015	Jabalpur	55	DWR, Jabalpur

S. No.	Training/Workshop Title	Date	Venue	No. of Participants	Collaborating Institute
12	Five days 2nd MDP for Newly recruited PCs of KVKs	May 23-27, 2015	ATARI, Jabalpur	5	NAARM, Hyderabad
13	Training-cum-workshop for Extension Experts	June 17-18, 2015	ATARI, Jabalpur	60	JNKVV, Jabalpur
14	Capacity Building of Home Science Experts	June 25-27, 2015	KVK Ujjain	46	RVSKVV, Gwalior
15	Training-cum-workshop on Nutition-rich vegetable crops	August 11-13, 2015	Varanasi	65	IIVR, Varanasi
16	Organised Review cum Action Plan Workshop for Tribal Sub Plan KVKs at KVK Koraput, Odisha	August 17-18, 2015	KVK Koraput	40	OUAT, Bhubaneswar
17	Zonal Workshop of KVKs 2015	Sept. 9-11, 2015	KVK Ujjain	350	RVSKVV, Gwalior
18	Training on cluster demonstrations on oilseeds and pulses	October 8, 2015	ATARI, Jabalpur	55	JNKVV, Jabalpur
19	Sensitization workshop of Nodal Officers of Mera Gaon Mera Gaurav (MGMG	October 14, 2015	ATARI, Jabalpur	32	-
20	Zonal Workshop of cluster demonstrations on pulses	January 5-6, 2016	Bhubaneswar	42	OUAT, Bhubaneswar
21	Five days 3rd MDP for Newly recruited PCs of KVKs	January 18-22, 2016	ATARI, Jabalpur	5	NAARM, Hyderabad
22	Training–cum-workshop for Home Science Experts	Feb. 25-26, 2016	Chitrakoot	57	DRI, KVK Satna
23	Training-cum Workshop on Farm Mechanization	March 4-5, 2016	Bhopal	35	CIAE, Bhopal
24	Training-cum Workshop in Fishery Technology	March 17-18, 2016	Bhubaneswar	30	CIFA, Bhubaneswar
Total				**1401**	**-**

Table 4.8: KVK Visit/Workshop/Training/Symposium attended by the ZPD Staff/Scientist

S. No.	Particulars	No. of Programmes
1	Trainings	3
2	Workshops	5
3	Conferences	7
4	Seminars	1
5	KVK Visits	69
6	Any other (Review Workshop/Training conducted)	32
Total		**117**

Table 4.9: Capacity building of ATARI Staff

a. Participation in training

S. No.	Name of employee	Designation	Discipline/ Section	Name of training programme attended	Duration (days)	Organizing institution
1	Sh. Tushar Athare	Scientist	Agricultural Extension	Capacity Building Programme on Methodology in Agricultural Extension Research	5	Division of Agricultural Extension & IFPRI
2	Sh. Sunil Kumar Gupta	AAO	NA	MIS/FMS	3	ICAR-IASRI
3	Sh. R.K.Soni	Prog Asstt.	Comp. Appl.	MIS/FMS	3	ICAR-IASRI

b. Training organized for various category of Employee: NIL

c. HRD fund Allocation and Utilization

Particulars	Budget RE (Rs. in lakhs) allocated	Actual expenditure (Rs. in lakhs)	Utilization (%)
ATARI	0.75	0.19	25.33
KVKs	10.0	9.25	92.5
Total	**10.75**	**9.44**	-

Table 4.10: Footfall in KVKs of Zone VII

State	KVKs	No. of Footfalls			
		Farmers	Officials	VIPs	Total
Madhya Pradesh	46	129666	4399	460	134525
Chhattisgarh	19	42626	3247	744	46617
Odisha	33	35648	3088	269	39005
Total	**98**	**207940**	**10734**	**1473**	**220147**

Farmer interaction with scientist

Farmer interaction in Chickpea

05 SEED, PLANTING MATERIALS, BIO-PRODUCTS AND LIVESTOCK MATERIAL PRODUCTION

Availability of the quality seeds timely and adequate happens to be the major constraints of farmers. Therefore, it was taken as 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 17156.57 q of seed and 66.79 lakhs planting material of different crops (cereals, pulses, oilseeds, vegetables, medicinal plants, fruits, etc.) and distributed among farmers. KVKs of the Zone also produced bio-products and livestock products at their farms.

Table 5.1: State- wise seed and planting material produced by the KVKs in Zone-VII

State	2015-16	
	Seed (q)	Planting Material (in lakhs)
Madhya Pradesh	9694.93	30.00
Chhattisgarh	3829.65	10.83
Odisha	3631.99	25.96
Total	**17156.57**	**66.79**

Table 5.2: State- wise details of planting material produced by the KVKs in Zone-VII

State	2015-16			
	Nos.	Value (Rs.)	Provided to no. of Farmers	Expected area coverage (ha.)
Madhya Pradesh	3000177	831415	21051	184.7
Chhattisgarh	1083374	868851	3525	145.47
Odisha	2595589	1395867.5	19363	58.29
Total	**6679140**	**3096134**	**43939**	**388.46**

Table 5.3: Status of seed production in Zone-VII

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Cereal	Barley	JB-1	3.6	9000	12
Cereal	Barley	K-588	3.13	7825	7
Cereal	Barley	UB- 52	7.88	19700	20
Cereal	Maize	Hyb- 4055	18.4	23600	40
Cereal	Maize	JM- 216	52.8	48000	0
Cereal	Rice	Bamleshwari	77.7	115000	0

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Cereal	Rice	Birsa Vikash, Danteshwari, PS- 3	180	170000	220
Cereal	Rice	C-40	17.05	26427.5	0
Cereal	Rice	Chandrahasini	210.1	127600	70
Cereal	Rice	CR-Dhan-10	31.5	70875	0
Cereal	Rice	Danteshwari	149.8	10995	18
Cereal	Rice	Durgeshwari	63.56	114408	265
Cereal	Rice	IGKV R-1	26	39000	28
Cereal	Rice	Indira Arobic	16.72	25916	0
Cereal	Rice	Indira Barani-1	196.4	275250	0
Cereal	Rice	Indira Maheshwari	64	95000	0
Cereal	Rice	Indira Rajeshwari	184	125000	0
Cereal	Rice	IR-64	159.5	24000	0
Cereal	Rice	Jogesh	17.8	46227	0
Cereal	Rice	JR- 201	133.83	35478	46
Cereal	Rice	JR -503	98	3234	0
Cereal	Rice	JRH-19	0.5	15000	0
Cereal	Rice	Karma Masuri	336	34920	81
Cereal	Rice	Kranti	126	3528	0
Cereal	Rice	Lalat	26	64584	0
Cereal	Rice	Mahamaya	205.6	172460	167
Cereal	Rice	Maheshwari	179.3	237775	0
Cereal	Rice	Manaswini	156.8	164840	0
Cereal	Rice	Mandakini	260.6	376545	0
Cereal	Rice	Menka1	20.8	68224	0
Cereal	Rice	Mrunalini	196.6	82620	0
Cereal	Rice	MTU- 1010	893.02	1949945	1361
Cereal	Rice	Pant-10	7.13	28520	25
Cereal	Rice	Pooja	121	3993	0
Cereal	Rice	Pratikshya	1445.2	2779759	123
Cereal	Rice	PS- 5	93.2	23200	22
Cereal	Rice	Purnima	116	3828	0
Cereal	Rice	Rajeshwari	355.6	568898	115
Cereal	Rice	Rani Dhan	930.4	2254750.6	614
Cereal	Rice	Sahabhagi	199.3	190643	52
Cereal	Rice	Sambha Mahsuri	79	2607	0
Cereal	Rice	Samleshwari	112.05	51426	119
Cereal	Rice	Siddhant	24.4	19217	35

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Cereal	Rice	Swarna sub-1	366.3	607110	70
Cereal	Rice	Tejaswini	120.4	170946	150
Cereal	Rice	WGL- 32100	94.4	44372	53
Cereal	Rice	RC-14	20	40000	0
Cereal	Rice	PB- 1509	36.51	550	3
Cereal	Rice	PS- 4	1.2	12060	12
Cereal	Rice	Pusa- 1401	6.5	32500	81
Cereal	Rice	Pusa- 1509	7.02	49140	100
Cereal	Wheat	DBW- 110	27.8	30000	16
Cereal	Wheat	GW- 322	631.2	1002200	103
Cereal	Wheat	GW-266	120	216000	0
Cereal	Wheat	GW-273	191.3	198148	78
Cereal	Wheat	Gw-366	1477.54	3153832	2123
Cereal	Wheat	HD- 2652	1.14	10990	8
Cereal	Wheat	HD- 2864	6.3	22050	16
Cereal	Wheat	HD- 2932	1.1	3700	2
Cereal	Wheat	HD- 2987	16	48000	22
Cereal	Wheat	HI -1544	154.97	201730	148
Cereal	Wheat	HI- 8663	20.51	1200	0
Cereal	Wheat	HI- 8713	138.58	161100	128
Cereal	Wheat	HI- 8737	0.45	1350	0
Cereal	Wheat	JW- 17	14	24675	18
Cereal	Wheat	JW- 3020	316.95	2217850	18
Cereal	Wheat	JW -3173	113.25	0	0
Cereal	Wheat	JW- 3211	234.2	958800	290
Cereal	Wheat	JW- 3288	31.8	108170	57
Cereal	Wheat	JW- 3336	32	38000	0
Cereal	Wheat	Kanchan	31	36000	0
Cereal	Wheat	LOK-1	57.2	171360	0
Cereal	Wheat	MP- 1203	16.03	1400	4
Cereal	Wheat	MP- 3211	11.2	39200	27
Cereal	Wheat	MP 3288	10	30000	16
Cereal	Wheat	MPO- 1215	0.8	800	0
Cereal	Wheat	Pusa Mangal, Purna, Poshan	53.47	133675	25
Cereal	Wheat	Ratan	122.5	3500	20
Cereal	Wheat	RVW- 4106	394	2694750	0
Cereal	Wheat	Sujata	140.9	201350	4

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Cereal	Wheat	MP- 3269	2	7000	4
Cereal	Wheat	Raj- 4238	1.25	3750	0
Fiber	Sunhemp	K-12	36.1	173800	105
Fiber	Sunhemp	Local	1.5	10000	20
Flowers	Marigold	Pusa Narangi	0.177	88500	134
Fodder	Oat	JHO – 822	0.08	390	0
Fodder	Oat	JHO – 851	0.31	1575	17
Forestry	Bamboo	Local		8500	19
Fruits	Aonla	N-7	80	8000	2
Fruits	Guava	G-27	150	30000	4
Fruits	Jack fruit	Deshi	25	2500	2
Fruits	Lemon	Kagzi	60	12000	3
Fruits	Mango	Amarapalli, Langra	53.83	29575	5
Fruits	Papaya	Coorg honeydew	0.0056	2800	36
Fruits	Watermelon	SB	0.01	1000	30
Green Manuring Crop	Dhanicha	Local	7.7	6250	20
Green Manuring Crop	Sunhemp	Local	2.3	10410	6
Millet	Kodo	JK- 41	4.8	19200	120
Millet	Kodo	JK -439	5.7	22800	142
Millet	Kodo	JK -48	9.16	41220	200
Millet	Little Millet	JK- 8	3.3	13200	82
Millet	Ragi	GPU-28	16	32000	0
Mushroom	Mushroom	*Pleurotus spp.*	0.66	6600	66
Mushroom	Oyster mushroom	*P.sajarcaju*	0.75	3750	0
Mushroom	Paddy straw mushroom	*V.volvacea*	2.49	17430	0
Oilseed	Groundnut	Devi	3	18900	6
Oilseed	Linseed	Deepika	3	12000	0
Oilseed	Linseed	Indira Alsi- 32	1.05	20000	4
Oilseed	Linseed	JLS- 66	8.5	59075	75
Oilseed	Linseed	JLS- 67	3.5	24325	30
Oilseed	Linseed	JLS- 9	5.46	38040	68
Oilseed	Linseed	JLS-27	4	26000	0
Oilseed	Linseed	Kartika	5.35	35000	0
Oilseed	Linseed	PKDL-21	1.1	7500	0

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Oilseed	Linseed	RLC-92	11.46	54490	200
Oilseed	Mustard	Anuradha	2	5000	0
Oilseed	Mustard	Bharat- 1	2.21	22100	78
Oilseed	Mustard	Chhattisgarh Sarson	15.09	81800	0
Oilseed	Mustard	Laxmi	1	10000	20
Oilseed	Mustard	NRCDR-2	1.56	15600	32
Oilseed	Mustard	Pusa Agrani/ Pusa Tarak	1	2000	50
Oilseed	Mustard	Pusa Bold	1.15	3000	3
Oilseed	Mustard	Pusa Mahak	1.46	13600	46
Oilseed	Mustard	Pusa Tarak	4.115	37390	162
Oilseed	Mustard	Pusa vijay	15.16	80000	0
Oilseed	Mustard	RP- 09	0.07	280	3
Oilseed	Mustard	RVM	28.44	145000	0
Oilseed	Mustard	Varuna	4.02	40200	127
Oilseed	Niger	Utakal-150	1.5	7500	0
Oilseed	Niger	Utkal Niger	2.8	10080	14
Oilseed	Niger	JNC-6	3.3	26450	80
Oilseed	Niger	JNS- 9	1.3	6500	0
Oilseed	Safflower	PBNS-12	14.13	31395	0
Oilseed	Sesame	TKG- 8	1	11000	50
Oilseed	Sesame	JTS-08	0.145	2175	19
Oilseed	Sesame	JTS-21	1.06	16950	84
Oilseed	Sesame	JTS-22	0.56	8400	34
Oilseed	Sesame	Local	0.65	9750	6
Oilseed	Sesame	TKG-22	0.67	13567	0
Oilseed	Sesame	TKG-55	3.68	74520	0
Oilseed	Sesame	Western- 11	0.2	20000	10
Oilseed	Soybean	JS- 9560	120	1125000	0
Oilseed	Soybean	JS- 2029	226.2	1750000	420
Oilseed	Soybean	JS- 2034	9.07	18000	0
Oilseed	Soybean	JS- 335	298.67	2160750	144
Oilseed	Soybean	JS- 9305	376.62	2033075	6
Oilseed	Soybean	JS- 9560	338.64	1406300	258
Oilseed	Soybean	JS-9752	103.69	91050	0
Oilseed	Soybean	NRC- 7	0.35	2800	3
Oilseed	Soybean	RVS- 20010	37.33	288750	97
Oilseed	Soybean	RVS- 20014	132.4	858000	0

