# वार्षिक प्रतिवेदन
# ANNUAL REPORT
## 2022


भाकृअनुप-कृषि प्रोद्यौगिकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र-9

**ICAR-Agricultural Technology Application Research Institute, Zone IX**

जबलपुर, मध्य प्रदेश - 482 004 | Jabalpur, Madhya Pradesh - 482 004

# वार्षिक प्रतिवेदन

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**ICAR-Agricultural Technology Application Research Institute, Zone IX**

**(Division of Agricultural Extension)**

**Jabalpur, Madhya Pradesh**

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## Guidance

Dr. S. R. K. Singh
Director

## Compilation and Editing

Dr. Dwaipayan Bardhan, Principal Scientist, ATARI, Jabalpur

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

## Subject Matter Assistance

Dr. Shashi Gour, Scientist,(Home Sci.), KVK Katni, M.P.

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

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

Dr. (Smt.) Shalu Ann Abraham, Scientist,(Agronomy), KVK Gariyaband, C.G.

Dr. Pradip Kumar Dwivedi, Scientist (Plant Protection), KVK Raisen , M.P.

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

Smt. Rajeshwari Sahu, Scientist (Horticulture), KVK Kawardha, C.G.

Dr. Ranjeet Singh Raghav (Soil Science), KVK RAISEN, M.P.

Dr. Sushil Kumar, Scientist (LPM), KVK Ratlam, M.P.

## Technical Assistance

Dr. Varsha Shrivastava (RA), Dr. Venkteshwar Jallaraph (SRF), Dr. Ranjeet Singh (SRF), Dr. Shrishti Bilaiya (SRF), Mrs. Deepshikha Singh (SRF), Mr. Prashant Sinoriya (SRF), Mr. Shivam Mishra(YPII) Dr. Sanjana Shrivastava (YPI), Mr. Ravi Kumar Dubey (YPI)

## Computer Assistance

Smt. Dipti Dubey, Mr. Roshan Lal Singh, Miss Preeti Tiwari, Mr. Ajay Shukla, Mr. Rishabh Vishwakarma, Mr. Prashant Chapekar

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## Published by

The Director,
ICAR-Agricultural Technology Application Research Institute,
Jabalpur (MP)
Ph: 0761-2680807, 2680158 Fax: 0761-2680485,
email: ATARI.JABALPUR@icar.gov.oin

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# Preface

The new era of Indian agriculture has shifted from Production-driven to market-driven, man- driven to machine-driven and is focusing more on innovations and technological interventions for agri-food systems transformation, frontiers in science and technology for achieving food security and nutrition, bio-fortification in food crops for enhancing nutritional value, digital agriculture, resilient agri-food systems and public-private partnership in agricultural R&D. Thus, putting Indian agriculture firmly on the global map as India's agriculture has the potential to be a big hitter. India's efforts to mainstream millets have found a resounding support from various millet-producing countries, after India got mandate from UN to promote the year 2023 as International year of Millets.

ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-IX is situated in the premises of Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh. The institute coordinates, monitors and evaluates the mandated activities of 82 KVKs spread across two states viz., Madhya Pradesh and Chhattisgarh. Flagship programmes like NICRA, ARYA, Seed hub etc., are being implemented by KVKs with several interventions at field level. Farmer FIRST programme is operational in five centers of Madhya Pradesh and two centers of Chhattisgarh, carried out interventions in farmers filed under crop, horticulture, NRM, livestock, enterprize and IFS based modules. CFLDs on oilseeds and pulses also were conducted by KVKs to increase production and productivity of oilseeds and pulses by demonstrating improved production technologies. In ARYA, rural youth were trained in different agricultural and allied enterprizes as a result rural youth established agre-prenuerial units. Tribal Sub Plan on pulses aimed for enhancing pulse production for food, nutritional security and livelihoods of tribal community through demonstrations and trainings. Seed hub programme being implemented by the KVKs of the zone to produce quality seeds and timely availability to the farmers. District Agro-Meteorological Units are in operation by 23 KVKs of Madhya Pradesh and Chhattisgarh to provide timely weather agro-advisories to perform timely agricultural operations to reduce ill effect of weather variations.

Nutri-SMART Village (NSV) was initiated to tackle the problem of malnutrition by nutrition sensitive agriculture under which 42 NSVs and 15 NSVs operational in Madhya Pradesh and Chhattisgarh, respectively. Nutrition garden, *poshan* thali, *poshan* calender, *poshan* rangoli etc., demonstrated and capacity building and awareness programmes were organized to enhance nutrition literacy and availability of nutrition rich foods. Outscaling of Natural farming project is being operationalized to promote agroecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity. Agri-Drone technology demonstration and Kisan Sarathi are new initiative operational under the zone.

During the year, ATARI organized Zonal Workshop (29$^{th}$) of Krishi Vigyan Kendras at Morena during November 11$^{th}$ -13$^{th}$, 2022 and inaugurated by the Union Minister for Agriculture and Farmers Welfare, Shri Narendra Singh Tomar Ji on November 11, 2022. Further, a National level workshop on outscaling of natural farming was organized dated on 3$^{rd}$ December 2023 inaugurated by the Union Minister for Agriculture and Farmers Welfare, Shri Narendra Singh Tomar Ji in which 425 KVKs scientist with 20 elite farmers practicing natural farming across the country also participated. The details of technical achievements of KVKs has been explained in various chapters.

Due to better performances, ATARI, Jabalpur was felicitated with many accolades. ICAR Awards viz. Pt. Deen Dayal Upadhyay Krishi Vigyan Protsahan Award 2021 to KVK Gwalior (M.P.), Swamy Sahajanand Saraswati outstanding Extension Scientist 2021 and Vasantrao Naik Award for Outstanding Research and Application in Dryland Farming Systems 2021 at National level. Besides, Utkrisht Krishak Samman and SBA Dr. Chandish R. Ballal Team award received by KVK scientists and farmers of the zone for their recognized work in the field of agriculture.

It gives me immense pleasure and great honor to present Annual Progress Report 2022 of ICAR-ATARI, Zone-IX, Jabalpur as testimony of the salient contributions made by KVKs of Madhya Pradesh and Chhattisgarh.

Date: 14/07/2023

**(S. R. K. Singh)**
Director

# सारांश

भा.कृ.अनु. प.–कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र–9 के अन्तर्गत 82 कृषि विज्ञान केन्द्र, मध्यप्रदेश एवं छत्तीसगढ़ राज्यों में स्थित है।

## प्रक्षेत्र परीक्षण के द्वारा तकनीक आंकलन

विभिन्न कृषि विज्ञान केन्द्रों द्वारा 1191 तकनीकियाँ, 10541 प्रक्षेत्र परीक्षण द्वारा परीक्षित की गई। मध्यप्रदेश द्वारा 877 एवं छत्तीसगढ़ द्वारा 314 प्रक्षेत्र परीक्षणों का आयोजन किया गया। कुल प्रक्षेत्र परीक्षण 1191 में से 870 प्रक्षेत्र परीक्षण फसल पर शेष 321 अन्य उद्यमों पर रहा।

## अंग्रिम पंक्ति प्रदर्शन

प्रगति वर्ष के दौरान, कुल 1087 अंग्रिम पंक्ति प्रदर्शन विभिन्न फसलों (दलहन, तिलहन, धन धान्य फसलें, सब्जी फसल, मोटे अनाज) पर आयोजित हुए। कुल प्रदर्शन 11842.93 हे. क्षेत्र में किये गए एवं 28452 किसानों के प्रक्षेत्र पर आयोजित हुए। मुख्य आय सृजन वाले उद्यम पर भी अंग्रिम पंक्ति प्रदर्शन आयोजित किये गये। जिसमें क्षेत्रफल की दृष्टि से 397.68 हे., 2280 इकाईयाँ एवं 2984 लाभार्थियों की संख्या रही।

## प्रशिक्षण एवम् क्षमता संवहन

कुल आयोजित 7577 प्रशिक्षणों में 243253 लाभार्थीयों (कृषक, महिलायें, ग्रामीण युवक, प्रसार कर्मी) ने भाग लिया। भारतीय कृषि अनुसंधान परिषद् के विभिन्न संस्थाओं सहयोग के साथ कृषि तकनीक अनुप्रयोग अनुसंधान संस्थान, जबलपुर द्वारा आयोजित 42 क्षमता संवहन कार्यक्रम से मध्यप्रदेश एवं छत्तीसगढ़ के कृषि विज्ञान केन्द्रों के विषय वस्तु विशेषज्ञ लाभान्वित हुए।

## प्रसार गतिविधियाँ

वर्ष 2022 में कुल 29126 प्रसार गतिविधियों (प्रक्षेत्र दिवस, किसान मेला, कृषक सलाहकारी सेवाएं, प्रदर्शनी, फिल्म शो आदि) के माध्यम से विभिन्न तकनीक का प्रसार कर 2871122 किसान एवं प्रसार कर्मी लाभान्वित हुए।

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

कृषि विज्ञान केन्द्रों द्वारा 18382.31 क्विंटल बीज, 34.01 लाख रोपण सामग्री (धन–धान्य फसलें, दलहन, तिलहन, सब्जी, औषधीय पौधे, फलदार पौधे) का उत्पादन किया गया। कृषि विज्ञान केन्द्रों द्वारा 1244638.91 क्विंटल जैव उत्पाद एवं 500979.20 पशु उपयोगी सामग्री का भी उत्पादन किया गया।

## मृदा, जल एवं पौधों का परीक्षण

क्षेत्र के कृषि विज्ञान केन्द्रों द्वारा किए गए 21549 मृदा एवं 144 जल नमूनों के परीक्षण से 24253 किसान एवं 2785 गांव लाभान्वित हुए।

## वैज्ञानिक सलाहकार समिति की बैठक

वर्ष 2022 में कुल 103 वैज्ञानिक सलाहकार समिति की बैठकों का आयोजन किया गया। इनमें से म.प्र. के 31 कृषि विज्ञान केन्द्रों द्वारा वर्ष में एक बार, 22 कृषि विज्ञान केन्द्रों द्वारा वर्ष में दो बार उक्त बैठक आयोजित की गई। छत्तीसगढ़ के 28 कृषि विज्ञान केन्द्रों द्वारा वर्ष में एक बार उक्त बैठक आयोजित की गई।

## एटिक वार्षिक प्रगति प्रतिवेदन

अटारी जबलपुर के अधीन 4 एटिक संस्थान हैं। वर्ष में 10202 कृषकों ने एटिक में भ्रमण किया, एव तकनीकी सूचनाओं से 7690 कृषक लाभान्वित हुए। प्रकाशन के अन्तर्गत 43074 प्रकाशित प्रतियां विक्रय कर कुल 21.67 लाख रुपये अर्जित हुए।

## पुरस्कार एवं सम्मान

कृषि विज्ञान केन्द्र ग्वालियर (म.प्र.) को पण्डित दीनदयाल उपाध्याय कृषि विज्ञान प्रोत्साहन पुरस्कार–2021 (नेशनल) प्राप्त हुआ। कृषि विज्ञान केन्द्र दतिया (म.प्र.) के प्रधान वैज्ञानिक एवं प्रमुख डॉ. राज कुमार सिंह तोमर को स्वामी सहजानन्द सरस्वती आउटस्टैंडिंग एक्सटेंशन साइंटिस्ट अवार्ड–2021 प्रधान वैज्ञानिक एवं (निदेशक प्रभारी) से पुरस्कृत किया गया। साथ ही डॉ एस. आर. के. सिंह, प्रधान वैज्ञानिक एवं निदेशक (कार्यकारी), अटारी, जबलपुर को बसंतराव नाईक–2021 अवार्ड से पुरस्कृत किया गया।

## कृषि विज्ञान केन्द्रों में आगन्तुकों का आगमन

वर्ष 2022 में जोन–9 के कृषि विज्ञान केन्द्रों में 269907 आगन्तुकों का आगमन हुआ, जिसमें कुल 256799 किसान, 11663 अधिकारीगण एवं 1445 गणमान्य व्यक्ति शामिल है।

# Executive Summary

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

## Technology Assessment through On-Farm Testing

During 2022 year, 1191 technologies were assessed in the Zone through 10541 On-Farm Trials. The highest number of technologies were assessed in the state of Madhya Pradesh (877) followed by Chhattisgarh (314). Out of total 1191 technologies assessed, 870 were on crops and remaining 321 technologies on enterprises.

## Frontline Demonstrations

During year 2022, 1087 FLDs were conducted on crops (oilseeds, pulses, cereals, vegetables crops, cash crops, agro-forestry, millets, etc.) covering the total area of 11842.93 ha, benefiting 28452 farmers. FLDs were also conducted on important income generating enterprises, covering the 2280 units and 397.68 ha area among 2984 beneficiaries.

## Training and Capacity Building

During the year there was a significant increase in the number of training and participants. Total 7577 courses were organized and benefitted 243253 participants (farmers and farm women, rural youth, extension personnel). ICAR-ATARI, Jabalpur also organized 42 capacity building programmes in collaboration with ICAR institutes for technical upscaling of Subject Matter Specialists in the Zone.

## Extension Activities

A total of 29126 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 2871122 farmers and extension personnel in the ICAR-ATARI, Zone-IX.

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

KVKs of the Zone produced total 18382.31 q of seeds and 34.01 lakhs of planting material of different crops (cereals, pulses, oilseeds and vegetables), medicinal plants, fruits, etc. and distributed among farmers. Besides, these KVKs of the Zone also produced 1244638.91 q bio-products and 500979.20 livestock products at their farms.

## Soil, Water and Plant Analysis

During year 2022, 21549 soil samples and 144 water samples were analyzed by KVKs of the Zone touching 24253 farmers of 2785 villages.

## Technological backstopping

Technological backstopping were carried out through production of 135563 copies of technical literature, newsletters etc. of which 130924 were distributed among the farmers, in Panchayats as well as Line department officials.

## Scientific Advisory Committee Meeting

In the Zone, total 103 Scientific Advisory Committee (SACs) meetings were conducted by KVKs. In MP, 31 KVK organized SAC meeting once, 22 KVKs organized meeting twice times during the reporting period. In Chhattisgarh, 28 KVKs organized SAC meeting once during the reporting period.

## ATIC Progress

In the Zone IX, four ATICs are operational under ATARI, Jabalpur. In these ATICs there were 10202 footfalls during the year 2022. Technological information was provided to 7690 farmers. A total 43074 publications (print & electronic media) were sold and generated revenue of Rs. 21.67 lakh.

## Awards and Recognitions

Krishi Vigyan Kendra Gwalior (M.P.) has been awarded Pt. Deen Dayal Upadhyay Krishi Vigyan Protsahan Award–2021. Principal Scientist and

Head of KVK Datia (M.P.), Dr. Raj Kumar Singh Tomar received ICAR- National award "Swamy Sahajanand Saraswati outstanding Extension Scientist 2021" for excellence in agricultural research. Dr. S. R.K. Singh, Principal Scientist & Director, (Act) ICAR-ATARI, Jabalpur received ICAR National Award for excellence in Agricultural Research- Vasantrao Naik Award for Outstanding Research and Application in Dryland Farming Systems 2021 for excellent work in Dryland farming Systems.

## Footfalls in KVKs

In the KVKs of Zone IX, there were 269907 footfalls (256799 farmers, 11663 officials and 1145 dignitaries/VIPs) during 2022.

# Contents

# 1

# INTRODUCTION

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

## Major activities of ATARI

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

## KVKs in ATARI, Jabalpur

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

## Krishi Vigyan Kendra

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

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

| State | No of Districts | No. of of KVKs | | | | | |
|---|---|---|---|---|---|---|---|
| | | SAUs | VU | CU | NGOs | ICAR | Total |
| Chattisgarh | 28 | 27 | 01 | 0 | 0 | 0 | 28 |
| Madhya Pradesh | 52 | 44 | 0 | 01 | 08 | 01 | 54 |
| **Total** | **80** | **71** | **01** | **01** | **08** | **01** | 82 |

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

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

| Host Institutions | No. of KVKs |
|---|---|
| **Madhya Pradesh** | **54** |
| Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur | 22 |
| Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior | 22 |
| Indira Gandhi National Tribal University, Amarkantak | 1 |
| ICAR-Central Institute of Agricultural Engineering, Bhopal | 1 |
| Deen Dayal Research Institute, Chitrakoot, Satna | 1 |
| Kasturba Gandhi National Memorial Trust, Indore | 1 |

| Host Institutions | No. of KVKs |
|---|---|
| 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 |
| KVK, Vidisha* | 1 |
| Bhausahab Bhuskute Smriti Lok Nyas Sansthan, Bankhedi, Narmadapuram | 1 |
| **Chhattisgarh** | **28** |
| Indira Gandhi Krishi Vishwa Vidyalaya, Raipur | 27 |
| Dau Shri Vasudev Chandrakar Kamdhenu Vishwavidyalaya , Durg | 1 |

***KVK Vidisha under -process of reopening.**

## Mandates of KVK

Technology Assessment and Demonstration for its Application and Capacity Development.

## Activities of KVK

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

## Staff Position

The current staff position in KVKs of Zone-IX is given in Table 1.3. Out of the total posts, 66.29 per cent are filled while remaining 33.71 per cent are lying vacant. The percentage of vacant posts is comparatively higher in case of technical and administrative categories.

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

| State | No. of KVKs | Senior Sci. & head (1) | | SMS (6) | | PA (3) | | Admn. (6) | | Total (16) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sanc. | Filled | Sanc. | Filled | Sanc. | Filled | Sanc. | Filled | Sanc. | Filled |
| Madhya Pradesh | 54 | 54 | 46 | 324 | 194 | 162 | 113 | 324 | 162 | 864 | 515 |
| Chhattisgarh | 28 | 28 | 12 | 168 | 140 | 84 | 72 | 168 | 71 | 448 | 295 |
| **Total** | **82** | **82** | **58** | **492** | **334** | **246** | **185** | **492** | **233** | **1312** | **810** |

## Budgetary Provision

- The details of budgetary provision of KVKs under on IX, Jabalpur is given in Table 1.4

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

| S. No. | States & Institute | Rs. in lakh | | |
|---|---|---|---|---|
| | | Pre revised Estimate | Revised Estimate | Total Release/ Expenditure |
| 1 | Madhya Pradesh | 8612.67 | 8630.90 | 8630.90 |
| 2 | Chhattisgarh | 3225.57 | 3569.57 | 3569.57 |
| 4. | ATARI, Zone IX | 368.76 | 280.75 | 280.66 |
| **Total** | | **12207.00** | **12481.22** | **12481.13** |

**Table 1.5:** Status of infrastructural facilities in KVKs under Zone-IX during 2022

| S. No. | State | No. of KVKs | Admn. Building | | | Trainees Hotel | | | Staff Quarters | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Com-pleted | In pro-gress | NA | Completed | In pro-gress | NA | Completed | In pro-gress | NA |
| 1 | Madhya Pradesh | 54 | 51 | 02 | 1 | 51 | 2 | 1 | 43 | 0 | 11 |
| 2 | Chhattisgarh | 28 | 28 | 0 | 0 | 20 | 0 | 8 | 06 | 0 | 22 |
| **Total** | | **82** | **79** | **2** | **1** | **71** | **2** | **9** | **49** | **0** | **33** |

*NA= Not Applicable

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

There are 80 rural districts under the jurisdiction of Zone-IX, Jabalpur, covering 82 operational KVK's. The coverage of KVKs under different agro-climatic zones is given in Table 1.6.

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

| State | Agroclimatic Zones (ACZ) | KVKs | No. of KVKs |
|---|---|---|---|
| M. P. | Chhattisgarh Plains | Balaghat | 01 |
| | North Hills of Chhattisgarh | Anuppur, Dindori, Mandla, Shahdol, Umaria | 05 |
| | Bundelkhand Region | Chattarpur, Datia, Tikamgarh | 03 |
| | Gird Zone | Ashoknagar, Bhind (Lahar), Guna, Gwalior, Morena, Shivpuri, Sheopur | 07 |
| | Kymore Plateau and Satpura Hills | Jabalpur, Katni, Panna, Rewa, Satna, Sidhi, Singarauli, Seoni | 08 |
| | Jhabua Hills | Alirajpur, Jhabua | 02 |
| | Malwa Plateau | Agar Malwa, Dhar, Dhar-II, Dewas, Indore Neemach, Mandsaur, Ratlam, Rajgarh, Shajapur, Ujjain | 11 |
| | Nimar Valley | Badwani, Burhanpur, Khandwa, Khargone, | 04 |
| | Satpura Plateau | Betul, Chhindwara, Chhindwara-II | 03 |
| | Vindhya Plateau | Bhopal, Damoh, Raisen, Sehore, Sagar, Sagar-II, Vidisha | 07 |
| | Central Narmada Valley | Narsinghpur, Narmadapuram*(Bankhedi), Harda | 03 |
| **Total** | **11 ACZs** | | **54** |
| CG | Chhattisgarh Plains | Bilaspur, Bemetra, Balod, Baloda Bazar (Bhatapara), Dhamtari, Durg, Durg-II, Gariyaband, Janjgir-Champa, Korba, Kanker, Kabirdham, Mahasamund, Mungeli, Raipur, Raigarh, Rajnandgaon | 17 |
| | North Hills of Chhattisgarh | Ambikapur (Surguja I), Balrampur, Jashpur, Korea, Surguja(II) (Mainpat) | 05 |
| | Bastar Plateau | Bastar, Bijapur, Dantewada, Narayanpur, Sukma | 06 |
| **Total** | **ACZs** | | **28** |

*New name of Hoshangabad district.

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

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

- Sustainable production system through location-specific assessment and demonstrations of technology.
- Resource conservation through rain water harvesting, in-situ moisture, soil and water conservation including sustainable farm mechanization.
- Development and promotion of crop/ enterprise diversification and alternate land use system.
- Integrated pest and disease management for cost reduction and eco-friendly environment through supporting practices.
- Promotion of rural entrepreneurship through livestock, goatery, poultry, fishery, mushroom, lac, bee-keeping etc. by production, processing, value addition and marketing for additional income generation.
- Empowerment of farm women and rural youth through income generating activities and drudgery reduction.
- Alternate sustainable livelihood support system in rural areas for marginal and small farmers, landless laborers and farm women to check migration.
- Promoting climate resilient agriculture for sustaining rainfed farming.
- Promotion of Nutrition Sensitive Agriculture through Nutri-Smart Villages.

# 2

# TECHNOLOGY ASSESSMENT THROUGH ON-FARM TESTING

The claimed superiority of location-specific technologies were tested by KVKs through On-Farm Testing's (OFTs) and the numbers of technologies tested as well as trials are given in below mentioned tables. Overall 1191 technologies were tested in the zone through 10541 different trials (Table 2.1) of which 870 were on crops, 146 on different enterprises like livestock, fishery, mushroom, etc and 121 on different aspects of women empowerment like drudgery reduction, nutritional security, value addition, etc. The highest number of technologies were tested in the state of Madhya Pradesh (877) followed by Chhattisgarh (314) as the number of KVKs are also in the same order.

**Table 2.1:** State-wise technology assessed during 2022

| State | No. of technology assessed | No. of Trials |
|---|---|---|
| Chhattisgarh | 309 | 1608 |
| Chhattisgarh (ICT) | 5 | 160 |
| Total | 314 | 1768 |
| Madhya Pradesh | 828 | 5766 |
| Madhya Pradesh (ICT) | 49 | 3007 |
| Total | 877 | 8773 |
| **Total** | **1191** | **10541** |

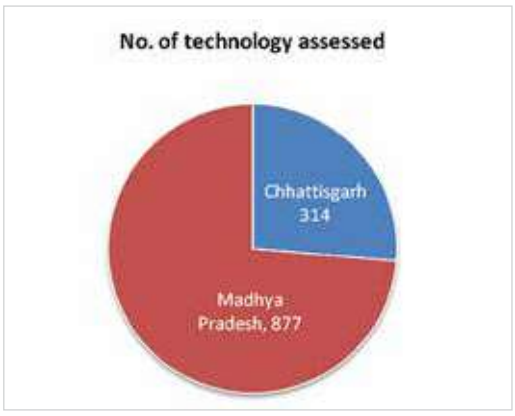



**Fig.1:** No. of technology assessed by KVK's

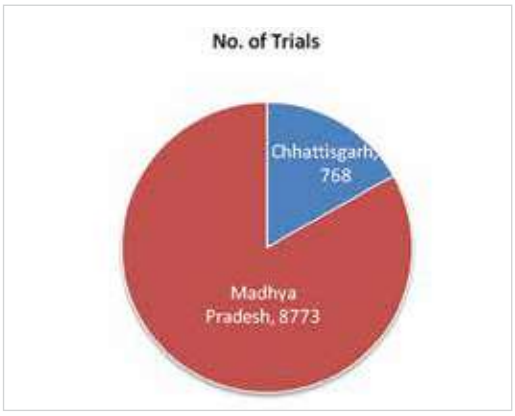



**Fig.2:** No. of trials conducted by KVK's

**Table 2.2:** Category-wise OFTs conducted on crops

| Crop Category | Number of technology Assessed | | | No. of trials | | |
|---|---|---|---|---|---|---|
| | CG | MP | Total | CG | MP | Total |
| Agro Forestry | - | 5 | 5 | - | 25 | 25 |
| Cash | 2 | 2 | 4 | 8 | 12 | 20 |
| Cereal | 72 | 180 | 252 | 407 | 1239 | 1646 |
| Milets | 12 | 9 | 21 | 63 | 75 | 138 |
| Oilseed | 16 | 97 | 113 | 87 | 687 | 774 |
| Pulse | 37 | 113 | 150 | 188 | 782 | 970 |
| Fodder | 1 | 2 | 3 | 4 | 8 | 12 |
| Spice | 11 | 53 | 64 | 52 | 350 | 402 |
| Fibre | - | 4 | 4 | - | 57 | 57 |
| Vegetable | 70 | 131 | 201 | 362 | 896 | 1258 |
| Fruits | 9 | 19 | 28 | 38 | 127 | 165 |
| Flower | 3 | 8 | 11 | 18 | 70 | 88 |
| Medicinal | - | 1 | 1 | - | 5 | 5 |
| Others | 2 | 11 | 13 | 9 | 62 | 71 |
| **Grand Total** | **235** | **635** | **870** | **1236** | **4395** | **5631** |

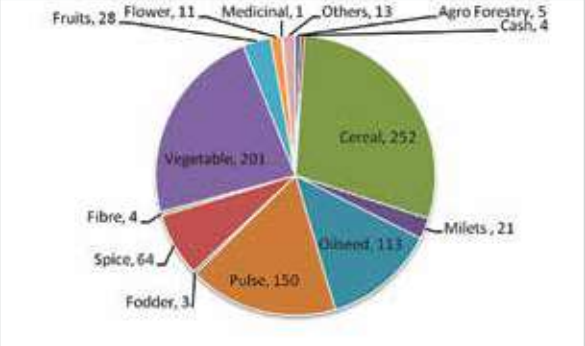



**Fig.3:** Category wise Technology assessed on crops

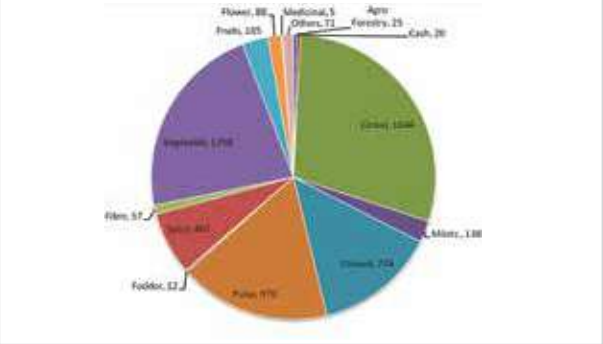


**Fig.4:** Category wise OFTs conducted on crops

**Table 2.3:** Thematic area wise OFTs conducted on crops

| Thematic Area | Number of technology Assessed | | | No. of trials | | |
|---|---|---|---|---|---|---|
| | CG | MP | Total | CG | MP | Total |
| Crop diversification | 2 | 15 | 17 | 9 | 102 | 111 |
| Feed and fodder Production | 1 | 3 | 4 | 4 | 18 | 22 |
| Integrated crop management | 49 | 46 | 95 | 263 | 298 | 561 |
| Integrated disease management | 22 | 80 | 102 | 108 | 562 | 670 |
| Integrated farming system | 5 | 17 | 22 | 23 | 92 | 115 |
| Integrated nutrient Management | 43 | 90 | 133 | 233 | 667 | 900 |
| Integrated pest management | 37 | 110 | 147 | 217 | 783 | 1000 |
| Integrated weed management | 25 | 28 | 53 | 128 | 228 | 356 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Cropping system | 2 | 7 | 9 | 9 | 55 | 64 |
| Resource conservation Technology | 5 | 27 | 32 | 27 | 170 | 197 |
| Soil fertility management | 36 | 191 | 227 | 184 | 1263 | 1447 |
| Varietal evaluation | 8 | 16 | 24 | 31 | 107 | 138 |
| Storage technique | - | 5 | 5 | - | 50 | 50 |
| **Grand Total** | **235** | **635** | **870** | **1236** | **4395** | **5631** |

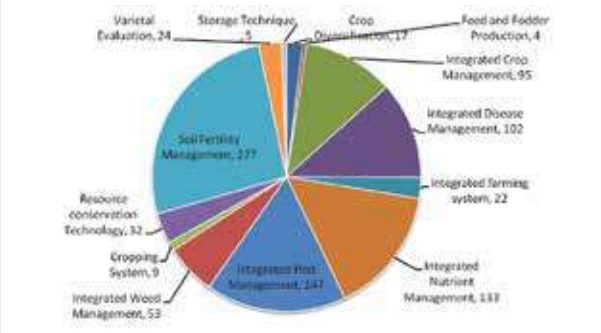



**Fig.5:** Thematic area-wise Technology assessed on crops

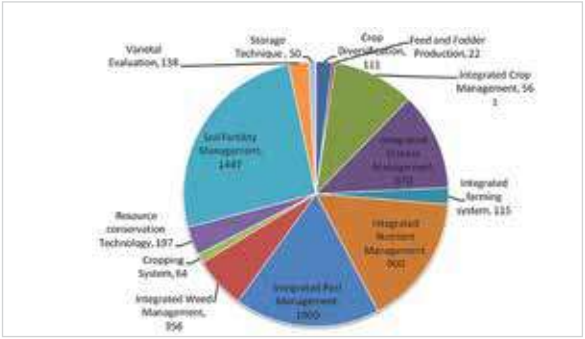



**Fig.6:** Thematic area-wise OFTs conducted on crops

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

| Thematic Area | No of technology assessed | | | No of Trials | | |
|---|---|---|---|---|---|---|
| | CG | MP | Total | CG | MP | Total |
| Farm mechanization | 18 | 12 | 30 | 89 | 65 | 154 |
| Post harvest management | 4 | - | 4 | 15 | - | 15 |
| Resource conservation technology | 5 | 12 | 17 | 24 | 76 | 100 |
| Small farm implements | 3 | 2 | 5 | 14 | 10 | 24 |
| Animal disease management | 1 | 15 | 16 | 4 | 123 | 127 |
| Animal feed / fodder management | 1 | 13 | 14 | 5 | 103 | 108 |
| Animal nutrition management | 8 | 20 | 28 | 35 | 171 | 206 |
| Animal breed evaluation | 2 | 1 | 3 | 9 | 10 | 19 |
| Poultry Production and management | 4 | 4 | 8 | 18 | 30 | 48 |
| Composite fish farming | 2 | - | 2 | 8 | - | 8 |
| Fish nutrition | - | 2 | 2 | - | 8 | 8 |
| Fish production & management | 8 | 3 | 11 | 28 | 10 | 38 |
| Fish seed production | 1 | - | 1 | 4 | | 4 |
| Fish species diversification | - | 3 | 3 | - | 12 | 12 |
| Nursery pond management | 2 | - | 2 | 10 | - | 10 |
| Drudgery reduction | - | 10 | 10 | - | 87 | 87 |
| Income generation | 6 | 36 | 42 | 44 | 219 | 263 |
| Nutritional security | 6 | 52 | 58 | 44 | 387 | 431 |
| Value addition | 3 | 8 | 11 | 21 | 60 | 81 |
| Capacity building | 5 | 26 | 31 | 160 | 1327 | 1487 |
| Information & Communication Technology (ICT) | - | 23 | 23 | - | 1680 | 1680 |
| **Grand Total** | **79** | **242** | **321** | **532** | **4378** | **4910** |

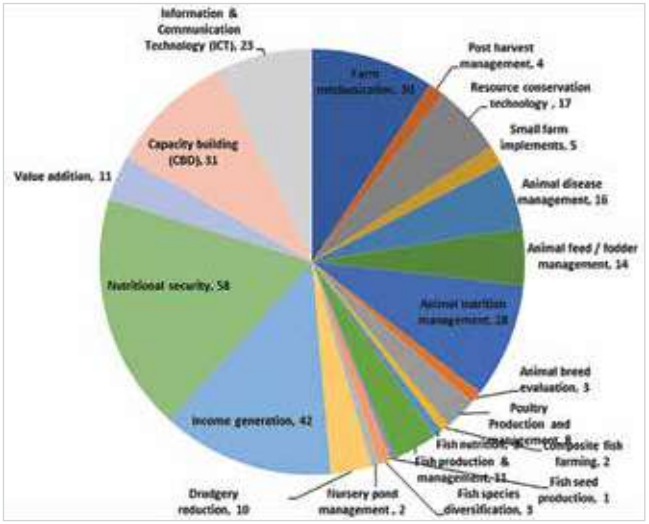



**Fig.7:** Thematic area-wise OFTs conducted on enterprises

## TECHNOLOGIES ASSESSED FOR MAJOR CROPS/ENTERPRISES

### Varietal Evaluation

#### Varital Assessment of Paddy

**Problem Identified-** Low yield due to use of old rice variety

**Technology Assessed-** Assessment of paddy improved variety MTU1153

Use of old varieties with low potential is one of the major factor responsible for low productivity of paddy in farmers field. Keeping this in view KVK Durg and Bemetra conducted on farm trials to assess the performance of paddy variety MTU1153. The results revealed that MTU1153 recorded 14.89% higher yield over MTU1010 and additional net income of Rs.10456/ha over MTU1010.

**Table 2.5:** Performance of MTU1153 variety of Paddy

| Details | No. of trials | Yield (q/ha) | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|
| Paddy variety MTU1010 (Farmers' practice) T1 | 14 | 40.62 | 36548.75 | 1.97 |
| Paddy variety MTU1153 (Recommended practice) T2 | | 46.67 | 47005 | 2.25 |

Improved variety of Paddy MTU1153

## Plant Protection

### Pest Management of Girdle beetle in Soybean

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

**Technology Assessed:** Assessment of Thiacloprid for the control of girdle beetle in soybean

Girdle beetle infestation in soybean is a major problem, which affects the crop severely if not managed in timely and properly resulting in low crop yield. Farmers generally use insecticides with herbicide which works better in weed control but not for girdle beetle. Looking the above problem, KVKs of Raisen, Neemuch, Ratlam, Sheopur from Madhya Pradesh conducted 23 OFTs for assessing the management of girdle beetle in soybean. The result of these OFTs showed that the yield was increased by 27.87 and 11.15 per cent in the assessed insecticidal treatment (Spray of Thiacloprid 21.7 % SC @ 750ml/ha at 35 DAS ($T_3$) and (Spray of Chlorantraniliprole 18.5 % SC @ 150 ml/ha at 35 DAS ($T_2$) over farmer's practice (Spray of Triazophos @ 1.5 lit /ha at 35 DAS ($T_1$) respectively. The net return under the assessed technology also increased by Rs. 17,637.41 per ha over farmer's practice along with higher BC ratio than farmer's practice.

**Table 2.6:** Performance of Integrated management of girdle beetle in soybean

| Details | No. of trials | Yield (q/ha) | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|
| Spray of Profenophos 50% EC @ 1.5 lit /ha at 30 DAS (Farmer's practices-T1) | 23 | 13.63 | 38598.25 | 2.35 |
| Spray of Chlorantraniliprole 18.5 % SC @ 150 ml/ha at 35 DAS ml/ha at 35 DAS ($T_2$) | | 15.15 | 44769.25 | 2.56 |
| Spray of Thiacloprid 21.7 % SC @ 750ml/ha at 35 DAS ($T_3$) | | 17.43 | 56235.66 | 2.88 |



Integrated management of girdle beetle in soybean

### Integrated Pest Management in Maize

**Management of Fall Armyworm (*Spodoptera frugiperda*) in *kharif* maize**

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

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

Fall Armyworm (*Spodoptera frugiperda*) is an important pest of kharif maize. KVKs of Burhanpur, Dewas, Mandsaur, Ratlam, Ujjain, Dindori, Ashoknagar, Govindnagar from Madhya Pradesh and Mainpat, Ambikapur (Surguja), Balrampur, Korba, Durg-II from Chhattisgarh conducted 82 trials on Fall Armyworm management in kharif maize. The Fall Armyworm management technology assessed was indiscriminate use of insecticides as Farmers practice ($T_1$), Seed treatment with Cyantraniliprole 19.8% + Thiamethoxam 19.8% @4 g/kg seed +Eraction of bird perches @ 25/ha + Installation of frugiperda pheromone trap @ 37/ha + Need based

application of B.t. var. Kurstaki @ 1000 g/ha. as T2, Seed treatment with Cyantraniliprole 19.8%+ Thiamethoxam 19.8% @4 g/kg seed +Eraction of bird percher @ 25/ha + Installation of frugiperda pheromone trap @ 37/ha + Need based application of emamectin benzoate 5% S.G. @ 200 g/ha as $T_3$.

The increase of yield in $T_3$ was 24.79 and 6.08 per cent over $T_1$ and $T_2$ respectively, where as plant damage by Fall Armyworm decreased by 56.42 per cent in $T_3$. The increase in net return under $T_3$ was Rs. 12,177 per ha over farmers' practice.

**Table 2.7:** Performance of IPM module for fall armyworm in maize

| Details of Technology | No. of trials | Plant Damage (%) | Yield (q/ ha) | Net return (Rs/ ha) | B:C ratio |
|---|---|---|---|---|---|
| Indiscriminate in use of insecticides (Farmers' Practice – $T_1$) | 82 | 13.70 | 33.12 | 37899 | 2.50 |
| Seed treatment with Cyantraniliprole 19.8%+ Thiamethoxam 19.8% @4 g/kg seed +Eraction of bird percher @ 25/ha + installation of frugiperda pheromone trap @ 37/ha + Need based application of B.t. var. Kurstaki @ 1000 g/ha. ($T_2$) | | 7.07 | 38.96 | 48942 | 2.83 |
| Seed treatment with Cyantraniliprole 19.8%+ Thiamethoxam 19.8% @4 g/kg seed +Eraction of bird perches @ 25/ha + Installation of frugiperda pheromone trap @ 37/ha + Need based application of emamectin benzoate 5% S.G. @ 200 g/ha ($T_3$) | | 5.97 | 41.33 | 50076 | 2.99 |


Integrated pest management for fall armyworm

## Soil Science

### Integrated Nutrient Management in Soybean

**Problem identified:** Low yield of soybean due to imbalance/non-judicious use of fertilizers.

**Technology Assessed:** Assessment of recommended dose of NPKS along with Bio-fertilizers and organic manure in Soybean.

Soybean [Glycine max (L.) Merill] is an important global oilseed crop and has very high nutritional value. The productivity of any crop depends upon various factors but most important is the optimum and balanced use of fertilizer nutrients especially macro, micro and Integrated Nutrient Management. It is very essential to encourage sustainable management and maintaining soil health. Deficiencies of primary, secondary and micronutrients have been observed in intensive cultivated area. KVKs have

been testing the judicious use of balance dose of fertilizers RDF 25:60:20:40 kg/ha. NPKS+ 5 kg Zn /ha +5T FYM+ Bio-fertilizer+ local method of Nutrient Management based on Natural farming (09:23:0 NPK Kg/ha). In this regard, 13 OFTs were conducted by KVK Bhatapara, Rajnandgaon of Chhattisgarh and Dewas, Dhar Harda, Indore, Khandwa, Ujjain, Raisen, Panna, Jhabua, Ashoknagar, Rajgarh of Madhya Pradesh. The results showed that yield and yield attributes was directly influenced by the use of RDF 25:60:20:40 kg/ha. NPKS+ 5 kg Zn /ha +5 T FYM+ Bio-fertilizer+ local method of Nutrient Management based on Natural farming (Recommended practice-$T_2$) and RDF 25:60:20:40 kg/ha. NPKS ( 50% P (through DAP or SSP) + FYM+ seed treatment of Nano DAP fertilizers + seed treatment Rhizobium + Natural farming (Recommended practice-T3). The results showed that the seed yield obtained was 20.06 and 29.03 per cent higher under treatment $T_2$ and $T_3$ respectively over the farmers' practice. Similarly, the incremental net return observed under the $T_2$ was Rs. 9419.77 and $T_3$ was Rs. 19035.66 over farmer's practice. The assessed technology in $T_3$ also performed well and gave 29.03 per cent higher yield over farmer's practice. On the basis of the above findings it may be concluded that the assessed technology under $T_3$ are more effective as these increases the crop yield vis-a-vis and maintains the soil health and fertility.

**Table 2.8:** Response of integration of NPKS along with Bio-fertilizers and organic manure in Soybean

| Details | No. of trials | Yield (q/ha) | Percent increase Yield | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|---|
| NPK @ 9:23:0 kg/ha (Farmers' practice-$T_1$) | 13 | 13.4475 | - | 34430.54 | 2.44 |
| RDF 25:60:20:40 kg/ha. NPKS+ 5 kg Zn /ha +5T FYM+ Bio-fertilizer+ local method of Nutrient Management based on Natural farming (Recommended practice-$T_2$) | | 16.145 | 20.06 | 43850.31 | 2.99 |
| RDF 25:60:20:40 kg/ha. NPKS ( 50% P (through DAP or SSP) + FYM+ seed treatment of Nano DAP fertilizers + seed treatment Rhizobium + local method of Nutrient Management based on Natural farming (Recommended practice-$T_3$) | | 17.352 | 29.03 | 53466.2 | 3.27 |

Integrated Nutrient Management in Soybean

## Integrated Nutrient Management in Chickpea

**Problem identified:** Low yield of chickpea due to imbalanced/indiscriminate use of fertilizers

**Technology Assessed:** Assessment of INM on STV based Bio-fertilizers and Natural Farming in Chickpea.

Chickpea is an important pulse crop grown across the Zone. Imbalanced/indiscriminate use of plant nutrients, no use of INM and local resources are the major reasons for declining yield of chickpea. Looking to the above problem on priority KVKs Indore, Jhabua, Ratlam, Raisen, Mandala, Khandwa, Rajnandgaon, Dhamtari and Mungeli conducted 10 OFTs to assess the response by use of RDF 20:60:20 Kg NPK/ha., seed treatment Rhizobium, PSB @10 gm/kg., Bijamreet Ghanjeevamrit@250kg/ha. at sowing time and Jivamreet at irrigation time or spraying of jivamreet @ 500 ltr/ ha(Recommended practice-T2) in chickpea and RDF NPK 20:40:20, seed treatment Rhizobium, PSB @10 gm/kg., FYM 2.5 t/ha, 75% NPK @ 20:50:20kg/ha, seed treated with Ammonium molybdenum @ 1 gm/kg of seed (Recommended practice-T3). Results showed that the yield obtained was 10.25 and 21.24 per cent higher under treatment T2 and T3 respectively over the farmers' practice. Similarly, the incremental net return observed under T2 was Rs. 8442.48 and T3 was Rs. 9144.35 over the farmer's practice, and the BC ratio was also found to be higher in T3 compared to T2 and T1.

**Table 2.9:** Response of integration of INM on STV based Bio-fertilizers and Natural farming in Chickpea

| Details | No. of trials | Yield (q/ha) | % increase Yield | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|---|
| NPK @ 9:23:0 kg/ha (Farmers' practice-$T_1$) | 10 | 12.68 | - | 36729.9 | 2.47 |
| Use of RDF 20:60:20 Kg NPK/ha.+ seed treatment Rhizobium+PSB @10 gm./kg. + with Bijamreet Ghanjeevamrit@250kg/ha. at sowing time, Jivamreet at irrigation time or spraying of jivamreet @ 500 ltr/ ha (Recommended practice-$T_2$) | | 13.98 | 10.25 | 45172.38 | 2.81 |
| RDF NPK 20:40:20 + seed treatment Rhizobium+PSB @10 gm/kg. +FYM 2.5 t/ha + 75% NPK @ 20:50:20kg/ha +Seed treated with Ammonium molybdenum @ 1 gm / kg of seed+ Fertilizer application based of STV (Recommended practice-$T_3$) | | 15.65 | 21.24 | 45874.25 | 3.01 |

Integrated Nutrient Management in Chickpea

## Varietal Assessment of onion

**Problem identified:** Low yield due to use of local variety

**Technology Assessed:** Assessment of high yielding onion varieties *viz*. Bhima Super, Bhima Shakti and Bhima Dark Red.

Onion is one of the important vegetable widely used in all households around the year. Farmers using low yielding variety and lacking knowledge of scientific production technology were the responsible resaons for low the yield of onion. There were 20 OFTs on Bhima Super variety, 17 OFTs on Bhima Shakti and 12 OFTs on Bhima Dark Red variety conducted by KVKs *viz*. Dewas, Jhabua, Dindori, Raisen, Khargone in MP and Kawardha and Rajnandgaon in CG to assess the performance of the improved onion varieties Bhima Super, Bhima Shakti and Bhima Dark Red. Results revealed that the yield of varieties Bhima Super, Bhima Shakti and Bhima Dark Red were increased by 15.38 per cent, 14.40 and 17.27 per cent, respectively over farmer's practice. Economic analysis showed that onion variety Bhima Super's Net Return increased by Rs. 35719 per ha over farmers practice. Similarly, in varieties Bhima Shakti and Bhima Dark Red observed Net Return was increased by Rs.40733 per ha and Rs. 30000 per ha over farmers' practice. It can be concluded that, higher yield of onion was obtained from HYV and improved package of practices.

**Table 2.10:** Performance of HYV varieties of onion

| Details | No. of trials | Variety | Yield (q/ha) | Cost of cultivation (Rs/ha) | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|---|---|
| Farmers' practices ($T_1$) | 49 | Bhima Super | 234.44 | 57793 | 163232 | 3.82 |
| Recommended practice ($T_2$) | | | 270.5 | 60797 | 198951 | 4.27 |
| Farmers' practices ($T_1$) | | Bhima Shakti | 320.28 | 70718 | 170832 | 3.41 |
| Recommended practice ($T_2$) | | | 366.4 | 72178 | 211605 | 3.91 |
| Farmers' practices ($T_1$) | | Bhima Dark Red | 220 | 66000 | 154000 | 3.33 |
| Recommended practice ($T_2$) | | | 258 | 74000 | 184000 | 3.49 |


Bhima Super


Bhima Shakti


Bhima Dark Red

# Agriculture Engineering

## Resource Conservation Technology

## Direct Sowing through Happy Seeder

**Problem identified:** Combine-harvested rice fields have heavy straw load of the crop residue. Also, there is presence of loose tough straw deposited by the harvester. It is a general practice to burn the rice stubbles in the mechanised rice–wheat systems so as to facilitate sowing of wheat. This practice leads to loss of nutrients and aids in air pollution. To get a suitable machinery for direct drilling into such fields is a matter of concern.

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

A heavy straw load of the crop residue is one of the main problems of combine-harvested rice fields. Also, there is presence of loose tough straw deposited by the harvester. It is a general practice to burn the rice stubbles in the mechanised rice–wheat systems so as to facilitate sowing of

wheat. This practice leads to loss of nutrients and aids in air pollution. It is worth mentioning that sowing wheat directly into just-harvested rice fields without burning or removing crop residues improves soil health, reduces irrigation need and mitigates climate change effects. Thus, Happy seeder - a tractor-mounted implement is a promising technology in conservation agriculture. It cuts grooves in the soil, drops seed and fertilizer into the groove and covers the seeded row, all in one pass without any significant soil disturbance. KVK Bastar, Janjgir-Champa in Chhattisgarh, and Bhopal in Madhya Pradesh conducted OFTs on assessment of happy seeder technology for wheat and chickpea in *rabi* after the mechanized rice harvest. A total of 14 trials were conducted and the results obtained were encouraging. In case of Wheat the incremental increase in yield, net return and B:C ratio over the conventional system were 3.7 q/ha, Rs. 9006/- per ha and 0.48 respectively. In case of chickpea, the incremental increase in yield, net return and B:C ratio over the conventional system was 2.27 q/ha, Rs. 7720/- per ha and 0.51 respectively. Thus the concept of direct sowing through happy seeder is a promising one.

**Table 2.11:** Direct Sowing through Happy Seeder

| Details | No. of trials | Crop | Yield (q/ha) | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|---|
| Conventional sowing after field preparation (Farmers' practices) | 14 | Wheat | 38.8 | 51380 | 2.91 |
| | | Chickpea | 6.85 | 13830 | 2.13 |
| Direct sowing through Happy Seeder (Recommended practice) | | Wheat | 42.5 | 60386 | 3.39 |
| | | Chickpea | 9.12 | 21550 | 2.64 |

## Broad bed and Furrow method of sowing

**Problem identified:** Major soybean producing area lies in the vertisols and associated soils of Central India. These soils are prone to severe runoff and water stagnation depending on the topography and the rainfall intensity during monsoon season. In addition, in case of less rainfall, the crop suffers from intermittent moisture stress leading to lower yields. Production of chickpea in rabi in these areas is also affected due to the special soil characteristics which at times create moisture stress.

**Technology Assessed:** Broad bed and Furrow method of sowing

Vertisols and associated soils cover a major part of central India. Soybean in *kharif* and chickpea in *rabi* are major crops grown in these areas. The vertisols, due to their shrinking and swelling properties, need a very good land and water management practice so as to facilitate a good crop production, else they hinder good crop yields. Broad bed and furrow method of sowing provides an improved rainwater management and surface irrigation strategy in these soils. In this technique, the crop is grown on broad beds and irrigation water is applied to the furrows. The furrows also save the crop from water stagnation during heavy rainfalls. KVK Shajapur in Madhya Pradesh and Rajnandgaon and Durg II in Chhattisgarh conducted 25 OFTs on broad bed and furrow irrigated planting of soybean and chickpea. In case of soybean the incremental increase in yield, net return and B:C ratio over the conventional system were 1.6 q/ha, Rs. 9454/- per ha and 0.28 respectively. In case of chickpea the incremental increase in yield, net return and B:C ratio over the conventional system were 6.5 q/ha, Rs. 33175/- per ha and 1.26 respectively. Overall Broad bed and Furrow method of sowing proved better than the conventional planting technique.

**Table 2.12:** Furrow irrigated raised bed sowing

| Details | No. of trials | Crop | Yield (q/ha) | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|---|
| Conventional sowing after field preparation (Farmers' practices) | 25 | Soybean | 15.0 | 38896 | 2.44 |
| | | Chickpea | 8.25 | 13875 | 1.50 |
| Broad bed and furrow sowing (Recommended practice) | | Soybean | 16.6 | 48350 | 2.72 |
| | | Chickpea | 14.75 | 47050 | 2.76 |

## Zero till seed cum fertilizer drill method of sowing

**Problem identified:** Delay in sowing due to unavailability of optimum field condition for preparation of seed bed for *rabi* crop after the *kharif* harvest adversely affects *rabi* crop production in the rice-wheat system.

**Technology Assessed:** Zero till seed cum fertilizer drill method of sowing

Delay in sowing due to unavailability of optimum field condition for preparation of seed bed for rabi crop after the kharif harvest adversely affects rabi crop production. Zero till seed cum fertilizer drill method of sowing a promising technology that reduces tillage to only one pass and allows more timely sowing, which raises yields and lowers costs by saving soil, fuel, tractor costs, water, fertilizer and herbicides. KVK Bhatapara and Balod in Chhattisgarh and, Katni, Ashoknagar and Shahdol in Madhya Pradesh conducted 27 OFTs on Zero till seed cum fertilizer drill method of sowing of wheat, mustard and lathyrus. In case of wheat the incremental increase in yield, net return and B:C ratio over the conventional system were 10 q/ha, Rs. 20250/- per ha and 0.6 respectively. In case of mustard the incremental increase in yield, net return and B:C ratio over the conventional system were 0.3 q/ha, Rs. 3336/- per ha and 0.24 respectively. Overall Zero till seed drill sowing concept proved better than the conventional planting technique.

**Table 2.13:** Zero tillage cum fertilizer drill method of sowing

| Details | No. of trials | Crop | Yield (q/ha) | Net Return (Rs/ha) | B:C Ratio |
|---|---|---|---|---|---|
| Conventional sowing after field preparation (Farmers' practices) | 27 | Wheat | 42.0 | 62250 | 3.3 |
| | | Mustard | 13.72 | 41138 | 2.67 |
| Zero till seed drill sowing (Recommended practice) | | Wheat | 52.0 | 82500 | 3.9 |
| | | Mustard | 14.11 | 44474 | 2.91 |

# Animal Science

## Animal Feed/Fodder Management

### Cultivation and feeding of Azolla in backyard poultry

**Problem diagnosed:** High mortality, feather loss, slow growth rate and less body wt gain in poultry

**Technology assessed:** Azolla as a protein source for feeding of backyard poultry to increase their body weight and reduce mortality

Azolla looks like other typical ferns that are green in colour however it looks more like duckweed or mosses, freely floating on the water surface. It can be used in poultry feed as a protein source. Azolla has several pharmacological effects and can be used as antioxidant, immune-stimulating, hepato-protective, phytoremediation, bioremediation and also as nutritious material. Azolla contains vitamins (B12, beta carotene, vitamin A), biopolymers, minerals and amino acids. Azolla is rich in trace minerals and carotene. It looks to be potentially hepatoprotective drug against hepatotoxic substances. Its decoction (concentrated liquor of plant) has anti-inflammatory, antioxidant, and anti-apoptotic characteristics, making it an attractive preventive and therapeutic drug against super hepatotoxicity. Moreover, laying geese fed Azolla-based diets enhanced their FCR, overall performance, performance index, egg weight, egg production, egg shape index, and yolk colour. Thus, the goal of OFT's were to learn more about the health advantages of Azolla, as well as to boost chicken productivity.

Three KVKs Durg-I, Jhabua and Mandla from CG and MP of Zone-IX conducted 19 trials to assess the effect of Azolla as a protein source to increase their body weight. In recommended practice 100 gm/bird/day Azolla was offered to birds for three month in addition to the feed offered in farmers practice. The result revealed that there is an increase in average body weight and net return by 64% and 71%, respectively; indicating that supplementing the Azolla feed regularly at appropriate quantity is beneficial in improving body weight and reduces mortality of birds.

**Table 2.14:** Assessment of Azolla as a protein source for feeding of backyard poultry to increase their body weight and reduce mortality

| Details | No. of trails | Avg. Body weight at 3 months (gm/bird) | Avg. Net Returns (Rs.) in 3 months | B:C ratio |
|---|---|---|---|---|
| Local grains based readymade feeds/ foraging(Farmers' practices) $T_1$ | 19 | 987 | 13513 | 2.81 |
| Feeding of Azolla @ 100 gm/bird/day (Recommended practice) $T_2$ | | 1140 | 20584 | 3.43 |

Azolla production demonstration unit

Azolla feeding to poultry

## Animal Disease Management

### Assessment of use of Gurhul flower juice (ITK) for treatment of diarrhoea in Goats.

**Problem diagnosed:** Diarrhea commonly seen in goats, dehydration, weakness, poor body weight gain and high mortality (up to 25 %) may occur

**Technology assessed:** Use of Gurhul flowers juice (ITK) for treatment of diarrhea in goats.

Gurhul (*Hibuscus Sp*) is an evergreen woody glabrous 5-8 feet high showy herb. It is native of China, grown as an ornamental plant throughout India. Gurhul flower and leaves are used against eczema, ringworm and cough traditionally. Gurhul-flower juice reduced the dehydration and faecal consistency scores in both parasitic and non-parasitic diarrhoeic goats. Gurhul flower juice has astringent effect and can be used as supportive therapy. At CIRG, Makhdoom the clinical efficacy was assessed on the basis of revival of appetite, faecal consistency, dehydration status and changes in serum biochemical parameters. The overall therapeutic efficacy of the ITK was 66.7%. It was noted that the flower juice was moderately effective in bacterial diarrhoea in goats. Serum glucose, sodium and potassium levels increased slightly after the treatment.

KVK Durg II and Satna from CG and MP of this zone conducted 14 trials to assess the use of Gurhul flower juice (ITK) for treatment of diarrhoea in goats. In recommended practice juice of gurhul flowers (2-3 flowers) is orally administered twice a day for 3 days. The result revealed that there is decrease in rate of diarrhoea in goat and increase in average body weight and net return by 47% and 55%, respectively; indicating that supplementing the Gurhul flowers juice fed regularly at appropriate amount is beneficial in improving body weight and reduces the rate of diarrhea in goats.

**Table 2.15 :** Assessment of use of Gurhul flowers juice (ITK) for treatment of diarrhea goats.

| Details | No. of trails | Avg. Body weight at 6 month (Kg/Goat) | Avg. Net Returns (Rs.) in 6 months | B:C ratio |
|---|---|---|---|---|
| No treatment of goats (Farmers' practices) $T_1$ | 14 | 11.64 | 12227.04 | 1.89 |
| Juice of Gurhul flowers (2-3 flowers) is orally administered twice a day for 3 days (Recommended practice) $T_2$ | | 13.65 | 16645.74 | 2.21 |

Use of Gurhul flower juice (ITK) for treatment of diarrhea in Goats

## Fisheries

### Composite fish Culture

**Problem identified:** Farmers use single species, improper ratio of fish species no use of supplementary feed and micro nutrient, no management of pond like pre stocking management and post stocking management that's why low yield of fish production

**Technology Assessed :** Growth of fish with farm made fish feed, vitamin mineral mixture along with conventional feed for composite fish culture.

Composite fish culture is a technology in which five or six different types of fish species are cultured together in a single pond fishes with their different food habitats are selected and cultivated so they don't fight with each other food resources fish culture in which compatible and non-competing fishes are cultured simultanesly through utilization of different feeding zones from a pond so as to increase the total production fish culture optimum utilization of the ponds productivity for maximization of fish yield.

**Table 2.16:** Performance of composite fish culture

| Details | No of trails | Yield (q/ha) | Cost of cultivation (Rs) | Net Return (Rs) | B:C ratio |
|---|---|---|---|---|---|
| No practices and do not stocked fish seed in proper ratio, no rearing pond management (FP-T1) | 17 | 23.94 | 117809.5 | 142190.4 | 2.1 |
| Stocking of 8000 Fingerling of catla, rohu, mrigle 4:3:3 ratio, fish feeding with farm made (Rice bran & Mustard oil cake in 1:1 ratio 0.1% mineral vitamin mixture @ 3% /kg body weight , application of lime 200-250 kg/ha. (RP-T2) | | 35.85 | 177052 | 255993 | 2.2 |


Provided Fish seed to farmers

Fish Harvesting

## Improved Fish species

**Problem Identified :** Lack of knowledge about air breathing fish culture, pangasius fish culture and introduction of new species jayanti rohu, murral pond management.

**Technology Assessed :** Production of air breathing fish, Pangasius fish, jayanti rohu, monosex ssp. , amur carp, murral of grow out technology in fish pond.

Magur are the demand of the market, thus more profit can be obtained by their culture as they can survive in adverse in environment such as less oxygen, high temperature of water, even can survive in polluted water and are less affected by diseases. Pangasius is a facultative air breathing fish which can tolerate very low oxygen levels even to the 0.1 ppm for short duration owing to its fast growth rate, hardy nature, good diseases resistance and adaptability to high stocking density. It is considered as a potential species for intensive aquaculture. Monosex tilapia is superior with respect to growth and yield per unit area and has great value and demand, as they are able to feed on natural foods in the pond and thrive equally on supplementary feeds. Jayanti rohu is an improve variety of rohu and have diseases resistance against aromonas. Murrel is one of the indigenous air breathing fish and there is surpabracchial accessory respiratory organs in the murrel head, which help them to survive in lower dissolved oxygen levels.

**Table 2.17:** Performance of air breathing fish culture

| Details | No of trails | Yield (Q/ Ha.) | Cost of cultivation (Rs) | Net Return (Rs.) | B:C ratio |
|---|---|---|---|---|---|
| No air-breathing fish culture, practicing the local rohu, lack of knowledge about Pangasius fish production and murrels technology (FP-T1) | 27 | 32.75 | 107732.6 | 135074 | 1.9 |
| Stocking of Clarias batrachus fingerling @50,000/ha. Stocking of Pangasius fish seed @20000/ha. Use ABS feed, stocking IMC with Jayanti rohu @4500 and 500/ha. , stocking murrel 10,000 FL/ha.with feed @3-5% body weight (T2) | | 43.31 | 150496 | 311572 | 2.6 |


Fish seed of Magur

Harvested Fish

## Fish Production –Biofloc technology

**Problem identified –** High cost of fish production, low growth of fishes, requirement of large water body & manpower for fish culture.

**Technology Assessed -** High value fish spp. production in Biofloc Technology (BFT)

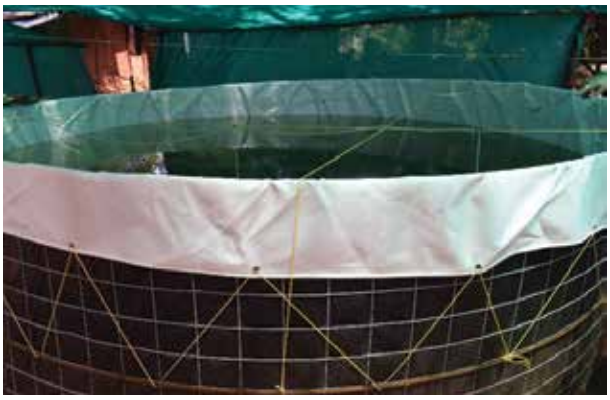
Biofloc technology is defined as the use of aggregates of bacteria, algae, or protozoa held together in a matrix along with particulate organic matter for the purpose of improving water quality waste treatment and diseases prevention in intensive aquaculture systems. It can be an

ideal option for sustainable and environmentally friendly aquaculture. It prevents introduction of diseases to fish farms from incoming water, helps in improvement of bio-security feed convention water quality ,water use efficiency and land use efficiency .

**Table 2.18:** Performance of Biofloc technology fish culture

| Details | No of trails | Yield (Q/ Ha.) | Cost of cultivation (Rs) | Net Return (Rs.) | B:C ratio |
|---|---|---|---|---|---|
| Low density in pond culture system with large area and fish production in earthen pond (FP-T1) | 13 | 19 | 104762.5 | 84124.5 | 1.8 |
| Standard practices & package of fresh water biofloc technology, use of probiotic mulasses for water prepration, seed sanitization,use of floating feed maintains C:N ratio kg/ha. (RP-T2) | | 24.8 | 129862.5 | 102328.7 | 2.0 |

Providing Fish seed to farm women



Biofloc technology for fish production

## Home Science

### Nutrition Security

#### Bio-fortified varieties of crops for nutrition security

**Problem identified:** Malnutrition among farm families due to low nutrient diet.

**Technology Assessed:** Assessment of bio-fortified varieties of crops for nutrition security.

Nutritious diet is vital for proper growth and development in humans. It helps preventing diseases, besides maintaining the body metabolism for physical and mental well being. Food provides energy, protein, essential fats, vitamins, anti-oxidants and minerals to meet our daily metabolic requirement. Biofortified crops complements existing micro-nutrients interventions and can have significant impact on the lives and health of millions of people, especially childrens, adolescents and women. Looking above KVK Indore, Khandwa, Morena, Shahdol, Shajapur, Ujjain, Katni, Raisen, Anuppur, Mandla and Jabalpur from Madhya Pradesh conducted 106 farm trails on different Bio- fortified varieties of different crops like Wheat HI-1633 (Pusa Vani) , HI-1634 (Pusa Ahilya), Pusa Tejas (Hi 9759) ,WB-02, paddy CR Dhan -310 and Pearl millet AHB 1200 to utilize the meal of farm family for improvement of nutritional status .