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Oilseed	Groundnut	TG- 37	3.5	20000	0
Ornamental	Amaranthus	Local	0.0025	500	20
Ornamental	Madhukamni, Chandni, Champa, Rose, Bogainvillea	Local	102	2040	23
Pulses	Blackgram	IPU-941	8.25	8250	40
Pulses	Blackgram	JU-86	15	12500	0
Pulses	Blackgram	LBG-20	3	5700	0
Pulses	Blackgram	Prasad	0.8	6400	10
Pulses	Blackgram	PU-31	4.68	10400	0
Pulses	Blackgram	TAU-1	1.36	8160	0
Pulses	Blackgram	TU-942	1.2	14400	25
Pulses	Blackgram	Azad-3	4.26	7000	0
Pulses	Chick pea	JAKI	30	120000	100
Pulses	Chick pea	JAKI- 9218	387.2	831600	0
Pulses	Chick pea	JAKI- 9260	103	1236000	0
Pulses	Chick pea	JG- 12	19.05	20000	0
Pulses	Chick pea	JG- 130	153.35	314800	276
Pulses	Chick pea	JG- 14	64.24	45600	29
Pulses	Chick pea	JG- 16	41.30	88755	50
Pulses	Chick pea	JG- 6	18	216000	0
Pulses	Chick pea	JG- 63	126.62	1695400	52
Pulses	Chick pea	JG-11	40.86	72000	106
Pulses	Chick pea	JG-226	129.29	135098	0
Pulses	Chick pea	Kripa	17.18	159620	39
Pulses	Chick pea	Local	56	672000	12
Pulses	Chick pea	PKV-4	9	50000	12
Pulses	Chick pea	RSG- 895	0.75	5000	9
Pulses	Chick pea	RSG- 945	2	10000	17
Pulses	Chick pea	RVG- 2	2.8	19200	0
Pulses	Chick pea	RVG- 202	80	516000	0
Pulses	Chick pea	RVG- 203	12.8	160000	64
Pulses	Chick pea	RVSKG- 102	5	50000	12
Pulses	Chick pea	Vaibhav	51.72	6000	50
Pulses	Fieldpea	Paras	6.1	22631	19
Pulses	Fieldpea	Shubhra	7.99	30107	26
Pulses	Greengram	HUM -12	14.54	28000	0

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Pulses	Greengram	IPM-214	0.01	150	1
Pulses	Greengram	IPM-23	0.015	225	2
Pulses	Greengram	PDM- 139	3.275	18000	3
Pulses	Greengram	Samrat	1.29	19350	43
Pulses	Greengram	TARM-1	18.78	37450	10
Pulses	Greengram	TJM-37	1.15	20700	0
Pulses	Lathyrus	Mahatiwra	6.05	12000	0
Pulses	Lentil	JL- 3	44.4	110000	0
Pulses	Lentil	KLS-218	5.22	58400	37
Pulses	Pigeon Pea	ICPL- 88039	3.15	1200	0
Pulses	Pigeon Pea	Pusa- 2002	0.04	560	13
Pulses	Pigeon Pea	Rajiv Lochan	3.76	28770	85
Pulses	Pigeon Pea	TJT- 501	382.53	874800	120
Pulses	Pigeon Pea	TT- 401	0.52	7140	67
Pulses	Pigeon pea	Asha	17.5	70000	0
Pulses	Pigeon pea	Rajeev Lochan	19.58	85000	0
Pulses	Pigeonpea	Asha	6.11	30170	19
Pulses	Pigeonpea	VL-Arhar-1	1	7016	10
Spices	Coriander	Hira moti	0.26	9100	14
Spices	Coriander	Pant haritima	2.22	55500	320
Spices	Fenugreek	Kasoori	0.014	140	15
Spices	Fenugreek	PEB	0.6775	3387.5	0
Spices	Fenugreek	RMT-1	0.55	13875	11
Spices	Garlic	G-282	54.77	112716	79
Spices	Ginger	Suprabha	3.59	48550	0
Spices	Turmeric	Pant Pitambh	2.24	17920	10
Spices	Turmeric	Roma	49.8	124500	12
Spices	Turmeric	Roma, Suroma	1.84	18400	4
Spices	Coriander	CIMPO-33	0.75	29660	5
Tuber	Elephant foot	Gajendra	7	28000	0
Vegetables	Bitter gourd	Aman shree	0.0228	4560	80
Vegetables	Bottle Gourd	Pusa shrumadhi	0.0363	3630	37
Vegetables	Bottle Gourd	Narendra Shivani	0.0585	5850	137
Vegetables	Brinjal	NB-2	0.0112	2240	75
Vegetables	Carrot	Pusa kesar	0.011	330	3
Vegetables	Carrot	Pusa rudhira	0.0212	636	29

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Vegetables	Chilli	KA-2	0.16	32000	215
Vegetables	Chinese Cabbage	CC	0.46	5410	0
Vegetables	Cluster bean	RGC-1002	0.01	100	1
Vegetables	Cluster bean	RGC-1066	0.003	30	2
Vegetables	Cluster bean	RGC-936	0.019	190	11
Vegetables	Cow pea	K- 5169	0.021	420	29
Vegetables	Cow pea	Kanchan	0.005	100	2
Vegetables	Cow pea	Kohinoor	0.1	500	0
Vegetables	Cow pea	Pant Lobia-1	0.014	280	79
Vegetables	Cucumber	Jounpuri long	0.01385	2770	23
Vegetables	Fennel	Mushrika	0.0105	315	14
Vegetables	Muskmelon	Madhu	0.02	2000	30
Vegetables	Okra	Arka Anamika, VRO-22	1.01	80800	14
Vegetables	Okra	Kashi Pragati	1.83	36600	112
Vegetables	Onion	AFDR	0.18	27000	20
Vegetables	Onion	ALR	1.6	256000	77
Vegetables	Onion	Bhima Red	0.01	2000	2
Vegetables	Onion	Bhima Super	0.0125	2500	3
Vegetables	Pea	GS-10	0.74	8880	16
Vegetables	Pea	Prakash	10	84000	50
Vegetables	Pea	VRP-22	0.16	1920	8
Vegetables	Pea	VRP-9	0.24	2880	4
Vegetables	Potato	Kufari pukhraj, Kufari Jyoti	115.01	345030	12
Vegetables	Pumpkin	Pusa harit	0.0255	2550	32
Vegetables	Raddish	Arka nishant	0.19	5700	213
Vegetables	Raddish	Japani Safed	0.015	450	11
Vegetables	Raddish	Kashi Sweta	0.093	2790	95
Vegetables	Raddish	Pusa Chetki	0.155	4650	113
Vegetables	Raddish	Regi	0.012	360	4
Vegetables	Spinach	All green	0.0995	2487.5	59

Crop Category	Crop	Variety	Quantity (q)	Value (Rs)	Beneficiaries
Vegetables	Spinach	Arka Anupama,	0.0106	265	67
Vegetables	Sponge guard	Local	0.04	400	60
Vegetables	Tomato	Pusa- 120	0.0053	1060	19
Vegetables	Tomato	Pusa rohani	0.015	3000	59
	Total		**17156.56**	**40732812**	**13883**

Table 5.4: Status of Planting Material production in Zone-VII

Crop Category	Crop	Nos.	Value (Rs)	Beneficiaries	Expected area coverage (ha)
Cash Crop	Sugarcane	700	1050	10	3.5
Cash Crop	Sweet corn	1210	10282	12	0.8
Cereal	Rice	64000	0	2	0.4
Fibre crop	Dhaincha	75	3000	0	0
Flower	Cosmoss	8000	12000	35	0.6
Flower	Daizy	6000	9000	25	0.5
Flower	Galladia	11825	1000	2454	0.5
Flower	Hibiscus	1000	2000	3	0.5
Flower	Marigold	189996	106128	609	24.17
Flower	Rose	2259	4090	427	0.1
Flower	Tithunia	8000	12000	30	0.5
Flower	Zinia	5920	7368	50	0.05
Fodder	Hybrid Napier	125	125	0	.1
Forest species	Acacia	1000	5000	36	1
Forest species	Agasti	150	750	30	0.22
Forest species	Agroforestry	1000	8000	42	4
Forest species	Amaltas	550	3000	10	1.9
Forest species	Bamboo	4513	28430	48	6.3
Forest species	Caronda	692	0	165	0
Forest species	Casia Sama	200	2000	20	1
Forest species	Duranta	2000	10000	0	1
Forest species	Eucalyptus	1000	1000	0	2
Forest species	Ficus	80	8000	10	0
Forest species	Forest seedlings	1124	13388	20	
Forest species	Goldon + Brown Duranta	2000	10000	30	1
Forest species	Gulmohar	1750	17050	15	5.75
Forest species	Hyb. Acacia	600	3000	25	0.8
Forest species	Imli	508	2540	2	2.1
Forest species	Karonda	1772	15720	128	3.1
Forest species	Kesiasama	500	2500	0	1.5

Crop Category	Crop	Nos.	Value (Rs)	Beneficiaries	Expected area coverage (ha)
Forest species	Mahogany	350	1750	20	0.45
Forest species	Mahua	26	260	8	0.1
Forest species	Neem	89	890	10	0.1
Forest species	Semialata	300	1500	2	0.01
Forest species	Seven	1250	12500	24	4
Forest species	Teak	350	2800	38	0.45
Forest species	Tendu	10	500	4	0
Forest species	Tikoma	710	4010	12	2.25
Fruits	Acid lime	880	12000	108	10
Fruits	Aonla	2488	520	313	0.3
Fruits	Bael	48	7000	29	0
Fruits	Banana	100	5000	50	0
Fruits	Ber	32	6000	18	0
Fruits	Cashew	300	50000	280	0
Fruits	Chirongi	57	12000	12	0
Fruits	Citrus	724	85000	163	0
Fruits	Citrus seeded lime	200	4000	100	0
Fruits	Citrus Seedless lemon	200	8000	100	0
Fruits	Colocasia	2	11250	10	0.1
Fruits	Custard apple	1750	10020	362	2.5
Fruits	Guava	4933	100970	656	9
Fruits	Jackfruit	1018	2580	460	0.5
Fruits	Jamun	1351	13060	165	3.55
Fruits	Lime	820	13450	55	2.5
Fruits	Mango	15341	118590	985	27
Fruits	Orange	74	2250	43	0
Fruits	Papaya	112150	643880	2128	30.11
Fruits	Papaya seedling	176	3520	0	
Fruits	Pomegranate	515	2650	131	0
Medicinal	Black Turmeric	5000	5000	250	0
Medicinal	Karre Patta	500	5000	250	0
Medicinal	Medicinal seedlings	200	2000	10	
Medicinal	Tulsi	500	5000	250	0
Oilseed	Seasum	1600	8000	5	5.25
Ornamental Crop	Ashok	173	2545	20	1.5
Ornamental Crop	Kachnar	1550	20500	290	2
Ornamental Crop	Sindoor	1000	10000	30	2.5
Ornamental Crop	Vidya	26	1040	8	0.5
Plantation	Water chestnut seedling	200	2000	0	0

Crop Category	Crop	Nos.	Value (Rs)	Beneficiaries	Expected area coverage (ha)
Pulses	Pigeon pea	500	2500	6	0.6
Spices	Black pepper	300	4500	25	
Spices	Ginger	0	2400	0	0
Spices	Turmeric	157	108920	39	1.25
Tuber Crop	Elephant foot yam	30	121000	60	1
Vegetables	Bittergourd (Veg.)	175	583	9	1
Vegetables	Bottle gourd	703	9500	16	1
Vegetables	Brinjal	536216	210163	6055	26.63
Vegetables	Broccoli	80755	59780	130	2.43
Vegetables	Cabbage	141810	77413	4748	5.27
Vegetables	Capsicum	68490	58010	85	1.2
Vegetables	Cauliflower	198361	96095	3746	10.075
Vegetables	Chilli	550691	146012	5600	23.126
Vegetables	Cluster bean	17	1632	0	0
Vegetables	Cowpea (Veg.)	1	1680	0	0
Vegetables	Cucumber	23	230	5	0
Vegetables	Cucurbits	11000	44000	33	5
Vegetables	Drum stick	120211	117090	778	7.226
Vegetables	Fenugreek	56	15875	0	0
Vegetables	HYV Brinjal	3000	9000	30	0.75
Vegetables	HYV Tomato	4000	11000	40	0.8
Vegetables	Knol Khol	7000	5000	262	0.3
Vegetables	Lotus	1303	10240	0	0
Vegetables	Makhana Pop	0	1000	0	0
Vegetables	Makhana Seed	0	2000	0	0
Vegetables	Mixed Vegetable seedlings	85050	81800	183	1.1
Vegetables	Okra	50	22800	5	0
Vegetables	Onion	3377711	183516	739	11.44
Vegetables	Pointed gourd	200	1900	2	0.06
Vegetables	Potato	980	8600	25	0
Vegetables	Pumpkin	210	345	8	1
Vegetables	Sponge gourd	943	3493	27	1
Vegetables	Tomato	855100	307116	8627	30.944
Vegetables	Watermelon	490	735	3	1
Other	Nadep compost	50	5000	50	20
Other	Others	157955	36500	802	2.4
Other	Vermi compost	60	30000	60	24
Other	Worms		26000	104	42
	Total	**6679140**	**3096134**	**43939**	**388.46**

Production of Bio-products

Table 5.5: Production of bio-agents, pesticides, fertilizers by KVKs in Zone-VII

Major Group Bio-agent, fertilizers, Pesticides	Name of the Product	Qty (in kg)	Qty (in No)	Value (Rs)	Beneficiaries	No. of KVKs
Bio-Agents	*Azolla*	537	20	20900	177	5
Bio-Agents	Earthworm	790	2500	196425	443	10
Bio-Agents	Vermiculture	119	0	60200	80	12
Bio-Agents	*Pseudomonas*	396	0	78150	15	2
Bio-Agents	*Trichoderma*	979	7871	243610	2383	12
Bio-Agents	*Beauveria bassiana*	0	76	21280		1
Bio-Fertilizer	Azotobactor	70	1344	26980	104	4
Bio-Fertilizer	Vermi compost	148087	408	672203	1172	47
Bio-Fertilizer	*Rhizobium*	256	6480	119520	1595	6
Bio-Fertilizer	PSB	825	9900	247500	2160	5
Manure	FYM	1720	0	39265	25	2
Compost	NADEP compost	5000	15	9500	50	3
Bio Pesticide	Neem based Product (litre)	100	0	5000	50	1
Mushroom	Mushroom	4491	0	18720	105897	20
Mushroom	Paddy straw & Oyster (kg)	220	0	10000	35128	1
Mushroom	*P. Sajorcaju* spawn	0	1000	12000	25	1
Mushroom	Mushroom Spawn	1000	9212	135429	805	2

Table 5.6: Production of bio-agents, pesticides, fertilizers by KVKs in Chhattisgarh

Major Group Bio- agent, fertilizers, Pesticides	Name of the Product	Qty (in kg)	Qty (in No.)	Value (Rs.)	Beneficiaries	No. of KVKs
Bio-Agents	*Azolla*	20	20	2000	40	1
Bio-Agents	Earthworm	121	0	108500	187	5
Bio-Agents	*Pseudomonas*	21	0	3150	15	1
Bio-Agents	*Trichoderma*	464	231	52610	548	9
Bio-Agents	*Trichoderma* with compost	390	401	9080	133	3
Bio-Fertilizer	Vermi compost	5574	408	60610	214	9
Bio-Fertilizer	*Rhizobium*	10	0	0	20	1
Manure	FYM	1720	0	39265	25	2
Compost	NADEP compost	4000	15	9500	50	2
Mushroom	Mushroom Spawn	0	1279	19185	112	1

Table 5.7: Production of bio-agents, pesticides, fertilizers by KVKs in Madhya Pradesh

Major Group Bio-agent, fertilizers, Pesticides	Name of the Product	Qty (in kg)	Qty (in No.)	Value (Rs.)	Beneficiaries	No. of KVKs
Bio-Agents	*Azolla*	474	0	19700	121	2
	Earth Worms	669	2500	87925	256	5
	Pseudomonas	375	0	75000	0	1
	Trichoderma viride	515	7640	191000	1835	4
	Beauveria bassiana	0	76	21280	0	1
Bio-Fertilizer	*Azatobactor*	70	1344	26980	104	4
	NADEP Compost	1000	0	0	0	1
	PSB	825	9900	247500	2160	5
	Rhizobium	246	6480	119520	1575	5
	Vermicompost	85196	0	397892	564	14
Bio Pesticide	Neem based Product	100	0	5000	50	1

Table 5.8: Production of bio-agents, pesticides, fertilizers by KVKs in Odisha

Major Group Bio agent/Bio fertilizers/Bio Pesticides	Name of the Product	Qty (in kg)	Qty (in No.)	Value (Rs.)	Beneficiaries	No. of KVKs
Bio-Agents	Vermiculture	119.8	0	60200	80	12
Bio-Fertilizer	Vermicompost	57317	0	213701	394	24
Bio-Fertilizer	*Azolla*	43	0	1200	16	2
Mushroom	Mushroom	4491	0	18720	105897	20
Mushroom	Paddy straw & Oyster	220	0	10000	35128	1
Mushroom	*P. sajorcaju* spawn	0	1000	12000	25	1
Mushroom	Mushroom spawn	1000	7933	116244	693	1

Production of Livestock Materials

Table 5.9: Status of Livestock Production in KVKs under Zone-VII

Name of the animal / bird / aquaticses	Breed	Type of Produce	Qty. (kg/q./ litre/No.)	Value (Rs)	No. of Beneficiaries	No. of KVK
Buffalo	Murrah	Milk	854067	2729436	28632	2
Cattle	Crossbred Jersey	Milk	2307	69210	120	1
Cattle	Crossbreed	Milk	8037	257168	26	1
Cattle	HF	Milk	13100	488376	65	1
Cattle	Jersy HS, Gir, Sahiwal, Malvi	Milk	848300	2544900	28600	1

Name of the animal / bird / aquaticses	Breed	Type of Produce	Qty. (kg/q./ litre/No.)	Value (Rs)	No. of Beneficiaries	No. of KVK
Cattle	Sahiwal, Gir	Milk	38528	1249195	193	10
Cattle	Sahiwal	Milk	4148	116158	32	1
Goat	Jamunapari	Breeding	16	0	0	1
Goat	Black Bengal	Buck	340	72000	10	2
Goat	Black Bangal	Meat	108	43200	0	1
Goat	Barbari	Lambs	15	80000	15	1
Poultry	Kadaknath	Eggs	2425	41912	154	2
Poultry	Dual Purpose colour bird	Meat	300	15000	10	1
Poultry	Kadaknath	Birds	93	56196	36	4
Poultry	Kadaknath	Chicks	14927	2798221	613	8
Poultry	Black ply mouth roch. Red cornish	Brooded chicks	235	8225	23	1
Poultry	Coloured breed(black rock, red carnish)	Dual purpose	650	43100	30	1
Poultry	Rainbow rooster	21 day old chicks	290	17400	28	1
Poultry	Rainbow rooster & Vanaraja	Brooded chicks	1064	58520	116	1
Poultry	Rainbow rooster, Vanaraja, Chhabro, Black rock,	Developed chicks	14549	676247	624	2
Poultry	Vanaraja	Chicks	4388	198627	345	4
Poultry	Vanaraja	Birds	18	3250	12	1
Poultry	Vanaraja	Chicks	1170	63400	380	3
Poultry	Vanaraja	Developed chicks	2205	165215	263	2
Poultry	Vanaraja, Chabro, Red Cornish, Rainbow Rooster	Chicks	7364	441030	345	2
Numididae	Numididae	Guinea fowl	20	1000		1
Duck	Khaki Campbel, White Pekin, Native cross	Ducklings	939	52125	44	2
Duck	Nagraj	Ducks	100	40000	10	1
Fish	Catla, Rahu, Mrigal, Common carp	Fingerlings	1650300	319400	56	3

Name of the animal / bird / aquaticses	Breed	Type of Produce	Qty. (kg/q./ litre/No.)	Value (Rs)	No. of Beneficiaries	No. of KVK
Fish	Carp	Spawn	700000	4900	10	1
Fish	Guppy, Molly, platy	Colour fish	510	2550	16	1
Fish	Rohu, Katla and Mrigal etc	Spawn	100000	100000	0	1
Fish	Fish seed	Fry, fingerlings	103875	94620		1
Fish	IMC	Culture cum Capture	5000	4051	0	1
Fish	IMC	Advance Fingerlings	10000	12000	5	1
Fish	IMC	Fish	7	800		1
Fish	IMC	Mixed carp spawns	5000000	35000	9	1
Fish	IMC	Nile Tilapia juveniles	900	5000	1	1
Fish	IMC	Stunted fingerlings / yearlings	42000	15000	18	1
Fish	IMC	Table Fish	1.36	15410	45	1
Fish	Major Indian Carps	Fingerlings	177500	200165	20	1
Fish	Moly	Fingerlings	170	2550	12	1
Fish	Jayanti Rohu & catla	Advance fingerlings	17500	25000	0	1
Fish	Fish	Fish	167	15030	1	1

Table 5.10: Status of Livestock Production in KVKs under Chhattishgarh during 2015-16

Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/q./ litre/No.)	Value (Rs.)	No. of Beneficiaries	No. of KVKs
Cattle	Sahiwal, Gir	Milk	38528	1249195	193	10
Cattle	HF	Milk	13100	488376	65	1
Duck	Nagraj	Ducks	100	40000	10	1
Fish	Catla, Rahu, Mrigal, Common carp	Fingerlings	1650300	319400	56	3
Goat	Black Bengal	Buck	340	72000	10	2
Goat	Black Bengal	Meat	108	43200	0	1
Goat	Barbari	Lambs	15	80000	15	1
Poultry	Kadaknath	Birds	93	56196	36	4
Poultry	Kadaknath	Chicks	12702	1016160	85	1

Table 5.11: Status of Livestock Production in KVKs under Madhya Pradesh during 2015-16

Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/q. / litre/No.)	Value (Rs.)	No. of Beneficiaries	No. of KVK
Buffalows	Murrah	Milk	854067	2729436	28632	2
Cattle	Crossbreed	Milk	8037	257168	26	1
Cattle	Jersy HS, Gir, Sahiwal, Malvi	Milk	848300	2544900	28600	1
Cattle	Sahiwal	Milk	4148	116158	32	1
Fish	IMC	Culture cum Capture	5000	4051	0	1
Fish	Rohu, Katla and Mrigal etc	Spawn	100000	100000	0	1
Goat	Jamunapari	Breeding	16	0		1
Poultry	Kadaknath	Eggs	2425	41912	154	2
Poultry	Dual Purpose color bird	Meat	300	15000	10	1
Poultry	Kadaknath	Chicks	2225	1782061	528	7

Table 5.12: Status of Livestock Production in KVKs under Odisha during 2015-16

Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/q./ litre)	Value (Rs.)	No. of Beneficiaries	No. of KVKs
Cattle	Crossbred Jersey	Milk	2307	69210	120	1
Fish	Carp	Spawn	700000	4900	10	1
Fish	Guppy, Molly, platy	Colour fish	510	2550	16	1
Fish	Fish seed	Fry, fingerlings	103875	94620		1
Fish	IMC	Advance fingerlings	10000		5	1
Fish	IMC	Fish	7			1
Fish	IMC	Mixed carp spawns	5000000	35000	9	1
Fish	IMC	Nile Tilapia juveniles	900	500	1	1
Fish	IMC	Stunted fingerlings/ yearlings	42000	1	18	1
Fish	IMC	Table Fish	1.36	15410	45	1
Fish	Major Indian Carps	Fingerlings	177500	200165	20	1
Fish	Moly	Fingerlings	170	2550	12	1
Fish	Jayanti Rohu & catla	Advance fingerlings	17500			1
Fish	Fish	Fish	167	15030	1	1

Name of the animal / bird / aquatics	Breed	Type of Produce	Qty. (kg/q./ litre)	Value (Rs.)	No. of Beneficiaries	No. of KVKs
Duck	Khaki Campbel, White Pekin, Native cross	Ducklings	939	52125	44	2
Poultry	Black ply mouth roch. Red cornish	Brooded chicks	235	8225	23	1
Poultry	Coloured breed(black rock, red carnish)	Dual purpose	650	43100	30	1
Poultry	Rainbow rooster	Chicks	290	17400	28	1
Poultry	Rainbow rooster & Vanaraja	Brooded chicks	1064	58520	116	1
Poultry	Rainbow rooster, Vanaraja, Chhabro, Black rock,	Developed chicks	14549	676247	624	2
Poultry	Vanaraja	Chicks	4388	198627	345	4
Poultry	Vanaraja	Birds	18	3250	12	1
Poultry	Vanaraja	Chicks	1170	63400	380	3
Poultry	Vanaraja	Developed chicks	2205	165215	263	2
Poultry	Vanaraja, Chabro, Red Cornish, Rainbow Rooster	Chicks	7364	441030	345	2
Numididae	Numididae	Guinea fowl	20	1000	0	1

06

DETAILS OF 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 analyzed 72439 soil samples and 630 water samples benefitting 91200 farmers of 3109 villages (Table 6). The highest numbers of samples were tested in the state of Madhya Pradesh followed by Chhattisgarh and Odisha. The KVK wise details of soil and water samples tested are given in Table 6.

Table 6: Summary of soil and water samples tested by the KVKs in Zone-VII during 2015-16

State	Details	No. of Samples	No. of Farmers	No. of Villages covered
Chhattisgarh	Soil samples	18863	19703	520
Madhya Pradesh	Soil samples	36801	36074	1462
	Water samples	53	60	10
Odisha	Soil samples	16775	34923	989
	Water samples	577	440	128
Total	**Soil samples**	**72439**	**90700**	**2971**
	Water samples	630	500	138
	Total	**73069**	**91200**	**3109**

07 EXTENSION ACTIVITIES

Transfer of technology holds key to rapid development and transformation of rural society. Krishi Vigyan Kendras having district as 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 famers. To reach to wider masses different means information dissemination from traditional ones like of poster exhibition to new ICT tools like mobile messaging and social media are used. Broadly, extension activities conducted by KVK includes – (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 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 fields. In all, 1,19,740 activities were conducted and 21,23,621 farmers, farm women, rural youth and extension workers were benefited (Table 7.1 & 7.2).

Table 7.1 : Details of extension activities organized by the KVKs of Zone-VII during 2015-16

Activity	No. of activities (Achieved)	Detail of Participants								
		Farmers (Others)		Farmers (SC/ ST)		Extension Officials		Total of Farmers and Extension Personnel		
		M	F	M	F	M	F	M	F	Total
Agri Mobile Clinic	299	6681	461	6940	666	278	94	13899	1221	15120
Diagnostic visits	5206	12906	2677	12254	2850	952	212	26112	5739	31851
Exhibition	444	182626	23499	98332	39128	4241	1294	285199	63921	349120
Exposure visits	336	2068	368	2355	545	185	49	4608	962	5570
Ex-trainees Sammelan	132	1860	454	1621	526	267	41	3748	1021	4769
Farm advisory Services	6215	242605	13613	317869	17752	3908	352	564382	31717	596099
Farm Science Club conveners meet	91	1175	142	418	160	85	33	1678	335	2013
Farmers Seminar/ workshop	146	3371	705	2356	806	296	91	6023	1602	7625
Farmers visit to KVK	70925	67739	12268	50268	12907	2473	633	120480	25808	146288
Field Day	767	15518	2482	10656	3263	1087	236	27261	5981	33242
Film Show	1699	18870	4361	11421	3996	3009	843	33300	9200	42500
Group meetings	1525	7214	1958	5214	1919	365	124	12793	4001	16794
Kisan Ghosthi	1818	50390	6648	19066	6503	2108	257	71564	13408	84972
Kisan Mela	266	159407	18141	97130	39117	5273	990	261810	58248	320058

Activity	No. of activities (Achieved)	Detail of Participants								
		Farmers (Others)		Farmers (SC/ ST)		Extension Officials		Total of Farmers and Extension Personnel		
		M	F	M	F	M	F	M	F	Total
Krishi Mahotsav	3	9500	900	2600	240	85	10	12185	1150	13335
Lectures delivered as resource persons	5426	110430	8127	60463	15441	2851	690	173744	24258	198002
Mahila Mandals conveners meetings	104	800	1110	805	530	134	86	1739	1726	3465
Method Demonstrations	653	5114	1473	4023	1652	2008	123	11145	3248	14393
Scientific visit to farmers field	12331	25262	6497	21199	6107	775	196	47236	12800	60036
Self Help Group conveners meetings	210	910	2281	790	1174	104	109	1804	3564	5368
Soil health Camp	792	9884	965	5377	1096	373	103	15634	2164	17798
Soil test campaigns	4437	9863	1192	5422	958	348	69	15633	2219	17852
Technology Week	3	611	59	95	28	27	6	733	93	826
Workshop	236	2035	527	1981	522	1777	281	5793	1330	7123
Celebration of important days (Soil health day, Jai Kiasan & Jai Vigyan day, Swachata Abiyan etc.)	403	29263	7665	11138	3995	1640	307	42041	11967	54008
Total	**114467**	**976102**	**118573**	**749793**	**161881**	**34649**	**7229**	**1760544**	**287683**	**2048227**

Note: M-Male, F-Female

Table 7.2 : Details of other extension activities

Activity	No. of activities (Achieved)	Detail of Participants								
		Farmers (Others)		Farmers (SC/ ST)		Extension Officials		Totals of farmers and Extension Personnel		
		M	F	M	F	M	F	M	F	Total
Extension Literature	786	36683	4540	17226	6832	609	243	54518	11615	66133
Newspaper coverage	2717	216	124	224	185	0	0	440	309	749
Popular articles	683	830	250	195	25	40	14	1065	289	1354
Radio talks	509	0	0	0	0	0	0	0	0	0
TV talks	440	0	0	0	0	0	0	0	0	0
Animal Health Camp	138	3422	423	2467	572	229	45	6118	1040	7158
Total	**5273**	**41151**	**5337**	**20112**	**7614**	**878**	**302**	**62141**	**13253**	**75394**

Note: M-Male, F-Female

Table 7.3 : Details of extension activities organized by the KVKs of Chhattisgarh during 2015-16

Activity	No. of activities (Achieved)	Detail of Participants								
		Farmers (Others)		Farmers (SC/ST)		Extension Officials		Total of Farmers and Extension Personnel		
		M	F	M	F	M	F	M	F	Total
Agri mobile clinic	31	3680	425	6622	640	175	94	10477	1159	11636
Animal Health Camp	30	517	101	594	215	91	21	1202	337	1539
Diagnostic visits	1116	2063	513	3321	639	493	121	5877	1273	7150
Exhibition	128	3286	1013	5019	1622	520	318	8825	2953	11778
Exposure visits	100	569	35	1240	217	35	10	1844	262	2106
Extension Literature	177	9926	2786	9127	3493	438	165	19491	6444	25935
Ex-trainees sammelan	18	110	30	253	43	11	6	374	79	453
Farm advisory services	843	139750	10448	267205	7403	1497	170	408452	18021	426473
Farm Science Club conveners meet	3	21	4	30	2	1	0	52	6	58
Farmers Seminar	25	533	103	781	227	60	18	1374	348	1722
Farmers visit to KVK	17153	8825	1445	14486	3606	706	283	24017	5334	29351
Field Day	150	2054	219	2967	697	226	53	5247	969	6216
Film Show	233	1883	438	3453	661	166	49	5502	1148	6650
Group meetings	119	356	92	823	274	72	21	1251	387	1638
Kisan Ghosthi	221	3024	481	3171	1060	156	61	6351	1602	7953
Kisan Mela	47	9637	2037	13943	4785	978	287	24558	7109	31667
Lectures delivered as resource persons	630	2393	794	4398	1269	452	150	7243	2213	9456
Mahila Mandals conveners meetings	11	0	60	0	156	0	0	0	216	216
Method Demonstrations	127	432	325	754	336	127	28	1313	689	2002
Newspaper coverage	675	0	0	0	0	0	0	0	0	0
Popular articles	236	200	205	165	4	26	12	391	221	612
Radio talks	77	0	0	0	0	0	0	0	0	0
Scientific visit to farmers field	1889	1063	323	2424	685	126	38	3613	1046	4659
Self Help Group conveners meetings	46	21	23	176	136	3	3	200	162	362
Soil health camp	52	3175	310	2206	735	210	63	5591	1108	6699
Soil test campaigns	3623	1155	38	821	182	60	28	2036	248	2284
TV talks	57	0	0	0	0	0	0	0	0	0