**Table 2.19 :** Nutrition Security through Bio fortified varieties of crops

| Detail of Technology | No. of trials | Nutrient /100gm | | |
|---|---|---|---|---|
| | | Protein (gm) | Iron (mg ) | Zn (mg) |
| Lok-1 (Farmers Practices $T_1$) | 106 | 10.57 | - | - |
| (Recommended Practices $T_2$) Pusa Vani (HI-1633) | | 12.4 | 41.6 | 41.1 |
| Pusa Tejas (Hi 9759) | | 12.0 | 42.1 | 42.8 |
| WB-2 | | 12.4 | 40.0 | 42.0 |
| Paddy - CR Dhan -310 | | 10.3 | 4.53 | |
| Pearl millet -AHB 1200 | | | 7.7 | 2.7 |

Wheat variety Pusa Tejas (Hi 9759)

Wheat variety WB-2

## Multigrain Flour Chapati fortified with Green leafy Vegetable

**Problem identified:** Malnutrition due to high anemia in farm women.

**Technology Assessed:** Assessment of multigrain flour chapati fortified with green leafy vegetable for improvement of haemoglobin level in farmwomen.

Multigrain flour makes an important contribution in maintaining the health of the population by enriching their flours. Flour fortification is the practice of deliberately increasing the content of one or more essential micronutrients in flour. Looking above KVK's Gwalior, Khandwa, Neemuch, Ratlam, Satna, Shahdol, Shajapur ,Betul from Madhya Pradesh conducted 94 OFT's on green leafy fortified multigrain flour chapati for improvement of haemoglobin or iron supplement for nutritional security of farm women for 3 months

**Table 2.20 :** Multigrain flour chapati fortified with green leafy vegetable.

| Details | No. of trials | Energy (kcal) | Protein (gm) | Iron (mg) | Calcium (mg) |
|---|---|---|---|---|---|
| (Farmer practice) T1 | 94 | - | 5.3 | 2.19 | 26.08 |
| Green leafy fortified multigrain Flour Chapati (Recommended practice) T2 | | 724.6 | 13.95 | 3.47 | 69.56 |

Multigrain flour

Multigrain Chapati

## Income Generation

### Processing and Value Addition of minor Millet for Additional Income

**Problem identified:** Lack of knowledge of processing and value addition of minor millets

**Technology Assessed:** Assessment of processing and value addition of minor millet to achieve nutritional and financial security

Millets are traditionally grown by poor farmers in various regions of the country which include sorghum, pearl millet, finger millet and small millets. They are nutri-cereals, which are highly nutritious and are known to have high fiber content which includes protein, essential fatty acids, B-vitamins, minerals such as calcium, iron, zinc, potassium and magnesium. Majority of the farm women have marginal and small land holding and their income is also very less. To enhance the income level and living standard of those farming women there is urgent need to provide technology of processing and value addition. Looking above this problem KVKs Govindnagar, Chhindwara, Rewa, Jabalpur from Madhya Pradesh and Raipur from Chhattisgarh conducted 30 on farm trails on value added products of minor millets. Results indicated that, farm women obtained average net return of Rs 8167 with cost of input Rs 13400 and benefit cost ratio 1.6.

**Table 2.21:** Value added products by oyster mushroom for income generation

| Detail of Technology | No.of trials | Average Cost of input (Rs/ unit | Average Gross Return (Rs/unit) | Average Net Return (Rs/unit) | Benefit-Cost Ratio (Gross Return / Gross Cost) |
|---|---|---|---|---|---|
| Marketing of Unprocessed minor millets $T_1$(Farmers Practices) | 30 | 6800 | 9300 | 2500 | 1.36 |
| Marketing of processed minor millets $T_2$ (Recommended Practices) | | 13400 | 21567 | 8167 | 1.6 |


Processed and value added products of minor millets

# 3

# FRONTLINE DEMONSTRATIONS

Frontline demonstrations (FLD) are conducted to demonstrate the superiority of frontier and location specific proven technologies of agriculture and allied sectors among the farming community and extension functionaries for up-scaling in the larger area as well as for generating the production data along with the feedback. During the year 2022, total 1087 FLDs were conducted on oilseeds, pulses, cereals, vegetables crops, cash crops, agro-forestry, millets, etc., covering the total area of 11842.93 ha and benefitting 28452 farmers. FLDs were also conducted on important income generating enterprises, covering the total area of 397.68 ha including 2280 units and 2984 beneficiaries (Table-3).

**Table 3:** Summary of FLDs (State-wise) conducted by KVKs during 2022

| State | Categories | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | Unit (no.) | No. of FLD's (Beneficiaries) |
|---|---|---|---|---|---|
| Chhattisgarh | Cereals | 131 | 535.278 | - | 1333 |
| | Oilseeds (CFLD) | 99 | 1790 | - | 4324 |
| | Pulses (CFLD) | 143 | 2260 | - | 4580 |
| | Enterprises | 94 | 221.68 | 1062 | 1202 |
| **Total** | | **467** | **4806.958** | **1062** | **11439** |
| Madhya Pradesh | Cereals | 367 | 1168.85 | - | 3159 |
| | Oilseeds (CFLD) | 123 | 2527.4 | - | 6279 |
| | Pulses (CFLD) | 224 | 3561.4 | - | 8777 |
| | Enterprises | 160 | 176 | 1218 | 1782 |
| Total | | 874 | 7433.65 | 1218 | 19997 |
| Total | Cereals | 498 | 1704.128 | - | 4492 |
| | Oilseeds (CFLD) | 222 | 4317.4 | - | 10603 |
| | Pulses (CFLD) | 367 | 5821.4 | - | 13357 |
| | Total | 1087 | 11842.93 | 0 | 28452 |
| | Enterprises | 254 | 397.68 | 2280 | 2984 |
| **Grand Total** | | **1341** | **12240.61** | **2280** | **31436** |

*CFLD on Pulses and oilseeds reports are given Flagship program section

**Table 3.1:** Summary of FLDs (Crop-wise) conducted by KVKs during 2022

| Categories | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | Unit (no.) | Beneficia-ries |
|---|---|---|---|---|
| Cash | 2 | 7 | - | 17 |
| Cereal | 131 | 535.2 | - | 1260 |
| Fibre | 6 | 34.4 | - | 53 |
| Flower | 3 | 14.5 | - | 25 |
| Fodder | 2 | 4 | - | 10 |
| Fruit | 10 | 20.8 | - | 79 |
| Medicinal and Aromatic | 4 | 14 | - | 37 |

| Categories | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | Unit (no.) | Beneficia-ries |
|---|---|---|---|---|
| Millets | 19 | 109 | - | 248 |
| Oilseeds | 97 | 352.8 | - | 859 |
| Pulses | 92 | 313.4 | - | 806 |
| Spices | 42 | 110.9 | - | 356 |
| Tuber | 15 | 28.557 | - | 123 |
| Vegetable | 75 | 159.57 | - | 619 |
| **Grand Total** | **498** | **1704.127** | | **4492** |
| **Enterprises (ha/Units)** | | | | |
| Agriculture Engineering | 59 | 281.68 | - | 520 |
| Animal Science (ha/unit) | 12 | 47 | - | 83 |
| Fisheries | 62 | 69 | 2280 | 771 |
| Women Empowerment | 94 | - | - | 1176 |
| Other enterprises | 27 | - | - | 434 |
| **Total** | **254** | **397.68** | **2280** | **2984** |
| **Grand Total** | **752** | **2101.807** | **2280** | **7476** |

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

| Categories | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | Unit (no.) | Beneficiaries |
|---|---|---|---|---|
| Cash | 1 | 2 | | 5 |
| Cereal | 89 | 336.6 | | 822 |
| Fibre | 5 | 32.8 | | 49 |
| Flower | 2 | 4.5 | | 15 |
| Fodder | 2 | 4 | | 10 |
| Fruit | 6 | 13 | | 52 |
| Medicinal and Aromatic | 1 | 2 | | 5 |
| Millets | 12 | 56 | | 153 |
| Oilseeds | 80 | 274.8 | | 679 |
| Pulses | 71 | 213.8 | | 554 |
| Spices | 36 | 94.2 | | 311 |
| Tuber | 7 | 14 | | 55 |
| Vegetable | 55 | 121.15 | | 449 |
| **Grand Total** | **367** | **1168.85** | | **3159** |
| **Enterprises (ha/Units)** | | | - | |
| Agriculture Engineering | 25 | 127 | | 225 |
| Fisheries | 2 | 2 | | 8 |
| Animal Science (ha/unit) | 45 | 47 | 1218 | 430 |
| Women Empowerment (ha/unit) | 70 | - | - | 852 |
| Other enterprises | 18 | - | - | 267 |
| **Total** | **160** | **176** | **1218** | **1782** |
| **Grand Total** | **527** | **1344.85** | **1218** | **4941** |

**Table 3.3:** Summary of FLDs conducted by KVKs in state Chhattisgarh

| Categories | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | Unit (no.) | Beneficia-ries |
|---|---|---|---|---|
| Cash | 1 | 5 | | 12 |
| Cereal | 42 | 198.6 | | 438 |
| Fibre | 1 | 1.6 | | 4 |
| Flower | 1 | 10 | | 10 |
| Fruit | 4 | 7.8 | | 27 |
| Medicinal and Aromatic | 3 | 12 | | 32 |
| Millets | 7 | 53 | | 95 |
| Oilseed | 17 | 78 | | 180 |
| Pulses | 21 | 99.6 | | 252 |
| Spices | 6 | 16.7 | | 45 |
| Tuber | 8 | 14.557 | | 68 |
| Vegetable | 20 | 38.42 | | 170 |
| **Grand Total** | **131** | **535.277** | | **1333** |
| **Enterprises (ha/Units)** | | | | |
| Agriculture Engineering | 34 | 154.68 | - | 295 |
| Fisheries | 10 | 45 | - | 75 |
| Animal Science (ha/unit) | 17 | 22 | 1062 | 341 |
| Women Empowerment (ha/unit) | 24 | - | - | 324 |
| Other enterprises | 09 | - | - | 167 |
| **Total** | **94** | **221.68** | **1062** | **1202** |
| **Grand Total** | **225** | **756.957** | **1062** | **2535** |

**Table 3.4:** Summary of FLDs under Integrated Crop Management

| Crops | No. of Technology Demonstrat-ed (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cereal** | | | | | | | | |
| Maize | 4 | 26 | 65 | 37.13 | 27.98 | 32.71 | 27925.08 | 40879.08 |
| Paddy | 5 | 25.2 | 63 | 39.40 | 32.54 | 21.07 | 50735.57 | 71403.83 |
| Wheat | 4 | 23.2 | 53 | 37.72 | 30.89 | 22.13 | 47858.69 | 61563.45 |
| **Fibre** | | | | | | | | |
| Cotton | 1 | 6 | 15 | 20.78 | 17.26 | 20.39 | 61280 | 78690 |
| **Flower** | | | | | | | | |
| Mahua | 1 | 10 | 10 | 3.5 | 2.5 | 40 | 950 | 5700 |
| **Fruit** | | | | | | | | |
| Guava | 1 | 0.4 | 5 | 555 | 416 | 33.41 | 1220800 | 449200 |
| Water melon | 1 | 5 | 5 | 378 | 277 | 36.46 | 117600 | 167400 |
| **Medicinal and Aromatic** | | | | | | | | |
| Lemon grass | 1 | 2 | 5 | 138 | 109 | 26.60 | 80800 | 110600 |
| **Millets** | | | | | | | | |
| Finger millet | 1 | 10 | 25 | 9.86 | 5.96 | 65.43 | 12350 | 23800 |
| Kodo | 2 | 20 | 35 | 8.3 | 5.975 | 38.91 | 8540 | 4350.97 |
| **Oilseed** | | | | | | | | |
| Linseed | 1 | 1.6 | 4 | 7.1 | 6.25 | 13.6 | 27585 | 24987 |
| Mustard | 4 | 23.6 | 59 | 12.23 | 9.57 | 27.71 | 20586.36 | 27742.2 |
| Niger | 1 | 4 | 10 | 5.73 | 4.44 | 29.05 | 11832 | 17499 |

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Sesame | 4 | 10 | 25 | 5.71 | 4.47 | 27.78 | 21562.6 | 29918.6 |
| Soybean | 3 | 12 | 30 | 17.21 | 13.29 | 29.44 | 28895.83 | 44343.33 |
| Sunflower | 1 | 3.2 | 8 | 6.2 | 5.6 | 10.71 | 12200 | 10263 |
| **Pulses** | | | | | | | | |
| Black gram | 4 | 18 | 47 | 8.48 | 6.73 | 26.19 | 16622.22 | 22671.11 |
| Chickpea | 4 | 20 | 50 | 12.43 | 9.07 | 37.04 | 25293.5 | 40009 |
| Greengram | 1 | 2 | 5 | 13.17 | 10.68 | 23.31 | 59311 | 78183 |
| Lathyrus | 2 | 7.2 | 19 | 3.64 | 2.48 | 46.77 | 5536 | 9942.33 |
| **Spices** | | | | | | | | |
| Chilli | 1 | 1 | 5 | 315.42 | 295.21 | 6.84 | 175527 | 193482 |
| Turmeric | 1 | 2.5 | 6 | 61.88 | 54.39 | 13.77 | 74270 | 109010 |
| **Tuber** | | | | | | | | |
| Elephant Foot Yam | 3 | 7.5 | 26 | 580.25 | 429.47 | 35.10 | 454083.33 | 715560.7 |
| **Vegetable** | | | | | | | | |
| Bottle gourd | 1 | 0.2 | 6 | 400 | 311 | 28.61 | 100000 | 150000 |
| Cucumber | 1 | 2 | 5 | 315.6 | 167.50 | 88.41 | 78900 | 256340 |
| Drumstick | 1 | 2 | 5 | 138 | 92 | 50 | 126000 | 179000 |
| Onion | 1 | 1 | 5 | 154.23 | 144.53 | 6.71 | 104665 | 112285 |
| Seasonal vegetable | 2 | 5.02 | 25 | 48.33 | 31.26 | 54.58 | 14350.41 | 81485.92 |
| Tomato | 4 | 13 | 35 | 477.12 | 388.72 | 22.73 | 162201.08 | 229672.5 |
| **Grand Total** | **61** | **263.62** | **656** | **72.51** | **55.93** | **29.61** | **51773.48** | **74683.53** |

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

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

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cash** | | | | | | | | |
| Sugarcane | 1 | 5 | 12 | 931 | 861 | 8.13 | 202500 | 234500 |
| **Cereal** | | | | | | | | |
| Paddy | 8 | 21.2 | 60 | 40.02 | 32.84 | 21.85 | 48486.13 | 62200.91 |
| **Fruit** | | | | | | | | |
| Guava | 1 | 4 | 10 | 268.64 | 194.26 | 38.29 | 1101761.6 | 169636 |
| Papaya | 1 | 1 | 12 | 202 | 128 | 57.81 | 541200 | 923000 |
| **Millets** | | | | | | | | |
| Pearl Millet | 1 | 2 | 6 | 21.4 | 19 | 12.63 | 29500 | 34800 |
| **Oilseed** | | | | | | | | |
| Groundnut | 1 | 2 | 8 | 18.26 | 15 | 21.73 | 36750 | 53921 |
| Mustard | 2 | 4 | 15 | 16.20 | 10.73 | 51.05 | 59652.5 | 78292.5 |
| Sesame | 1 | 2 | 5 | 5.10 | 3.20 | 59.38 | 13953 | 26483 |

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Soybean | 5 | 15 | 32 | 13.91 | 11.40 | 22.06 | 32368.67 | 44876.4 |
| **Pulses** | | | | | | | | |
| Black gram | 3 | 13 | 38 | 7.70 | 6.03 | 27.68 | 30017.38 | 40685.85 |
| Chickpea | 5 | 16.4 | 41 | 12.64 | 9.80 | 28.94 | 27701.85 | 41277.36 |
| Pigeon pea | 1 | 2 | 5 | 16.4 | 12.4 | 32.26 | 65340 | 89740 |
| **Spices** | | | | | | | | |
| Chilli | 2 | 6.8 | 17 | 38.34 | 32.23 | 18.94 | 216369.35 | 303127.3 |
| Coriander | 2 | 5.2 | 26 | 20.25 | 17.62 | 14.90 | 64009.35 | 79226.81 |
| Garlic | 1 | 2.5 | 10 | 101.8 | 94.1 | 8.18 | 173106 | 195880 |
| **Tuber** | | | | | | | | |
| Potato | 1 | 1 | 5 | 215 | 165 | 30.30 | 67000 | 94000 |
| **Vegetable** | | | | | | | | |
| Brinjal | 4 | 4.4 | 23 | 258.18 | 203.82 | 26.67 | 197235.23 | 257290 |
| Onion | 2 | 5 | 15 | 289.34 | 240.48 | 20.32 | 216168 | 275380 |
| Tomato | 2 | 4.6 | 18 | 456.61 | 384.91 | 18.63 | 783400 | 963996.1 |
| **Grand Total** | **44** | **117.1** | **358** | **111.03** | **94.27** | **17.78** | **142652.9** | **142571.1** |

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

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cereal** | | | | | | | | |
| Maize | 8 | 32 | 65 | 44.37 | 36.88 | 20.28 | 27561.13 | 38462.09 |
| Paddy | 14 | 52 | 151 | 41.93 | 35.74 | 17.32 | 40769.38 | 50875 |
| Wheat | 12 | 42.8 | 98 | 35.61 | 29.49 | 20.74 | 38208.99 | 51527.01 |
| **Fibre** | | | | | | | | |
| Cotton | 2 | 5.6 | 11 | 70.94 | 59.88 | 18.47 | 80877.14 | 94655 |
| **Flower** | | | | | | | | |
| Marigold | 1 | 2.5 | 10 | 131 | 111 | 18.02 | 235400 | 299780 |
| **Fruit** | | | | | | | | |
| Banana | 1 | 5 | 5 | 724 | 683.2 | 5.97 | 463200 | 489600 |
| **Medicinal and Aromatic** | | | | | | | | |
| Lemon grass | 1 | 5 | 12 | 0.88 | 0.40 | 120.00 | 6000 | 36600 |
| Vetiver(khus) | 1 | 5 | 10 | 0.03 | 0.012 | 116.67 | 50000 | 136000 |
| **Millets** | | | | | | | | |
| Pearl Millet | 1 | 2 | 10 | 28 | 25 | 12.00 | 48050 | 53700 |
| Sorghum | 1 | 4 | 10 | 31.35 | 24.75 | 26.67 | 42503 | 55354 |

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Oilseeds** | | | | | | | | |
| Groundnut | 2 | 10 | 25 | 13.02 | 10.94 | 19.01 | 29533.5 | 39949 |
| Mustard | 4 | 15.8 | 40 | 12.03 | 9.08 | 32.41 | 31822.27 | 43903.9 |
| Niger | 1 | 2 | 5 | 5.42 | 4.50 | 20.44 | 12970 | 17246 |
| Sesame | 3 | 8.8 | 22 | 5.37 | 3.97 | 35.40 | 14958.41 | 23549.91 |
| Soybean | 8 | 28.6 | 76 | 17.20 | 14.61 | 17.78 | 39191.07 | 50624.41 |
| **Pulses** | | | | | | | | |
| Blackgram | 4 | 9 | 32 | 9.32 | 7.30 | 27.65 | 35632.18 | 54702.53 |
| Chickpea | 14 | 43 | 99 | 16.79 | 13.95 | 20.37 | 38049.12 | 51511.37 |
| Lentil | 1 | 4 | 5 | 32.2 | 28.3 | 13.78 | 39200 | 50000 |
| Pigeonpea | 4 | 15.8 | 40 | 13.27 | 10.57 | 25.49 | 31610.13 | 43992.41 |
| **Spices** | | | | | | | | |
| Chilli | 4 | 9.5 | 35 | 187.22 | 159.25 | 17.57 | 168737.11 | 213580.5 |
| Garlic | 3 | 3.2 | 20 | 84.67 | 70.99 | 19.26 | 309068.13 | 374188.1 |
| **Tuber** | | | | | | | | |
| Potato | 3 | 7 | 25 | 248.56 | 204.3 | 21.66 | 148164.29 | 194694.3 |
| **Vegetable** | | | | | | | | |
| Bottle gourd | 1 | 2 | 10 | 92.00 | 80.00 | 15.00 | 60000 | 73000 |
| Brinjal | 2 | 1.1 | 15 | 279.14 | 231.29 | 20.69 | 141166.36 | 161736 |
| Cabbage | 1 | 4 | 10 | 358.6 | 310.3 | 15.57 | 174340 | 216380 |
| Onion | 6 | 7 | 44 | 263.68 | 221.74 | 18.925 | 175418.2 | 235221.7 |
| Tomato | 2 | 6 | 20 | 331.13 | 292.07 | 13.38 | 210133.33 | 247133.3 |
| **Grand Total** | **105** | **332.7** | **905** | **63.78** | **54.91** | **16.14** | **60979.54** | **78977** |

**Table 3.7:** Summary of FLDs on Integrated Pest Management

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cash** | | | | | | | | |
| Sugarcane | 1 | 2 | 5 | 848 | 733.5 | 15.61 | 274075 | 323400 |
| **Cereal** | | | | | | | | |
| Maize | 3 | 14 | 27 | 46.21 | 30.86 | 49.77 | 27903.57 | 55107.14 |
| Paddy | 15 | 57.6 | 140 | 43.02 | 37.25 | 15.48 | 54268.04 | 65917.5 |
| Wheat | 2 | 4.8 | 12 | 40.59 | 36.71 | 10.57 | 45836.25 | 52483.92 |
| **Fibre** | | | | | | | | |
| Cotton | 2 | 12.8 | 17 | 22.15 | 18.31 | 21.00 | 55345.28 | 79578.94 |
| **Oilseed** | | | | | | | | |
| Mustard | 6 | 26 | 61 | 15.64 | 12.73 | 22.91 | 46707.69 | 60963.85 |

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Sesame | 2 | 4 | 10 | 6.24 | 3.89 | 60.49 | 22410 | 40695.5 |
| Soybean | 8 | 28.2 | 77 | 16.42 | 14.01 | 17.18 | 39650.4 | 50038.74 |
| **Pulses** | | | | | | | | |
| Chickpea | 13 | 44.4 | 106 | 17.54 | 14.78 | 18.68 | 44333.95 | 55920.07 |
| Pigeon pea | 2 | 4 | 10 | 13 | 9.65 | 34.72 | 38755 | 57090 |
| **Spices** | | | | | | | | |
| Chilli | 1 | 5 | 12 | 216.00 | 172.00 | 25.58 | 72400 | 137200 |
| Garlic | 2 | 6 | 17 | 116.91 | 94.75 | 23.39 | 162514.5 | 210742 |
| **Tuber** | | | | | | | | |
| Potato | 1 | 2 | 5 | 372 | 305 | 21.97 | 165000 | 217000 |
| **Vegetable** | | | | | | | | |
| Brinjal | 1 | 1 | 12 | 275 | 178 | 54.49 | 272600 | 434700 |
| Cabbage | 1 | 2 | 5 | 378 | 270 | 40.00 | 174225 | 274925 |
| Cauli-flower | 1 | 0.8 | 4 | 111.56 | 105.02 | 6.23 | 51062 | 27267 |
| Okra | 4 | 11.6 | 38 | 136.19 | 108.02 | 26.07 | 83245.75 | 108996.10 |
| Onion | 6 | 24.6 | 69 | 327.63 | 286.575 | 13.555 | 201260.05 | 244366.10 |
| **Grand Total** | **71** | **250.8** | **627** | **74.41** | **62.48** | **19.09** | **70320.15** | **90165.36** |

**Table 3.8:** Summary of FLDs on Integrated Weed Management

| Crops | No. of Technol-ogy Demon-strated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cereal** | | | | | | | | |
| Maize | 3 | 8 | 20 | 47.63 | 38.58 | 23.46 | 43658.25 | 58386.25 |
| Paddy | 2 | 10.2 | 25 | 47.98 | 36.90 | 30.02 | 47833.92 | 65889.8 |
| Wheat | 9 | 34.8 | 91 | 48.66 | 41.51 | 17.22 | 59821.65 | 73764.47 |
| **Millets** | | | | | | | | |
| Pearl Millet | 1 | 2 | 10 | 22.64 | 19.67 | 15.10 | 28375 | 34600 |
| **Oilseed** | | | | | | | | |
| Niger | 1 | 2 | 5 | 5.50 | 3.40 | 61.76 | 16034 | 27135 |
| Sesame | 2 | 6 | 15 | 5.93 | 3.87 | 53.28 | 19163.33 | 33492 |
| Soybean | 5 | 25 | 47 | 16.93 | 14.21 | 19.18 | 36788.72 | 50525.84 |
| **Pulses** | | | | | | | | |
| Black gram | 3 | 10.8 | 27 | 6.14 | 4.52 | 35.75 | 11694.19 | 21086.11 |
| Chickpea | 2 | 10.2 | 25 | 14.62 | 11.65 | 25.59 | 31896.86 | 48009.51 |
| Field pea | 1 | 2 | 10 | 22.61 | 19.81 | 14.13 | 25030 | 30913 |
| Green Gram | 2 | 6.8 | 23 | 7.49 | 5.73 | 30.72 | 22747.06 | 33157.65 |

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Pigeon pea | 2 | 6.8 | 17 | 11.67 | 8.93 | 30.66 | 35444.12 | 55529.29 |
| **Spices** | | | | | | | | |
| Coriander | 1 | 1 | 11 | 8.3 | 6.9 | 20.29 | 21110 | 29360 |
| Garlic | 1 | 5 | 12 | 111.29 | 103.76 | 7.26 | 456800 | 490850 |
| **Vegetable** | | | | | | | | |
| Okra | 1 | 1 | 5 | 148 | 105 | 40.95 | 122500 | 180000 |
| Onion | 5 | 20 | 54 | 226.43 | 197.83 | 14.655 | 152738.56 | 181617.6 |
| **Grand Total** | **41** | **151.6** | **397** | **57.41** | **48.57** | **18.21** | **69042.37** | **86444.19** |

**Table 3.9:** Summary of FLDs on Varietal evaluation

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cereal** | | | | | | | | |
| Barley | 2 | 7.2 | 18 | 34.86 | 23.95 | 45.55 | 13425 | 26053 |
| Maize | 4 | 27.2 | 34 | 70.11 | 55.57 | 26.17 | 62257.35 | 88309.56 |
| Paddy | 10 | 43 | 102 | 36.80 | 29.97 | 22.77 | 37124.49 | 48840.6 |
| Wheat | 19 | 75 | 176 | 43.94 | 35.79 | 22.78 | 45148.33 | 60668.35 |
| **Flower** | | | | | | | | |
| Marigold | 1 | 2 | 5 | 115.8 | 77.3 | 49.81 | 109600 | 181600 |
| Fruit | | | | | | | | |
| Papaya | 3 | 2.4 | 20 | 513.02 | 295 | 73.91 | 278145.83 | 531325 |
| Pear | 1 | 2 | 12 | 15.68 | 10 | 56.80 | 24500 | 33257 |
| **Medicinal and Aromatic** | | | | | | | | |
| Citronella | 1 | 2 | 10 | 0.98 | 0.55 | 78.18 | 8240 | 46020 |
| **Millets** | | | | | | | | |
| Finger millet | 3 | 19 | 32 | 9.10 | 7.12 | 27.69 | 8067 | 11920 |
| Kodo | 4 | 20 | 38 | 10.91 | 8.03 | 35.83 | 9435.95 | 15047.2 |
| Kutki | 1 | 10 | 25 | 7.7 | 5.28 | 45.83 | 6900 | 1.66 |
| Pearl Millet | 1 | 2 | 5 | 26.2 | 21.3 | 23.00 | 17600 | 25900 |
| Ragi | 1 | 4 | 10 | 10.5 | 8.5 | 23.53 | 17250 | 22250 |
| Sorghum | 2 | 14 | 42 | 24.51 | 21.39 | 14.59 | 35346.43 | 43677.14 |
| **Oilseed** | | | | | | | | |
| Linseed | 3 | 10 | 25 | 14.24 | 10.76 | 32.34 | 44576 | 62044 |
| Mustard | 8 | 31.2 | 72 | 15.72 | 11.98 | 31.26 | 22753.54 | 36413.15 |
| Niger | 2 | 7 | 22 | 5.01 | 3.16 | 58.82 | 15285.71 | 17513.77 |
| Sesame | 4 | 12 | 30 | 6.65 | 4.43 | 50.21 | 20283.33 | 36229.5 |
| Soybean | 10 | 32.8 | 89 | 16.37 | 12.68 | 29.10 | 39744.33 | 55145.81 |
| **Pulses** | | | | | | | | |
| Blackgram | 3 | 10.2 | 30 | 9.06 | 5.89 | 53.78 | 17847.25 | 33203.35 |
| Chickpea | 10 | 27 | 60 | 15.34 | 11.50 | 33.42 | 39855.58 | 58821.68 |

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Cluster beans | 1 | 2 | 12 | 12.8 | 8.2 | 56.10 | 20560 | 41940 |
| Greengram | 3 | 7.2 | 17 | 10.67 | 8.23 | 29.65 | 31644.22 | 46527.78 |
| Lathyrus | 1 | 4.8 | 12 | 3.57 | 2.41 | 48.13 | 6138 | 10735 |
| Pigeon pea | 3 | 15 | 51 | 10.17 | 7.71 | 31.86 | 33230.67 | 34552.73 |
| **Spices** | | | | | | | | |
| Ajawain | 1 | 5 | 10 | 10.56 | 8.66 | 21.94 | 68150 | 86212 |
| Chilli | 1 | 1 | 5 | 82.00 | 68.00 | 20.59 | 45600 | 60400 |
| Coriander | 4 | 8.3 | 38 | 13.59 | 10.31 | 31.82 | 44494.65 | 73536.87 |
| Fenugreek | 1 | 5 | 12 | 12.82 | 10.53 | 21.75 | 19900 | 20200 |
| Garlic | 1 | 1 | 5 | 83.5 | 68.1 | 22.61 | 130500 | 169900 |
| Ginger | 3 | 6.4 | 20 | 146.53 | 113.45 | 29.15 | 298203.13 | 420709.4 |
| Nigella | 1 | 5 | 10 | 10.17 | 8.22 | 23.72 | 75193 | 96159 |
| Turmeric | 3 | 5 | 19 | 213.44 | 160.80 | 32.74 | 252960 | 395280 |
| **Tuber** | | | | | | | | |
| Elephant Foot Yam | 3 | 2.057 | 26 | 453.26 | 269.72 | 68.05 | 257681.33 | 598565.4 |
| Potato | 2 | 4 | 20 | 254.46 | 206.27 | 23.36 | 132275 | 169495 |
| Sweet Potato | 1 | 3 | 4 | 96 | 85.4 | 12.41 | 120100 | 130000 |
| **Vegetable** | | | | | | | | |
| Ash gourd | 2 | 3 | 15 | 324.04 | 226.52 | 43.05 | 62666.33 | 95856.67 |
| Brinjal | 2 | 7 | 18 | 268.5 | 197.38 | 36.03 | 77675.71 | 132365 |
| Carrot | 1 | 1 | 10 | 248.79 | 176.45 | 41.00 | 84845 | 141532 |
| Cauliflower | 1 | 1 | 5 | 250 | 180 | 38.89 | 67000 | 105000 |
| Colocasia | 1 | 5 | 12 | 85 | 72 | 18.06 | 100000 | 142500 |
| Cowpea | 2 | 1.8 | 14 | 99.16 | 72.67 | 36.45 | 60486.11 | 103916.7 |
| Cucumber | 1 | 1 | 5 | 130.10 | 98.50 | 32.08 | 124750 | 181800 |
| Drumstick | 3 | 1.9 | 29 | 105.16 | 32.84 | 220.19 | 60947.37 | 205842.1 |
| Okra | 1 | 4 | 10 | 176 | 113 | 55.75 | 146000 | 272000 |
| Onion | 7 | 19.45 | 53 | 244.07 | 193.96 | 27.445 | 114569.46 | 151028.8 |
| Pea | 1 | 5.2 | 13 | 128.9 | 107.8 | 19.57 | 111480 | 167100 |
| Pointed gourd | 1 | 0.8 | 4 | 182 | 120 | 51.67 | 147000 | 315000 |
| Sem (Indian Bean) | 1 | 1 | 12 | 250 | 220 | 13.64 | 174000 | 215000 |
| Sponge gourd | 1 | 1 | 12 | 271.4 | 192.6 | 40.91 | 231400 | 337300 |
| Tomato | 2 | 1 | 11 | 346.80 | 208.20 | 66.57 | 149720 | 287400 |
| **Grand Total** | **149** | **488.907** | **1341** | **56.65** | **42.41** | **33.59** | **51078.59** | **75381.47** |