Activity	No. of activities (Achieved)	Detail of Participants								
		Farmers (Others)		Farmers (SC/ST)		Extension Officials		Total of Farmers and Extension Personnel		
		M	F	M	F	M	F	M	F	Total
Workshop	122	181	51	1048	236	1409	170	2638	457	3095
Celebration of important days (Soil health day, Jai Kiasan & Jai Vigyan day, Rado Diwas, Swachata Abiyan etc.)	64	1719	541	2074	838	267	71	4060	1450	5510
Soil test tested	500	89	15	369	27	0	0	458	42	500
Total	**28503**	**196662**	**22855**	**347470**	**30188**	**8305**	**2240**	**552437**	**55283**	**607720**

Note: M-Male, F-Female

Table 7.4: Details of extension activities organized by the KVKs of Madhya Pradesh during 2015-16

Activity	No. of activities (Achieved)	Farmers (Others)		Farmers (SC/ST)		Extension Officials		Total of Farmers and Extension Personnel		
		M	F	M	F	M	F	M	F	Total
Agri mobile clinic	260	2815	8	245	0	97	0	3157	8	3165
Animal Health Camp	64	2032	149	1103	158	78	13	3213	320	3533
Diagnostic visits	1090	6595	636	3382	354	356	42	10333	1032	11365
Exhibition	198	67320	8194	60548	29562	2081	456	129949	38212	168161
Exposure visits	162	625	165	363	118	53	10	1041	293	1334
Extension Literature	378	17020	300	819	68	0	0	17839	368	18207
Ex-trainees sammelan	58	1167	157	613	177	233	26	2013	360	2373
Farm advisory services	3355	93402	1922	46926	9122	2093	91	142421	11135	153556
Farm Science Club conveners meet	32	422	59	121	60	35	15	578	134	712
Farmers Seminar/ workshop	81	2164	411	1170	379	205	57	3539	847	4386
Farmers visit to KVK	28348	48505	7443	26108	6295	1675	273	76288	14011	90299
Field Day	348	8506	769	4228	961	597	79	13331	1809	15140
Film Show	781	8521	1347	4058	1396	773	158	13352	2901	16253
Group meetings	261	3059	547	1498	462	172	43	4729	1052	5781
Kisan Ghosthi	1521	46297	5726	15331	5145	1925	181	63553	11052	74605
Kisan Mela	160	136743	12467	76465	31790	3323	365	216531	44622	261153
Krishi Mahotsav	3	9500	900	2600	240	85	10	12185	1150	13335
Lectures delivered as resource persons	4034	97387	4783	50955	11834	1656	308	149998	16925	166923

Activity	No. of activities (Achieved)	Farmers (Others)		Farmers (SC/ST)		Extension Officials		Total of Farmers and Extension Personnel		
		M	F	M	F	M	F	M	F	Total
Mahila Mandals conveners meetings	76	800	805	805	247	129	68	1734	1120	2854
Method Demonstrations	179	2038	422	1467	334	1752	40	5257	796	6053
Newspaper coverage	1666	0	0	0	0	0	0	0	0	0
Popular articles	313	0	0	0	0	0	0	0	0	0
Radio talks	296	0	0	0	0	0	0	0	0	0
Scientific visit to farmers field	3573	12855	1933	9402	2130	517	103	22774	4166	26940
Self Help Group conveners meetings	93	712	1383	397	253	82	40	1191	1676	2867
Soil health camp	100	5645	428	2460	212	141	28	8246	668	8914
Soil test campaigns	143	7308	854	3400	404	240	31	10948	1289	12237
Technology Week	3	611	59	95	28	27	6	733	93	826
TV talks	234	0	0	0	0	0	0	0	0	0
Workshop	73	1614	409	736	229	185	42	2535	680	3215
Celebration of important days (Soil health day, Jai Kiasan & Jai Vigyan day, Swachata Abiyan etc.)	229	22199	5803	7903	1634	1280	168	31382	7605	38987
Total	**48112**	**605862**	**58079**	**323198**	**103592**	**19790**	**2653**	**948850**	**164324**	**1113174**

Note: M-Male, F-Female

Table 7.5 : Details of extension activities organized by the KVKs of Odisha during 2015-16

Activity	No. of activities (Achieved)	Detail of Participants						Total of Farmers and Extension Personnel		
		Farmers (Others)		Farmers (SC/ST)		Extension Officials				
		M	F	M	F	M	F	M	F	Total
Agri Mobile Clinic	8	186	28	73	26	6	0	265	54	319
Animal Health Camp	44	873	173	770	199	60	11	1703	383	2086
Diagnostic Visits	3000	4248	1528	5551	1857	103	49	9902	3434	13336
Exhibition	118	112020	14292	32765	7944	1640	520	146425	22756	169181
Exposure Visits	74	874	168	752	210	97	29	1723	407	2130
Extension Literature	231	9737	1454	7280	3271	171	78	17188	4803	21991
Ex-trainees sammelan	56	583	267	755	306	23	9	1361	582	1943
Farm advisory services	2017	9453	1243	3738	1227	318	91	13509	2561	16070

Activity	No. of activities (Achieved)	Detail of Participants						Total of Farmers and Extension Personnel		
		Farmers (Others)		Farmers (SC/ST)		Extension Officials				
		M	F	M	F	M	F	M	F	Total
Farm Science Club conveners meet	56	732	79	267	98	49	18	1048	195	1243
Farmers Seminar	40	674	191	405	200	31	16	1110	407	1517
Farmers Visit to KVK	25424	10409	3380	9674	3006	92	77	20175	6463	26638
Field Day	269	4958	1494	3461	1605	264	104	8683	3203	11886
Film Show	685	8466	2576	3910	1939	2070	636	14446	5151	19597
Group meetings	1145	3799	1319	2893	1183	121	60	6813	2562	9375
Kisan Ghosthi	76	1069	441	564	298	27	15	1660	754	2414
Kisan Mela	59	13027	3637	6722	2542	972	338	20721	6517	27238
Lectures delivered as resource persons	762	10650	2550	5110	2338	743	232	16503	5120	21623
Mahila Mandals conveners meetings	17	0	245	0	127	5	18	5	390	395
Method Demonstrations	347	2644	726	1802	982	129	55	4575	1763	6338
Newspaper coverage	376	216	124	224	185	0	0	440	309	749
Popular Articles	134	630	45	30	21	14	2	674	68	742
Radio talks	136	0	0	0	0	0	0	0	0	0
Scientific visit to farmers field	6869	11344	4241	9373	3292	132	55	20849	7588	28437
Self Help Group conveners meetings	71	177	875	217	785	19	66	413	1726	2139
Soil Health camp	640	1064	227	711	149	22	12	1797	388	2185
Soil Test Campaigns	671	1400	300	1201	372	48	10	2649	682	3331
TV talks	149	0	0	0	0	0	0	0	0	0
Workshop	41	240	67	197	57	183	69	620	193	813
Celebration of important days (Soil health day, Swachata Abiyan, etc.)	112	5860	1343	1973	1563	125	70	7958	2976	10934
Total	**43627**	**215333**	**43013**	**100418**	**35782**	**7464**	**2640**	**323215**	**81435**	**404650**

Note: M-Male, F-Female

08

TECHNOLOGY WEEK

Technology week concept 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 would result in higher adoption of the technology. Status of Technology week organized by KVKs in Zone VII is given in Table 8.

Table 8 : Details of Technology week organized by the KVKs of Zone-VII during 2015-16

Type of Activities	No. of Activities	No. of Participants	Related crop/livestock technology
Animal Health Camp	13	602	
Awareness Campaign	15	895	Awareness on plant and soil health, Awareness on Safety measures during the application of agro-chemicals
Beej Saptah	4	109	Mustard, Chick Pea, Vegetables
Bio Product distribution (kg)	55	399	Bio-agents, bio-fertilizers
Demonstration	45	1085	Demonstration of improved practices, seed treatment, fertilizer application, value addition etc.
Diagnostic camp	5	219	Plant Health
Diagnostic practical's	71	1364	Crop cafeteria on field crops, vegetables, spices and medicinal crops, Demonstrations of implements, tractor mounted sprayers, seed grader etc., Diseases'/ Insect-Pest /livestock diseases, Soybean Groundnut, tomato etc.
Distribution of Livestock/ Poultry chicks	3	262	Poultry chicks
Distribution of literature	524	22279	Improved technology of agril. allied fields, Kharif –Rabi crop/Goatry and Poultry Management/Fodder production, Production technology of rabi and kharif crop, Related to various technology, Various package of practices, vermin compost, etc.
Distribution of Planting materials	6623	2055	Guava, Jackfruit, teak, aonla, Lime, Tomato, Chilli etc.

Type of Activities	No. of Activities	No. of Participants	Related crop/livestock technology
Distribution of Seed (q)	309.5	764	Black Gram, Gram, Marigold, Onion, Tomato, Sponge gourd, Radish, Soybean, Wheat, Chickpea, Mustard, Coriander, Wheat, Gram, Others
Exhibition	62	8191	Display different varieties of seed (cereal, pulse, spices, oilseed, vegetable medicinal and aromatic plant), Cereals, vegetables and fruit crops , value addition and Forest Crops, Implements, Seed samples, Technological Charts, Models etc., Improved seed and planting material, Improved technology of agril. allied fields etc.
Extension activity	6	240	Extension outreach programmes
Ex-trainees samelan	4	182	Discuss about the adoption of technologies and collect feed back, Use of Micro Irrigation System
Farm Visit	202	8418	Live demonstration of crop varieties, Crop cafeteria, Green house and vermi compost unit, Seed production of Soybean, wheat and Chickpea, Demonstration Plots/High density Guava Orchard/Vermicompost unit/ Azola unit., Improved technology of agril. allied fields
Farmer Fair	19	9358	Implements, Seed samples, Technological Charts, Models etc., Production technology of kharif and Rabi crop, Others
Farmers training	14	2276	INM,IPM,IDM,ICM, Value addition and Nutrition Security, Seed Production , Water Conservation, Formation of SHG, ICT, Mechanization, Crop Protection, Crop Diversification, Market led extension in agriculture, Role of Market intelligence in economic sustain, Poly House, Plant Protection
Field Day	5	167	IPM module in soybean; IWM in soybean; Mastitis management in milch animals
Film show	202	5700	Crop/ Livestock, Cultivation practices of Onion, Garlic and Coriander, Drudgery Reduction, Soybean cultivation and Importance of Green House, Water Management, Improved technology of agril. allied fields, Vermiculture, farm implements, IPM, INM, Micro irrigation, CIAE technology

Type of Activities	No. of Activities	No. of Participants	Related crop/livestock technology
Gosthies	60	1464	Micro-irrigation & HI- tech Vegetables production, Improved technology of agril. allied fields, Production technology of kharif and Rabi crops, Rabi crop, Women operated equipment, sowing machinery, harvesting
Jai Kisan Jai Vigyan Sangosthi	6	230	*Jai Kisan Jai Vigyan*
Lectures organized	110	4051	Improved technology of agril. allied fields, IPM in Soybean and Gram cultivation practices, Kharif –Rabi crop/Goatry and Poultry Management/ Fodder production, Soybean, tomato Soybean, Maize, Wheat, Gram, Green Gram and Vegetables, Various aspects on agricultural, vermi compost & farm implements
News Paper	2	mass	Others
Parthenium Day	1	25	Parthenium
Plant Health Diagnostic Camp	5	219	
Road show	3	200	Improved technologies in agriculture
Road show	3	200	
Safety measures during the application of agro-chemicals	2	70	Awareness on Safety measures during the application of agro-chemicals
Seed production of fresh water prawn	1	25	Breeding seed production of fresh water prawn
Seed treatment campaign	1	50	
Seed treatment campaign	1	50	Dissemination of knowledge on Seed treatment
Self Help group Convener meet	8	334	Discussion on income generating activities, value addition, processing
Soil Health Campaign	10	968	Soil sample collection, Soil helth card distribution
Swaacha Bharat Abiyan	2	87	Cleanliness drive
Women in Agriculture Day	2	250	International women day celebration
World Water Day	1	45	Awareness on water management

09 TECHNOLOGICAL BACKSTOPPING THROUGH LITERATURES AND MEDIA

9.1 Newsletter

Table 9.1: State wise Newsletter published by the KVKs during 2015-16

State	No. of KVKs	No. of issues	Number of copies printed	Number of copies distributed
Chhatisgarh	20	4	49220	48027
Madhya Pradesh	46	4	139350	136883
Odisha	31	4	49502	48075
Total	**97**	-	**238072**	**232985**

9.2. Publications

Table 9.2: Category wise literature published and distributed by the KVKs of Zone VII during 2015-16

S. No.	Type	Number	No. of KVKs
1	Abstract	12103	13
2	Book/Book Chapter/Booklet	78190	96
3	Leaflets/folder	239484	98
4	Literature	152000	30
5	News paper coverage	165	3
6	Newsletter	56702	34
7	Pamphlet	13120	6
8	Popular article	1089	50
9	Research paper	1562	50
10	Review paper	2	3
11.	Technical Bulletin/Report/Manual	50850	73
12.	Year planner	1500	2
	Total	**606767**	**458**

10 FLAGSHIP PROGRAMMES

1. Kisan Mobile Advisory (KMA)

Incharge : ***Shri Tushar Athare, 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, Chhattisgarh and Orissa. This ICT based alternate agricultural information and rural delivery mechanism through Mobile phone was initiated during 2007 in ZPD Zone VII, Jabalpur. It is based on the linear model of communication. This is the unique programme for making linkages between different stakeholders who are 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 2015-16, total 16097 text messages were sent which benefitted to 2076133 users in 26304 villages by the operational KVKs in the Zone.

2. Climate Resilience Agriculture through KVKs under NICRA

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

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

NICRA is operational in 17 KVKs in states of Madhya Pradesh, Chhattisgarh and Odisha in Zone VII. ATARI, Zone VII monitor the performance of NICRA KVKs namely Balaghat, Chhattarpur, Datia, Guna, Morena, Satna, Tikamgarh, Jhabua and Ratlam in Madhya Pradesh, Bhatapara, Bilaspur, Dantewada in Chhattisgarh, Kendrapara, Ganjam, Jharsuguda, Sonepur and Kalahandi in Odisha.

These KVKs are conducting the field activities as per their approved action plan. During 2015-16, under **Natural Resource Management module**, a total of 1076 farmers benefited covering 1098.08 ha area in all activities. Eight old farm ponds were

Table 10.1: Details of KMA during 2015-16 by KVKs of Zone VII

State	No. of				
	KVKs	Messages	Farmers	Extension Personnel	Beneficiaries
Madhya Pradesh	46	12615	1051877	11584	1063461
Chhattisgarh	20	1102	632302	4577	**636879**
Odisha	**33**	**2380**	**391954**	**3078**	**395032**
Total	**99**	**16097**	**2076133**	**19239**	**2095372**

renovated to avoid flooding. Six new check dam were constructed/renovated, 303 farmers are benefited through in-situ moisture conservation practices and covering 192.5 ha area. Water harvesting and recycling for supplemental irrigation applications were followed by 473 farmers and 36 farmers used Zero tillage technology and other technologies for saving residual moisture etc.

In **Crop Production Module**, a total of 3191 demonstrations were conducted on 1380.1 ha. area focused on drought tolerant varieties , advancement of planting dates of rabi crops to escape terminal heat stress, etc on Rice chickpea, wheat, barley, moong, arhar and vegetable crops.

In **Livestock and Fisheries Module**, 2031 farmers benefited covering the 5889 Units during the year 2015-16. Out of 5889 Unit, 2612 animals were vaccinated to boost immunity through prevention and, 1214 animals were de-wormed, health check-up of 528 animals was done and 960 animals and birds were covered under breed upgradation.

In **Institutional Interventions Module**, 2922 farmers benefited covering 514.5 ha area in year 2015-16. Out of 2922 farmers, 724 farmers benefited through Custom hiring service, 160 farmers by collective marketing and 370 farmers through climate litracey.

A total of 8900 farmers benefited through **Capacity Building** which comprised 7022 male and 1878 female through 302 courses.

In order to create awareness among the farmers in region, various **Extension Activities** were organized by KVK at the farms and the farmer's fields. A total of 10914 farmers benefited of which 1106 farmers through Field day, 1704 farmers by group discussion and 558 farmers benefited through Exposure Visit during the year.

The testimony of the success of NICRA activities is the number of visitors including dignitaries to the custom hiring centers at NICRA village also wide publicity by the print and electronic media as well as through ICAR website and CRIDA newsletter.

Glimpses of NICRA activities by concerned KVKs

3. National Initiative for Fodder Technology Demonstration

Incharge : ***Shri Tushar Athare, Scientist (AE)***

The programme is implemented in 11 KVKs of ATARI, Jabalpur with technical guidance from IGFRI, Jhansi. 11 KVKs are implementing this programme namely Datia, Sagar, Panna, Chhattarpur,Ratlam, Neemuch from Madhya Pradesh and Deogarh, Angul, Sundergarh, Kalahandi and Nuapara from Odisha. The programme includes various Technology Demonstration Modules as mentioned below.

Technology Demonstration Modules (TDMs)

In order to address the feed resources related issues of the selected villages under different districts, different interventions will are planned with three modules. However the specific intervention under each module for a particular village is need based and decided upon categories of livestock and farming resource situation of that village. The three intervention modules are as follows-

Table 10.2: Demonstrations of Fodder Crops in Farmers Field during 2015-16

Name of KVK	Name of technology	No. of Demonstrations	Area (ha)	Mean yield (q/ha)		Increase in yield (%)
				Check	demo	
Angul	Maize variety, J-1006	05	0.8	145.3	204.5	40.7
	Oat (Kent)	05	0.09	235.6	346.2	46.9
Nuapada	Hybrid napier cultivation in backyard	13	2.0	480	570	18.7
Chhatarpur	M.P chari	03	0.4	210	248	18.09
Datia	Maize variety J-1006	04	0.2	16.50	22.90	38.78
	Oat JHO-851	03	0.2	19.75	31.25	58.22
Neemach	Annual cultivated fodder crop	05	1.00	315	420	33.33
Panna	Jowar - MP Chari-2	04	0.4	450	650	44.4
	Maize -CJ-1006	04	0.4	350	450	28.5
	Lobia-EC-4216	04	0.8		350	100
Ratlam	Maize + cowpea (EC4216)	02	0.40	422	530	25.59
	Hybrid Napier(CO-3)-Berseem + Oat- Maize + Cowpea	10	2.0	1430	1950	36.36
	Oat (Kent)	05	0.09	235.6	346.2	46.9

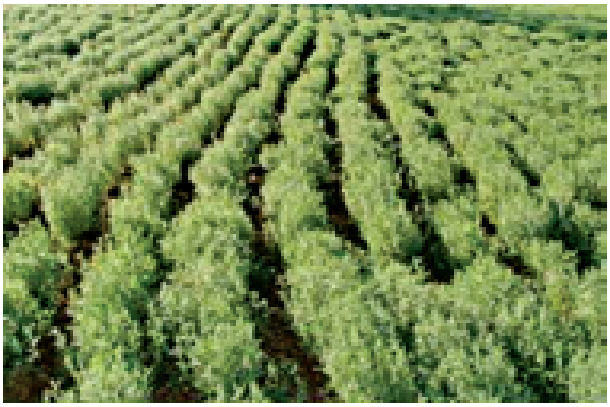
FLD on Chickpea : Variety JG 63

4. Tribal Sub Plan (TSP) on Pulses

Incharge: ***Dr. A.P. Dwivedi, Sr. Scientist (Agronomy)***

Tribal Sub Plan (TSP) is aimed for 'Enhancing Pulses Production for Food, Nutritional Security and livelihoods of Tribal Community through Demonstration and Training'. TSP is operational in 10 KVKs located in the tribal region of the Madhya Pradesh and Chhattisgarh. A total of 262 demonstrations were conducted in different pulse crops during the Kharif 2015 with an area of 105 ha with Blackgram (PU-35, JU-3, JU-86) and Pigeon

pea (JKM-189, TUT-501) varieties. During the Rabi 2015-16 the selected KVKs have conducted demonstration with 1100 farmers on an area of 440 ha. Varieties like JG-11, JG-16 of Chickpea and JL-3 of Lentil are being demonstrated for enhanced production of pulses. KVKs have organized Field Days for enhanced production of pulses.



FLD Crop of Lentil variety JL-3

Regarding the average demonstrated yield of important crops like gram was ranged from 8.5 to 12.3 q/ha to in demonstrated yield whereas, the average yield of framers' practice was ranged between 5.5 to 7.9 q/ha. In case of pegionpea, the average demonstrated yield was reported with range of 8.5 to 14.4 q/ha while, in farmers' practices the range of average yield was found between 6.4 to 11.4 q/ha. The average yield of lentil demonstrations was reported with ranged between 6.1 to 12.3 q/ha against the farmer practices which was ranged from 4.5 to 7.8 q/ha. As per concern of fieldpea, the average yield of demonstration plots was recorded in range between 8.8 to 10.5 q/ha against the farmers' practices which was 5.79 to 7.61 q/ha. The average demonstrated yield of blackgram was recorded in range between 6.2 to 8.92 q/ha against the farmers' practice which was 4.3 to 5.91 q/ha.

5. PPV & FRA Awearness

Incharge: ***Dr. A.P.Dwivedi, Senior Scientist (Agronomy)***

India is predominating agriculture and 12th mega biodiversity hot spot in the world. The farmers are playing major role to conservation of biodiversity in the country. There is a need to develop an effective system to empower the farmers for their right for proteting the plant varieties in different parts of the country. Looking the importance of the above programmes, the ICAR-ATARI, Jabalpur and PPV & FRA, New Delhi jointly launched the programme for creation of awareness among the farmer's and other stakeholders about the provision of Protection of Plant Varieties & Farmer's Right Act, 2001 in 44 KVKs of Madhya Pradesh, Chhattisgarh and Odisha and one at ATARI level for Programme Co-ordinators of KVKs under Zone-VII. Since the Zone-VII having five biodiversity hot spot of the country covering 41 KVKs in the district out of 100 KVKs of zone-VII .

Methodology/ Action Plan/ Road Map

ICAR-ATARI, Zone-VII, ICAR, Jabalpur and PPV & FRA, New Delhi jointly worked to identify the district for the creation of awareness among the farmer's and other stakeholders about the provision of PPV & FRA, 2001 in five hot spot

Dignitaries visiting exhibition

in the Zone viz. two in Madhya Pradesh namely Malwa Plateau and Central highland, Bundelkhand and one in C.G. namely Bastar and two in Odisha namely Chota Nagpur and Koraput.

Outcome of the programme

The programme outcome are 829 farmer's planting materials including 403 in cereals, 153 in Vegetable, Fruits and Spices, 49 in Oilseeds, 118 in pulses, 77 in Millets and 29 other crops applied for registration in the PPV & FRA.

Table 10.3: Details of participants attended PPV & FRA programme

KVK Name	No. of			
	Farmers	Scientist	State Govt. Officers/ Officials	NGO and other participants
JNKVV, Jabalpur				
Dindori	169	4	4	6
Harda	195	6	8	5
Jabalpur	187	28	8	2
Narsinghpur	81	5	2	2
Panna	153	4	13	2
Sagar	166	15	16	0
Shahdol	177	6	44	1
Sidhi	310	5	11	14
Tikamgarh	91	6	4	1
Umaria	400	7	20	50
SubTotal	1929	86	130	83
RVSKVV, Gwalior				
Badwani	153	5	4	4
Datia	139	7	10	4
Dhar	176	8	13	3
Jhabua	187	5	9	10
Khargone	113	9	5	0
Mandsaur	114	6	9	0
Shajapur	197	7	9	0
SubTotal	1079	47	59	21
IGKV, Raipur				
Balrampur	154	7	3	1
Bijapur	69	7	12	2
Bilaspur	330	22	12	4
Dantewada	105	17	6	23
Dhamtari	50	7	2	0
Janjgir Champa	46	1	20	4
Jashpur	160	7	10	0
Kanker	120	9	3	1
Kawardha	125	15	5	0
Korea	250	7	8	1
Rajnandgaon	504	15	20	0
Surguja	150	10	2	5
SubTotal	**2063**	**124**	**103**	**41**
OUAT, Bhubaneswar				

KVK Name	No. of			
	Farmers	Scientist	State Govt. Officers/ Officials	NGO and other participants
Dean Extension, OUAT	110	6	10	3
Cuttack	90	10	1	4
Gajapati	100	4	2	1
Jagatsinghpur	124	6	10	2
Jajpur	181	10	14	8
Kalahandi	100	12	19	9
Kandhamal	129	7	5	4
Koraput	67	92	20	15
Malkangiri	100	7	8	0
Mayurbhanj-I	100	10	9	3
Rayagada	100	5	6	2
Sambalpur	100	6	9	1
Sundergarh-I	120	12	21	8
Sub Total	**1421**	**187**	**134**	**60**
NGOs				
Satna	195	7	32	14
Sehore	97	8	22	2
Sub Total	292	15	54	16
ATARI, Jabalpur	95	46	8	149
Grand Total	**6879**	**505**	**488**	**370**

Future Strategy

i. Awareness of large number of farmers about registration of planting material under PPV & FRA Act.

ii. Training of KVKs Scientist about PPV & FRA.

iii. Training of ATARI Scientist abroad under PPV & FRA.

iv. Increase the number of DUS testing Centre in each hot spot.

v. Increase the number of crop, varieties, medicinal plants, economic value plants for registration under PPV & FRA.

vi. Training programme of farmers, NGO and other stakeholder who are directly involved in the PPV & FRA programme for sustain the programmes .

Cluster Frontline Demonstrations of Rabi Oilseeds 2015-16

Incharge : *Dr. Prem Chand, Scientist (Agril. Economics)*

Project "Cluster Frontline Demonstrations of Rabi oilseed 2015-16" under National Mission on oil seed and oil palm (Mini Mission-I) is implemented through 8 Zones of ICAR Agricultural Technology Research Institutes. Zone-VII is the Nodal office of this Project. In Zone-VII, four major crops groundnut, mustard, linseed and sesame were taken in three states Chhattisgarh, Madhya Pradesh and Odisha.

In Chhattisgarh mustard, linseed and sesame crops was demonstrated. There was 541 demonstrations on mustard covering 310.44 ha area, under linseed it was 295 and 163.96 ha respectively. There was 20 demonstrations on sesame in 148 ha area. In MP, there was 580 demonstrations on mustard covering 232 ha while in Linseed it was 506 demonstrations in 211.2 ha area.

In Odisha there was 1034 demonstration on graoundnut with a coverage of 448 ha. While in mustard it was 770 demonstrations and 309 ha area. There was only 68 demonstratons on Sesame with a coverage of 26 ha.

Table 10.4: State-wise result of Cluster Frontline Demonstation of Rabi oilseeds

State	Particulars	Groundnut	Mustard	Linseed	Sesame	Total
Chhattisgarh	Area (ha.)	-	340	320	40	700
	Demo (no.)	-	850	800	100	1750
	Productivity	-	8.21	6.78	2	16.99
	B:C Ratio	-	2.36	2.41	2.98	7.75
Madhya Pradesh	Area (ha.)	-	288	318	-	606
	Demo (no.)	-	720	796	-	1516
	Productivity	-	15.51	8.36	-	23.87
	B:C Ratio	-	3.47	2.93	-	6.4
Odisha	Area (ha.)	570	364	-	110	110
	Demo (no.)	1475	828	-	275	275
	Productivity	21.7	7.6	-	6.59	6.59
	B:C Ratio	2.5	1.81	-	1.99	1.99

Line sowing in Linseed

Mulching in Groundnut

System of mustard intensification

Cluster Frontline Demonstration on Rabi Pulses

Incharge: ***Dr. Prem Chand, Scientist, Sr. Scale (Ag Economics)***

Performance of Demonstrations

Chickpea and lentil are the major rabi pulses in the states of Madhya Pradesh and Chhattisgarh. Greengram is the major pulses in the state of Odisha. Among these three states, Madhya Pradesh produced Chickpea in large areas. Clustered demonstration was organized in 2202.6 ha covering these three states.

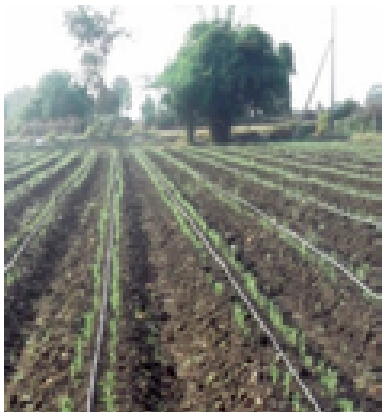
Table 10.5: State-wise result of Cluster Frontline Demonstation of Rabi Pulses

State	Particulars	Chickpea	Field Pea	Lentil	Green gram
Chhattisgarh	Area (ha.)	490	80	150	40
	Demo (no.)	1034	153	295	100
	Productivity(q/ha)	11.15	9.07	8.02	7.30
	Net Return (in Rs.)	25895.25	17444.75	17815.80	20480.00
	B:C Ratio	2.63	2.33	2.14	2.56

State	Particulars	Chickpea	Field Pea	Lentil	Green gram
Madhya Pradesh	Area (ha.)	760	40	172.6	-
	Demo (no.)	1878	97	433	-
	Productivity(q/ha)	15.10	14.80	12.58	-
	Net Return (in Rs.)	31624.00	34430.50	42273.30	-
	BC Ratio	2.73	3.08	3.26	-
Odisha	Area (ha.)	180	-	-	330
	Demo (no.)	460	-	-	839
	Productivity(q/ha)	12.76	-	-	7.08
	Net Return (in Rs.)	32921.25	-	-	19818.80
	BC Ratio	2.41	-	-	2.04

Out of 2392 ha allotted for FLD 2202.6 ha was covered through 5189 demonstrations. Area under Chickpea was 1430 ha., Lentil 322.6 ha., Greengram 330 ha. and Fieldpea 120 ha. Out of these area coverage in Madhya Pradesh was 972.6 ha., Chhattisgarh 720 ha and Odisha 510 ha.