**Table 3.10:** Summary of FLDs on Resource Conservation Technology

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cereal** | | | | | | | | |
| Maize | 1 | 10 | 10 | 38.00 | 24.00 | 58.33 | 20230 | 40410 |
| Paddy | 1 | 2 | 5 | 48.00 | 39.70 | 20.91 | 53105 | 67255 |
| Wheat | 1 | 5.2 | 13 | 43.89 | 38.06 | 15.32 | 41224 | 57918 |
| **Pulses** | | | | | | | | |
| Chickpea | 1 | 2 | 5 | 15.80 | 13.50 | 17.04 | 45600 | 54840 |
| Lathyrus | 1 | 4.8 | 10 | 7.16 | 5.10 | 40.39 | 9050 | 14955 |
| **Spices** | | | | | | | | |
| Chilli | 1 | 4 | 10 | 146.20 | 125.90 | 16.12 | 186300 | 226200 |
| Turmeric | 1 | 0.5 | 5 | 106.40 | 82.20 | 29.44 | 157700 | 209800 |
| **Grand Total** | **7** | **28.5** | **58** | **49.41** | **39.07** | **26.47** | **51984.73** | **71261.32** |

**Table 3.11:** Summary of FLDs on Soil Fertility Management

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| **Cereal** | | | | | | | | |
| Paddy | 1 | 4 | 10 | 49.80 | 47.30 | 5.29 | 58150 | 63700 |
| Wheat | 2 | 4.8 | 12 | 38.73 | 34.33 | 12.79 | 44693.33 | 50538.33 |
| Fibre | | | | | | | | |
| Cotton | 1 | 10 | 10 | 11.26 | 8.15 | 38.16 | 5420 | 26568 |
| Oilseed | | | | | | | | |
| Soybean | 2 | 6 | 12 | 16.67 | 14.96 | 11.41 | 47230.67 | 55595 |
| Vegetable | | | | | | | | |
| Onion | 1 | 4 | 7 | 264.59 | 239.11 | 10.66 | 108275 | 123338 |
| Tomato | 1 | 0.8 | 2 | 260.00 | 250.00 | 4.00 | 48000 | 60000 |
| **Grand Total** | **8** | **29.6** | **53** | **62.97** | **56.81** | **10.84** | **42439.59** | **55337.36** |

**Table 3.12:** Summary of FLDs on Crop Production

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Cereal | | | | | | | | |
| Wheat | 1 | 5 | 10 | 51.54 | 38.25 | 34.75 | 47914 | 70923 |
| Fruit | | | | | | | | |
| Water melon | 1 | 1 | 10 | 225.00 | 155.00 | 45.16 | 64500 | 102500 |
| Oilseed | | | | | | | | |
| Soybean | 2 | 10 | 20 | 16.88 | 14.25 | 18.42 | 38735 | 49262.5 |
| Pulses | | | | | | | | |
| Chickpea | 1 | 5 | 10 | 19.89 | 15.39 | 29.24 | 52624 | 72796 |
| Vegetable | | | | | | | | |
| Broccoli | 1 | 0.2 | 6 | 160 | 121 | 32.23 | 69500 | 123900 |
| **Grand Total** | **6** | **21.2** | **56** | **36.93** | **27.83** | **32.72** | **45681.13** | **63136.79** |

**Table 3.13:** Summary of FLDs on Integrated Farming System

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Oilseed | | | | | | | | |
| Groundnut | 1 | 10 | 10 | 7 | 0 | | 0 | 24350 |
| Spices | | | | | | | | |
| Turmeric | 1 | 4 | 4 | 26.60 | 0.00 | | 0 | 70600 |
| Tuber | | | | | | | | |
| Potato | 1 | 2 | 12 | 195.3 | 120.46 | 62.13 | 72552 | 148360 |
| Vegetable | | | | | | | | |
| Tomato | 1 | 0.1 | 5 | 630.00 | 384.00 | 64.06 | 107 | 224 |
| **Grand Total** | **4** | **16.1** | **31** | **39.13** | **17.35** | **125.55** | **9013.34** | **51095.8** |

**Table 3.14:** Summary of FLDs on Feed & Fodder Production

| Crops | No. of Technology Demonstrated (crops/ enterprises) | Area (ha) | No. of farmers | Yield q/ha | | % Change | Net Return Rs/ha | |
|---|---|---|---|---|---|---|---|---|
| | | | | RP* | FP** | | FP | RP |
| Fodder | | | | | | | | |
| African tall/Maize grass | 1 | 2 | 5 | 550 | 450 | 22.22 | 20100 | 33000 |
| Napier grass | 1 | 2 | 5 | 1050 | 940 | 11.70 | 48900 | 56000 |
| **Grand Total** | **2** | **4** | **10** | **800.00** | **695.00** | **15.11** | **34500** | **44500** |

**Table 3.14:** Summary of FLDs on Farm Mechanization

| Category | Name of the implement | Crops | No. of FLDs | Area (ha) | No. of farmers |
|---|---|---|---|---|---|
| Sowing and planting tools and machineries | 8 Row Self Propelled Paddy Transplanter | Paddy | 1 | 4.08 | 10 |
| | Broad bed furrow seed drill | Soybean | 2 | 10 | 25 |
| | Dibbler | Maize | 1 | 2.6 | 13 |
| | Direct Seeded Rice(DSR) | Paddy | 1 | 2 | 5 |
| | Drone technology | | 1 | 5 | 10 |
| | Garlic planter | Garlic | 1 | 5 | 5 |
| | Groundnut decorticate | Groundnut | 1 | 5 | 5 |
| | Happy seeder | Wheat | 2 | 14 | 21 |
| | Inclined Plate Planter | Paddy | 1 | 5 | 13 |
| | Indira soya seed drill | Soybean | 1 | 5 | 10 |
| | Line sowing | Chickpea | 1 | 4.8 | 5 |
| | | Linseed | 1 | 4.8 | 5 |
| | | Paddy | 1 | 4.8 | 3 |
| | Line transplanting | Paddy | 1 | 4 | 5 |
| | Manually operated 8 row paddy drum seeder | Paddy | 1 | 5 | 10 |
| | MB Plough | Chickpea | 1 | 5 | 5 |
| | Multi crop planter | Pigeonpea | 1 | 5 | 10 |
| | Potato planter | Potato | 1 | 5 | 5 |
| | Reversible Plough | Soybean | 1 | 2.5 | 10 |
| | Ridge furrow seed cum fertilizer drill | Chickpea | 1 | 2 | 5 |
| | Seed cum fertilizer drill | Chickpea | 2 | 10 | 19 |
| | | Mustard | 1 | 5 | 12 |
| | | Paddy | 2 | 17 | 18 |
| | | Soybean | 1 | 5 | 5 |
| | | Wheat | 1 | 12 | 12 |
| | Seed Drill | Paddy | 1 | 2 | 10 |
| | Super Happy Seeder | Wheat | 1 | 10 | 12 |
| | Tractor operated bed maker machine | Tomato | 1 | 5 | 10 |
| | Tractor operated potato planter | Potato | 1 | 22 | 16 |
| | Tractor operated seed cum fertilizer drill | Paddy | 2 | 9 | 15 |
| | | Wheat | 1 | 5 | 5 |
| | Tractor operated seed drill | Linseed | 1 | 2.6 | 13 |
| | | Paddy | 1 | 2 | 8 |
| Intercultural operation tools and machineries | Maize dehusker cum sheller | Maize | 1 | 5 | 5 |
| | Modified Duck Foot Cultivator | | 1 | 4 | 10 |
| | Paddy weeder | Paddy | 1 | 4 | 10 |
| | PUSA decomposer | | 1 | 0 | 22 |
| Irrigation management tools and machineries | Plastic mulching with fertigation system | Chilli | 1 | 5 | 5 |
| | | Tomato | 1 | 2 | 5 |
| | Raised Bed Planting | Soybean | 3 | 8.5 | 24 |
| | Zero till seed cum fertilizer drill | Wheat | 2 | 7 | 18 |
| Harvesting tools and machineries | Tractor drawn front mounted vertical conveyor reaper | Wheat | 1 | 4 | 10 |
| | Tractor operated axial flow thresher | Paddy | 2 | 10 | 18 |

| Category | Name of the implement | Crops | No. of FLDs | Area (ha) | No. of farmers |
|---|---|---|---|---|---|
| Postharvest processing tools and machineries | Baler Machine | Paddy | 1 | 5 | 5 |
| | Hybrid dryer for mushroom drying | Mushroom | 1 | 1 | 1 |
| | Mahua Seed Decorticator | Mahua | 1 | 0 | 10 |
| | Processing and value addition | Finger millet | 1 | 1 | 12 |
| | Spiral gravity separator | | 1 | 11 | 14 |
| | Straw Baler | Paddy | 1 | 2 | 2 |
| | Tractor operated mini rice mill | Paddy | 1 | 5 | 14 |
| **Grand Total** | | | **59** | **281.68** | **520** |

**Table 3.15:** Summary of FLDs on Livestock and Poultry Production

| Category | No. of FLDs | No. of Farmers | No. of Animals/units |
|---|---|---|---|
| Dairy and cattle | | | |
| Buffalo | 3 | 30 | 220 |
| Cattle (Cow) | 5 | 82 | 100 |
| Nutrition management | 15 | 136 | 134 |
| Others | 18 | 143 | 249 |
| Total Dairy and cattle | 41 | 391 | 703 |
| Sheep and goats | | | |
| Goat | 2 | 15 | 15 |
| Nutrition management | 1 | 6 | 6 |
| Disease management | 1 | 10 | 500 |
| Total Sheep and Goat | 4 | 31 | 521 |
| Poultry | | | |
| Poultry - Chicken | 3 | 25 | 33 |
| Quail | 4 | 40 | 770 |
| Poultry management | 9 | 278 | 315 |
| Total Poultry | 16 | 343 | 1118 |
| Piggery | 1 | 6 | 3 |
| Piggery Total | 1 | 6 | 3 |
| **Grand Total** | **62** | **771** | **2345** |

**Table 3.16:** Summary of FLDs on Fisheries

| Thematic area | No. of FLD | Area (ha) | No. of farm-ers | Results | | |
|---|---|---|---|---|---|---|
| | | | | RP | FP | % Change |
| Fingerling Production in Seasonal Ponds | 1 | 4 | 4 | 12.74 | 41.57 | 226.29 |
| Fish Nutrition | 2 | 2 | 8 | 18.11 | 42.46 | 267.94 |
| Fish Production & Management | 6 | 36 | 46 | 105.42 | 178.31 | 512.63 |
| Fish Seed Production | 1 | 3 | 5 | 18.5 | 25.8 | 39.45 |
| Integrated Farming system | 1 | 1 | 10 | 17.5 | 25.7 | 46.85 |
| Composite Fish Farming | 1 | 1 | 10 | 19.5 | 27.6 | 41.53 |
| **Grand Total** | **12** | **47** | **83** | | | |

**Table 3.17:** Summary of FLDs on Women Empowerment

| Name of technology demonstrated | No. of FLDs | No of farm women | Output ($m^2$/kg/hr) | | Av. % reduction in drudgery | Av. % increase in efficiency |
|---|---|---|---|---|---|---|
| | | | FP | RP | | |
| Drudgery Reduction | | | | | | |
| Ambika cono weeder | 1 | 10 | 25 | 45 | 44 | 80 |
| Bhindi plucker | 1 | 20 | 8.6 | 24.62 | 26.44 | 79.34 |
| Ring cutter | 1 | 10 | 27 | 40 | 18.7 | 32.5 |
| Twin Wheel Hoe | 2 | 15 | 75 | 115 | 52 | 106 |
| **Total** | **5** | **55** | | | | |
| **Value Addition** | | | | | | |
| **Name of Technology demonstrated** | **No. of FLDs** | **No of farm women** | **Production per unit (kg)** | **Cost of input (Rs.)** | **Gross income (Rs.)** | **Net Return (Rs.)** |
| Aonla products | 1 | 10 | 1 | 125 | 300 | 175 |
| Food preservation | 1 | 11 | 165 | 18150 | 37125 | 18975 |
| Multigrain flour concentrate | 1 | 20 | 200 | 20000 | 40000 | 20000 |
| Mushroom Products(kg/bag) | 1 | 31 | 5 | 12000 | 26000 | 14000 |
| Tamarind Candy | 1 | 10 | 2 | 200 | 1600 | 1400 |
| Tomato Pickle | 1 | 20 | 250 | 15300 | 75000 | 59700 |
| **Total** | **6** | **102** | | | | |
| **Income Generation** | | | | | | |
| **Name of Technology demonstrated** | **No. of FLDs** | **No of farm women** | **Production per unit** | **Cost of input(Rs)** | **Gross income (Rs.)** | **Net Return** |
| Backyard poultry | 2 | 22 | 85 | 13020 | 50500 | 38980 |
| Beekeeping | 1 | 5 | 6.4 | 210 | 224000 | 89600 |
| Flower Production | 2 | 16 | 341.8 | 171950 | 496510 | 324560 |
| Lac production Technology | 2 | 25 | 25.02 | 48480 | 131912 | 51621 |
| Mushroom Production | 9 | 97 | 351.3 | 23045 | 79510 | 47115 |
| Nursery Management | 4 | 35 | 51940 | 11990 | 59090 | 47100 |
| Onion dehydration | 1 | 13 | 0.114 | 1900 | 2850 | 950 |
| Vermi compost production | 6 | 60 | 7925.8 | 28370 | 121200 | 92830 |
| Aonla Products | 1 | 13 | 9.55 | 146.6 | 2626.25 | 1226.25 |
| Kitchen Garden | 3 | 47 | 965.15 | 14611 | 37177.2 | 22566.2 |
| Ginger Candy | 1 | 10 | 2 | 400 | 1000 | 600 |
| Drumstick Products | 1 | 20 | 200 | 40510 | 240000 | 199490 |
| Agriculture produce | 1 | 31 | 300 | 16000 | 54000 | 38000 |
| **Total** | **34** | **394** | | | | |
| **Nutritional Security** | | | | | | |
| **Name of Technology demonstrated** | **No. of FLDs** | **No of farm women** | **Average of per capita consumption (gm/ day)** | | **Iron (mg)** | **Calcium (mg)** |
| | | | FP | RP | | |
| Nutritional Kitchen Garden | 36 | 487 | 129.8 | 222.45 | 165.81 | 342.32 |
| Wheat porridge | 3 | 39 | 90 | 90 | 86.5 | 49.64 |

| Name of technology demonstrated | No. of FLDs | No of farm women | Output ($m^2$/kg/hr) | | Av. % reduction in drudgery | Av. % increase in efficiency |
|---|---|---|---|---|---|---|
| | | | FP | RP | | |
| Finger millet / Multi Grain porridge | 2 | 15 | 15 | 67.5 | 3.9 | 177 |
| Multigrain biscuits | 1 | 10 | - | 50 | 3.34 | 40.05 |
| Nutritious laddu (Drumstick leaves powder) | 1 | 20 | 112 | 864 | 4852 | 4012 |
| Kodo Laddu | 1 | 10 | - | 25 | 1.39 | 40.87 |
| Micro Greens | 1 | 10 | 25 | 50 | 26 | 10 |
| Soy Biscuits | 1 | 5 | 450 | 50 | 11.83 | 383.6 |
| Soy-Poha Laddu | 1 | 5 | - | 100 | 6.99 | 84.5 |
| Vegetable Soybean | 1 | 14 | - | 100 | 2.7 | 2.7 |
| **Total** | **48** | **615** | | | | |
| **Grand Total** | **93** | **1166** | | | | |

# 4

# TRAINING AND CAPACITY BUILDING

Training has been considered a key component for updating the knowledge and imparting the new skill to the participants. There was great emphasis on organizing training both for the farmers as well as for the trainers. During the year 2022, total 7577 courses were organized benefitting 243253 participants (including farmers and farm women, rural youth, extension personnel and sponsored from different agencies) were organised (Table 4.1).

## A. Training organized by KVK

**Table 4.1:** State wise, category wise training programmes conducted by KVKs in Zone IX during 2022

| Training | No. of courses | | | No. of Participants | | |
|---|---|---|---|---|---|---|
| | CG | MP | Total | CG | MP | Total |
| Farmers & Farm Women | 2569 | 3320 | 5889 | 88959 | 98067 | 187026 |
| Extension Personnel | 155 | 311 | 466 | 4571 | 9601 | 14172 |
| Rural Youth | 486 | 261 | 747 | 16054 | 7284 | 23338 |
| Sponsored | 125 | 107 | 232 | 5759 | 5082 | 10841 |
| Vocational | 137 | 106 | 243 | 4261 | 3615 | 7876 |
| **Total** | **3472** | **4105** | **7577** | **119604** | **123649** | **243253** |

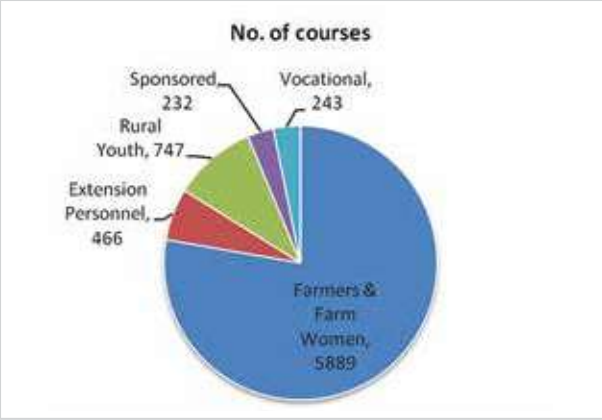



Fig 4.1 : No. of courses organised

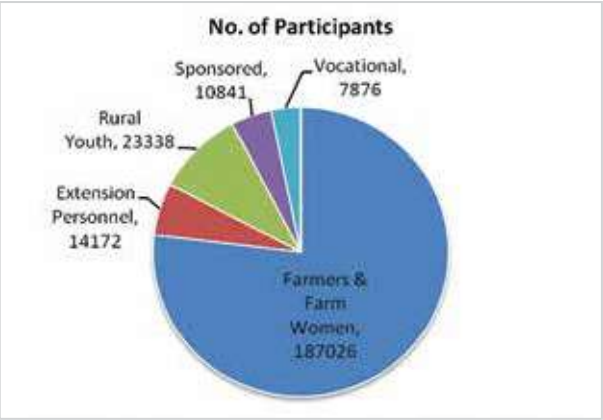



Fig 4.2 : No. of participants

**Table 4.2:** Training program oragnised by the KVKs for farmers and farm women

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Agri. Engineering | 286 | 3903 | 1084 | 836 | 332 | 1496 | 824 | 6235 | 2240 | 8475 |
| Agro forestry | 67 | 824 | 169 | 100 | 60 | 772 | 177 | 1696 | 406 | 2102 |
| Capacity Building and Group Dynamics | 317 | 4923 | 1283 | 790 | 374 | 2070 | 886 | 7783 | 2543 | 10326 |
| Crop Production | 1572 | 20391 | 5304 | 5474 | 2593 | 13423 | 6092 | 39288 | 13989 | 53277 |
| Plant Protection | 132 | 2036 | 1076 | 183 | 77 | 472 | 137 | 2691 | 1290 | 3981 |
| Production of Input at site | 563 | 3645 | 6260 | 564 | 1916 | 1335 | 2445 | 5544 | 10621 | 16165 |
| Women empowerment | 263 | 3151 | 978 | 956 | 322 | 1966 | 981 | 6073 | 2281 | 8354 |
| Horticulture (Vegetable Crops) | 54 | 637 | 194 | 148 | 86 | 447 | 347 | 1232 | 627 | 1859 |
| Horticulture(Spices) | 475 | 5835 | 2214 | 2246 | 920 | 3736 | 1420 | 11817 | 4554 | 16371 |
| Horticulture (Fruits) | 64 | 515 | 362 | 214 | 185 | 396 | 273 | 1125 | 820 | 1945 |
| Horticulture (Ornamental Plants) | 32 | 507 | 151 | 87 | 101 | 214 | 65 | 808 | 317 | 1125 |
| Horticulture( Medicinal and Aromatic Plants) | 71 | 856 | 238 | 154 | 67 | 402 | 169 | 1412 | 474 | 1886 |
| Horticulture (Plantation crops) | 45 | 491 | 262 | 198 | 83 | 266 | 211 | 955 | 556 | 1511 |
| Horticulture (Tuber crops) | 294 | 4144 | 775 | 605 | 236 | 1827 | 1276 | 6576 | 2287 | 8863 |
| Livestock Production and Management | 656 | 9707 | 2321 | 1590 | 594 | 3289 | 1461 | 14586 | 4376 | 18962 |
| Fisheries | 225 | 1918 | 1528 | 472 | 731 | 1215 | 1193 | 3605 | 3452 | 7057 |
| Soil Health and Fertility Management | 773 | 9384 | 2805 | 2201 | 781 | 6348 | 3248 | 17933 | 6834 | 24767 |
| **Grand Total** | **5889** | **72867** | **27004** | **16818** | **9458** | **39674** | **21205** | **129359** | **57667** | **187026** |

**Table 4.3:** Training program oragnised by the KVKs for Rural Youth

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Bee keeping | 19 | 235 | 67 | 35 | 15 | 52 | 15 | 322 | 97 | 419 |
| Commercial fruit production | 13 | 136 | 74 | 55 | 72 | 125 | 51 | 316 | 197 | 513 |
| Composite fish culture | 5 | 129 | 14 | 9 | 2 | 15 | 3 | 153 | 19 | 172 |
| Dairying | 14 | 336 | 129 | 35 | 29 | 19 | 25 | 390 | 183 | 573 |
| Fish harvest and processing technology | 11 | 143 | 85 | 28 | 21 | 53 | 35 | 224 | 141 | 365 |
| Fry and fingerling rearing | 13 | 182 | 51 | 15 | 8 | 84 | 53 | 281 | 112 | 393 |
| Integrated farming | 39 | 659 | 371 | 122 | 90 | 223 | 119 | 1004 | 580 | 1584 |
| Mushroom Production | 89 | 550 | 445 | 79 | 240 | 189 | 771 | 818 | 1456 | 2274 |

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Nursery Management of Horticulture crops | 61 | 758 | 238 | 168 | 82 | 426 | 182 | 1352 | 502 | 1854 |
| Others(Pl. Specify) | 51 | 741 | 237 | 296 | 128 | 395 | 177 | 1432 | 542 | 1974 |
| Pearl culture | 1 | 13 | 7 | 5 | 3 | 7 | 8 | 25 | 18 | 43 |
| Planting material production | 15 | 214 | 63 | 41 | 18 | 102 | 171 | 357 | 252 | 609 |
| Post Harvest Technology | 13 | 85 | 147 | 39 | 57 | 84 | 104 | 208 | 308 | 516 |
| Poultry production | 34 | 427 | 169 | 123 | 74 | 221 | 110 | 771 | 353 | 1124 |
| Production of organic inputs | 46 | 507 | 150 | 118 | 75 | 237 | 110 | 862 | 335 | 1197 |
| Production of quality animal products | 2 | 8 | 0 | 14 | 0 | 17 | 2 | 39 | 2 | 41 |
| Protected cultivation of vegetable crops | 39 | 444 | 184 | 125 | 56 | 259 | 133 | 828 | 373 | 1201 |
| Quail farming | 10 | 195 | 124 | 34 | 23 | 74 | 46 | 303 | 193 | 496 |
| Repair and maintenance of farm machinery and implements | 20 | 202 | 53 | 36 | 6 | 99 | 22 | 337 | 81 | 418 |
| Rural Crafts | 12 | 87 | 107 | 13 | 17 | 35 | 22 | 135 | 146 | 281 |
| Seed production | 55 | 960 | 283 | 162 | 76 | 187 | 90 | 1309 | 449 | 1758 |
| Sericulture | 2 | 34 | 14 | 5 | 0 | 17 | 5 | 56 | 19 | 75 |
| Sheep and goat rearing | 15 | 116 | 83 | 44 | 11 | 125 | 33 | 285 | 127 | 412 |
| Small scale processing | 18 | 132 | 113 | 25 | 20 | 110 | 181 | 267 | 314 | 581 |
| Tailoring and Stitching | 3 | 1 | 16 | 2 | 6 | 31 | 5 | 34 | 27 | 61 |
| Training and pruning of orchards | 30 | 347 | 123 | 99 | 27 | 184 | 137 | 630 | 287 | 917 |
| Value addition | 32 | 224 | 226 | 71 | 73 | 201 | 122 | 496 | 421 | 917 |
| Vermi culture | 85 | 1272 | 477 | 123 | 51 | 351 | 296 | 1746 | 824 | 2570 |
| **Grand Total** | **747** | **9137** | **4050** | **1921** | **1280** | **3922** | **3028** | **14980** | **8358** | **23338** |

**Table 4.4:** Training programmes organized by the KVKs for Extension Personnel

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Capacity building for ICT application | 15 | 235 | 39 | 31 | 18 | 66 | 14 | 332 | 71 | 403 |
| Care and maintenance of farm machinery and implements | 16 | 183 | 82 | 81 | 31 | 43 | 34 | 307 | 147 | 454 |
| Formation and management of SHGs | 10 | 107 | 70 | 16 | 11 | 30 | 25 | 153 | 106 | 259 |
| Gender mainstreaming through SHGs | 2 | 7 | 21 | 2 | 4 | 2 | 16 | 11 | 41 | 52 |
| Group dynamics and farmers organization | 3 | 9 | 25 | 2 | 2 | 27 | 5 | 38 | 32 | 70 |

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Household food security | 10 | 36 | 114 | 19 | 44 | 4 | 32 | 59 | 190 | 249 |
| Information networking among farmers | 1 | 7 | 3 | 1 | 1 | 2 | 1 | 10 | 5 | 15 |
| Integrated nutrient management | 55 | 644 | 218 | 227 | 83 | 315 | 140 | 1186 | 441 | 1627 |
| Integrated pest management | 79 | 1021 | 328 | 317 | 111 | 375 | 150 | 1713 | 589 | 2302 |
| Livestock feed and fodder production | 18 | 255 | 78 | 48 | 14 | 59 | 30 | 362 | 122 | 484 |
| Low cost and nutrient efficient diet designing | 18 | 82 | 236 | 14 | 39 | 25 | 74 | 121 | 349 | 470 |
| Management of farm animals | 12 | 294 | 51 | 61 | 8 | 98 | 23 | 453 | 82 | 535 |
| Production and use of organic inputs | 34 | 504 | 174 | 198 | 88 | 204 | 118 | 906 | 380 | 1286 |
| Productivity enhancement in field crops | 70 | 1168 | 251 | 372 | 120 | 240 | 146 | 1780 | 517 | 2297 |
| Protected cultivation technology | 33 | 438 | 145 | 153 | 36 | 156 | 75 | 747 | 256 | 1003 |
| Rejuvenation of old orchards | 14 | 169 | 70 | 79 | 15 | 70 | 41 | 318 | 126 | 444 |
| Women and Child care | 10 | 20 | 138 | 8 | 42 | 9 | 83 | 37 | 263 | 300 |
| Others | 66 | 1059 | 288 | 193 | 66 | 255 | 61 | 1507 | 415 | 1922 |
| Grand Total | 466 | 6238 | 2331 | 1822 | 733 | 1980 | 1068 | 10040 | 4132 | 14172 |

**Table 4.5:** Sponsored Training programmes organized by the KVKs

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Agricultural Extension | 22 | 406 | 65 | 64 | 26 | 60 | 18 | 530 | 109 | 639 |
| Crop production and management | 152 | 3052 | 889 | 688 | 344 | 1694 | 823 | 5434 | 2056 | 7490 |
| Farm machinery | 10 | 223 | 80 | 28 | 18 | 88 | 40 | 339 | 138 | 477 |
| Home Science | 7 | 62 | 32 | 3 | 8 | 47 | 45 | 112 | 85 | 197 |
| Livestock and fisheries | 26 | 361 | 80 | 91 | 19 | 227 | 261 | 679 | 360 | 1039 |
| Post harvest technology and value addition | 15 | 368 | 205 | 144 | 48 | 162 | 72 | 674 | 325 | 999 |
| Grand Total | 232 | 4472 | 1351 | 1018 | 463 | 2278 | 1259 | 7768 | 3073 | 10841 |

**Table 4.6:** Vocational Training programmes organized by the KVKs

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Crop production and management | 70 | 947 | 388 | 299 | 191 | 297 | 255 | 1543 | 834 | 2377 |
| Post harvest technology and value addition | 15 | 76 | 152 | 17 | 53 | 91 | 64 | 184 | 269 | 453 |

| Major Theme | No. of Courses | Gen & Other | | SC | | ST | | Total | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | |
| Livestock and fisheries | 36 | 506 | 328 | 110 | 35 | 235 | 129 | 851 | 492 | 1343 |
| Income generation activities | 107 | 862 | 691 | 230 | 528 | 420 | 410 | 1512 | 1629 | 3141 |
| Agricultural Extension | 15 | 199 | 83 | 54 | 22 | 109 | 95 | 362 | 200 | 562 |
| **Grand Total** | **243** | **2590** | **1642** | **710** | **829** | **1152** | **953** | **4452** | **3424** | **7876** |

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

**Table 4.7:** Capacity building activities organized in identified area for KVK Staff by the Directorate of Extension Services during 2022

| Training Title | Date | Venue | No. of Participants KVKs | Collaborating Institute |
|---|---|---|---|---|
| **Directorate of Extension Services, JNKVV, M.P.** | | | | |
| Knowledge Empowerment and Technology backstopping of KVK Scientists cum Review meeting/ Workshop | 09-10 March, 2022 | JNKVV, Jabalpur | 26 | ICAR-ATARI, Jabalpur |
| Review Workshop of KVK | 14-15 March 2022 | JNKVV, Jabalpur | 28 | ICAR-ATARI, Jabalpur |
| 5th Extension Council Meeting | 09 March 2022 | JNKVV, Jabalpur | 30 | - |
| **Total** | | | **84** | |
| **Directorate of Extension Services, Gwalior, M.P.** | | | | |
| Video Editing and conference skill for professional excellence | January 27-29, 2022 | KVK, Morena | 28 | EEI, Anand, Gujrat |
| Conservation Agriculture based Natural Farming | March 26-27, 2022 | Directorate of Extension Services, RVSKVV, Gwalior | 27 | EEI, Anand, Gujrat |
| National Workshop on Natural Farming | December 3, 2022 | RVSKVV, Gwalior | 1000 | ICAR-ATARI, Jabalpur |
| Behavioral skills for extensionists and scientists | December 13-15, 2022 | Directorate of Extension Services, RVSKVV, Gwalior | 30 | EEI, Anand, Gujrat |
| **Total** | | | **1085** | |
| **Directorate of Extension Services, Raipur, C.G.** | | | | |
| Workshop on Annual Action Plan-2022 of CG KVKs | 14 February, 2022 | DES Meeting Hall, IGKV, Raipur | 34 | ICAR-ATARI, Jabalpur |
| Prepatory Review Meeting and Workshop for organizing Kisan Pathshala during Akti Tihar festival | 19 April, 2022 | DES Meeting Hall, IGKV, Raipur | 16 | - |
| Review meeting-cum-Orientation Workshop of KVKs of Chhattisgarh | 29 April, 2022 | DES Meeting Hall, IGKV, Raipur | 75 | ICAR-ATARI, Jabalpur |
| Annual Progress Report meeting of KVKs of Chhattisgarh | 23-24 May, 2022 | DES Meeting Hall, IGKV, Raipur | 43 | ICAR-ATARI, Jabalpur |
| Operationalization of CFLDs Workshop | 15 July, 2022 | DES Meeting Hall, IGKV, Raipur | 41 | ICAR-ATARI, Jabalpur |

| Training Title | Date | Venue | No. of Participants KVKs | Collaborating Institute |
|---|---|---|---|---|
| Review meeting of KVKs | 06 July, 2022 | DES Meeting Hall, IGKV, Raipur | 24 | ICAR-ATARI, Jabalpur |
| Review meeting-cum-workshop on Farm Mechanization | 27 July, 2022 | DES Meeting Hall, IGKV, Raipur | 18 | ICAR-ATARI, Jabalpur |
| Review and Planning workshop for major Rabi crops and production technologies | 30 July, 2022 | DES Meeting Hall, IGKV, Raipur | 22 | ICAR-ATARI, Jabalpur |
| Workshop on display technique and Krishak Pathshala during Agri- Cariwal-2022 | 08 October, 2022 | DES Meeting Hall, IGKV, Raipur | 40 | - |
| Review meeting-cum-workshop of KVKs | 08 December, 2022 | DES Meeting Hall, IGKV, Raipur | 90 | ICAR-ATARI, Jabalpur |
| Training programme of communication skills for effective extension services | 14-16 December, 2022 | DES Meeting Hall, IGKV, Raipur | 30 | ICAR-ATARI, Jabalpur |
| Training programme on presentation skills for professional excellence | 19-21 December, 2022 | | 46 | EEI, Anand |
| **Total** | | | **479** | |
| **Grand Total** | | | **1648** | |

**Capacity building activities organized by ATARI Jabalpur in collaboration with ICAR Institutes in identified areas for KVK staff during January to December, 2022**

ICAR-ATARI, Jabalpur organized 42 capacity building programmes in participatory mode for KVK scientists and programme assistants working in the KVKs for farming community. ATARI Jabalpur organized Action Plan Workshops for finalization of the action plan of the KVKs for 2022. This is very important activity as it gives direction to each KVK to move further for planned change through scheduled work plan. Review workshop of ICAR flagship programmes like ARYA and Seed hub was organized to discuss the previous progress as well as future action plan to the concerned KVKs.