Sprinkler Irrigation in Chickpea



Ridge & Furrow & Drip Irrigation in Lentil

Integrated Pest Management in Greengram

11

NEW INITIATIVES

With the changing scenario, new initiative 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 endaevours in agriculture. KVK is performing very well in the farmers' condition through its well planned mandated activities under the guidance of Division of Agricultural Extension and monitoring system of the ICAR-ATARI with Director Extension of SAUs. In view of lack of proper documentation of the work and impact assessment, only few KVKs got recognition and appreciation at various platforms.

Keeping in view the importance of the matter, ICAR-ATARI, Jabalpur initiated some new works and its proper documentation at KVK level. Some of the important initiatives are being discussed below.

A. Capacity building of extension scientists for frontline extension research

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

Two workshops were oraganized for capacity building of the extension scientist regard. After discussion and deliberation, the parameters were finalized in consultaion with the experts.

Identified areas for methodological interventions in technology application were as follows:

- Technology Expansion
- ICT Application in agriculture (KMA, Whatsapp, other social media)
- Integration of scheme/ programmes/NGOs (Convergence model)
- Market-led Approach (Money to money)
- Seed to Consumer End (losses in marketing steps

Following study were conducted and findings are as follows:

i. Study on performance of seed societies in Madhya Pradesh

Objectives:

- To study the performance of the seed societies
- To identify the factors responsible for success / failure of the seed societies
- To document the problems faced by the societies

KVK Sehore, Harda, Neemuch, Jabalpur were identified for the study on Performance of seed societies in Madhya Pradesh.

Table 11.1: List of active and inactive Seed societies

S. No.	District	No. of Seed societies		
		Active	Inactive	Total
1	Raisen	40	40	80
2	Indore	120	408	528
3	Khandwa	12	10	32
4	Ratlam	10	24	34
5	Harda	9	8	17
6	Jabalpur	6	60	66
7	Dewas	69	42	111
8	Sehore	28	38	66
	Total	**294**	**630**	**934**

Problems in Execution of Seed Societies

The main problems faced by seed societies are Lack of finance during procurement, Delay in disbursement of payment for the seed supply to different agencies, distribution system of Primary Agricultural Cooperative Society needs to be improved, unavailability of breeder seeds for further production, delay in certification process of produce etc.

Table 11.2: Ranking of problems faced by Seed societies

S. No.	Particulars	Percentage	Ranking of the problem
1.	Delay in disbursement of payment for the seeds supply to different agencies	18.2	II
2	Delay in certification process of produce	9.12	V
3	Lack of finance during procurement	22.10	I
4	Weak marketing system for seeds	8.52	VII
5	Unavailability of breeder seeds for further production	10.2	IV
6	Distribution system of PACS needs to be improved	13.7	III
7	Lack of proper demand of seeds by govt. institution as well as farmers	5.22	VI
8	Lack of proper cooperation from related departments	5.22	VI
9	Lack of trust within group	2.4	VIII
10	Lack of resources	5.22	VI

Suggestions from Seed Societies

The main suggestions perceived from Seed Societies were easily availability of loan facilities, Breeder seeds to be provide on the basis of demand and time, support from allied department, ensure lifting of seeds through government, regular technical backup etc.

Table 11.3: Ranking of suggestions given by Seed societies

S. No.	Particulars	Percentage	Rank
1.	Breeder seeds to be provide on the basis of demand and time	24.80	II
2	Easily availability of loan facilities	28.60	I
3	Ensure lifting of seeds through Govt. agencies	16.30	IV
4	Regular technical backup	12.30	V
5	Support from allied departments	18.00	III

Table 11.4: Information sources and its frequency of use by Seed societies

S. No.	Particulars	Always	Sometime	Not
A.	**Print Media**			
1.	Agri. Newspaper	32.00	40.00	28.00
2.	Agri. Magazine	26.00	38.00	36.00
B.	**Mass Media**			
1.	Agri. Programme broadcasted on T.V	25.00	70.00	5.00
2.	Agri. Programme broadcasted on Radio	12.00	38.00	50.00

Study on ICT tools – mobile messaging, social media (Whatsapp) in dissemination of agricultural information

Problem identified:

- Lack of timely dissemination of agricultural information.
- Lack of timely available solutions of the problems
- Lack of technical knowledge in farming community.
- Lack of interaction of farmers with agri. Scientists and experts

Technology Assessed

Study on ICT tools – Mobile Messaging , Social media (whatsapp) in dissemination of Agricultural Messages. Five trials with 450 farmers were conducted by KVK Sehore, Neemuch, Jabalpur, Bhind, Burhanpur to study on ICT tools – Mobile Messaging, Social Media (whatsapp) in dissemination of Agricultural messages.

Result:

Results revealed that 20.74 percent increase perception towards the technology, 30.36 percent increase knowledge level, 37.76 percent increase in extent of utilization information, 35.84 percent increase in the Information reliability and applicability, 52.24 percent increase in timeliness and 18.60 percent, increase adoption dynamics through application of ICT (Whats app) based information in agricultural and allied sector.

Table- 11.5: Performance of ICT(Whats app) based information sources

Details	No. of trials	Percentage of					
		perception towards the technology	knowledge level (%)	extent of utilization information	information reliability & applicability	timeliness	adoption
Traditional Information Sources (Farmers practice) T^1	05	57.74	46.48	44.48	38.84	34.44	38.84
ICT (Whats app) based information sources (Recommended practice) T^2		78.48	76.84	82.24	74.68	86.68	57.44
Percent change		20.74	30.36	37.76	35.84	52.24	18.60

B. Mera Gaon Mera Gaurav

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

Mera Gaon Mera Gaurav is operational in 17 Institutions including ICAR institutes (11) and SAUs (6) under Zone VII is monitored by ATARI, Jabalpur. DWSR, Jabalpur, IISS, Bhopal, DSR, Indore, CIAE, Bhopal, National Institute of High security Animal Disease, Bhopal, NDVSU, Jabalpur, JNKVV and RVSKVV in Madhya Pradesh, IGKV, CGKV and NIBSM, Raipur in Chhattisgarh, CIFA, Bhubaneswar, CRRI, Cuttack, CIWA, Bhubaneswar, RC-CTCRI, Bhubaneswar, IIWM, Bhubaneswar, CARI, Bhubaneswar and OUAT are institures.

The different activities conducted under MGMG are as follows

During 2015-16, 167 groups were formed by involving 583 scientists under ICAR institutes and SAUs. Through training, demonstration, literature distribution, general awareness and Linkages created with other Departments/ Organizations of 45874 farmers of 683 villages were benefited under MGMG programme.

Four groups involving 14 scientists the ICAR-DWSR, Jabalpur conducted total 25 demonstrations and six training by covering 20 villages. Training, demonstration, literature distribution, general awareness and Linkages created with other Departments/ Organizations benefitted 5854 farmers.

In IISS, Bhopal 11 groups were formed in which 44 scientists involved by covering 55 villages. About 1000 farmers were benefited through 20 demonstration and 10 training conducted by the different groups and 250 farmers benefited through soil health card distribution in adopted village.

Total 5040 farmers of 70 villages benefited through 39 demonstrations, seven trainings in by 14 groups involving 57 scientists CIAE, Bhopal.

DSR, Indore formed six groups involving 24 farmers laid out 24 demonstrations and conducted one training programme. Involving demonstration, training and other extension activities in 20 village total 3276 farmers were benefitted.

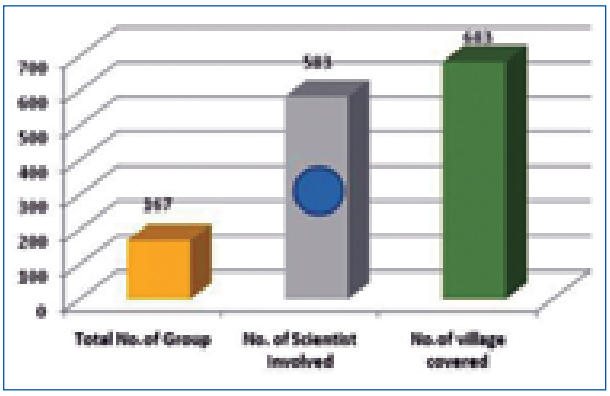
Through 30 demonstrations and three training programme on carp seed rearing, carp culture, farm made feed preparation and literature distribution for farmer awareness benefited 3533 farmers of 75 village. Similarly NRRI, Cuttack adopted the 95 village in which 11 training on different aspect of crop conducted in which 1081farmer were participated.

ICAR- CIWA and ICAR IIWM institutes covered the 20 and 30 villages respectively in which total 3516 farmers were benefited by participating in four demonstration and 17 training programmes.

JNKVV, Jabalpur conducted total 82 demonstrations and 19 training programmes in 30 adopted villages which benefitted 2229 farmers in MGMG programme.

In 39 demonstrations and 50 training programmes total 15695 farmers of 193 village were benefited in RVSKVV, Gwalior involving 41 groups of 159 scientists.

Fifteen groups of 60 scientists covered 25 villages and directly approach to 2250 by general awareness and Linkages created with other Departments.



Glimpses of *Mera Gaon, Mera Gaurav*

Table 11.6: Institute-wise progress under *MERA GAON MERA GAURAV*

S. No.	Name of Institute	Number of					
		Group	Scientist Involved	Village covered	Demo.	training	farmers benefited
1	DWR, Jabalpur	4	14	20	25	6	5648
2	IISS, Bhopal	11	44	55	20	10	1250
3	CIAE, Bhopal	14	57	70	39	7	5040
4	NIHSD, Bhopal*	5	20	25	-	-	-
5	DSR, Indore	25	6	30	20	1	3276
6	CIFA, Bhubaneshwar	15	60	75	30	3	3533
7	NRRI, Cuttack	19	76	95		11	1081
8	CIWA, Bhubaneshwar	4	18	20	4	2	1036
10	IIWM, Bhubaneshwar	6	27	30		15	2480
11	NIBSM, Raipur	3	12	15	-	-	-
12	CARI, Bhubaneshwar	-	6	-	-	-	-
13	JNKVV, Jabalpur	6	24	30	-	-	-
14	RVSKVV, Gwalior	41	159	193	39	-	15695
15	IGKV, Raipur	-	-	-	6	4	2260
16	OUAT, Bhubaneswar	15	60	25	10	17	2250
17	CGKV, Durg	2	6	-	-	-	-
18	NDVSU, Jabalpur	-	-	-	-	-	-
	Total	**168**	**583**	**683**	**183**	**101**	**43645**

* No field work due to protoc0l problem

C. Attracting and Retaining Youth in Agriculture (ARYA)

Nodal Scientist: ***Dr. SRK Singh/Dr. Prem Chand***

i. KVK Gwalior

Krishi Vigyan Kendra, Gwalior has given ICAR funded ARYA project for developing entrepreneurship skill development among rural youth in district Gwalior in February 2016. Under this project KVK has carried out following activities:

Village Selection

KVK has selected eleven (11) villages having rural youth in cluster form viz. Amrol, Moucch, Ritora, Nikodi, Banwar, Himmatgarh, Panihar, Girwai, Supawali, Badagoan and Gadajar.

Selection of farmers

KVK selected 200 interested rural youth for entrepreneurship skill development among them as per their field of interest. Activity wise selected youth numbers are mention in the table below.

Table 11.7: Activity and youth selected under ARYA

S. No.	Enterprises	No. of youths selected
1	Horticulture based activities	50
2	Vermi composting	60
3	Mushroom production	40
4	Poultry	50
	Total	**200**

Training programme conducted

KVK conducted total eight motivational cum awareness training programmes (two programme in each enterprise). The details of training programme are given below.

Table 11.8: Details of training programmes under ARYA

S. No.	Enterprises	Training	Participant
1.	Horticulture based activities	1	34
2.	Vermi composting activities	2	30
3.	Mushroom production	2	22
4.	Poultry production	2	47

Establishment of Vermi compost unit for hands on trainings

A model vermi compost unit is constructed as per design finalized for hands on training for the participants at Agro-technology park of KVK Gwalior under ARYA Project.

Training on Vermi compost

ii. KVK Nayagarh, Odisha

The modalities of the project were discussed with DDA, DFO, DDH, and CDVO. Accordingly all were requested to supply list of beneficiaries for undertaking production. A total of 46 no of beneficiaries of mushroom, 30 no of beneficiaries of fingerlings production and 42 no of beneficiaries of broiler farmers have been selected. Further the line department officials were requested to make a

Constructing low cost bamboo structure for mushroom production

Fingerlings production at Ikiri village Block Nayagarh under ARYA

joint visit and finalization of the beneficiaries will be done at district level committee on ARYA under the chairmanship of Dean Extension Education..

iii. KVK Dantewada

Mushroom Production

Four groups each with 10 members with the age of 15-35 years are formed.Two training programme of 4 days were organized.

Strengthening of Mushroom Laboratory: The mushroom lab of KVK is strengthened and Mushroom spawn production started. Initial critical

Hon'ble APC visited to Mushroom Laboratory

Hon'ble APC visited to Mushroom Laboratory

inputs for mushroom production (Mushroom Spawn, Drum, Bucket, Polythene sheet, Formalin, Bavistin, Poly bags etc.) have been purchased.

Lac production

Four groups each with 15 members with the age of 15-35 years were formed. Four training programme of 4 days were organized. A Lac processing unit will be established in the 2016-17

Training on Lac production

Processing and value addition of NTFP's

Four groups with 15 members in each group with the age of 15-35 years have been formed for this activity. Two training programme of 4 days were organize. Tikhur processing unit has been purchased and Chironji and Tamarind processing unit will be established soon.

Tikhur Processing Unit

Backyard Poultry management

Four groups with 10 members in each group with the age of 15-35 years is formed. Two training programme of 4 days were organized.

Poultry Bird: Poultry breed of Kadaknath

Poultry unit: Inputs for poultry farming (Poultry Cage, Poultry Breed, Feeding and drinking pod, initial feed) have been procured.

Training on poultry farming

D. Farmer FIRST

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 smallholder agriculture and complex, diverse and risk prone realities of majority of the farmers through enhancing farmers-scientist interface.

Two Zonal Project Management Committee (ZPMC) meeting on Farmer FIRST programme held for project proposal reviewing in ATARI. The ZPMC members are Dr. Anupam Mishra, (Chairman), Dr. Y.V. Singh and Dr. S.K. Shrivastava (Expert), Shri Vivek Mahajan, Shri M.S. Saluja, (Farmer Members), Shri K.S. Netam and Er. S.K. Chourasia (State Government Members). Dr. S.R.K. Singh Principal Scientist (AE) ATARI, Jabalpur as Member Secretary.

Total eight proposal reviewed and finalized for its submission to ICAR.

E. Pre-Kharif Campaign at Krishi Vigyan Kendra

Nodal Scientist: ***Shri Tushar Athare, Scientist (AE)***

Sixty four KVKs were involved in pre- Kharif Campaign from ICAR-ATARI Jabalpur in which 44098 farmers participated. Hon'ble Shri Balram Ji Das Tondon, Governor of Chhattisgarh was the Chief Guest in Pre-Kharif Mela programme at KVK Kawardha on June 26, 2015. Shri Sanjay Das Burma, Hon'ble Minister for Food Supply, Consumer welfare, Skill Development & Technical Education, Odisha; Shri Gauri Shankar Bisen, Hon'ble Minister for FW & AD, GoMP at Balaghat and Shri Brij Mohan Agrawal, Hon'ble State Agriculture Minister, GoCG at Durg. Pre-Kharif Mela programmes organized by KVKs were attended by 38 Hon'ble Member of Parliament and 15 MLAs.

Table 11.9: Details of Pre-Kharif Campaign at Krishi Vigyan Kendra

State	No. of			
	Programme	MP	MLA	Farmers
Chhattisgarh	14	9	1	12479
Madhya Pradesh	33	16	8	18349
Odisha	17	13	6	13270
Total	**64**	**38**	**15**	**44098**

During Pre-Kharif Campaign Interactive meet of scientists and farmers were organized on planning for Kharif crop, improved package of practices, weed management, fish farming etc. were given by experts. Progressive farmers also shared their experiences about new practices of crop cultivation. Kisan mela, exhibition of live crop samples, seed samples, farm implements and technology posters were arranged for the farmers by KVK. Officials from various line departments including District Administration, Agriculture, Horticulture and Animal Husbandry departments participated in the programmes.

Shri Gauri Shankar Bisen, Hon'ble Minister FW& AD, Govt. of MP at Balaghat

Shri Prafulla Samal, Hon'ble MLA in Pre-Kharif Mela at KVK Bhadrak at KVK Bhadrak

Shri Balram Ji Das Tondon, Hon'ble Governor of Chhattisgarh in Pre-Kharif Kisan Mela at Kawardha

Pre-Kharif Kisan Mela at Kawardha

F. World Soil Health Day Celebration

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

The 68th UN General Assembly declared 2015 as the International Year of Soils (IYS) for raising awareness among the people on the importance of soil in sustaining life support system on earth. Keeping this in view, ICAR ATARI, Jabalpur and KVKs celebrated World Soil Health Day on December 5, 2015 across the Zone. Ninety six KVKs organised programme on December 5, 2015 at KVKs in collaboration with District authorities and various Line departments with involvement of Chief Ministers, Member of Parliaments, Ministers, MLAs and other people's representatives. Soil samples to the tune of 49300 were collected from 3022 villages following grid method of sample collection, 108320 Soil Health Cards were prepared and distributed by KVKs on World Soil Health Day.

The World Soil Health Day Programme was attended by Hon'ble Chief Minister, Chhattisgarh Dr Raman Singh, at Raipur, Hon'ble Chief Minister, Madhya Pradesh Sh. Shivraj Singh Chouhan at Bhopal, Hon'ble Minister of State for Mines, Steel, Labour and Employment GoI, New Delhi, Sh. Vishnudev Sai, Seven Ministers from State Governments of Madhya Pradesh, Chhattisgarh and Odisha, 27 Hon'ble Member of Parliament, 60 MLAs, 71 Zila Panchayat Chairman and other dignitaries. Exhibitions were organized by 96 KVKs on this occasion showing various Soil Health Conservation technologies. The KVKs received support from other line departments of state governments in organization of World Soil Health Day Programme. Mandi Board of Madhya Pradesh has financed 20 Soil Testing Kits to KVKs and also Rs. 3.00 Lakh each was given by State Government of Madhya Pradesh to selected KVKs. Nutrient Recommendation for 15 crops viz; rice, soybean, wheat, cotton, mustard, groundnut, mango, tuber crops, onion and garlic, fodder, pulses, citrus, pomegranate, potato, sugarcane with the help of 15 ICAR Institutes has been prepared to celebrate this occasion.

Hon,ble CMs of Madhya Pradesh Sh Shivraj Singh Chauhan and Dr Raman Singh of Chhattisgarh at World Soil Health Day Programme

Table 11.10: Summary of KVK wise World Soil Health Day programmes in Zone VII

	No. of			
State	**KVKs**	**Participants**	**Cards distributed at venue**	**Villages covered**
Chhattisgarh	20	17565	16918	783
Madhya Pradesh	46	31572	66775	1646
Odisha	33	14278	24627	593
Total	**99**	**63415**	**108320**	**3022**

G. Pradhan Mantri Fasal Beema Yojana Programme

Nodal Scientist: ***Shri Tushar Athare, Scientist (AE)***

Pradhan Mantri Fasal Beema Yojana Farmers Fair cum Awareness Programme was organised during 30 March to 23 April, 2016 in 94 KVKs with participation of 53095 farmers in states of Madhya Pradesh, Chhattisgarh and Odisha. The Hon'ble Union Minister Shri Vishnudev Sai, Union Minster of State for Steel & Mining participated as Chief guest in programme on April 7, 2016 at KVK Raigarh, Chhattisgarh. Shri Jual Oram, Union Cabinet Minister for Tribal Affairs also participated as Chief guest on April 16, 2016 at KVK Sundergarh, Odisha.

Pradhan Mantri Fasal Beema Yojana Programme was attended by eight Hon'ble State Government Ministers, 59 Hon'ble Member of Parliaments as Chief Guest. The programme was also attended by 70 Member of Legislative Assembly from three states along with Chairman/ member of Zilla Panchayat, District Collectors, Bank Officers, Line departments also participated in the programme.

Shri Vishnu Deo Sai, Hon'ble Union Minister of State for Mines, Steel, Labour & Employment at Raigarh

Shri Jual Oram, Hon'ble Union Minister of Tribal Affairs at Sundergarh

Table 11.11: Summary of *Pradhan Mantri Fasal Beema Yojana* Zone VII

State	No. of KVKs Organised the programme	Number of Participants								
		Hon'ble Union Ministers	Hon'ble State Govt Ministers	Hon'ble MPs	MLAs	District Officials			No. of Farmers	No. of Organization in Exhibition
						Chairman/ Members Zila Panchayat	Dist. Collector	Bank Officials		
Chhattisgarh	19	01	01	10	18	11	06	18	13044	140
Madhya Pradesh	45	0	05	28	33	21	11	49	31025	158
Odisha	30	01	02	21	19	18	10	32	9026	201
Total	**94**	**2**	**8**	**59**	**70**	**50**	**27**	**99**	**53095**	**499**

Shri Abhishek Singh, Hon'ble MP in PMFBY programme at Kawardha

Smt. Pratyusha Rajeshwari Singh, Hon'ble MP in PMFBY programme Nayagarh

12 INSTITUTE PROJECTS AND PUBLICATIONS

A. Institute Research Projects

S No.	Title	Name of Scientist	Designation	Responsibility
1	Assessing the Efficacy of Mobile Messaging by KVK-KMA to the Farmers in operational states of Zone VII	Dr. S.R.K. Singh	Principal Scientist	Principal Investigator
2	Adoption Dynamics and impact of Improved Production Technology disseminated by KVK	Dr. S.R.K. Singh	Principal Scientist	Principal Investigator
3	Assessment of Sowing Techniques for Soybean in Madhya Pradesh	Dr. A.P Dwivedi	Sr. Scientist	Principal Investigator
4	Growth and Activities of Earthworm Species under Different Combination of Bio-wastes	Dr. A.P. Dwivedi	Sr. Scientist	Principal Investigator
5	Estimation of yield gap and its factors affecting in major crops of Madhya Pradesh, Chhattisgarh and Odisha	Dr. Prem Chand	Scientist (SS)	Principal Investigator
6	Impact assessment of KKVs: Standardizing methodologies and its estimation	Dr. Prem Chand	Scientist (SS)	Principal Investigator
7	Participatory Approach for Management of Community Grazing Land through KVKs	Sh. Tushar Athare	Scientist	Principal Investigator

B. Publications

i. Research Articles

1. A.K. Dixit, D.S. Tomar, S.R.K. Singh and A. Saxena (2016). Influence of rate, source and mode of sulphur application on soybean (Glycine max L.) in Vertisols of Madhya Pradesh. Indian Journal of Fertilizers, Vol. 12 (2), pp. 44-47.
2. A. Kulhade, S.R.K. Singh and Aroop D. Gupta (2015). Knowledge level on Organic farming Technology Practiced by the farmers of Seoni District. *Flora & Fauna,* Vol. 21 (1), Pp. 107-110.
3. Chand, P. and Sirohi, S. (2015). Sectoral Priorities for Sustainable Livestock Development in Rajasthan: Lessons from Total Factor Productivity Growth. *Agricultural Economics Research Review* 28 (Conference Number): 81-92
4. Chand, P., Sirohi, S., Sirohi S.K. and Chahal, V. P. (2015). Estimation of demand and supply of livestock feed and fodder in Rajasthan: a disaggregated analysis. *Indian Journal of Animal Sciences* 85 (11): 1229–1234.
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6. Mamta Singh, U.S. Gautam, A.P. Dwivedi, Vinita Singh, Vivekin Pachauri, K.S. Yadav (2015). Maximization of wheat production under limited irrigated condition through technological interventions. *Progressive Research 10 (III):*1480-1482.

7. P. Rajan, K.K. Rana, N.K. Khare, and S.R.K.Singh (2015). Adoption of KVK activities by tribal farmers in India. *International Journal of Agricultural Sciences*, Vol. 8 (15), Pp. 1261-1265.

8. P. Rajan, N.K. Khare, S.R.K. Singh and M.A. Khan (2014). Constraints perceived by Tribal farmers in adoption of recommended practices. *Ind. J. of Ext. Edu*., Vol. 50 (3 & 4), Pp. 65-68.

9. R. Shukla and S.R.K. Singh (2015). Ergonomic evaluation of improved grain cleaning technologies – comparative study. *Ind. J. of Ext. Edu*., Vol. 51 (3 & 4), Pp. 105-108.

10. S. Kumar, S.R.K. Singh and R.C. Sharma (2014). Farmers attitude mapping towards Kisan Mobile Advisory Services. *Ind. J. of Ext. Edu*., Vol. 51 (3 & 4), Pp. 145-147.

11. S.P. Lal, K.S. Kadian, S.K. Jha, S.R.K. Singh, J. Goyal and R.S. Kumar (2015). A resilience scale to measure farmers' disenchantment towards agriculture in national calamity hit region of India: an innovative tool. *Journal of Community Mobilization and Sustainable Development*, Vol. 10 (1), Pp. 13-19.

12. N.K. Pandey, S.R.K. Singh and R.R. Burman (2015). Assessing the level of participation and acceptance of watershed practices in Panchkula district. *Journal of Community Mobilization and Sustainable Development*, Vol. 10 (1), Pp. 125-129.

13. P.Rajan, N.K. Khare and S.R.K. Singh (2015). Factors affecting the income generation of tribal farmers in Madhya Pradesh State of India. *Journal of Community Mobilization and Sustainable Development*, Vol. 10 (2), Pp. 147-151.

14. S.P. Tripathi, S.P.S. Somvanshi, Anupam Mishra, S.R.K. Singh and Shilpi Verma (2015). Ergonomic evaluation of farm womenthrough improved serrated sickle for harvesting in wheat. *Journal of Community Mobilization and Sustainable Development*, Vol. 10 (2), Pp. 233-236.

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ii. Technical Bulletins/ Manual

1. Anupam Mishra and S.R.K. Singh (2016). Simhastha 2016 as Green Kumbh. ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh. Pp. 15.

2. Anupam Mishra, S.R.K. Singh and Saswati Pattanaik (2015). Manual on Poultry Brooding and Management at Backyard by Farmwomen. ICAR-ATARI, Jabalpur. Pp. 16.

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5. Anupam Mishra, S.R.K. Singh, and P.N. Ananth (2015). Methodological Initiatives for Accelerating Technology Application by KVK (2015). ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh. Pp. 83.

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8. Capacity Building of KVK Personnel 2015-*Proceedings*. ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh. Pp.79.
9. S.R.K. Singh, Anupam Mishra and Tushar Athare (2015). Extension for next generation. ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh. Pp. 95.
10. S.R.K. Singh, Anupam Mishra and Tushar Athare (2015). Sowing Status. ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh. Pp. 37.
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15. Tushar Athare, Anupam Mishra and S.R.K. Singh (2015). Highlights of ATARI. ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh. Pp. 24.
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17. XXII Zonal Workshop of KVKs-Proceedings. ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh.
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24. Tushar Athare, Anupam Mishra, S.R.K. Singh, A.P. Dwivedi and Prem Chand (2016) ICAR-ATARI at a Glance. ICAR-ATARI, Zone-VII, Jabalpur, Madhya Pradesh.

iii. Book:

1. P. Rajan, N.K. Khare, S.R.K. Singh (2016). Impact Assessment of Krishi Vigyan Kendra on Tribal Farmers. Today and Tomorrow Printers and Publishers, New Delhi. Pp. 125.
2. S. Singh, M.M. Patel, S.R.K. Singh (2016). Women in Rainfed Farming. Today and Tomorrow Printers and Publishers, New Delhi. Pp. 128.

iv. Book Chapters

1. A.P. Dwivedi, R.P. Singh, Dinesh Singh, U.S. Gautam, S.N. Singh and Smita Puri (2015). Pulse Crop: Implication for Food Security and Soil

Rejuvenation Qualities. 2015. Impact of Organic Farming in Sustainable Rural Development through Agriculture-2015.pp 212-219.

2. Anupam Mishra, A.P. Dwivedi, S.R.K. Singh, Prem Chand, Tusar Athare and Mamta Singh (2015). System of rice intensification: may one of the resource conservation technology become more potential, profitable and ecologically safe. Impact of Organic Farming in Sustainable Rural Development through Agriculture-2015. pp 227-230.
3. Mamta Singh, U.S. Gautam, A.P. Dwivedi, Vinita Singh, Vivekin Pachauri and K.S. Yadav (2015). Yield gap analysis of wheat under limited irrigated condition in Vindhya plateau zone with special reference to climate aberration. Impact of Organic Farming in Sustainable Rural Development through Agriculture-2015. pp78-85.
4. R.P. Singh, U.S. Gautam, Dinesh Singh, S.K. Pandey, A.P. Dwivedi, Smita Puri and Mahesh Pal (2015). Integrated pest management strategies in solanaceous vegetable crops: a way towards organic farming. Pulse Crop: Implication for Food Security and Soil Rejuvenation Qualities. 2015. Impact of Organic Farming in Sustainable Rural Development through Agriculture-2015. pp1-14.
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v. Presentations in Conferences/Symposia/ Seminars/Other forums

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13

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 an application by the KVK. Therefore, all KVKs were asked to conduct the meetings on the periodical basis (twice in a year).

Total 150 SAC meetings conducted are presented in Table 14. All 99 functional KVKs have conducted their SAC meeting during 2015-16.