**Table 4.8:** Capacity building activities organized by ATARI Jabalpur in collaboration with ICAR Institutes in identified areas for KVK staff during January to December, 2022

| S. No | Training/Workshop | Date | Venue | No. of Participants |
|---|---|---|---|---|
| 1 | Interaction with KVK regarding "Natural Farming" | January 04, 2022 | ATARI Jabalpur | 73 |
| 2 | Review meeting of NICRA KVKs | January 07,2022 | ATARI Jabalpur | 27 |
| 3 | IMC Meeting of ATARI, Jabalpur | January 11, 2022 | ATARI Jabalpur | 11 |
| 4 | ICAR Mega Project on DFI | February 2, 2022 | ATARI Jabalpur | 06 |
| 5 | Action Plan Workshop of KVKs 2022 (online) | February 08, 09 and 11, 2022 | ATARI Jabalpur | 100 |
| 6 | Action plan workshop of KVKs for CG | February 14, 2022 | ATARI Jabalpur | 100 |
| 7 | Interaction with KVKs on budget and expenditure of flagship programmes | February 18, 2022 | ATARI Jabalpur | 100 |
| 8 | Review of progress on Nutri SMART village | February 23, 2022 | ATARI Jabalpur | 100 |
| 9 | Review meet of ICAR Mega project on DFI | February 28, 2022 | ATARI Jabalpur | 05 |
| 10 | NICRA Workshop for new KVK | March 8, 2022 | ATARI Jabalpur | 35 |
| 11 | Review of FFP Expenditure | March 16, 2022 | ATARI Jabalpur | 15 |

| S. No | Training/Workshop | Date | Venue | No. of Participants |
|---|---|---|---|---|
| 12 | Review meeting of Gender and Nutrition project | March 22, 2022 | ATARI Jabalpur | 15 |
| 13 | Review meeting of ARYA | March 29, 2022 | ATARI Jabalpur | 22 |
| 14 | Review meeting on DFI mega project (On-line) | April 18, 2022 | ATARI Jabalpur | 05 |
| 15 | CBP on Gender and Nutrition project (On-line) | April 20, 2022 | ATARI Jabalpur | 150 |
| 16 | Review meeting of Gender and Nutrition project (Online) | May 12, 2022 | ATARI Jabalpur | 22 |
| 17 | Review of KVK progress on programme Implementation (Online) | May 14, 2022 | ATARI Jabalpur | 110 |
| 18 | Implementation of Kisan Sarathi(Online) | May 17, 2022 | ATARI Jabalpur | 93 |
| 19 | ARYA Review Workshop (Online) | July 01, 2022 | ATARI Jabalpur | 03 |
| 20 | Review meeting with KVKs for ICAR Foundation day | July 15, 2022 | ATARI Jabalpur | 80 |
| 21 | Review meeting on Gender and Nutrition Project | Aug 03 2022 | ATARI Jabalpur | 23 |
| 22 | Revised procedure for flow of funds to ICAR to meet emoluments of manpower under the head GIA-General in ACROSS scheme | Aug 08 2022 | ATARI Jabalpur | 44 |
| 23 | Implementation of Agri-Drone Project | Aug 12, 2022 | ATARI Jabalpur | 22 |
| 24 | Review Workshop of progress on Horticulture at KVKs (Online) | Aug 23-25, 2022 | ATARI Jabalpur | 94 |
| 25 | Review of progress on Plant Protection (Online) | Sept 05-07, 2022 | ATARI Jabalpur | 88 |
| 26 | Review meeting of national campaign on Poshanabhiyan (Online) | Sept 12, 2022 | ATARI Jabalpur | 97 |
| 27 | Progress of Flagship programmes and project (Online) | Sept 26, 2022 | ATARI Jabalpur | 98 |
| 28 | Review meeting for arrangement of Agri-Start-Up Conclave and Kisan Seminar on 17$^{th}$ October, 2022 (Online) | Oct 13, 2022 | ATARI Jabalpur | 68 |
| 29 | DAMU Project Operationalization (Online) | Oct 18, 2022 | ATARI Jabalpur | 32 |
| 30 | Review of Gender and Nutrition Project (Online) | Nov 10, 2022 | ATARI Jabalpur | 118 |
| 31 | 29th Zonal Workshop of KVKs | Nov 11, 2022 | ATARI Jabalpur | 257 |
| 32 | Review of Gender and Nutrition project (Online) | Nov 16, 2022 | ATARI Jabalpur | 38 |
| 33 | Review of TSP project Implementation (Online) | Nov 18, 2022 | ATARI Jabalpur | 18 |
| 34 | Farm Innovation Meet 2022 (hybrid mode) | Nov 28, 2022 | ATARI Jabalpur | 112 |
| 35 | 10th IMC Meet of ATARI, Jabalpur | Nov 29, 2022 | ATARI Jabalpur | 12 |
| 36 | Review meeting of Gender and Nutrition (Online) | Nov 30, 2022 | ATARI Jabalpur | 11 |
| 37 | National workshop on Natural farming (Hybrid) | Dec 3, 2022 | ATARI Jabalpur | 1100 |
| 38 | Review meeting on Value addition of horticultural crops in MP (Online) | Dec 9, 2022 | ATARI Jabalpur | 71 |

| S. No | Training/Workshop | Date | Venue | No. of Participants |
|---|---|---|---|---|
| 39 | Review of Gender and Nutrition project progress (Online) | Dec 12, 2022 | ATARI Jabalpur | 26 |
| 40 | Review of Gender and Nutrition project progress (Online) | Dec 13, 2022 | ATARI Jabalpur | 114 |
| 41 | Review meeting CFLD- Oilseeds & Pulses (Online) | Dec 13, 2022 | ATARI Jabalpur | 91 |
| 42 | Natural Farming Project Meeting (Online) | Dec 16, 2022 | ATARI Jabalpur | 56 |





Capacity Building activities organized by ATARI Jabalpur

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

| S. No. | Particulars | No. of Programmes |
|---|---|---|
| 1 | Trainings | 03 |
| 2 | Workshops | 12 |
| 3 | Conferences | 4 |
| 4 | Seminars/Webinar | 28 |
| 5 | KVK Visits | 25 |
| 6 | Any other (Review Meetings, Interface) | 46 |
| **Total** | | **118** |

**Table 4.10:** Capacity building of ATARI Staff

| S. No | Name of Employee | Designation | Discipline/ section | Name of training programme attended | Duration (days) | Organizing institution |
|---|---|---|---|---|---|---|
| 1 | Dr. A.A. Raut | Scientist | Agriculture Extension | | 02 | State National Farming Training Institute Gurukul, Kurushetra, Haryana |
| 2 | Shri Ajay Kumar Bhowal | Private Secretary | Director Cell | Capacity Building programme for CJSC members of ICAR Institutes w.e.f. 15-19 Nov. 2022 | 05 | NAARM, Hyderabad |
| 3 | Shri Ram Sandesh Gupta | LDC | Finance & Account | Accrual Accounting | 03 | ICAR-NRRI, Cuttack |
| 4 | Shri Ram Sandesh Gupta | LDC | Finance & Account | Karmayogi prarambh module- 1. Code of conduct for Govt. Employees | 01 | Karmayogi Bharat (GoI) |
| **Total** | | | | | | |

**Table 4.11:** HRD fund Allocation and Utilization

| Particulars | Budget RE (Rs in lakhs) allocated | Actual expenditure (Rs in lakhs) | Utilization (%) |
|---|---|---|---|
| ATARI | 19.20 | 19.19 | 99.97 |
| Total | 19.20 | 19.19 | 99.97 |

**Table 4.12:** Footfall in KVKs of Zone IX

| State | No. of KVKs | No. of Footfalls | | | |
|---|---|---|---|---|---|
| | | Farmers | Officials | VIPs | Total |
| Chhattisgarh | 28 | 96926 | 6669 | 883 | 104478 |
| Madhya Pradesh | 53 | 159873 | 4994 | 562 | 165429 |
| Zone-IX | 81 | 256799 | 11663 | 1445 | 269907 |

Farmers present in KVK –Datia during demonstration of drone working process

ADG Extension, ICAR-New Delhi and Director ATARI Zone IX Jabalpur visited KVK Narmadapuram

Hon'ble Minister Govt. of M.P. and Member of Parliament Visited KVK Ratlam

# 5

# EXTENSION ACTIVITIES

Transfer of technology holds the key to rapid development and transformation of rural society. Krishi Vigyan Kendras, having districts as their jurisdiction, are playing crucial role in showing of technology and thereby enhancing productivity and income of the farming community. The various extension activities include demonstration for farmers group and exhibition reaching large number of farmers. To reach to wider masses, different means of information dissemination from traditional ones like poster, exhibition to new ICT tools like mobile messaging and social media are used. Broadly, extension activities conducted by KVKs 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 like production of CD/DVD, Film show, Newspaper coverage, Radio talks and TV talks (v) Meeting based like ex-trainee sammelan, celebration of important days, club meet, farmers' seminar, field day, group meet, gosthi, mela, SHG meeting and workshops (vi) Soil related activities like soil health camp and soil test campaign (vii) Visit based activities like diagnostic visits, exposure visits, farmers visit to KVK and scientists visits to farmers field. In all 29126 activities were conducted and 2871122 farmers, farm women, rural youth and extension workers were benefited (Table 7.1).

**Table 5.1** : Extension activities organized by the KVKs of Zone-IX

| State | No. of activities organized | General & Others | | SC | | ST | | Extension Officials | | Grand Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | F | M | F | M | F | M | F | M | F | Total |
| CG | 12411 | 775343 | 156950 | 132768 | 38443 | 113465 | 36585 | 15702 | 6933 | 1037278 | 238911 | 1276189 |
| MP | 16715 | 1134945 | 162382 | 69691 | 26525 | 141729 | 37028 | 16997 | 5636 | 1363362 | 231571 | 1594933 |
| **Grand Total** | **29126** | **1910288** | **319332** | **202459** | **64968** | **255194** | **73613** | **32699** | **12569** | **2400640** | **470482** | **2871122** |

Group meetings

Kisan Ghosthi

**Table 5.2 :** Details of extension activities organized by the KVKs of Zone-IX

| Activity | No. of activities organized | Details of participants | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | General & Others | | SC | | ST | | Extension Officials | | Grand Total | | |
| | | M | F | M | F | M | F | M | F | M | F | Total |
| Agri mobile clinic | 123 | 4781 | 618 | 137 | 30 | 132 | 60 | 393 | 86 | 5443 | 794 | 6237 |
| Awareness programme | 742 | 16516 | 4853 | 5678 | 1927 | 3841 | 1958 | 752 | 322 | 26787 | 9060 | 35847 |
| Advisory Services (includes KMA) | 4896 | 1259314 | 160135 | 36729 | 11369 | 149461 | 25206 | 6494 | 2373 | 1451998 | 199083 | 1651081 |
| Plant/animal health camps | 71 | 2223 | 425 | 412 | 88 | 406 | 131 | 200 | 40 | 3241 | 684 | 3925 |
| Diagnostic visits | 1930 | 8212 | 2472 | 2189 | 794 | 2413 | 743 | 1017 | 370 | 13831 | 4379 | 18210 |
| Exhibition | 328 | 43813 | 14723 | 6944 | 2688 | 10059 | 6108 | 1585 | 479 | 62401 | 23998 | 86399 |
| Exposure visits | 358 | 5193 | 2217 | 2742 | 389 | 9850 | 2269 | 519 | 192 | 18304 | 5067 | 23371 |
| Extension literature | 390 | 33728 | 7800 | 9264 | 4263 | 10117 | 5821 | 2065 | 764 | 55174 | 18648 | 73822 |
| Ex-trainees Sammelan | 85 | 1912 | 567 | 352 | 76 | 500 | 233 | 272 | 136 | 3036 | 1012 | 4048 |
| Farm Science Club | 100 | 938 | 338 | 359 | 71 | 603 | 186 | 105 | 72 | 2005 | 667 | 2672 |
| Farmers Seminar/ Workshop | 287 | 10065 | 2333 | 1580 | 706 | 2086 | 886 | 731 | 261 | 14462 | 4186 | 18648 |
| Farmers visit to KVK | 4233 | 96638 | 32762 | 14648 | 3149 | 13109 | 3889 | 2834 | 871 | 127229 | 40671 | 167900 |
| Field Day | 630 | 13770 | 3148 | 2763 | 722 | 2762 | 1130 | 664 | 197 | 19959 | 5197 | 25156 |
| Film Show | 724 | 14884 | 5127 | 7160 | 3349 | 4952 | 3705 | 907 | 786 | 27903 | 12967 | 40870 |
| Group Meetings/ Discussion | 604 | 9142 | 2411 | 1657 | 637 | 1952 | 1121 | 1224 | 337 | 13975 | 4506 | 18481 |
| Kisan Ghosthi/ Sammelan | 552 | 16519 | 4267 | 2627 | 879 | 2737 | 844 | 966 | 371 | 22849 | 6361 | 29210 |
| Kisan Mela | 207 | 88603 | 15695 | 8592 | 3438 | 11005 | 4105 | 2837 | 636 | 111037 | 23874 | 134911 |
| Krishi Mahotsav | 13 | 2084 | 346 | 41 | 38 | 166 | 28 | 42 | 14 | 2333 | 426 | 2759 |
| Lectures delivered as resource persons | 1530 | 22242 | 5464 | 8350 | 3005 | 4766 | 3106 | 922 | 398 | 36280 | 11973 | 48253 |

| Activity | No. of activities organized | Details of participants | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | General & Others | | SC | | ST | | Extension Officials | | Grand Total | | |
| | | M | F | M | F | M | F | M | F | M | F | Total |
| Mahila Mandals conveners meetings | 79 | 214 | 963 | 38 | 149 | 17 | 160 | 49 | 188 | 318 | 1460 | 1778 |
| Method Demonstrations | 541 | 5984 | 1615 | 754 | 471 | 1608 | 567 | 471 | 198 | 8817 | 2851 | 11668 |
| Pradhanmantri phasal beema yojana | 40 | 717 | 583 | 265 | 144 | 498 | 141 | 104 | 57 | 1584 | 925 | 2509 |
| Scientific visit to farmers field | 3873 | 20276 | 6448 | 5530 | 2369 | 5628 | 2643 | 2099 | 744 | 33533 | 12204 | 45737 |
| Self Help Group conveners meetings | 163 | 1324 | 1860 | 1201 | 1021 | 1323 | 709 | 202 | 117 | 4050 | 3707 | 7757 |
| Soil health Camp | 130 | 2567 | 794 | 342 | 87 | 576 | 173 | 240 | 118 | 3725 | 1172 | 4897 |
| Soil test campaigns | 114 | 2904 | 882 | 827 | 282 | 771 | 150 | 166 | 87 | 4668 | 1401 | 6069 |
| Celebration of important days (Akti Tihar, Hareli, C.G. Gourav diwas, International labour day) | 609 | 19122 | 8632 | 2922 | 1224 | 5507 | 2776 | 1357 | 793 | 28908 | 13425 | 42333 |
| Special Day Celebration (World food day, Environmental day,Farmers day, World soil health day, Education day, Krishak mahila diwas etc.) | 391 | 10363 | 4231 | 2059 | 1184 | 2303 | 1033 | 1719 | 678 | 16444 | 7126 | 23570 |
| Technology Week Celebration | 11 | 128 | 23 | 95 | 16 | 10 | 4 | 17 | 7 | 250 | 50 | 300 |
| Newspaper coverage | 3427 | 81630 | 8048 | 300 | 250 | 1200 | 1023 | 380 | 272 | 83510 | 9593 | 93103 |

| Activity | No. of activities organized | Details of participants | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | General & Others | | SC | | ST | | Extension Officials | | Grand Total | | |
| | | M | F | M | F | M | F | M | F | M | F | Total |
| Popular articles | 408 | 15042 | 5136 | 0 | 0 | 0 | 0 | 425 | 282 | 15467 | 5418 | 20885 |
| TV talks | 241 | 958 | 699 | 0 | 0 | 0 | 0 | 20 | 9 | 978 | 708 | 1686 |
| Radio talks | 393 | 1266 | 795 | 0 | 0 | 0 | 0 | 26 | 8 | 1292 | 803 | 2095 |
| Workshop | 108 | 4015 | 1157 | 77 | 47 | 132 | 73 | 458 | 106 | 4682 | 1383 | 6065 |
| Others( DAESI Programme,Posan maha abhiyan,PM kisan sammelan , Sickle cell Anemia awareness camp) | 795 | 93201 | 11765 | 75825 | 20106 | 4704 | 2632 | 437 | 200 | 174167 | 34703 | 208870 |
| **Grand Total** | **29126** | **1910288** | **319332** | **202459** | **64968** | **255194** | **73613** | **32699** | **12569** | **2400640** | **470482** | **2871122** |

**Table 5.3:** Mass Media based & other activities organized by the KVKs of Zone-IX

| Name of media | Number of events/activities | | |
|---|---|---|---|
| | Chhattisgarh | Madhya Pradesh | Total |
| Electronic Media (CD/DVD) | 30 | 88 | 118 |
| Social media (Whats App, Facebook, Instagram, Twitter etc.) | 1523 | 3816 | 5339 |
| Internet (Youtube) | 149 | 360 | 509 |
| Animal health Camps (Number of animals treated) | 334 | 502 | 836 |
| Others | 5 | 58 | 63 |
| **Grand Total** | **2041** | **4824** | **6865** |

# 6

# PRODUCTION OF QUALITY SEED AND PLANTING MATERIALS

Empirical evidences shows that, timely availability of the quality seeds in adequate amount happened to be the major constraints to the farmers for enhancing the productivity. Therefore, it was taken as challenge and appropriate steps were taken at the KVKs for helping the farmers in this regard. With continuous efforts, a considerable progress has been made and there is progress in seed quantity along with planting materials as shown in the following tables. The KVKs of the zone-IX produced 18382.31 q of seed and 34.01 lakhs planting materials of different crops like cereals, pulses, oilseeds, vegetables, medicinal plants, fruits, etc. and provided to the farmers. Besides, KVKs also produced bio-products and livestock products at their farms.

**Table 6.1:** Seed and planting material produced by the KVKs in Zone-IX

| State | 2022 | |
|---|---|---|
| | Seed (q) | Planting material (no) |
| Chhattisgarh | 5629.78 | 1738770 |
| Madhya Pradesh | 12752.53 | 1661811 |
| **Total** | **18382.31** | **3400581** |

**Table 6.2:** State- wise details of seeds produced by the KVKs

| State | Quantity (q) | Approximate Value (Rs) | Provided to Farmers (No.) | Sum of No of Village Covered (No.) |
|---|---|---|---|---|
| Chhattisgarh | 5629.775 | 23848879 | 5101 | 415 |
| Madhya Pradesh | 12752.53 | 101057826.5 | 7475 | 223 |
| **Zone-IX** | **18382.31** | **124906705.5** | **12576** | **638** |

**Table 6.3:** State- wise details of planting material produced by the KVKs

| State | Quantity (No.) | Approximate Value (Rs) | Farmers Covered (No.) |
|---|---|---|---|
| Chhattisgarh | 1738770 | 5728585 | 20412 |
| Madhya Pradesh | 1661811 | 3135913.5 | 21409 |
| **Zone-IX** | **3400581** | **8864499** | **41821** |

**Table 6.4:** State- wise details of Livestock strains and fingerlings production produced by the KVKs

| State | Quantity (No../ lit/kg) | Approximate Value (Rs) | No. of Beneficiaries |
|---|---|---|---|
| Chhattisgarh | 394688 | 4515341 | 1916 |
| Madhya Pradesh | 106291 | 6666315 | 793 |
| **Zone-IX** | **500979** | **11181656** | **2709** |

**Table 6.5:** Status of Seed production(q) in Zone-IX

| Crop Category | Crop | Quantity (q) | Value (Rs) | Provided to No of Farmers |
|---|---|---|---|---|
| Cereals | Barley | 39.27 | 183863 | 60 |
| Cereals | Finger Millet | 171.93 | 700621 | 273 |
| Cereals | Jowar | 7.1 | 17750 | 0 |
| Cereals | Kodo | 8.16 | 44940 | 13 |
| Cereals | Maize | 14.4 | 36000 | 0 |
| Cereals | Oat | 10.8 | 27000 | 0 |
| Cereals | Paddy | 4294.28 | 15358133.5 | 3618 |
| Cereals | Wheat | 4182.4 | 18133462.85 | 1434 |
| Cereals | Little Millet (kutki) | 1.47 | 8820 | 1 |
| Flower | Marigold | 0.255 | 23225 | 85 |
| Fruits | Mango | 250 | 25000 | 5 |
| Fruits | Pineapple | 100 | 4000 | 2 |
| Oilseeds | Linseed | 91.41 | 590924 | 221 |
| Oilseeds | Mustard | 170.85 | 1166176 | 868 |
| Oilseeds | Niger | 6.6 | 64878 | 177 |
| Oilseeds | Sesame | 0.14 | 1400 | |
| Oilseeds | Soybean | 3958.5 | 39341717 | 1136 |
| Pulses | Blackgram | 55.3 | 543502 | 331 |
| Pulses | Chickpea | 3834.65 | 39225554 | 556 |
| Pulses | Cowpea | 131.07 | 810700 | 61 |
| Pulses | Fieldpea | 29.1 | 194740 | 5 |
| Pulses | Lathyrus | 40.08 | 200400 | 10 |
| Pulses | Lentil | 38.05 | 561270 | 12 |
| Pulses | Pigeonpea | 261.12 | 2709860 | 139 |
| Pulses | Rajma | 0.065 | 650 | 2 |
| Pulses | Greengram (Moong) | 293.22 | 2699935 | 186 |
| Spices | Chilli | 0.101 | 30000 | 132 |
| Spices | Coriander | 8.17 | 203140 | 297 |
| Spices | Fenugreek | 13.53 | 72090 | 187 |
| Spices | Garlic | 2 | 8000 | 120 |
| Spices | Ginger | 22.6 | 226000 | 10 |
| Spices | Turmeric | 241.6 | 250300 | 77 |
| Vegetables | Bottlegourd | 0.11 | 11000 | 47 |
| Vegetables | Brinjal | 0.05 | 1500 | 248 |
| Vegetables | Colocasia | 4 | 16000 | 9 |
| Vegetables | Fieldpea | 0.37 | 2000 | 4 |
| Vegetables | Okra | 1.4305 | 42215 | 302 |
| Vegetables | Onion | 2 | 200000 | 128 |
| Vegetables | Pea | 1.7 | 24200 | 54 |
| Vegetables | Pumpkin | 0.005 | 500 | 47 |
| Vegetables | Radish | 0.95 | 54800 | 194 |
| Vegetables | Ridge gourd | 1 | 3000 | 512 |
| Vegetables | Spinach | 0.985 | 29550 | 257 |
| Vegetables | Sponge gourd | 0.005 | 500 | 38 |
| Vegetables | Tomato | 6.37 | 150533 | 683 |
| Vegetables | Amaranthus | 1.55 | 7787.5 | 0 |
| Fooder | Azolla | 0.003 | 300 | 3 |
| Tuber | Elephant footyam | 12 | 36000 | 6 |
| Tuber | Potato | 6.19 | 6019 | |
| Green Manure | Sunhemp | 4.35 | 21750 | |
| Others | Mushroom spawn | 61 | 24300 | 26 |
| **Grand Total** | | **18382.3** | **124906705.9** | **12576** |

**Table 6.6:** Status of seed production (q) in Madhya Pradesh

| Crop Category | Crop | Quantity (q) | Value(Rs) | Provided to No of Farmers |
|---|---|---|---|---|
| Cereals | Barley | 39.27 | 183863 | 60 |
| Cereals | Kodo | 1.23 | 3360 | 12 |
| Cereals | Paddy | 1698.38 | 8059246 | 2184 |
| Cereals | Wheat | 3862.82 | 17296066 | 1258 |
| Oilseeds | Linseed | 41.16 | 314163 | 5 |
| Oilseeds | Mustard | 114.11 | 866061 | 420 |
| Oilseeds | Niger | 4.25 | 46500 | 112 |
| Oilseeds | Sesame | 0.14 | 1400 | |
| Oilseeds | Soybean | 3617.25 | 36611717 | 984 |
| Pulses | Blackgram | 34.14 | 342017 | 132 |
| Pulses | Chickpea | 2703.45 | 31539854 | 326 |
| Pulses | Cowpea | 116.90 | 1380400 | 10 |
| Pulses | Fieldpea | 2.5 | 51500 | 0 |
| Pulses | Lentil | 31.55 | 509270 | 12 |
| Pulses | Pigeonpea | 143.72 | 1704640 | 21 |
| Pulses | Rajma | 0.065 | 650 | 2 |
| Pulses | Green Gram (Moong) | 197.91 | 1617900 | 44 |
| Spices | Chilli | 0.101 | 30000 | 132 |
| Spices | Coriander | 2.59 | 39400 | 183 |
| Spices | Fenugreek | 12.43 | 64090 | 63 |
| Spices | Garlic | 2 | 8000 | 120 |
| Spices | Ginger | 2.6 | 26000 | 10 |
| Spices | Turmeric | 4.6 | 27600 | 25 |
| Vegetables | Bottlegourd | 0.01 | 1000 | 47 |
| Vegetables | Brinjal | 0.05 | 1500 | 248 |
| Vegetables | Okra | 0.7405 | 22215 | 270 |
| Vegetables | Onion | 2 | 200000 | 128 |
| Vegetables | Pea | 1.7 | 24200 | 54 |
| Vegetables | Pumpkin | 0.005 | 500 | 47 |
| Vegetables | Radish | 0.05 | 800 | 40 |
| Vegetables | Spinach | 0.685 | 20550 | 257 |
| Vegetables | Sponge gourd | 0.005 | 500 | 38 |
| Vegetables | Tomato | 6.1259 | 25533 | 183 |
| Vegetables | Amaranthus | 1.5575 | 7787.5 | 0 |
| Flower | Marigold | 0.24 | 15225 | 43 |
| Fruits | Pineapple | 100 | 4000 | 2 |
| Fooder | Azolla | 0.003 | 300 | 3 |
| Tuber | Potato | 6.19 | 6019 | |
| **Grand Total** | | **12752.53** | **101057826.5** | **7475** |

**Table 6.7:** Status of Seed production(q) in Chhattisgarh

| Crop ategory | Crop | Quantity (q) | Value(Rs) | Provided to No of Farmers |
|---|---|---|---|---|
| Cereals | Finger Millet | 171.93 | 700621 | 273 |
| Cereals | Jower | 7.1 | 17750 | 0 |
| Cereals | Kodo | 6.93 | 41580 | 1 |
| Cereals | Maize | 14.4 | 36000 | 0 |
| Cereals | Oat | 10.8 | 27000 | 0 |
| Cereals | Paddy | 2595.9 | 7298888 | 1434 |
| Cereals | Wheat | 319.58 | 837396.9 | 176 |
| Cereals | Little Millet (Kutki) | 1.47 | 8820 | 1 |
| Oilseeds | Linseed | 50.25 | 276761 | 216 |
| Oilseeds | Mustard | 56.74 | 300115 | 448 |
| Oilseeds | Niger | 2.35 | 18378 | 65 |
| Oilseeds | Soybean | 341.25 | 2730000 | 152 |
| Pulses | Blackgram | 21.16 | 201485 | 199 |
| Pulses | Chickpea | 1131.2 | 7685700 | 230 |
| Pulses | Cowpea | 14.17 | 118500 | 51 |
| Pulses | Fieldpea | 26.6 | 143240 | 5 |
| Pulses | Lathyrus | 40.08 | 200400 | 10 |
| Pulses | Lentil | 6.5 | 52000 | |
| Pulses | Pigeonpea | 117.4 | 1005220 | 118 |
| Pulses | Greengram (Moong) | 95.31 | 1082035 | 142 |
| Spices | Coriander | 5.58 | 163740 | 114 |
| Spices | Fenugreek | 1.1 | 8000 | 124 |
| Spices | Ginger | 20 | 200000 | |
| Spices | Turmeric | 237 | 222700 | 52 |
| Vegetables | Bottlegourd | 0.1 | 10000 | |
| Vegetables | Colocasia | 4 | 16000 | 9 |
| Vegetables | Fieldpea | 0.37 | 2000 | 4 |
| Vegetables | Okra | 0.69 | 20000 | 32 |
| Vegetables | Radish | 0.9 | 54000 | 154 |
| Vegetables | Ridge gourd | 1 | 3000 | 512 |
| Vegetables | Spinach | 0.3 | 9000 | |
| Vegetables | Tomato | 0.25 | 125000 | 500 |
| Flower | Marigold | 0.015 | 8000 | 42 |
| Fruits | Mango | 250 | 25000 | 5 |
| Green Manure | Sunhemp | 4.35 | 21750 | |
| Tuber | Elephant footyam | 12 | 36000 | 6 |
| Others | Mushroom spawn | 61 | 24300 | 26 |
| **Grand Total** | | **5629.775** | **23848879** | **5101** |

## Planting Material

**Table 6.8:** Status of planting material production (no) in Zone-IX

| Crop Category | Crop | Quantity (no) | Value (Rs) |
|---|---|---|---|
| Fodder crop | Napier | 462000 | 276500 |
| Forest Species | August | 27 | 540 |
| Forest Species | Arjun | 149 | 2700 |
| Forest Species | Bahera | 10 | 200 |
| Forest Species | Chironji | 413 | 10325 |
| Forest Species | Ficus | 9 | 300 |
| Forest Species | Gulmohar | 73 | 370 |
| Forest Species | Hanuman Phal | 37 | 1850 |
| Forest Species | Kaintha | 18 | 360 |
| Forest Species | Neem | 761 | 9960 |
| Forest Species | Poplar | 100 | 1000 |
| Forest Species | Semialata | 2000 | 20000 |
| Forest Species | Sesam | 5 | 150 |
| Forest Species | Tendu | 13 | 260 |
| Forest Species | Umar (Gular) | 5 | 100 |
| Forest Species | Mahuwa | 519 | 10475 |
| Fruits | Aonla | 3280 | 27970 |
| Fruits | Aonla (Budded) | 262 | 13100 |
| Fruits | Banana | 1000 | 20000 |
| Fruits | Bel | 1221 | 23610 |
| Fruits | Ber | 13 | 260 |
| Fruits | Cashewnut | 5000 | 122500 |
| Fruits | Causterd Apple | 1882 | 39705 |
| Fruits | Citrus | 11551 | 359000 |
| Fruits | Dragon fruit | 6 | 300 |
| Fruits | Fig | 2000 | 80000 |
| Fruits | Gauva (Grafted) | 1762 | 99308 |
| Fruits | Guava | 59629 | 666693 |
| Fruits | Jack fruit | 12392 | 167895 |
| Fruits | Jamun | 7777 | 172050 |
| Fruits | Karonda | 39676 | 215702 |
| Fruits | Lemon budded | 549 | 21960 |
| Fruits | Lemon graft | 555 | 15750 |
| Fruits | Lemon | 37509 | 42608 |
| Fruits | Lime | 3500 | 132500 |
| Fruits | Litchi | 6100 | 230480 |
| Fruits | Makhana | 33800 | 78400 |
| Fruits | Mango Budded | 46 | 4900 |
| Fruits | Mango Grafted | 1902 | 1150 |
| Fruits | Mango | 36565 | 961181 |
| Fruits | Orange | 284 | 1520 |
| Fruits | Papaya | 32470 | 364525 |
| Fruits | Passion fruit | 99 | 4950 |
| Fruits | Pomegranate | 27734 | 139769 |
| Fruits | Sapota | 1610 | 63300 |
| Fruits | Strawberry | 1000 | 700 |
| Fruits | Walnut | 11 | 30 |
| Fruits | Guava (Budded) | 69 | 3450 |
| Medicinal and Aromatic | Citronella | 50000 | 50000 |
| Medicinal and Aromatic | Lemon Grass | 100500 | 107500 |
| Medicinal and Aromatic | Tulsi | 27 | 90 |
| Medicinal and Aromatic | Vetiver (Khus) | 50000 | 50000 |

| Crop Category | Crop | Quantity (no) | Value (Rs) |
|---|---|---|---|
| Medicinal and Aromatic | Giloy | 500 | 7500 |
| Medicinal and Aromatic | Aloevera | 9 | 180 |
| Ornamental plants | Ashok | 1745 | 37550 |
| Ornamental plants | Bamboo | 5998 | 239740 |
| Ornamental plants | Bottle palm | 22 | 2200 |
| Ornamental plants | Bougainville | 16 | 320 |
| Ornamental plants | Bush Jasmine | 1 | 20 |
| Ornamental plants | Cassia | 10 | 500 |
| Ornamental plants | Chameli | 39 | 780 |
| Ornamental plants | Champa | 9 | 240 |
| Ornamental plants | Chandani | 111 | 2220 |
| Ornamental plants | Coleus | 111 | 3330 |
| Ornamental plants | Crotan | 111 | 3330 |
| Ornamental plants | Daheliya | 50 | 50 |
| Ornamental plants | Duranta | 1600 | 10 |
| Ornamental plants | Gaillardia | 3200 | 3200 |
| Ornamental plants | Gladiolus | 641 | 299 |
| Ornamental plants | Hameliya | 33 | 1650 |
| Ornamental plants | Jatropha | 5 | 250 |
| Ornamental plants | Kachnar | 121 | 2420 |
| Ornamental plants | Karwar | 21 | 420 |
| Ornamental plants | Lajwanti | 16 | 320 |
| Ornamental plants | Madhukamni | 256 | 3120 |
| Ornamental plants | Manda | 6 | 400 |
| Ornamental plants | Marigold | 5000 | 10000 |
| Ornamental plants | Marigold | 49344 | 33598 |
| Ornamental plants | Molshree | 103 | 2040 |
| Ornamental plants | Morpankhi | 46 | 920 |
| Ornamental plants | Others | 80 | 2400 |
| Ornamental plants | Pipal | 10 | 200 |
| Ornamental plants | Rose | 621 | 9880 |
| Ornamental plants | Savani | 6 | 180 |
| Ornamental plants | Silver oak | 13 | 700 |
| Ornamental plants | Sita Ashok | 100 | 2500 |
| Ornamental plants | Tikoma | 88 | 320 |
| Ornamental plants | Gudhal | 1383 | 35315 |
| Ornamental plants | Vidya | 24 | 80 |
| Ornamental plants | Sewanti | 142 | 20 |
| Ornamental plants | Rat rani | 90 | 3630 |
| Ornamental plants | Jhumaklata | 45 | 900 |
| Plantation | Arecapalm | 5 | 500 |
| Plantation | Karanj | 4804 | 90220 |
| Plantation | Neem | 44 | 20 |
| Plantation | Shisham | 168 | 30 |
| Plantation | Tamarind | 41 | 20 |
| Spices | Chilli | 424925 | 469794 |
| Spices | Curry Leaf | 104 | 2590 |
| Spices | Ginger | 500 | 25000 |
| Spices | Methi Neem | 320 | 5970 |
| Spices | Turmeric | 58059 | 213000 |
| Tuber | Amorphophallus (Zimikand) | 180 | 3600 |
| Vegetable Seedling | Bitter gourd | 601 | 2360.5 |
| Vegetable Seedling | Bottle gourd | 3119 | 9077 |
| Vegetable Seedling | Brinjal | 417345 | 408358 |

| Crop Category | Crop | Quantity (no) | Value (Rs) |
|---|---|---|---|
| Vegetable Seedling | Broccoli | 31450 | 15970 |
| Vegetable Seedling | Cabbage | 69685 | 56906 |
| Vegetable Seedling | Capsicum | 11650 | 21650 |
| Vegetable Seedling | Cauliflower | 109573 | 85639 |
| Vegetable Seedling | Celery | 500 | 500 |
| Vegetable Seedling | Cucumber | 435 | 1631 |
| Vegetable Seedling | Drumstick | 54414 | 891091 |
| Vegetable Seedling | Knol-khol | 6000 | 4000 |
| Vegetable Seedling | Lettuce | 100 | 100 |
| Vegetable Seedling | Lotus Seedling | 2000 | 15625 |
| Vegetable Seedling | Onion | 158480 | 158480 |
| Vegetable Seedling | Parsley | 5000 | 5000 |
| Vegetable Seedling | Pointed gourd | 4500 | 135000 |
| Vegetable Seedling | Pumpkin | 466 | 2500 |
| Vegetable Seedling | Red Cabbage | 1500 | 450 |
| Vegetable Seedling | Sponge gourd | 1445 | 5910 |
| Vegetable Seedling | Tomato | 900463 | 990449 |
| Vegetable Seedling | Watermelon | 6059 | 6380 |
| Vegetable Seedling | Kundru | 5000 | 150000 |
| Vegetable Seedling | Cowpea | 2000 | 6000 |
| Commercial | Sweet Potato | 50000 | 50000 |
| **Grand Total** | | **3400581** | **8864499** |

## Production of Livestock materials

**Table 6.9:** Status of Livestock production in KVKs under Zone-IX during 2022

| Category | Name of the animal / bird / aquatics | Breed | Type of Produce | unit (no./lit/ kg) | Quantity | Value (Rs) | No. of Beneficiar-ies |
|---|---|---|---|---|---|---|---|
| Dairy animals | Breeding bull | Sirohi | Bull | No | 8 | 320000 | 0 |
| Dairy animals | Cow | Gir | Calves | No | 13 | 23400 | 0 |
| Dairy animals | Cow | Gir | Cow | No | 31 | 1240000 | 0 |
| Dairy animals | Cow | Gir | Milk | Liter | 31306.13 | 1160622 | 188 |
| Dairy animals | Cow | Gir | Heifers | No | 5 | 193000 | 5 |
| Dairy animals | Cow | Jersey | Cow | No | 5 | 200000 | 0 |
| Dairy animals | Cow | Jersey | Milk | Liter | 30 | 1500 | 0 |
| Dairy animals | Cow | Sahiwal | Calves | No | 22 | 99302 | 14 |
| Dairy animals | Cow | Sahiwal | Cow | No | 10 | 350000 | 0 |
| Dairy animals | Cow | Sahiwal | Milk | Liter | 22308 | 327040 | 65 |
| Dairy animals | Cow | Holstein Friesian | Calves | No | 14 | 25200 | 0 |
| Dairy animals | Cow | Holstein Friesian | Cow | No | 10 | 400000 | 0 |
| Dairy animals | Cow | Holstein Friesian | Milk | Liter | 15490 | 631667 | 27 |
| Dairy animals | Goats | Black Bengal | Meat | No | 7 | 42000 | 0 |
| Dairy animals | Goats | Bundelkhandi | Kids | No | 4 | 20000 | 0 |
| Dairy animals | Goats | Desi | Goat | No | 2 | 8000 | 1 |
| Dairy animals | Goats | Desi | Kids | No | 2 | 2700 | 1 |
| Dairy animals | Goats | Osmanabadi | Goat | No | 87 | 200000 | 58 |
| Dairy animals | Goats | Sirohi | Buck | No | 9 | 95000 | 35 |
| Dairy animals | Goats | Sirohi | Goat | No | 33 | 249800 | 2 |

| Category | Name of the animal / bird / aquatics | Breed | Type of Produce | unit (no./lit/ kg) | Quantity | Value (Rs) | No. of Beneficiar-ies |
|---|---|---|---|---|---|---|---|
| Dairy animals | Goats | Sirohi | Kids | No | 8 | 203150 | 4 |
| Dairy animals | Goats | Sirohi | Meat | kg | 800 | 400000 | 8 |
| Dairy animals | Goats | Sojat | Buck | No | 1 | 7100 | 1 |
| Dairy animals | Goats | Barbari | Goat | No | 24 | 144000 | 0 |
| Dairy animals | Goats | Barbari | Kids | No | 19 | 72000 | 0 |
| Dairy animals | Goats | Jamunapari, Barbari | Kids | No | 20 | 96000 | 0 |
| Dairy animals | Goats | Jamunapari | Goat | No | 1 | 9000 | 0 |
| Dairy animals | Goats | Jamunapari & Sirohi | Buck | No | 11 | 55000 | 11 |
| Fisheries | Exotic carp | Grass carp | Fish | kg | 100 | 10000 | 0 |
| Fisheries | Indian carp | Monosex Tilapia | Fish | kg | 200 | 2000 | 25 |
| Fisheries | Indian carp | Rohu,Catla & Nain | Fish | kg | 400 | 40000 | 0 |
| Fisheries | Indian carp | Rohu,Catla,Mrigal | Fish | kg | 1383 | 225560 | 26 |
| Fisheries | Indian carp | Rohu,Catla,Mrigal | Fingerling | No | 239500 | 239500 | 82 |
| Poultry | Ducks | American percin | Birds | No | 50 | 25000 | 0 |
| Poultry | Ducks | Duck | Birds | No | 500 | 10000 | 50 |
| Poultry | Ducks | Khaki Campbell | Chicks | No | 440 | 5280 | 0 |
| Poultry | Ducks | Khaki Campbell | Chicks & adult | No | 155 | 7750 | 0 |
| Poultry | Japanese quail | Japanese quail | Chicks | No | 35120 | 421440 | 118 |
| Poultry | Japanese quail | Japanese quail | Meat | No | 10674 | 426960 | 122 |
| Poultry | Japanese quail eggs | Japanese quail | Egg | No | 2944 | 6030 | 22 |
| Poultry | Poultry | Bundelkhandi | Cocks & Eggs | No | 266 | 10500 | 25 |
| Poultry | Poultry | Kadaknath | Adult, Chicks and Eggs | No | 40870 | 1373660 | 0 |
| Poultry | Poultry | Kadaknath | Chicken | kg | 249.081 | 102170.6 | 16 |
| Poultry | Poultry | Kadaknath | Chicken | No | 495 | 207950 | 146 |
| Poultry | Poultry | Kadaknath | Chicks | No | 93859 | 1298308 | 1558 |
| Poultry | Poultry | Kadaknath | Eggs | No | 2915 | 100616 | 62 |
| Poultry | Poultry | Kadaknath | Adult & Chicks | No | 100 | 8000 | 0 |
| Poultry | Poultry | Kadaknath& Sonali | Chicks | No | 31 | 16150 | 9 |
| Poultry | Poultry | Kadaknath & Cha-bro | Chicks & eggs | No | 195 | 24000 | 0 |
| Poultry | Poultry | Narmada Nidhi | Chicken | kg | 47 | 14100 | 25 |
| Poultry | Poultry | Aseel | Chicks | No | 100 | 1200 | 3 |
| Poultry | Poultry | Gramapriya | Hen & Cock | No | 106 | 30000 | 0 |
| **Grand Total** | | | | | **500979.2** | **11181656** | **2709** |

## Production of Bio-products

**Table 6.10:** Production of bio-agents, pesticides, fertilizers by KVKs under Zone-IX

| Category | Name of the Product | Qty (kg/lit) | Qty (No.) | Value (Rs.) | Provided to no. of Farmers |
|---|---|---|---|---|---|
| Bio Agents (Tricho card) | Lecannicillium | 2 | | 1400 | 2 |
| Bio Agents (Tricho card) | Trichogramma chilonis | 51 | | 3060 | 2 |
| Bio Agents (Worms) | Earth worm | 8053 | 42 | 251660 | 360 |
| Bio Fertilizers | Acetobactor | 245 | | 110210 | 72 |
| Bio Fertilizers | Aspergillius | 40 | | 10000 | |
| Bio Fertilizers | Azatobactor | 114 | | 17532 | 161 |
| Bio Fertilizers | Azolla | 7604.7 | | 151700 | 502 |
| Bio Fertilizers | Azospirillum | 152 | | 40430 | 65 |
| Bio Fertilizers | Beauveria bassiana | 36 | | 14400 | 0 |
| Bio Fertilizers | Bio fertisol | 136 | | 43656 | 120 |
| Bio Fertilizers | Biodigester | 58 | | 17052 | 58 |
| Bio Fertilizers | Blue green algae | 40 | | 20000 | 7 |
| Bio Fertilizers | Compost | 75800 | | 560500 | 111 |
| Bio Fertilizers | Jiwamrit | 500 | | 25000 | 0 |
| Bio Fertilizers | Potash Solubilizing Bacteria (KSB) | 15 | | 4410 | 10 |
| Bio Fertilizers | Metarhizium anisopliae | 36 | | 14400 | 0 |
| Bio Fertilizers | micro nutrient solublizing bacteria | 500 | | 80000 | 250 |
| Bio Fertilizers | NADEP compost | 40895 | 39 | 653025 | 118 |
| Bio Fertilizers | Non Symbiotic Azotobacter | 210 | | 57920 | 132 |
| Bio Fertilizers | Phosphate solublizing Bacteria | 2480 | 200 | 389148 | 1188 |
| Bio Fertilizers | PROM | 6200 | | 75589 | |
| Bio Fertilizers | Pseudomonas fluorescens | 112 | | 35952 | 27 |
| Bio Fertilizers | Rhizobium | 1754 | 620 | 223382 | 1184 |
| Bio Fertilizers | Sanjeewani Khad | 2000 | | 10000 | 5 |
| Bio Fertilizers | Trichoderma viride | 2960 | 60 | 431498 | 2515 |
| Bio Fertilizers | Vermicompost | 1075381 | | 4955484 | 16302 |
| Bio Fertilizers | Verticillium | 36 | | 14400 | 0 |
| Bio Fertilizers | Zinc Solubilizing Bacteria (ZSB) | 105 | | 30870 | 90 |
| Bio Fertilizers | | | | | |
| Bio Pesticides | Beauveria bassiana | 254.5 | | 133672.5 | 379 |
| Bio Pesticides | Bio decomposer | 127 | | 37338 | 86 |
| Bio Pesticides | Heli Lures | | 500 | 5000 | |
| Bio Pesticides | Metarhizium | 61 | | 42700 | 41 |
| Bio Pesticides | Metarhizium anisopliae | 91 | | 50850 | 108 |
| Bio Pesticides | Neem extract | 607.2 | | 31000 | 280 |
| Bio Pesticides | Neem powder | 525 | | 31500 | 155 |
| Bio Pesticides | Pseudomonas fluorescens | 282 | | 113018 | 278 |
| Bio Pesticides | Tobacco extract | 1000 | | 50000 | 40 |
| Bio Pesticides | Trichoderma harjinum | 71 | | 20874 | 71 |
| Bio Pesticides | Verticillium | 80 | | 22000 | 60 |
| Bio-Food | Honey | 110 | | 30000 | 50 |
| Others | Cow dung (dry) | 5941 | | 49250 | 45 |
| Others | Mineral Mixture | 267 | | 26700 | 165 |
| Others | Mushroom spawn | 1660.91 | | 182197 | 349 |
| Others | Vermiwash | 50 | | 200 | 1 |
| Others | Others | 7996 | | 40875 | 39 |
| **Grand Total** | | **1244638.91** | **1461** | **10216491** | **25388** |

# 7

# 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. Keeping in these facts in view, KVKs are testing soil and water samples of their activity as well as farmers samples received directly or through line departments.

## Soil Samples:

During the reporting year, KVKs of Madhya Pradesh and Chhattisgarh analyzed 21549 soil samples benefitting 24109 farmers of 2756 villages. The highest numbers of samples were tested in the state of Madhya Pradesh followed by Chhattisgarh. The KVK-wise details of soil samples tested are given in Table 7.1.

**Table 7.1:** Summary of soil samples tested by the KVKs

| State | Soil Samples analyzed | | | | |
|---|---|---|---|---|---|
| | No. of Soil Samples analyzed | No. of Farmers benefitted | No. of Villages covered | Amount realized (Rs.) | No. of Soil Health Cards issued |
| Chhattisgarh | 2910 | 3539 | 174 | 10000 | 3639 |
| Madhya Pradesh | 18639 | 20570 | 2582 | 566450 | 16070 |
| **Total** | **21549** | **24109** | **2756** | **576450** | **19709** |

## Water Samples:

KVKs of Chhattisgarh analyzed 19 water samples benefitting 195 farmers of 07 villages and KVKs of Madhya Pradesh analyzed 125 water samples benefitting 125 farmers of 22 villages

**Table 7.2.** Water samples analyzed by KVKs.

| State | Water Samples analyzed | | | |
|---|---|---|---|---|
| | No. of Water Samples analyzed | No. of Farmers benefitted | No. of Villages covered | Amount realized (Rs.) |
| Chhattisgarh | 19 | 19 | 7 | Nil |
| Madhya Pradesh | 125 | 125 | 22 | 5000 |
| **Total** | **144** | **144** | **29** | **5000** |

# 8

# TECHNOLOGICAL BACKSTOPPING THROUGH LITERATURE AND MEDIA

## 8.1 Newsletter

During the year 2022, total 61 KVK published four issues of Newsletter with 1,23,637 number of copies and distributed to 1,30,924 farmer.

KVKs has published 240 abstracts and 203 research paper in reputed journals. Apart from this KVKs also published book, book chapter, booklet-, leaflet , popular arile etc. (Table no. 8.2)

**Table 8.1:** State wise Newsletter published by the KVKs

| State | No. of KVKs | No. of issues | Number of copies printed | Number of copies distributed |
|---|---|---|---|---|
| Chhattisgarh | 22 | 4 | 31906 | 30687 |
| Madhya Pradesh | 39 | 4 | 101731 | 100237 |
| **Grand Total** | **61** | | **133637** | **130924** |

## 8.2. Publications

**Table 8.2:** Summary of literature and media devceloped and distributed

| Type | No. of KVKs | Number |
|---|---|---|
| Abstract | 54 | 240 |
| Research Paper | 46 | 203 |
| Book | 14 | 25 |
| Book Chapter | 27 | 78 |
| Booklet | 25 | 49 |
| Leaflets/ Folder/ Pamphlet | 65 | 307 |
| Popular article | 55 | 337 |
| Technical Bulletin | 31 | 202 |
| Technical Report | 44 | 328 |
| Training Manual | 16 | 39 |
| Year Planner | 47 | 51 |
| CD/DVD | 16 | 57 |
| **Grand Total** | | **1916** |

# 9

# FLAGSHIP PROGRAMMES

## Technology Demonstration Component under National Innovations on Climate Resilient Agriculture (NICRA)

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

NICRA is operational in 11 KVKs in the states of Madhya Pradesh and Chhattisgarh under ATARI, Jabalpur, which monitors the performance of NICRA KVKs namely Chhattarpur, Datia, Jhabua, Morena, Ratlam, Dindori, Bhind (Lahar) and Tikamgarh in Madhya Pradesh; Durg II, Mahasamund and Raigarh in Chhattisgarh.

During 2022-23, through various planned activities, total 14214 farmers were benefitted including 3463 farmers by technological interventions in 1020.13 ha and 10751 farmers by capacity building (3928 farmers) and extension activities (6823 farmers).

Under NRM module, total 834 farmers were benefited by covering 296.18 ha area. Demonstrations were focused on in-situ moisture conservation, water harvesting and recycling for supplemental irrigation, water saving irrigation method, conservation tillage, etc.

Under crop production module, a total of 1300 farmers were benefitted through demonstrations conducted in 456.25 ha area focused on drought tolerant varieties, advancement of planting dates of rabi crops to escape for terminal heat stress, etc. of chickpea, wheat, barley, green gram, pigeonpea and vegetable crops.

In livestock and fisheries module, a total of 4967 animals, 1300 poultry birds' were benefitted and 30,000 fingerlings distributed and 820 farmers were benefitted by the demonstrations conducted focusing on preventive vaccination, de-worming of animals, animal health camp and nutrition management.

In seed bank, fodder bank and custom hiring centers, 133.35 ha, 33.35 ha and 101 ha area covered and 194, 142 and 173 farmers were benefitted, respectively.

Demonstration of drone technology

Azolla production

Demonstration of Wheat variety JW 3288

Poultry production

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

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

ARYA project is operational in 12 KVKs viz., Gwalior, Morena, Dhar, Jhabua, Neemuch, Satna, Sheopur and Narmadapuram district of Madhya Pradesh and Dantewada, Raipur, Kanker and Surguja district of Chhattisgarh under ICAR-ATARI, Jabalpur. In this project, rural youths were trained in different agricultural and allied enterprises.

During 2022-23, under ARYA programme, total 88 trainings were organized in different agricultural and allied enterprises and 1982 youths were trained. After training under close monitoring by the KVK experts 823 youth were associated with various agricultural and allied enterprises viz., poultry farming, mushroom cultivation, goatery, vermi-compost production, beekeeping and processing and value addition etc. Total 285 new entrepreneurial units were established under different agricultural and allied enterprises.

**Table 9.1:** Performance of KVKs under ARYA Project

| State | KVK | Training programs (No.) | No. of youth trained | | | No. of Youth involved in established units | | | Entrepreneurial units established (No.) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total | |
| M.P. | Gwalior | 8 | 130 | 70 | 200 | 21 | 8 | 29 | 29 |
| | Morena | 8 | 99 | 39 | 138 | 37 | 5 | 42 | 40 |
| | Dhar | 4 | 172 | 28 | 200 | 62 | 7 | 69 | 14 |
| | Jhabua | 8 | 108 | 92 | 200 | 22 | 19 | 41 | 41 |
| | Neemuch | 6 | 157 | 14 | 171 | 45 | 1 | 46 | 30 |
| | Satna | 8 | 116 | 51 | 167 | 25 | 18 | 43 | 43 |
| | Sheopur | 2 | 44 | 1 | 45 | 44 | 0 | 44 | 20 |
| | Narmadapuram (Earlier Hoshang-abad) | 4 | 73 | 27 | 100 | 19 | 8 | 27 | 17 |
| C.G. | Dantewada | 12 | 22 | 128 | 150 | 20 | 115 | 135 | 14 |
| | Kanker | 8 | 168 | 72 | 240 | 10 | 60 | 70 | 16 |
| | Raipur | 16 | 108 | 63 | 171 | 108 | 63 | 171 | 10 |
| | Surguja (Ambi-kapur | 4 | 99 | 101 | 200 | 55 | 51 | 106 | 11 |
| | 12 KVKs | 88 | 1296 | 686 | 1982 | 468 | 355 | 823 | 285 |

Nursery management

Training on processing& value addition of Mahua product

Training on mushroom production

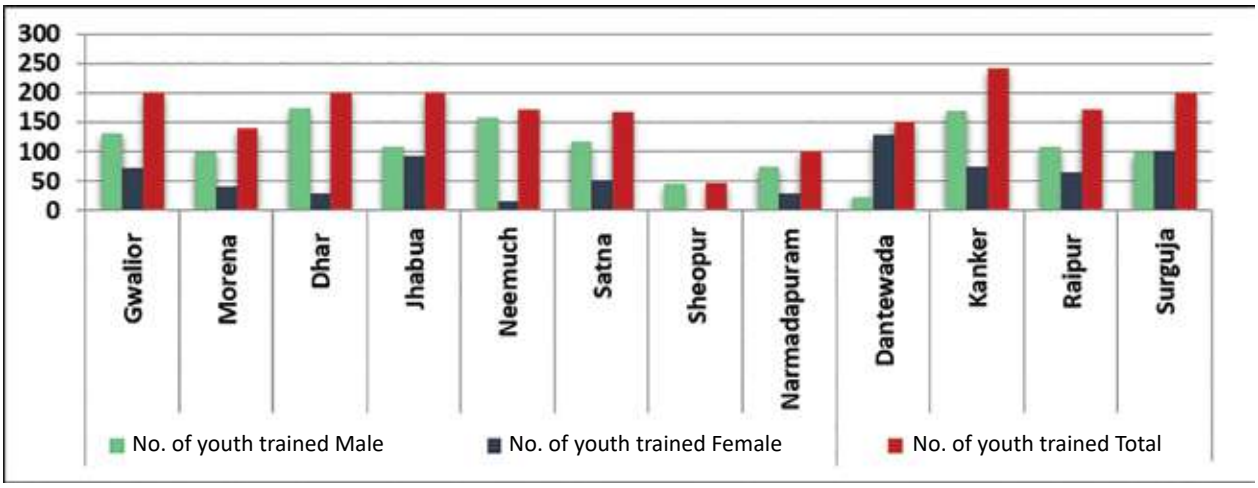



**Fig 9.1.** Number of youth trained under ARYA

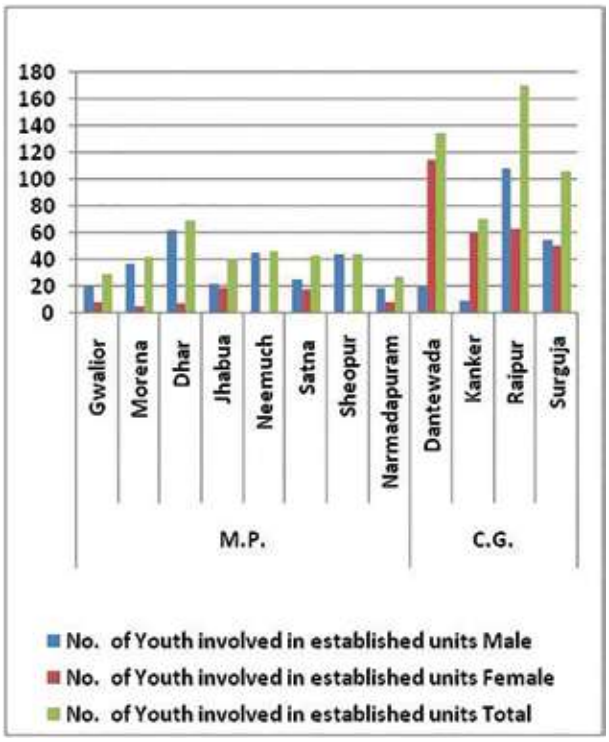



Fig 9.2. Number of youths establsihed enterpreneurial units under ARYA

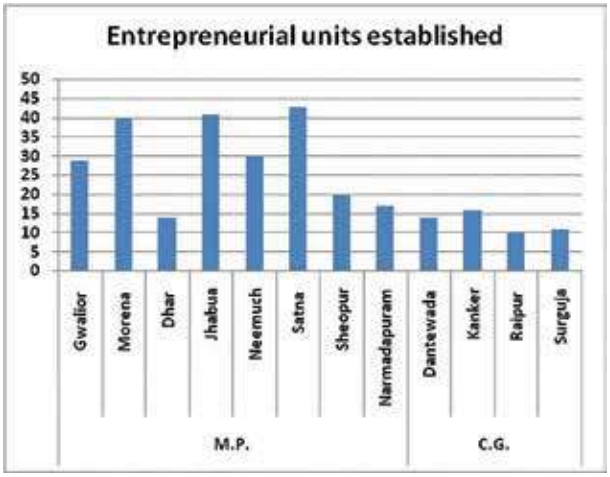



Fig 9.3. KVK-wise entrepreneurial units established under ARYA

## 3. Farmer FIRST Programme (FFP)

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

'Farmer FIRST' programme is an ICAR initiative to move beyond the production and productivity, to privilege the small holders' agriculture and complex, diverse and risk prone realities of majority of the farmers through enhancing farmers-scientist interface. The programme is operational in three ICAR institutes and four SAUs which is monitored by ICAR-ATARI, Jabalpur. ICAR-DWR, Jabalpur, ICAR-IISS, Bhopal, ICAR-NIBSM, Raipur and JNKVV, Jabalpur, RVSKVV-ZARS, Morena, NDVSU, Jabalpur, IGKV-SKS College of Agriculture and Research Station, Rajnanadgaon (C.G.) are institutes/ SAUs implementing Farmer FIRST programme and module wise different agricultural and allied activities were conducted in 32 villages under this project.

Under Farmer FIRST programme during 2022-23, total 1883.724 ha area covered, 10,703 animal/ poultry and 15920 farm families benefitted. The module wise progress is as follows:

- In crop based module, total 962.35 ha covered and benefitted 2769 farm families.
- In horticultural based module 85.164 ha area covered and 1112 farm families benefitted.
- Under livestock based module 43 kg fingerlings

distributed, 8305 poultry, 2398 animal and 721 farm families benefitted.

- Under enterprise based module, five mushroom units, 95 vermi-compost unit, four bee keeping unit, were established, 42,000 fingerlings provided, 123 plants brooded by lac, three hatchery units for poultry bird and one kadaknath poultry unit, three agro-processing units established and benefitted 451 farm families.
- Under IFS module 86.65 ha area covered and 69 farm families benefitted.
- Under NRM module 749.56 ha area covered and 1997 farm families benefited and six azolla unit demonstrated.
- Total 213 extension activities were organized that benefitted 5602 farmers.
- Total 114 capacity building programmes were organized that benefitted 3199 farmers.

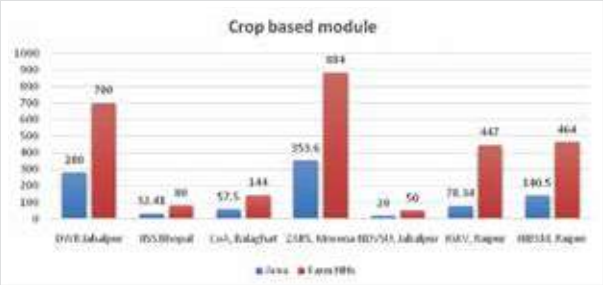



**Fig 9.4:** Area covered in ha and number of farm households benefitted under crop based module

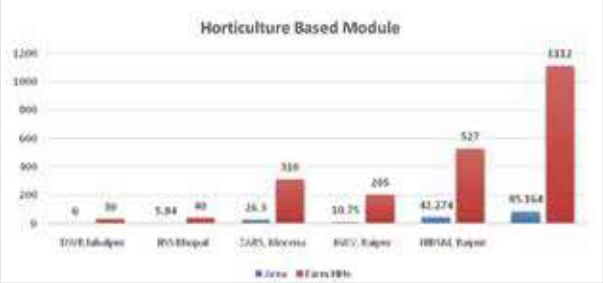



**Fig 9.5:** Area covered in ha and number of farm households benefitted under horticulture based module

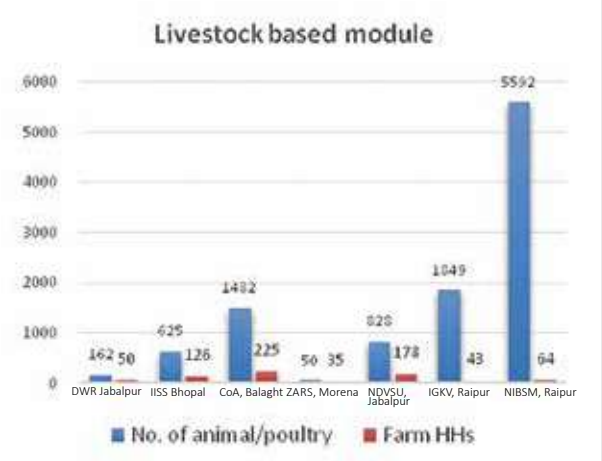



**Fig 9.6 :** Number of farm house holdsand animals/poultry benefitted under Livestock based module

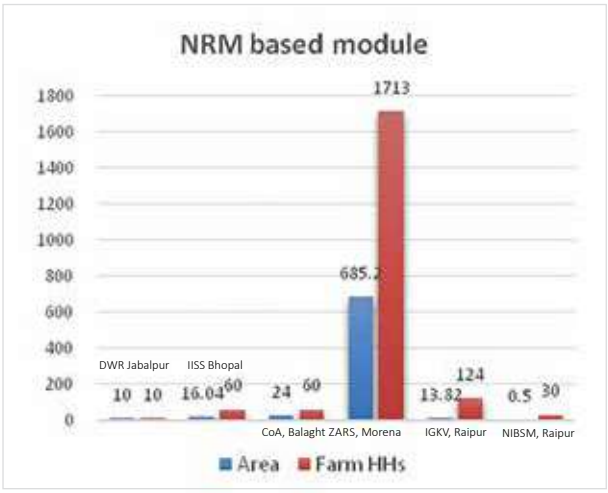



**Fig 9.7 :** Area covered in ha and number of farm households benefitted under NRM based module

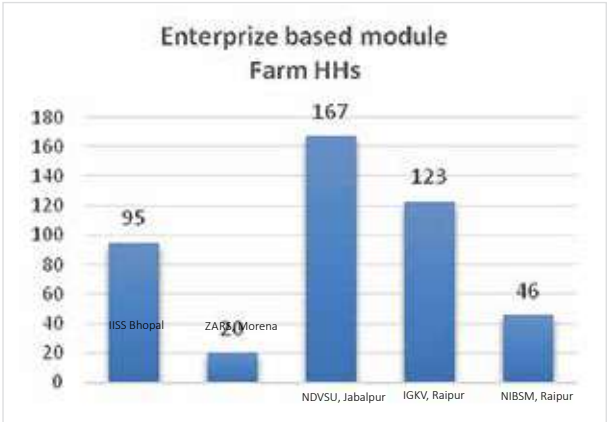



Fig 9.8 : Number of farm households benefitted under Enterprise based module

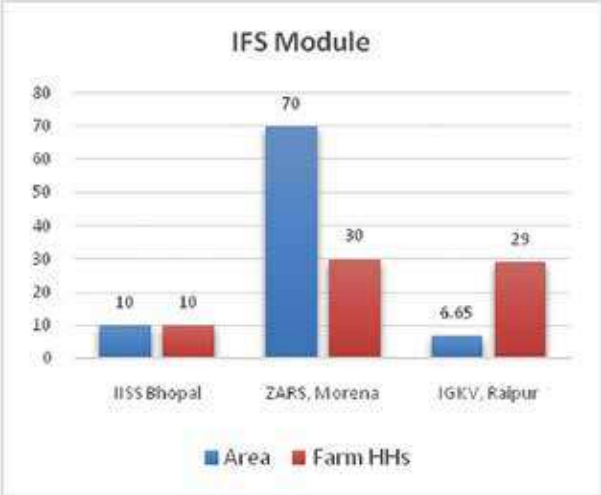



**Fig 9.9 :** Area covered in ha and number of farm households benefitted under IFS based module

Intercultural operation in paddy field

Sowing of chilli under plastic mulch

Beekeeping unit

## 4. Mera Gaon Mera Gaurav (MGMG)

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

Mera Gaon Mera Gaurav is operational in 10 institutions including six ICAR institutes and four SAU's under Zone IX. DWR Jabalpur, IISS Bhopal, CIAE Bhopal, IISR Indore, NIBSM Raipur, JNKVV Jabalpur and NDVSU Jabalpur, IGKV Raipur, CGKV Durg, RVSKVV Gwalior are institutes/SAUsworking under MGMG programme.