Table 13: Status of SAC conducted by KVKs during 2015-16

State	Host	S. No.	Name of KVKs	No. of SACs conducted
Chhattisgarh	IGKV	1	Balrampur	1
Chhattisgarh	IGKV	2	Bastar	1
Chhattisgarh	IGKV	3	Bhatapara	1
Chhattisgarh	IGKV	4	Bijapur	1
Chhattisgarh	IGKV	5	Bilaspur	1
Chhattisgarh	IGKV	6	Dantewada	1
Chhattisgarh	IGKV	7	Dhamtari	1
Chhattisgarh	IGKV	8	Durg	1
Chhattisgarh	IGKV	9	Gariyaband	1
Chhattisgarh	IGKV	10	Janjgir-Champa	1
Chhattisgarh	IGKV	11	Jashpur	1
Chhattisgarh	IGKV	12	Kanker	1
Chhattisgarh	IGKV	13	Kawardha	1
Chhattisgarh	IGKV	14	Korba	1
Chhattisgarh	IGKV	15	Korea	1
Chhattisgarh	IGKV	16	Mahasamund	1
Chhattisgarh	IGKV	17	Narayanpur	2
Chhattisgarh	IGKV	18	Raigarh	1
Chhattisgarh	IGKV	19	Rajnandgaon	2
Chhattisgarh	IGKV	20	Surguja	1
Total				22
Madhya Pradesh	JNKVV	21	Balaghat	1
Madhya Pradesh	JNKVV	22	Betul	1
Madhya Pradesh	JNKVV	23	Chhatarpur	1

State	Host	S. No.	Name of KVKs	No. of SACs conducted
Madhya Pradesh	JNKVV	24	Chhindwara	1
Madhya Pradesh	JNKVV	25	Damoh	1
Madhya Pradesh	JNKVV	26	Dindori	1
Madhya Pradesh	JNKVV	27	Harda	1
Madhya Pradesh	JNKVV	28	Hoshangabad	1
Madhya Pradesh	JNKVV	29	Jabalpur	1
Madhya Pradesh	JNKVV	30	Katni	1
Madhya Pradesh	JNKVV	31	Mandla	1
Madhya Pradesh	JNKVV	32	Narsinghpur	1
Madhya Pradesh	JNKVV	33	Panna	1
Madhya Pradesh	JNKVV	34	Rewa	1
Madhya Pradesh	JNKVV	35	Sagar	1
Madhya Pradesh	JNKVV	36	Seoni	1
Madhya Pradesh	JNKVV	37	Shahdol	1
Madhya Pradesh	JNKVV	38	Sidhi	1
Madhya Pradesh	JNKVV	39	Tikamgarh	1
Madhya Pradesh	JNKVV	40	Umaria	1
Madhya Pradesh	RVSKVV	41	Ashoknagar	2
Madhya Pradesh	RVSKVV	42	Barwani	2
Madhya Pradesh	RVSKVV	43	Bhind	2
Madhya Pradesh	RVSKVV	44	Datia	1
Madhya Pradesh	RVSKVV	45	Dewas	1
Madhya Pradesh	RVSKVV	46	Dhar	2
Madhya Pradesh	RVSKVV	47	Guna	2
Madhya Pradesh	RVSKVV	48	Gwalior	2
Madhya Pradesh	RVSKVV	49	Jhabua	2
Madhya Pradesh	RVSKVV	50	Khandwa	2
Madhya Pradesh	RVSKVV	51	Khargone	2
Madhya Pradesh	RVSKVV	52	Mandsaur	2
Madhya Pradesh	RVSKVV	53	Morena	2
Madhya Pradesh	RVSKVV	54	Neemuch	2
Madhya Pradesh	RVSKVV	55	Rajgarh	2
Madhya Pradesh	RVSKVV	56	Shajapur	2
Madhya Pradesh	RVSKVV	57	Sheopur	2
Madhya Pradesh	RVSKVV	58	Shivpuri	2
Madhya Pradesh	RVSKVV	59	Ujjain	2
Madhya Pradesh	NGO	60	Burhanpur	2
Madhya Pradesh	NGO	61	Indore	2
Madhya Pradesh	NGO	62	Ratlam	2

State	Host	S. No.	Name of KVKs	No. of SACs conducted
Madhya Pradesh	NGO	63	Raisen	1
Madhya Pradesh	NGO	64	Satna	1
Madhya Pradesh	NGO	65	Sehore	2
Madhya Pradesh	ICAR	66	Bhopal	2
Total				68
Odisha	OUAT	67	Angul	2
Odisha	OUAT	68	Balasore	2
Odisha	OUAT	69	Bargarh	1
Odisha	OUAT	70	Bhadrak	2
Odisha	OUAT	71	Bolangir	2
Odisha	OUAT	72	Boudh	2
Odisha	CRRI	73	Cuttack	1
Odisha	OUAT	74	Deogarh	2
Odisha	OUAT	75	Dhenkanal	2
Odisha	OUAT	76	Gajapati	2
Odisha	OUAT	77	Ganjam-I	2
Odisha	OUAT	78	Ganjam-II	2
Odisha	OUAT	79	Jagatsinghpur	2
Odisha	OUAT	80	Jajpur	2
Odisha	OUAT	81	Jharsuguda	2
Odisha	OUAT	82	Kalahandi	2
Odisha	OUAT	83	Kandhamal	2
Odisha	OUAT	84	Kendrapara	2
Odisha	CIFA	85	Keonjhar	2
Odisha	OUAT	86	Khordha	1
Odisha	OUAT	87	koraput	1
Odisha	OUAT	88	Malkangiri	2
Odisha	OUAT	89	Mayurbhanj-I	1
Odisha	OUAT	90	Mayurbhanj II	2
Odisha	OUAT	91	Nabarangpur	1
Odisha	OUAT	92	Nayagarh	2
Odisha	OUAT	93	Nuapada	2
Odisha	OUAT	94	Puri	2
Odisha	OUAT	95	Rayagada	2
Odisha	OUAT	96	Sambalpur	2
Odisha	OUAT	97	Sonepur	2
Odisha	OUAT	98	Sundargarh-I	2
Odisha	OUAT	99	Sundargarh-II	2
Total				**60**
Grand Total				**150**

14 AWARDS AND RECOGNITIONS

Best KVK Award (Zonal)

KVK Surguja received Best Krishi Vigyan Kendras Awards 2014 (Zonal) Zone VII by ICAR for their outstanding contribution. KVK has applied and disseminated several agro-technologies among the farmers and rural youth of the district which resulted into higher productivity and enhanced income and employment. All these agro-based initiatives and efforts translated the economy of the district.

Mahindra Samridhi India Agri Award

KVK Morena, Madhya Pradesh received Best KVK Mahindra Samridhi India Agri-Award 2016. KVK has demonstrated proven technologies on the farmers need based activities and enterprises like bee keeping which benefitted the farming community.

Outstanding Achievement Award

Dr. A.P. Dwivedi received Outstanding Achievement Award at PJTSAU, Hyderabad. He has done commendable works in the field of agriculture technology dissemination along with a regular monitoring of KVKs activities.

Young Scientists Award

Dr. Prem Chand, Scientist, ATARI, Jabalpur received Young Scientists Award. Due to his Industries efforts and inquisitiveness towards new aspects, he has supported KVK system with all sorts of methods and procedures which is proved worthful.

15 DISTINGUISHED VISITORS

KVK Kawardha: Shri Balramji Das Tondon, Governor Chhattisgarh inaugurated Administrative Building and Seed Storage bank

Administrative Building and Seed Storage bank of KVK Kawardha inaugurated by Shri Balramji Das Tondon, Governor Chhattisgarh in presnce of Shri Brij Mohan Agarwal, Minister of Agriculture, Govt of Chhattisgah, Shri Motiram Chandrawanshi, MLA Pandariya, Dr. S.K. Patil, VC, IGKV, Raipur, Shri Ajay Singh, APC on 26 June, 2015.

KVK Bijapur: Dr. Raman Singh, Hon'ble CM Chhattisgarh inaugurated Mushroom Spawn Laboratory

A Mushroom Spawn Lab of KVK Bijapur was inaugurated by Dr Raman Singh, CM Chhattisgarh on 14 April 2015 in presence of MLA Shri Mahesh Gagada, various public representatives and farmers of the district. He interacted with KVK scientists and took stock of various activities conducted by KVK. On the occasion members of Women SHG briefed him about mushroom production activities.

Jabalpur: Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare, Government of India inaugurated A Zonal level Agro-biodiversity Fair-cum-Exhibition

A Zonal level Agro-biodiversity Fair-cum-Exhibition organized by ICAR-ATARI, Jablpur was inaugurated by Shri Radha Mohan Singh, Hon'ble Union Minister, Agriculture and Farmer Welfare, Government of India on 13 February 2016. Shri Gauri Shankar Bisen, Hon'ble Minister of Farmer Welfare and Agriculture Development, Govt. of Madhya Pradesh emphasized the role of agriculture technologies in poverty reduction and scientific development.

Bargarh: Agri-horti Fair-cum-Exhibition at Bargarh, Odisha visited by Hon'ble Union Minister Agriculture and Farmers Welfare

An Inter-state Horti-fair 2015-16 was organized at Bargarh Odisha during 20-22 February, 2016. The inter-state Horti-fair was inaugurated by Hon'ble Union Agriculture and Farmers Welfare Minister Shri Radha Mohan Singh along with Union Tribal Affairs Minister Shri Jual Oram and Union Petroleum Minister Shri Dharmendra Pradhan. The ministers visited the exhibition put by 10 KVKs from western Odisha and appreciated the exhibits displayed by KVKs.

Satna: Hon'ble Minister of Environment and Forest Shri Praksh Javadekar ji reviewed activities in *Sansad Adarsh Gram* of Satna

Hon'ble Union Minister of Environment and Forest Shri Prakash Javedakreji visited Sansad Adarsh Gram Paldev, district Satna on 12 September 2015. He reviewed various activities in the village and interacted with farmers and youth of the village. He asked farmers to follow scientific practices in farming while also keeping environment safe.

KVK-Khordha: Shri Mohanbhai Kalyanjibhai Kundariya, Hon'ble Minister of State for Agriculture inaugurated an Exhibition and a farmer's interaction meet of KVK-Khordha

Shri Mohanbhai Kalyanjibhai Kundariya Hon'ble Minister of State, Ministry of Agriculture and Farmers Welfare, Government of India inaugurated an Exhibition and a farmer's interaction meet of KVK-Khordha on 11-2-2016. Hon'ble Minister interacted with farmers including 30 women self group members and entrepreneurs.

16 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 Sharma
2	ATIC, Raipur	IGKV, Raipur	Dr. S.S. Tuteja
3	ATIC, Bhubaneswar	OUAT, Bhubaneswar	Sri M.P. Nayak
4	ATIC, CIFA, Odisha	CIFA, Bhubaneswar, Odisha	Dr. H. K. De
5	ATIC, CIAE, Bhopal	CIAE, Bhopal, M.P.	Dr. Uday R. Badegaonkar

B. Details on farmers visit

S. No	Purpose of visit	Number of farmers visited
01	Technology Information	11015
02	Technology Products	1969
03	Diagnostic Services	2159
04	Others, (Exposure visits)	510
	Total	**15653**

C. Facilities in the ATIC

S. No	Particulars	Availability (Please √ mark)	Number of ATICs
01	Reception counter	√	5
02	Exhibition / technology museum	√	4
03	Touch screen Kiosk	√	3
04	Cafeteria	√	4
05	Sales counter	√	5
06	Farmer's feedback register	√	5
07	Others (Visitors register, Stock store register, Telephone etc.)	√	5

D. Technology information provided

D.1. Details on technology information

S. No.	Information category	Total number of farmers benefitted	Category of information						
			Varieties / hybrids	Pest management	Disease management	Agro-techniques	Soil and water conservation	Post Harvest technology and Value addition	Animal Husbandry and fisheries
1	Crop & Livestock	2694	50	30	20	2	20	10	68
2	Fish culture	3438	30	0	20	0	0	0	3388
3	Kisan Call Centre / other Phone calls from farmers	1379	194	269	158	330	24	46	8
4	Letters received	55	3	0	0	0	0	0	0
5	Letters replied	55	3	0	0	0	0	0	0
6	Training to farmers / technocrats / students	1188	0	0	0	0	0	0	0
7	Video shows	4778	50	350	220	570	120	0	90
8	Others (Exhibitions and Farmers Fair)	18	0	0	0	0	0	0	0
	Total	**6951**	**4**	**9**	**6**	**10**	**2**	**0**	**3388**

D.2 . Publications (Print & Electronic media)

S. No	Particulars	Numbers sold	Revenue generated in Rs.	Number of farmers benefited
1	Books & Technical Bulletins	111623	6155615	Mass
2	Cost of Cultivation	30	1500	100
3	DVDs (Videos of CIAE Technologies)	305	15250	Mass
4	Pulse Production	8	120	20
5	Rearing of Emu Bird	26	260	150
6	Scientific cultivation of Sugarcane	26	260	250
7	Others if any (Krishi Panchang, Farm magazine & booklets)	96259	3570886	Mass
	Total	**210571**	**9248206**	-

E. Technology products provided

S. No	Particulars	Quantity	Unit of quantity	Value in Rs.	Number of farmers benefited
1	Prototypes of Improved Agricultural Machinery	2890	Nos.	53.69 lakhs	Mass
2	Hand tools-equipment, planting material	Maize Sheller (70), Plant Sapling (8000)	Nos.	14.16 lakhs	8000
3	Agro processed products including soy-products, feed products, , energy products etc are sold through ATIC.	Agro processed products Wheat, Maize & Gram Flour (23273 kg) Pulses (3641 kg) Cattle Feed (10695 kg) Soy- Biscuits (16 kg) Others (3800 kg)	kg.		
4	Bio Pesticides (*Trichoderma & Pseudomonas* powder)	242	kg.	36300	
5	Bio Pesticides (*Trichoderma & Pseudomonas* liquid)	30	Lt	4500	
6	Bio Pesticides *(Trichoderma capsule)*	486	½ & 1 kg Packet	10370	
7	Multigrain Aata & Ragi Malt	98	kg	3920	
8	Organic Rice (Jeeraphool & Basmati)	3244	kg	200080	
9	Honey	6.5	kg	1560	8
	Total	45501.5 30 10960	kg. lt. Nos.	7041730	Mass

F. Technology services provided

S. No	Particulars	Number of farmers benefited
1	Details about the services to line Departments	320
2	Farmer's visited ATIC	7013
3	Mechanization Planning Advisory	1775
4	Plant diagnostics	88
5	Soil and water testing	18246
6	Soil Health Cards issued & Farmers' training conducted in KVKs & NGOs	28590
7	Technologies on freshwater aquaculture (hatchery management, grow out culture and post harvest technology)	6
8	Through Kisan Call Centre	48
9	Through Letters	52
10	Others (**Krishi Gyan Portal**)	3023
	Total	**12321**

17 LIST OF SCIENTIFIC, TECHNICAL AND ADMINSTRATIVE STAFF

Dr. Anupam Mishra, Director

Scientific

Dr. S.R.K. Singh, Principal Scientist (Agrl. Extension)
Dr. A.P. Dwivedi, Sr. Scientist (Agronomy)
Dr. Prem Chand, Scientist, Sr. Scale (Agrl. Economics)
Sh. T.R. Athare, Scientist (Agrl. Extension)
Dr. A.A. Raut, Scientist (Agrl. Extension)

Technical

Sh. Ashok Kumar Dubey, Driver (T2)

Adminstrative and Finance

Assistant Adminstrative Officer

Sh. Sunil Kumar Gupta

Assistant Finance and Accounts Officer

Dr. Prem Chand I/C
Sh. Utpal Ghosh, Junior Accounts Officer

PS to Director

Sh. A.K. Bhowal

Programme Assistant

Sh. R.K. Soni

Supporting

Sh. Sukhchain Das

Retirement

Sh. S.L. Harinkhare, A.A.O. on 30-06-2015.

New Colleagues

Sh. Utpal Ghosh, Junior Accounts Officer Joined on 02-05-2015 from ICAR-NRC on PIG, Guwahati
Dr. A.A. Raut, Scientist (Agrl. Extension) Joined on 01-01-2016 from ICAR-NRC on Equines, Hisar.

Promotion

Sh. Sunil Kumar Gupta promoted to AAO on 02-04-2016.

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(Division of Agricultural Extension)

Jabalpur, Madhya Pradesh