### ICAR institutes and SAUs activities:

During 2022-23, total 15 groups were formed by involving 70 scientists under ICAR institutes and SAUs. Through training, demonstration, literature distribution, message advisories, general awareness and linkage created with other Departments/Organization benefitted total of 89675 farmers of 195 villages under this programme.

In ICAR- DWR, Jabalpur, two groups involving 15 scientists conducted total 194 demonstrations, trainings and field activities by covering 11 villages. Training, demonstration, literature distribution, general awareness and linkages created with other Departments/ Organizations benefited total 24535 farmers.

JNKVV, Jabalpur conducted total 605 field activities in 169adopted villages by which 64252 farmers were benefited under the programme.

ICAR-NIBSM, Raipur conducted total 47 field activities in 15 adopted villages by which 888 farmers were benefited under the programme.

**Table 9.2:** Institute-wise progress under Mera Gaon Mera Gaurav

| S. No. | Name of Institute | Total Number of Groups/ team formed | No. of Scientists Involved | No. of villages covered | No. of field activities conducted | No. of messages/ advisory sent | Farmers benefited (No.) |
|---|---|---|---|---|---|---|---|
| 1 | ICAR-Directorate of Weed Research, Jabalpur (MP) | 2 | 15 | 11 | 194 | 54 | 24535 |
| 2 | Jawaharlal Nehru Krishi Vishwa Vidhyalaya, Jabalpur (MP) | 10 | 40 | 169 | 605 | 260 | 64252 |
| 3 | ICAR-National Institute of Biotic Stress Management, Raipur (C.G.) | 3 | 15 | 15 | 47 | 01 | 888 |
| | **Total** | **15** | **70** | **195** | **846** | **315** | **89675** |

Weed dynamic observations in summer greengram

IPM on brinjal

Observations growth parameters in maize

## 5. Cluster Frontline Demonstrations (CFLD) on Oilseeds

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

Cluster Frontline Demonstration on Oilseeds under the "National Food Security Mission" was implemented by ICAR ATARI, Jabalpur in Madhya Pradesh and Chhattisgarh. Under the project major crops were soybean, niger, sesame, mustard, linseed, groundnut and sunflower demonstrated in Madhya Pradesh and Chhattisgarh states. The programmes were implemented by 81 KVKs with major oilseed crops of *kharif, rabi* and summer season through 10603 demonstrations covering 4317.40 ha area including 1887.4 ha with 4487 demonstrations in kharif; 2230 ha with 5626 demonstrations in rabi and 200 ha with 490 demonstrations in summer season, respectively during 2022-23.

In kharif season, soybean, sesame, niger, groundnut and sunflower were demonstrated under CFLDs. In Madhya Pradesh, 1694 demonstrations were conducted in 695 ha area by 36 KVKs under soybean and obtained yield was 15.85 q/ha, whereas in niger 395 demonstrations were conducted in 160 ha area by 7 KVKs with obtained yield 5.02 q/ha. Sesame was demonstrated in 240 ha area by 12 KVK through 575 demonstrations and obtained yield was 5.26 q/ha, groundnut was demonstrated in 72.40 ha with 175 demonstrations by 6 KVKs at farmers' field with obtained yield 14.78 q/ha and sunflower was demonstrated in 40 ha with 100 demonstrations by 4 KVKs at farmers' field with obtained yield 4.49 q/ha. Similarly, in Chhattisgarh, 110 ha area covered through 267 demonstrations in soybean crop by 9 KVKs which obtained yield was 13.71 q/ha. In niger, 245 ha area was covered with 586 demonstrations by 10 KVKs and obtained yield was 4.45 q/ha. Sesame crop was demonstrated in 240 ha area in 11 KVKs through 463 demonstrations and 5.11 q/ha yield obtained, groundnut crop was demonstrated in 55 ha area in 5 KVKs through 137 demonstrations and 15.95 q/ha yield obtained, whereas, sunflower demonstration was laid out in 30 ha area by 3 KVKs through 95 demonstrations with 8.13 q/ha, average yield.

During rabi season, mustard, linseed, sesame, groundnut and sunflower were demonstrated. In Madhya Pradesh, mustard covered 960 ha area with 2425 demonstrations by 40 KVKs with avg. yield of 15.66 q/ha and linseed was demonstrated in 320 ha with 825 demonstrations by 16 KVKs with average yield obtained as 11.29 q/ha. Similarly, in

Chhattisgarh, mustard was demonstrated in 485 ha area with 1213 demonstrations by 25 KVKs with yield obtained 9.33 q/ha and linseed was there in 285 ha area through 713 demonstrations in 15 KVKs with average yield of 7.46 q/ha. Sunflower was demonstrated in 140 ha area with 350 demonstrations and average yield was 8.10 q/ha. Groundnut covered 20 ha area with 50 demonstrations by 1 KVKs and average yield obtained as 14.80 q/ha and sesame covered 20 ha area with 50 demonstrations by 1 KVKs and average yield obtained as 7.10 q/ha.

Besides, during summer (2022-23), 200 ha area covered with 490 demonstrations in groundnut, sesameand sunflower, results shown that in Madhya Pradesh, groundnut was demonstrated in 40 ha (90 demos) with yield advantage of 37.86 % over check. However, in Chhattisgarh, sesame was demonstrated in 90 ha (225 demos) with yield enhancement of 31.82 % over check, sunflower was demonstrated in 50 ha (125 demos) with yield advantage of 32.78 % over farmer practice and groundnut was demonstrated in 20 ha (50 demos) with yield enhancement of 20.35 % over check.

**Table 9.3 :** State-wise & Season-wise outcome of CFLD on Oilseed

| State | Crop | No. of KVK | Conducted | | Average Yield (q/ha) | | Yield increase (%) |
|---|---|---|---|---|---|---|---|
| | | | Area (ha) | Demo (No) | Check | Demo | |
| Madhya Pradesh | Soybean | 36 | 695 | 1694 | 11.97 | 15.85 | 32.41 |
| | Sesame | 12 | 240 | 575 | 3.89 | 5.26 | 35.22 |
| | Niger | 7 | 160 | 395 | 3.27 | 5.02 | 53.52 |
| | Groundnut | 6 | 72.40 | 175 | 10.53 | 14.78 | 40.36 |
| | Sunflower | 4 | 40 | 100 | 3.70 | 4.49 | 21.35 |
| Chhattisgarh | Soybean | 9 | 110 | 267 | 10.77 | 13.71 | 27.30 |
| | Sesame | 11 | 240 | 463 | 3.88 | 5.11 | 31.70 |
| | Niger | 10 | 245 | 586 | 3.52 | 4.45 | 26.42 |
| | Groundnut | 5 | 55 | 137 | 11.59 | 15.95 | 37.62 |
| | Sunflower | 3 | 30 | 95 | 6.59 | 8.13 | 23.37 |
| **Total Kharif (2022)** | | | **1887.40** | **4487** | | | |
| Madhya Pradesh | Mustard | 40 | 960 | 2425 | 12.26 | 15.66 | 27.73 |
| | Linseed | 16 | 320 | 825 | 8.08 | 11.29 | 39.73 |
| Chhattisgarh | Mustard | 25 | 485 | 1213 | 7.32 | 9.33 | 27.46 |
| | Linseed | 15 | 285 | 713 | 5.91 | 7.46 | 26.23 |
| | Sesame | 1 | 20 | 50 | 5.11 | 7.1 | 38.94 |
| | Groundnut | 1 | 20 | 50 | 10.00 | 14.8 | 48.00 |
| | Sunflower | 9 | 140 | 350 | 6.61 | 8.10 | 22.54 |
| **Total Rabi (2021-22)** | | | **2230** | **5626** | | | |
| Madhya Pradesh | Groundnut | 2 | 40 | 90 | 10.30 | 14.20 | 37.86 |
| Chhattisgarh | Groundnut | 2 | 20 | 50 | 8.60 | 10.35 | 20.35 |
| | Sesame | 4 | 90 | 225 | 4.40 | 5.80 | 31.82 |
| | Sunflower | 4 | 50 | 125 | 5.43 | 7.21 | 32.78 |
| **Total Summer (2022)** | | | **200** | **490** | | | |
| **Grand Total** | | | **4317.40** | **10603** | | | |

Farmer with soybean crop

Farmer with sesame crop

Farmers in niger field

Farmer with linseed crop

## 6. Cluster Frontline Demonstration (CFLD) on Pulses

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

Cluster Frontline Demonstration on pulses under "National Food Security Mission" was implemented by ICAR-ATARI, Zone-IX, Jabalpur in state Madhya Pradesh and Chhattisgarh. Under the project, major crops taken in *Kharif*season were blackgram, greengram, pigeonpea and horsegram and in *Rabi* season major crops were chickpea, fieldpea, laythrus, lentil, and pigeonpea.

Under CFLD pulses, during *Kharif* 2022, major crops demonstrated in states Madhya Pradesh and Chhattisgarh were blackgram, greengram, horsegram and Pigeonpea covered total 1940.00 ha area with total 4488 number of demonstrations. In Madhya Pradesh, under blackgram 500.00 ha area was conducted with 1245 number of demonstration by 28 KVKs and yield obtained was 8.11 qha$^{-1}$ with net return of Rs 30152/ha**.** Whereas, crop greengram covered 130 ha area with 300 number of demonstrations by 08 KVKs with 8.02 qha$^{-1}$ average yield and net return of Rs 38597/ha. Also, pigeonpea was demonstrated in 460 ha area by 24 KVKs through 1125 demonstrations with productivity of 15.13 qha$^{-1}$ and net return of Rs 72382/ha. While, crop horsegram was grown by only one KVK covering 20 ha area with 50 number of demonstration and the average yield obtained was 4.98 qha$^{-1}$ with net return of 8116/ha.

Similarly, in state Chhattisgarh, total 749 numbers of demonstrations were conducted by 18 KVKs in 350 ha area under crop blackgram and the average yield obtained was 7.50 qha$^{-1}$ with net return of Rs 29157/ha. Whereas, 90 ha area with 204 demonstrations was covered under crop greengram by 05 KVKs and resulted average yield was 7.29 qha$^{-1}$ with net return of Rs 39303/ ha. Crop Pigeonpea was demonstrated by 17 KVKs covering 320 ha area through 666 demonstrations, with productivity and net return of 11.88 qha$^{-1}$ and Rs 53426/ha, respectively. Also, 05 KVKs conducted 149 demonstrations in 70 ha area under horsegram and the average yield and net return obtained was 5.36 qha$^{-1}$ and Rs. 15586/ha respectively.

During *Rabi* 2022-23, chickpea, fieldpea, lentil, laythrus and pigeonpea were the major crops demonstrated in 2155 ha area with total 4956 number of demonstrations in states Madhya Pradesh and Chhattisgarh. Under chickpea, 910 ha area with 2243 number of demonstrations were demonstrated by 47 KVKs in state Madhya Pradesh. Whereas, crops fieldpea and Lentil were laid out in 70 ha by 05 KVKs and 395 ha area by 23 KVKs with 187 and 965 number of demonstrations, respectively.

Black gram var. Indira I

Green gram var. IPM 2057

**Table 9.4:** State-wise & Season-wise outcome of CFLD Pulses of Kharif 2022-23

| State | Season | Crop | No of KVK | Conducted | | | |
|---|---|---|---|---|---|---|---|
| | | | | Area (ha) | Demo (No.) | Yield q/ha | Net return/ ha |
| MP | *Kharif* 2022 | Blackgram | 28 | 500 | 1245 | 8.11 | 30152 |
| | | Greengram | 08 | 130 | 300 | 8.02 | 38597 |
| | | Pigeonpea | 24 | 460 | 1125 | 15.13 | 72382 |
| | | Horsegram | 01 | 20 | 50 | 4.98 | 8116 |
| | | **Sub Total** | | **1110** | **2720** | | |
| CG | | Blackgram | 18 | 350 | 749 | 7.50 | 29157 |
| | | Greengram | 05 | 90 | 204 | 7.29 | 39303 |
| | | Pigeonpea | 17 | 320 | 666 | 11.88 | 53426 |
| | | Horsegram | 05 | 70 | 149 | 5.36 | 15586 |
| | | **Sub Total** | | **830** | **1768** | | |
| **Total Kharif 2022-23** | | | | **1940** | **4488** | | |

During *Rabi* 2022-23, chickpea, fieldpea, lentil, laythrus and pigeonpea were the major crops demonstrated in 2155 ha area with total 4956 number of demonstrations in states Madhya Pradesh and Chhattisgarh. Under chickpea, 910 ha area with 2243 number of demonstrations were demonstrated by 47 KVKs in state Madhya Pradesh. Whereas, crops fieldpea and Lentil were laid out in 70 ha by 05 KVKs and 395 ha area by 23 KVKs with 187 and 965 number of demonstrations, respectively.

Similarly, crop chickpea and field pea were demonstrated in 390 ha and 155 ha with 836 and 275 number of demonstrations by 20 and 09 KVK's respectively in state Chhattisgarh. Also, demonstrations of crops laythrus and lentil were conducted in 145ha and 90 ha area with 274 and 176 number of demonstrations by 09 and 07 KVKs respectively.

**Table 9.5:** State-wise & Season-wise area covered and demo under CFLD pulses in Rabi 2022-23

| State | Season | Crop | No of KVK | Area (ha) | Demo (No.) |
|---|---|---|---|---|---|
| MP | *Rabi* 2022-23 | Chickpea | 47 | 910 | 2243 |
| | | Fieldpea | 05 | 70 | 187 |
| | | Lentil | 23 | 395 | 965 |
| | | ***Sub Total*** | | **1375** | **3395** |
| CG | | Chickpea | 20 | 390 | 836 |
| | | Fieldpea | 09 | 155 | 275 |
| | | Laythrus | 09 | 145 | 274 |
| | | Lentil | 07 | 90 | 176 |
| | | ***Sub Total*** | | **780** | **1560** |
| **Total Rabi 2022-23** | | | | **2155** | **4956** |

## Performance of *Rabi* and Summer 2021-22

In *Rabi* season, chickpea, fieldpea, lentil, laythrus and pigeonpea were the major crops demonstrated in states Madhya Pradesh and Chhattisgarh during 2021-22. In state Madhya Pradesh, under crop chickpea 636.40 ha area were covered with 1563 demonstrations and average yield obtained was 16.27 $qha^{-1}$ with net return of Rs. 59781/ha. Whereas, under crop fieldpea, total 40 ha area was covered through 100 demonstrations and average yield obtained was 17.78$qha^{-1}$ with net return of Rs. 27764/ha.

**Table 9.6 :** State-wise & Season-wise performance of Pulses under CFLD in Rabi and Summer 2021-22

| State | Season | Crop | No of KVK | Conducted | | | |
|---|---|---|---|---|---|---|---|
| | | | | Area (ha) | Demo (No.) | Yield q/ha | Net Rs/ha |
| MP | ***Rabi* 2021-22** | Chickpea | 49 | 636.40 | 1563 | 16.27 | 59781 |
| | | Fieldpea | 04 | 40 | 100 | 17.78 | 60210 |
| | | Lentil | 14 | 160 | 400 | 13.67 | 54081 |
| | | Sub Total | | 836.40 | 2063 | | |
| **CG** | | Chickpea | 14 | 305 | 576 | 10.89 | 38359 |
| | | Fieldpea | 10 | 110 | 238 | 09.01 | 27764 |
| | | Laythrus | 06 | 50 | 90 | 05.68 | 14580 |
| | | Lentil | 05 | 45 | 92 | 07.20 | 31030 |
| | | Pigeonpea | 03 | 10 | 13 | 07.38 | 21390 |
| | | Sub Total | | 520 | 1009 | | |
| **Total *Rabi* 2021-22** | | | | | | | |
| MP | | Blackgram | 04 | 40 | 100 | 8.46 | 32570 |
| | ***Summer* 2021-22** | Greengram | 17 | 200 | 499 | 10.83 | 61174 |
| | | Sub Total | | 240 | 599 | | |
| **CG** | | Blackgram | 05 | 40 | 69 | 7.57 | 13833 |
| | | Greengram | 10 | 90 | 174 | 7.38 | 19108 |
| | | Sub Total | | 130 | 243 | | |
| **Total Summer 2021-22** | | | | **1726.4** | **3914** | | |

Blackgram (Indira Urd 1)

Chickpea (RVG 204)

Greengram (MH 421)

Pigeonpea (BDN 716)

## 7. Tribal Sub Plan (TSP) on Pulses

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

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

Under Tribal Sub Plan, crops blackgram, greengram and pigeonpea were the major crops demonstrated by 15 KVKS in total 72 ha area with 180 number of demonstrations in states Madhya Pradesh and Chhattisgarh during *Kharif* 2022. In state Madhya Pradesh, total 60 demonstrations on blackgram were conducted in 24 ha area by 02 KVKs. Also, each crops greengram and pigeonpea were demonstrated in 24 ha area through 60 demonstrations by two KVKs. Average yield and net return obtained under greengram and pigeonpea were 8.05 $qha^{-1}$ with net return of Rs 28428/ha and 9.07 $qha^{-1}$ with net return of Rs 42620/ha, respectively.

Similarly, in state Chhattisgarh, major crops blackgram and pigeonpea covered total 48 ha area with 120 demonstrations. Individually, blackgram was demonstrated by 02 KVK in 24 ha area with 60 numbers of demonstrations and the average yield obtained was 7.31 $qha^{-1}$ with net return of Rs 27529/ha. Similarly, pigeonpea was demonstrated in 24 ha through 60 demonstrations by 02 KVKs. Average yield and net return obtained under crop pigeonpea was 7.11 $qha^{-1}$ with net return of Rs 19300/ha respectively.

**Table 9.7:** Performance of demonstrations under different crops during Kharif 2022

| State | Season | Crop | No of KVK | Conducted | | | |
|---|---|---|---|---|---|---|---|
| | | | | Area (ha) | Demo (No.) | Yield q/ha | Net return/ha |
| MP | *Kharif* 2022 | Blackgram | 02 | 24 | 60 | - | - |
| | | Greengram | 02 | 24 | 60 | 8.05 | 28428 |
| | | Pigeonpea | 02 | 24 | 60 | 9.07 | 42620 |
| | | **Sub Total** | | 72 | 180 | | |
| CG | | Blackgram | 02 | 24 | 60 | 7.31 | 27529 |
| | | Pigeonpea | 02 | 24 | 60 | 7.11 | 19300 |
| | | **Sub Total** | | 48 | 120 | | |
| **Total *Kharif* 2022** | | | **14** | **120** | **300** | | |

During *Rabi* 2021-22, under Tribal Sub Plan, major crop demonstrated in state Madhya Pradesh was only chickpea covering 84 ha with 160 demonstrations contucted by 04 KVKs resulting in average yield with of 12.76 $qha^{-1}$ with net return of Rs 48598/ha.

Whereas, in state Chhattisgarh crop Chickpea and lathyrus were demonstrated in 60 ha and 20 ha area with 150 & 31 no. of demonstrations by 03 and 04 KVKs respectively. The yield obtained from chickpea and lentil was 7.12 $qha^{-1}$ and 4 $qha^{-1}$ with net return of Rs 25318/ha and Rs 8283/ha respectively.

**Table 9.8:** Performance of demonstrations under different crops during Rabi 2021-22

| State | Season | Crop | No of KVK | Conducted | | | |
|---|---|---|---|---|---|---|---|
| | | | | Area (ha) | Demo (No.) | Yield q/ha | Net return/ha |
| MP | *Rabi* 2021-22 | Chickpea | 04 | 84 | 160 | 12.76 | 48598 |
| | | **Sub Total** | | **84** | **160** | | |
| CG | | Chickpea | 03 | 60 | 150 | 7.12 | 25318 |
| | | Lathyrus | 01 | 20 | 31 | 4 | 8283 |
| | | **Sub Total** | | **80** | **181** | | |
| **Total Rabi 2021-22** | | | | **164** | **341** | | |

Pigeonpea var. Rajeshwari

Blackgram var. Indira Urad- I

Chickpea var. RVG 202

## 8. Seed Hub for increasing production of Pulses

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

Seed Hub Project on pulses was functional in 14 KVKs of states Madhya Pradesh and Chhattisgarh under ICAR-ATARI, Jabalpur during *Kharif* 2022. Major crop demonstrated under this project in *kharif* season were blackgram, pigeonpea and horsegram and the programme was implemented in 234.25 ha area with 333.02 q seed production.

**Table 9.9:** Area and production of pulses in Kharif 2022

| | No. of KVKs | Area (ha.) | Production (q) |
|---|---|---|---|
| Madhya Pradesh | 07 | 95.65 | 40.9 |
| Chhattisgarh | 06 | 138.6 | 292.12 |
| **Total** | **13** | **234.25** | **333.02** |

On the other hand, during *Rabi* 2021-22, this project was functional in total 15 KVKs of Madhya Pradesh and Chhattisgarh. In *Rabi* season,724.13 ha area was demonstrated under this project with total seed production of 5911.4 q, covering major crops chickpea, fieldpea, lentil and laythrus.

**Table 9.10:** Area and production of pulses in Rabi 2021-22

| State | No. of KVKs | Area (ha.) | Production (q) |
|---|---|---|---|
| Madhya Pradesh | 09 | 356.9 | 3296.7 |
| Chhattisgarh | 06 | 367.23 | 2614.70 |
| **Total** | **15** | **724.13** | |

Similarly, crops blackgram and greengram were demonstrated in summer season 2022, covering 152.4 ha area with 495.82 q of seed production. Under this Project, seed godown with processing unit were established in KVKs of both the states Madhya Pradesh and Chhattisgarh.

**Table 9.11:** Area and production of pulses in summer 2022

| State | No. of KVKs | Area (ha.) | Production (q) |
|---|---|---|---|
| Madhya Pradesh | 08 | 86.8 | 298.86 |
| Chhattisgarh | 06 | 65.6 | 196.96 |
| **Total** | **14** | **152.4** | **495.82** |

Chickpea ( var. RBG-204)

Seed Processing plant

Seed treatment and line sowing

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

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

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

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

**Table 9.12:** Activities and beneficiaries under Nutri-SMART Village

| State | No of KVKs | No of activity | No. of farmers/ beneficiaries |
|---|---|---|---|
| **Technology Assessment on** | | | |
| Madhya Pradesh | | | |
| Nutrition Garden | 13 | 17 | 555 |
| Bio-fortified Crops | 19 | 34 | 178 |
| Drudgery reduction | 4 | 5 | 30 |
| Income generation | 12 | 16 | 120 |
| Value addition | 9 | 14 | 105 |
| Other Enterprises | 12 | 15 | 104 |
| **Total** | **69** | **101** | **1092** |
| **Chhattisgarh** | | | |
| Nutrition Garden | 4 | 8 | 42 |
| Bio-fortified Crops | 1 | 1 | 5 |
| Income generation | 3 | 4 | 30 |
| Value addition | 3 | 3 | 29 |
| Other Enterprises | 5 | 5 | 60 |
| **Total** | **16** | **21** | **166** |
| Grand Total | | 122 | 1258 |
| **Technology Demonstrated** | | | |
| **Madhya Pradesh** | | | |
| Nutrition Garden | 31 | 248 | 739 |
| Bio-fortified Crops | 5 | 5 | 47 |
| Drudgery reduction | 2 | 2 | 30 |
| Income generation | 10 | 14 | 101 |
| Value addition | 8 | 8 | 84 |
| Other Enterprises | 15 | 18 | 202 |
| **Total** | **71** | **295** | **1203** |

| State | No of KVKs | No of activity | No. of farmers/ beneficiaries |
|---|---|---|---|
| **Chhattisgarh** | | | |
| Nutrition Garden | 12 | 97 | 212 |
| Bio-fortified Crops | 1 | 1 | 5 |
| Drudgery reduction | 1 | 1 | 2 |
| Income generation | 9 | 16 | 146 |
| Value addition | 5 | 9 | 58 |
| Other Enterprises | 4 | 4 | 92 |
| **Total** | **32** | **128** | **515** |
| **Grand Total** | | **423** | **1718** |
| **Training** | | | |
| Madhya Pradesh | 14 | 69 | 1732 |
| Chhattisgarh | 13 | 74 | 1552 |
| **Total** | **27** | **143** | **3284** |
| **Extension Activities** | | | |
| Madhya Pradesh | 53 | 560 | 1387 |
| Chhattisgarh | 12 | 99 | 2103 |
| **Total** | **65** | **659** | **3490** |

## 10 District Agro-Met Units (DAMU)

***Nodal Scientist: Dr. D. Bardhan, Principal Scientist (Vet. Economics)***

IMD and ICAR signed MOU to establish District AgroMet Units (DAMU) under which DAMU established in 23 KVKs (14 in Madhya Pradesh and 09 in Chhattisgarh) under Gramin Krishi Mausam Sewa. Agromet observatories as well as Automated Weather Stations (AWS) record Agromet observations to generate agro-meteorological information for use in studies on crops, pests & diseases, soil, agro-forestry, livestock, horticulture, Agricultural physics, soil science etc. Each District Agro-Met Unit utilizes the relevant output products including weather data to generate specific advisories for agricultural management for the respective districts in Agro-climatic Zones identified under the area of its jurisdiction and disseminate the same to the farming community. Such data help to study crop-weather relationship, relationship between crop-weather and pest/ disease and develop region/location specific agromet predictive models. Training to extension workers as well as farmers along with climate awareness programmes were organized to aware about climate parameters and agro-advisories to take timely action in changing weather conditions to minimize losses in agriculture.

Training programme on agro-metereological paramaters

Agro-meteoreogical advisories to the farmers through Whtasapp group

## 11 Cluster based business organization (CBBOs)

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

CBBOs have an important role to play and stressed that formation of FPOs will help farmers to attain economy of scale towards better price realization. NCDC has allotted 117 blocks to ICAR-ATARI-KVKs who will work as a CBBO. The roles and responsibilities of CBBOs are baseline survey, cluster finalization, value chain study, formation of groups and FPO, assisting & registration of FPOs and training of BODs on roles, responsibilities & management. In Madhya Pradesh, three KVKs viz., Narmadapuram (Hoshangabad), Chhatarpur, Morena and in Chhattisgarh, two KVKs viz., Bhataparaand Raipur are working this CBBO in ten blocks of these districts.

**Table 9.13** : Formation of CBBOs in MP and CG

| S. No | Name of State | Name of District | Name of Block | Application Submitted for Registration | No. of share-holding farm-er members | Equity Amount Collected (Rs.) |
|---|---|---|---|---|---|---|
| 1 | Chhattisgarh | Baloda Bazar | Baloda Bazar | Registered | 313 | 236000 |
| 2 | Chhattisgarh | Baloda Bazar | Palari | Registered | 310 | 210000 |
| 3 | Chhattisgarh | Raipur | Dharsiwa | Registered | 336 | 0 |
| 4 | Chhattisgarh | Raipur | Tilda | Registered | 243 | 0 |
| 5 | Madhya Pradesh | Narmadapuram (Hoshangabad) | Siwni Malwa | Registered | 301 | 602000 |
| 6 | Madhya Pradesh | Narmadapuram (Hoshangabad) | Pipariya | Registered | 311 | 622000 |
| 7 | Madhya Pradesh | Chhatarpur | Naugaon | Registered | 306 | 336600 |
| 8 | Madhya Pradesh | Chhatarpur | Rajnagar | Registered | 308 | 304000 |
| 9 | Madhya Pradesh | Morena | Jaura | Registered | 300 | 300000 |
| 10 | Madhya Pradesh | Morena | Pahadgarh | Registered | 300 | 300000 |
| | **Total** | | | | **3028** | **2910600** |

# 10

# NEW INITIATIVES

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

Some of the important initiatives taken/ continued during the period 2022 are being presented here.

## Outscaling of Natural Farming

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

Department of Agriculture and Farmers' Welfare, Government of India has sanctioned a project titled "Outscaling of Natural Farming through KVKs". The project will be implemented in 425 KVKs of the country including those in districts along the Ganga river and its tributaries; as well as all KVKs of Andhra Pradesh, Gujarat and Himachal Pradesh. This project promotes agroecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity.

National level orientation Workshop on Natural Farming was organized dated on 3rd December 2023 in which 425 KVKs scientist with 20 elite farmers practicing natural farming across the country and 300 farmers from chambal region were present in the programme. Coordination of training programme on Orientation cum Training Programme of SMSs of KVKs implementing the Natural Farming Project organized at State Natural Farming Training Institute, Kurukshetra, Haryana during December 12-13, 2022. The training programme had participation of 49 KVK scientists from Madhya Pradesh and Chhattisgarh. Under this project total 1531 awareness and 46 training programmes benefitted 82,608 and 1921 farmers respectively as well as 381 demonstrations were conducted in the farmer's field.

**Table 10.1 :** Activities and participants under outscaling of Natural Farming

| States | No. of KVKs | Awareness Programme | | Training Programme | | No. of Demonstration |
|---|---|---|---|---|---|---|
| | | No. of Awareness Programme | No. of participants | No. of Training | No. of participants | |
| Chhattisgarh | 16 | 444 | 19542 | 15 | 603 | 125 |
| Madhya Pradesh | 32 | 1087 | 63066 | 31 | 1318 | 256 |
| **Total** | **48** | **1531** | **82608** | **46** | **1921** | **381** |

Demonstration on preparation of Jiwamrit

Training of the farmers on natural farming

Field visit


Natural farming unit at KVK

## 2. Drone Technology Demonstration- Sub mission under Agricultural Mechanization

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

This is the central sector scheme of Department of Agriculture and Farmers Welfare, Government of India under the Sub Mission on Agricultural Mechanization for implementation of its component no. one under Drone Technology Demonstration initiated during 2022. Small section of crops at different stages can be easily monitored by Drone. This scheme is operational in five ICAR Institutes viz., CIAE Bhopal, DWR Jabalpur, IISS Bhopal, IISR Indore and NIBSM Raipur; two SAUs namely JNKVV, Jabalpur and IGKV Raipur and nine KVKs under ICAR ATARI Jabalpur in Madhya Pradesh and Chhattisgarh. Under this scheme total 23 drone were purchased. Total 3851 demonstrations were conducted and covered 2406.6 ha area that benefitted 12280 farmers. Nano urea application, pesticide application, micronutrient application etc., technology demonstrated under the drone technology demonstrations.

**Table 10.2**: Status of activities under Drone Technology Demonstration

| State | No. of Drones Purchased | Area (in ha) covered | No. of Demonstrations | Number of farmers |
|---|---|---|---|---|
| Madhya Pradesh | 16 | 2397.6 | 3848 | 12077 |
| Chhattisgarh | 7 | 9 | 3 | 203 |
| **Total** | **23** | **2406.6** | **3851** | **12280** |

Training programme on drone operation

Pesticide application by Drone

## 3. Biotech-KISAN Hub

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

This project is operational in Eight KVKs under ICAR-ATARI, Jabalpur in Madhya Pradesh state namely-Damoh, Chhatarpur, Singrauli, Badwani, Guna, Khandwa, Rajgarh, Raisen (For Vidisha district FY 2022-23). Under the project selected KVKs have made to train the participating farmers about the complete improved package of practices of wheat, lentil, chickpea etc. growing that can help in better crop management in order

to enhance production and productivity and to aware farmers by providing latest knowledge of improved agronomic practices for solving their problems with reference to climate change. Field day, interaction meets at farmer's field, training to farmers at KVK and demonstrate the best practices conducted to farmers etc. activities.

Training programme under Biotech-KISAN Hub project

## 4. Kisan Sarathi

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

"Kisan Sarathi" an Information Communication and Technology (ICT) based interface solution was launched on pilot basis in Bihar, Madhya Pradesh, Maharashtra and Uttar Pradesh to provide a seamless, multimedia, multi-ways connectivity to the farmers with the latest agricultural technologies, knowledge base and the pool of large number of the subject matter experts. Major activities undertaken are onboarding of KVK Scientist, farmers, enhancement/customization of system, sensitization and capacity building of the farming community. It provides multi lingual support to farmers (22 languages) in seeking advisory services. In Madhya Pradesh, 53 KVK Heads and 237 KVK experts are engaged in the amalgamation of 16,70,254 farmers while in Chhattisgarh 28 KVK Heads and 90 KVK experts are engaged in the amalgamation of 7,82,940 farmers as well as 22,865 telephonic calls were made by farmers and scientist to solve queries of the farmers on the Kisan Sarathi portal.

**Table 10.3:** Registered experts and farmers in Kisan Sarathi portal

| State | Registered KVK Heads | Registered Experts | Registered Executives | Numbers of farmers | Call |
|---|---|---|---|---|---|
| MP | 53 | 237 | 14 | 1670254 | 19994 |
| CG | 28 | 90 | 12 | 782940 | 2871 |
| **Total** | **81** | **327** | **26** | **2453194** | **22865** |


Fig 10.1 Status of total calls, farmers interest and advisory in Kisan Sarathi portal

# 11

# NETWORK RESEARCH PROJECTS

**Table 11.1:** List of Network Research Projects

| S No. | Title of the Project | Name of PI/Co-PI/ CCPI | Nature of Project | Year of start |
|---|---|---|---|---|
| **A. National** | | | | |
| 1. | Assessing dietary diversity, consumption pattern and nutritional security in Nutri-SMART Villages- A step towards vocal for local (Gender & Nutrition theme) | Dr. S. R. K. Singh, PI | ICAR Network National Project | 2020-21 |
| 2. | Impact of climate resilient technology interventions implemented through NICRA across different agro-ecological regions of India | Dr. S. R. K. Singh, Co-PI | ICAR Network National Project | 2020-21 |
| 3. | Impact assessment of KVKs interventions on Doubling Farmers' Income (DFI) | Dr. D. Bardhan, Co-PI | ICAR Network National Project | 2020-21 |
| 4. | Network project on analysis on agriculture and micro-irrigation programmes in Aspirational districts in India | Dr. D. Bardhan, Co-PI | ICAR Network National Project | 2020-21 |
| 5. | Impact of ARYA on promotion of agri-preneurship, alternate livelihoods and spinoff effect | Dr. A. A. Raut, Co-PI | ICAR Network National Project | 2020-21 |
| 6. | Impact assessment of popular pulse varieties and technologies disseminated through Cluster frontline demonstration of pulses (CFLD-P) in India | Dr. A. A. Raut, Co-PI | ICAR Network National Project | 2020-21 |
| 7. | Indigenous Technical Knowledge (ITK) of tribal farmers and their effectiveness in Sustainable Agricultural Development: An Exploratory study in Indian Context | Dr. A. A. Raut, Co-PI | ICAR Network National Project | 2020-21 |
| 8. | ICAR-NIAP-Network Project on Production Systems, Agribusiness and Institutions: Component 1 - Impactassessment of Agricultural Technologies | Dr. D. Bardhan, CCPI | ICAR Network Project (Lead Centre: ICAR-NIAP, New Delhi) | 2021-22 |
| **B.** | **International (CGIAR collaborative)** | | | |
| 9. | ICAR-ILRI Collaborative research project on "Assessment of the economic impact of priority animal diseases (PPR, HS and Brucellosis) and the cost-effectiveness of their control strategies in India" | Dr. D. Bardhan, PI | ILRI-ICAR collaborative project | 2019-20 |

## Brief progress report of Research Project

### A. National

**Project: Assessing dietary diversity, consumption pattern and nutritional security in Nutri-SMART Villages- A step towards vocal for local**

Under the project, state-wise RCT plan was developed for each ATARI. A Knowledge test was developed to measure the knowledge on nutri-dish and nutrition related aspects. An interview schedule was developed for RCT plan. During reporting year, total 16 review workshop were organized to resolve queries on first phase data tabulation, RCT sampling plan and second phase (RCT) data collection/feeding. Results from MP and CG indicated that there is difference in knowledge of women respondents on nutrition related aspects among Nutri-SMART Village (NSV) and control villages. In Chhattisgarh, in the NSVs and control village, children between age group 2 to 5 years and 6 to 14 years old were taking traditional food

items than packed food items.

Household Dietary Diversity Score, Minimum Dietary Diversity Score for Women and individual Dietary Diversity Score for children shows that one food group were extra consumed in NSV than control village in Madhya Pradesh and Chhattisgarh while number of eating occasion per day in more in NSV than control village both states and results of food consumption score is statistically significant different in Madhya Pradesh. The results of PSM reveals that there is significant difference between the mean scores for treatment and control variables across all impact parameters i.e. HDDS, average MDDS, FCS and knowledge level, except avg. BMI scores of women. It is reported that NSV has significantly and positively affected knowledge, FCS and MDDS for women, but has no significant impact on BMI of women (15-49 years old) and HDDS in Madhya Pradesh.

**Project: Impact of climate resilient technology interventions implemented through NICRA across different agro-ecological regions of India**

This project is operational in four NICRA KVKs under ICAR-ATARI, Jabalpur in Madhya Pradesh and Chhattisgarh states in different agro-climatic zones. Climate resilient technological interventions at the farmer's fields we reconducted to best-bet climatic vulnerability. Data collection and compilation is completed and send for analysis to ICAR- ATARI Hyderabad.

**Project: Impact Assessment of Selected Interventions by KVK under Doubling Farmers' Income for Enhancing Farmers' Income**

The project was initiated on network mode at ICAR-ATARI, Zone IX, Jabalpur with the major objective of assessment of impact of selected KVK interventions under various agro-ecological conditions across the country under Doubling Farmers' Income. Total 27 Krishi Vigyan Kendras (KVKs) (18 in Madhya Pradesh and 9 in Chhattisgarh) were selected for impact assessment of Doubling Farmers' Income (DFI) initiatives at farm household level as per the mandate of ICAR-ATARI, Zone IX, Jabalpur. From these KVKs one adopted villages and non-adopter village were selected and 20 households from each villages, both from adopted and non-adopter village were selected for the study. A total of 1200 farm households were selected and final 1075 observations (532 DFI HHs and 543 non-DFI HHS) were analyzed after data cleaning and removing outliers. Net household income and net household income per hectare were considered as economic welfare indicators for the farmers. We find a significant positive impact of KVK access on farmers' household income. Comparing beneficiary and non-beneficiary farmers on the basis of 2020-21 data, we find significant increase in net household income and net household income per hectare (2.06 and 1.34 times, respectively). However, taking into account the change in income for both the two groups of households by creating a counterfactual, we find that the increase in household income is about 17 per cent, which is however statistically significant. However, in this case also comparison of DFI and non-DFI households in 2020-21 revealed an increase in net household income by 2.5 times. The study also established the beneficial effect on households with non-farm income source. Beneficial effect of KVKs' DFI initiatives is also significantly higher for households with higher education. Oilseeds, vegetables and animal husbandry, mainly, dairying have contributed most to the increase in net household income for DFI households, with the shares of traditional food grains like, rice, wheat and pulses to additional income being significantly lower.

**Project: Network project on analysis of agricultural programmes conducted in Aspirational Districts in India**

The project was initiated with the broad objective of quantifying the impact of various agricultural programmes conducted in Aspirational Districts; the impact parameters being agricultural production, productivity, income and employment generation. Total 4 KVKs were selected, viz. Barwani, and Khandwa from Madhya Pradesh and Mahsumund and Kanker from Chhattisgarh. As per the approved research of the project, 12 farm households were to be selected for each of the four technological interventions considered for impact assessment, viz. Minikits distribution of Pulses and Oilseeds, NADEP/ Vermi-compost pit, Artificial insemination programme and Training on Bee keeping, mushroom cultivation, kitchen gardening. KVK Khandwa and Kanker surveyed all households from treatment and control villages, however KVKs Mahasamund and Barwani still surveying households to complete required dataset for the project. The compiled datasheet has been sent to ATARI Kolkata for further data analysis at National level.

**Project: Impact of ARYA on promotion of agri-preneurship, alternate livelihoods and spinoff effect**

Collection of data on non-functional and discontinued enterprises under ARYA from KVK Dantewada and Gwalior by identifying and documenting enterprises that were previously established but no longer operational. The information gathered provides insights into the challenges and factors contributing to the discontinuation of these ventures. Collection of data on enterprises that were planned but not initiated. This data collection effort aimed to understand the reasons behind the delay or abandonment of these enterprises and to identify potential bottlenecks in their implementation.

Compilation of data assigned on poultry enterprises was done and analysis done in collaboration with the Principal Investigator, the collected data was analyzed to gain a comprehensive understanding of the socio-economic, situational, and institutional factors influencing the success and failure of poultry enterprises across various segments of the value chain. Coordinated data enumeration on other enterprises in addition to poultry enterprises, the project also coordinated data enumeration on other enterprises implemented under ARYA to capture a broader picture of the impact of the programme on various types of agri-entrepreneurship and alternative livelihood ventures. Analysis of collected data provided insights into the factors that contribute to the success or failure of enterprises under ARYA. Socio-economic, situational, and institutional determinants helped to identify key areas for improvement and develop strategies to promote successful agri-entrepreneurship and alternative livelihoods.

**Project : Impact assessment of popular pulses varieties and technologies disseminated by KVKs through Cluster frontline demonstration of pulses (CFLD-P) in India**

Pilot testing of Open Data Kit for project data collection was conducted to assess the suitability of the Open Data Kit tool for data collection. This testing specifically focused on the Chickpea crop in Ujjain, Shajapur, Damoh and Sagar Districts as well as the Lentil crop in Rewa, Satna, Sagar, and Raisen Districts of Madya Pradesh. The objective was to evaluate the functionality and effectiveness of ODK as a data collection tool in the context of pulse cultivation. Based on the insights gained during the pilot testing, suitable modifications were made to the Open Data Kit tool. This involved refining and customizing the tool to better align with the specific requirements of data collection for the Chickpea crop. Following the successful pilot testing and necessary modifications, the project commenced data collection using the ODK tool in the sampled districts for the Chickpea crop towards gathering comprehensive data on the impact of popular pulses varieties and technologies disseminated by KVKs through the Cluster Frontline Demonstration of pulses. Analysis was done using secondary data to calculate sustainable yield index in chickpea crop and derived benefits of Cluster Frontline Demonstration of pulses.

**Project : Impact of Technological Interventions of KVKs on Socio-Economic Empowerment and Sustainable Livelihood Security of Tribal Farmers**

Finalization of sampling for blocks and villages done in coordination with the Principal Investigator as per revised sampling plan in seven districts, namely Bastar, Dantewada, Bijapur, Kanker, Surguja in Chhattisgarh, and Dhar, Barwani, Mandla in Madhya Pradesh. While selection of blocks and villages focus was to ensure representative sample for the assessment of technological interventions' impact. Pilot testing of the interview schedule done for the identification of any necessary modifications required for the data collection process. The feedback obtained during the pilot testing phase was instrumental in refining the interview schedule to enhance its effectiveness and comprehensiveness. Based on the insights gained from the pilot testing, incorporated suitable modifications into the interview schedule. These modifications aimed to optimize the data collection process, ensuring that the interview schedule accurately captures the required information on various parameters.

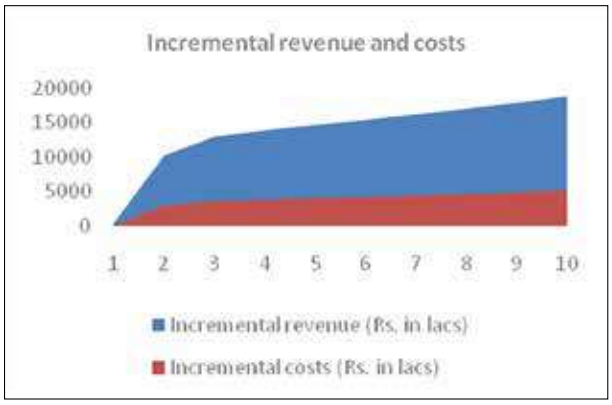
Following the pilot testing and necessary modifications, the project data collection commenced in selected villages within the identified blocks from the sampled districts. The data collection process focused on gathering information on basic details, productivity of farming situation and performance of enterprises in 2016-17 and 2020-21, cost and returns of major livestock, adoption of technologies, and livelihood security. These parameters provide a comprehensive understanding of the impact of technological interventions on socio-economic

empowerment and sustainable livelihood security among tribal farmers.

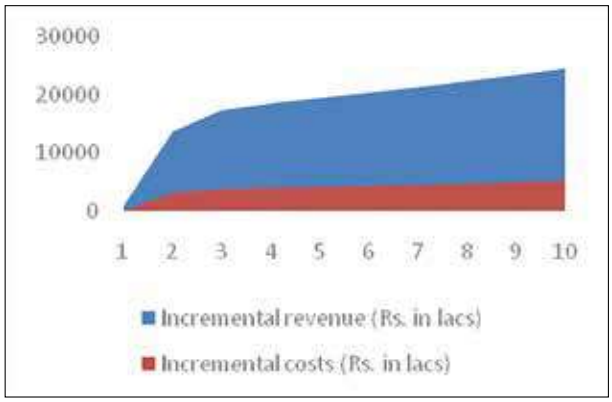
**Project: ICAR-NIAP-Network Project on Production Systems, Agribusiness and Institutions: Component 1 - Impact assessment of Agricultural Technologies**

ICAR (AS) institutes has made several critical technological interventions for improving livelihood and income security of resource poor farmers. Principal among these interventions has been dissemination of superior germplasms developed and disseminated by these institutes. Although, it has been acknowledged that the ICAR germplasms have made significant and positive contribution on economics and non-economics of the livestock-based farming systems; empirical evidence is scarce to support this contention, specially at the societal level. In this context, this study has addressed the question concerning the impact of adoption of ICAR germplasms on economic and social dimensions. The germplasms identified for assessment include Vanaraja and Gramapriya breeds under backyard poultry system, Frieswal cattle, Barbari goats, and Avishan sheep.

System dynamic modelling has been applied to assess the linkages between production and reproduction parameters. Economic surplus model is also used to measure the benefits of improved germplasm at societal level. Fig. 11.1 (a & b) presents the projected trends in incremental revenue and cost of Vanaraja and Gramapriya backyard poultry varieties after comparing with the parameters pertaining to local varieties. Fig. 11.2 presents the projected trends in incremental revenue and cost of Frieswal cattle.




(a) Vanaraja




(b) Gramapriya

**Fig. 11.1:** Incremental revenues & costs of Vanaraja & Gramapriya compared with local poultry variety


**Fig. 11.2:** Projected trends in incremental net revenue and cost in Rs. (Frieswal vis-a-vis non-Frieswal)

Fig. 11.3 presents the projected trends in incremental revenue and cost of Barbari goat breed (panel a) and Avishan sheep breed (panel b) after comparing with the parameters pertaining to local breeds.

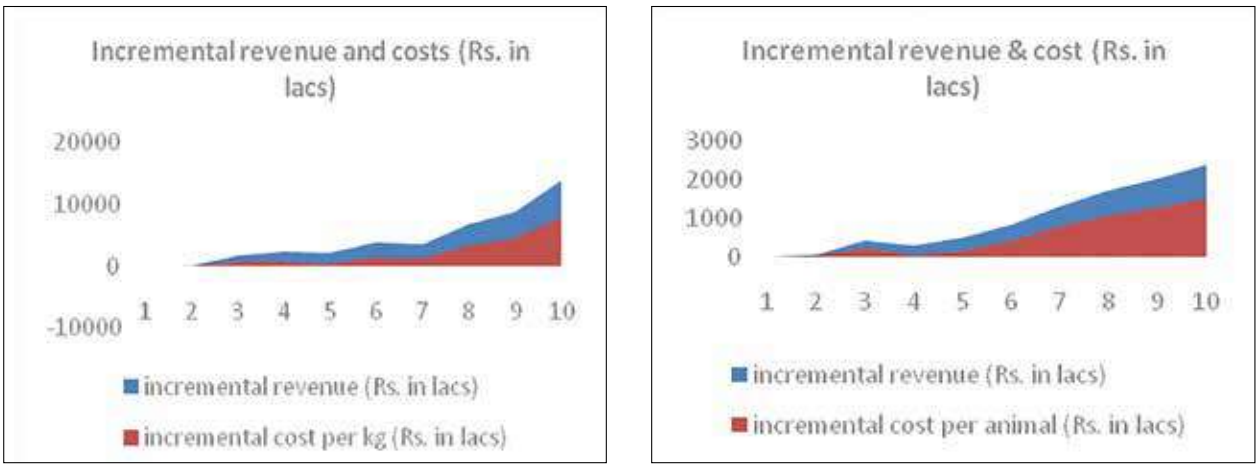



**Fig. 11. 3:** Trends in incremental net revenue and cost (Barbari breed of goat and Avishan breed of sheep)

In case of Vanaraja breed, the NPV and BCR calculated are Rs. 785.85 crores and 3.849 : 1, respectively. The same figures for Gramapriya breed are Rs. 1059.85 crores and 4.714 : 1, respectively.In case of Frieswal breed of cattle, NPV and BCR derived after comparing projected trends in revenues and costs pertaining to Frieswal vis-a-vis non-Frieswal cattle (Fig. 2) are Rs. 20.55 crores and 1.565 : 1. In case of Barbari goat breed, the NPV and BCR calculated are Rs. 157.07 crores and 2.13 : 1, respectively. The same figures for Avishan sheep breed are Rs. 27.89 crores and 1.76 : 1, respectively.

Results of economic surplus model revealed that the change in total surplus in case of Vanaraja breed is Rs. 538.53 crores per annum, and the same for Gramapriya breed is Rs. 1125.39 crores per annum.

In case of Frieswal breed of cattle, average change in total economic surplus per annum is Rs. 1326.34 crores, while the NPV and BCR calculated from ESM exercies is Rs. 4609.28 crores 2.027 : 1, respectively.

Contribution to societal welfare (in monetary terms measured in terms of change in total economic surplus) Barbari goat breed is Rs. 1.13 crores per annum. NPV and BCR computed for the breed is Rs. 5.67 crores and 3.273 : 1, respectively.

Average Change in total economic surplus per annum for Avishan breed of sheep is Rs. 0.084 crores per annum; with the computed values of NPV and BCR as Rs. 3.60 crores and 2.393 : 1.

## International

**Project: ICAR-ILRI Collaborative research project on 'Assessment of the economic impact of priority animal diseases (PPR, HS and Brucellosis) and the cost-effectiveness of their control strategies in India'**

Estimated the economic losses due to brucellosis in dairy animals in the states of Uttar Pradesh and Madhya Pradesh. Total number of farm households surveyed, as per approved sampling plan, was 152 in Uttar Pradesh and 150 in Madhya Pradesh. Total numbers of large ruminants covered in the sample farms are 256 and 150 in Uttar Pradesh and Madhya Pradesh, respectively.

The serum sample collected from cattle and buffalo were analysed using iELISA and diagnostic test report was prepared. Over all the prevalence rate of brucellosis in the state was 1.95%, and 10% in Uttar Pradesh and Madhya Pradesh, respectively. A comprehensive household survey, administering a detailed interview schedule (covering relevant economic and epidemiological parameters) was carried out on farmers covered during earlier sample collection survey.

Total economic losses due to brucellosis in indigenous cattle, crossbred cattle and buffaloes in Uttar Pradesh is computed at Rs. 695 crores; the same figure for the state of Madhya Pradesh is Rs. 917.44 crores.

# 12

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## iii. Technical Bulletin

- Singh, S.R.K., Mishra, A., Raut, A.A., Chahal V.P. and Shrivastava V. (2022). Household Based Technological Interventions for Enhancing Farmers Income- Farmer FIRST Experiences. ICAR-ATARI, Zone IX, Jabalpur. Pp.40.

## iv. Book Chapter

- Singh S.R.K., Mishra Anupam, Raut A.A., Deshmukh Anita, Singh A.K. and Kumar N. (2022). Deploying contingency measures in drought situation for sustaining of pulses productivity in Central India. Scientific Publishers, 165–184.
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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 KVKs in planned and systematic manner by the participating members from ICAR institutions, ATARI, line department, farmers, etc. The Committee monitors progress and facilitate exchange of views on the specific tasks. The Committee reviews periodically and takes further course of action deemed fit for further validation on application by the KVK. Therefore, all KVKs were mandated to conduct the meetings on the periodical basis (twice in a year).

Total 103 SAC meetings were conducted during 2022 in 81 functional KVKs (Table 13.1)

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

| S. No. | Name of KVKs | No. of SACs conducted | Name of KVKs | No. of SACs conducted | Name of KVKs | No. of SACs conducted |
|---|---|---|---|---|---|---|
| | **IGKV, Raipur , C.G.** | | **JNKVV, Jabalpur, M.P.** | | **RVSKVV, Gwalior, M.P.** | |
| 1 | Balrampur | 1 | Anuppur | 1 | Agarmalwa | 2 |
| 2 | Bastar | 1 | Balaghat | 1 | Alirajpur | 1 |
| 3 | Balod | 1 | Betul | 1 | Ashoknagar | 1 |
| 4 | Bemetara | 1 | Chhatarpur | 1 | Barwani | 2 |
| 5 | Bhatapara | 1 | Chhindwara | 1 | Bhind | 2 |
| 6 | Bijapur | 1 | Damoh | 1 | Datia | 2 |
| 7 | Bilaspur | 1 | Dindori | 1 | Dewas | 2 |
| 8 | Dantewada | 1 | Harda | 1 | Dhar | 2 |
| 9 | Dhamtari | 1 | Jabalpur | 1 | Guna | 1 |
| 10 | Durg-I | 1 | Katni | 1 | Gwalior | 1 |
| 11 | Durg-II | 1 | Mandla | 1 | Jhabua | 2 |
| 12 | Gariyaband | 1 | Narsinghpur | 1 | Khandwa | 2 |
| 13 | Janjgir-Champa | 1 | Panna | 2 | Khargone | 2 |
| 14 | Jashpur | 1 | Rewa | 1 | Manawar | 2 |
| 15 | Kanker | 1 | Sagar | 1 | Mandsaur | 2 |
| 16 | Kawardha | 1 | Sagar-II | 1 | Morena | 2 |
| 17 | Korba | 1 | Seoni | 1 | Neemuch | 2 |
| 18 | Korea | 1 | Shahdol | 1 | Rajgarh | 2 |
| 19 | Mainpat | 1 | Sidhi | 1 | Shajapur | 2 |
| 20 | Mahasamund | 1 | Singrauli | 1 | Sheopur | 2 |
| 21 | Mungeli | 1 | Tikamgarh | 1 | Shivpuri | 2 |
| 22 | Narayanpur | 1 | Umaria | 1 | Ujjain | 2 |
| 23 | Raigarh | 1 | Tamia (Chhindwara-II) | 1 | Bhopal (ICAR) | 1 |
| 24 | Raipur | 1 | Narmadapuram(NGO) | 1 | Burhanpur (NGO) | 2 |
| 25 | Rajnandgaon | 1 | Raisen (NGO) | 1 | Indore (NGO) | 2 |
| 26 | Surguja | 1 | Satna (NGO) | 1 | Ratlam (NGO) | 2 |
| 27 | Kondagaon | 1 | | | Sehore (NGO) | 1 |
| 28 | Sukma | 1 | | | | |
| | **Total** | **28** | | **27** | | **48** |
| | | **Grand Total- 103** | | | | |

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# AWARDS AND RECOGNITIONS

**Vasantrao Naik Award for Outstanding research and Application in Dryland Farming Systems 2021**

Dr. S.R.K. Singh, Principal Scientist & Director (Act.) ICAR-ATARI, Jabalpur received ICAR National Award for excellence in Agricultural Research- **Vasantrao Naik Award for Outstanding Research and Application in Dryland Farming Systems 2021** for excellent work in Dryland farming Systems.


**Pandit Deen Dayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar-2021**

KVK Gwalior, Madhya Pradesh received ICAR Prestigious Award **"Pandit Deendayal Upadhyay Rashtriya Krishi Vigyan Protsahan Puraskar 2021"**. KVK, Gwalior has received this award for excellent extension work**.**


**Swamy Sahajanand Saraswati Award**

Principal Scientist and Head of KVK Datia, Madhya Pradesh, Dr. Raj Kumar Singh Tomar received ICAR- National award **"Swamy Sahajanand Saraswati outstanding Extension Scientist 2021**" for excellence in agricultural research.


**Utkrisht Krishak Samman 2022**

Mr. Gajanand Khadiwala, innovative farmer of village Machal Indore, who is also associated with KVK Indore received **'Utkrisht Krishak Samman'** award from Hon'ble DG, ICAR, Dr. Trilochan Mahapatra in Soya Mahakumbh Kisan Mela organized at Indore during 29$^{th}$ -31$^{st}$ May 2022.

**SBA Dr. Chandish R. Ballal Team Award**

Scientists of KVK Kondagaon and KVK Rajnandgoan, Chhattisgarh Mr. Om Prakash and Dr. Vinamrata Jain respectively with other scientists of IGKV, Raipur received SBA Dr. Chandish R. Ballal Team national award for best work in Field of Biocontrol on December 15, 2022 at a conference organized by Society of Biocontrol Advancement (SBA) and ICAR-National Bureau of Agricultural Insect Resources at Bengaluru.


**Krishi Samridhi Mela 2022**

Krishi Vigyan Kendra, Bemetara participated at Krishi Samridhi Mela held at Bilaspur during 13th - 15th April, 2022, on this occasion farmers of Bemetara received award in the field of Bee keeping and Banana fibre product.

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# DISTINGUISHED VISITORS

**KVK Datia (M.P.): Hon'ble Cabinet Minister, Madhya Pradesh Government attended Kisan Sangosthi organized by KVK Datia.**

Kisan Sangosthi was organized by KVK Datia on November 4th, 2022 where Hon'ble Cabinet Minister of Madhya Pradesh, Dr. Narottam Mishra was present as a chief guest. During Kisan Sangosthi Hon'ble Cabinet Minister distributed potato seed to farmers under SCSP programme and also visited KVK campus.

**KVK Betul (M.P.): Natural Farming Program conducted by KVK Betul with Dr. S.K. Chaudhary, DDG, Natural Resource Management, ICAR, New Delhi as chief guest.**

Programme on Natural Farming was organized by Krishi Vigyan Kendra Betul on March 20, 2022. During the program meeting on Natural Farming was successfully conducted in the presence of chief guests Dr. S.K. Chaudhary, DDG, Natural Resource Management, ICAR, New Delhi, Dr. S.R.K. Singh, Director, ICAR-ATARI, Jabalpur and Dr. D.P. Sharma, Director of Extension Services, JNKVV, Jabalpur and other scientists. Kisan Mela and Exhibition were also conducted during this program and was graced by the presence of Member of Parliament, Betul Shri D.D. Uikey.

**KVK Dantewada (C.G.): Honorable Vice-Chancellor, Indira Gandhi Krishi Vishwa Vidhyalaya, Raipur (C.G) visited KVK Dantewada**

Dr. Girish Chandel, Honorable VC, IGKV, Raipur visited KVK Dantewada during June 23-24, 2022 and interacted with all the technical and non-technical staff of the KVK, along with visiting all the Production unit i.e. Mushroom and spawn production unit, Kadanath rearing unit, Goatary unit, Dairy unit and Processing Unit. Moreover, he also inaugurated Pakshi Bhavan of KVK Dantewada

in gracious presence of Dr. Vivek Kumar Tripath, DRS, IGKV, Raipur.

**KVK Rajnandgaon (C.G.): Dr. S. R. K. Singh, Director (Act.) ATARI-Zone-IX, Jabalpur, Madhya Pradesh visited KVK Rajnandgaon**

Live demonstration programme of agricultural drone technology was organized by Krishi Vigyan Kendra Rajnandgaon on September 07, 2022. On this occasion Dr. S.R.K. Singh, Director (Act.), ICAR-Agricultural Technology Application Research Institute, Zone-IX, Jabalpur, Dr. B. S. Rajput, Senior Scientist and Head Krishi Vigyan Kendra, Rajnandgaon, Dr. Vinamrata Jain, Professor, Agriculture College, Shri A. K. Upadhyaya, Manager, IFFCO Rajnandgaon, Krishi Vigyan Kendra scientist Mr. Atul Dange, Smt. Surbhi Jain and almost 70 farmers were present in this demonstration programme.

**KVK Panna (M.P.): Smt. Ranjita Rashmi, Director, Ministry of Home Affair, Govt. of India visited KVK Panna.**

Smt. Ranjita Rashmi, Director, Ministry of Home Affair, Govt. of India visited KVK Panna to monitor the activities regarding Jal Shakti

Abhiyan of KVK on July 4th, 2022. She also visited different demonstration units of the center viz. crop cafeteria, vermicompost production unit, azolla production unit, nursery production unit and nutritional garden of the centre and interacted with the scientists regarding natural farming, vermicomposting, azolla production, Fish farming

etc.

**Govind Nagar, Narmadapuram (M.P.): Dr. Ved Prakash Chahal, Assistant Director General (Agricultural Extension) I.A.R.I., New Delhi visited KVK Govindnagar.**

One day review workshop on seed hub project was organized on September 13th, 2022 at Krishi Vigyan Kendra Govindnagar and was inaugurated by chief guest Dr. Ved Prakash Chahal, Assistant Director General (Agricultural Extension), I.A.R.I., New Delhi. During this workshop Dr. S.R.K. Singh, Director (Act.) ICAR-ATARI Zone-IX, Jabalpur, Dr. J. S. Mishra, Director ICAR Directorate of Weed Research Jabalpur, Dr. P.K. Bisen, Ex Vice-Chancellor (Jawahar Lal Nehru Agricultural University, Jabalpur), Director Extension Service of JNKVV, Jabalpur, RVSKVV, Gwalior and IGKV, Raipur and Senior Scientist and Head, Krishi Vigyan

Kendra Govindnagar were also present. Dr. Chahal, along with other dignitaries visited ghee making unit, kadaknath production unit and prom unit of the KVK.

**KVK Indore (M.P.): Dr. Randhir Singh, Ex-ADG, ICAR, New Delhi visited KVK Indore.**

Dr. Randhir Singh, Ex-ADG, ICAR, New Delhi visited KVK Indore on November 11, 2022 and had a tour to different production units and crop cafeteria of the KVK along with discussion on various topics with KVK scientists. During his visit to Indore, he also visited village Mirzapur and interacted with farmers.

**KVK- Rajnandgaon (C.G.): Dr. K. Srinivas Ex-Assistant Director General, ICAR New Delhi visited KVK Rajnandgaon**

One day Agriculture Entrepreneurship Workshop was organized by Krishi Vigyan Kendra, Rajnandgaon on March 28th, 2022 with Dr. K. Srinivas, Ex- ADG, ICAR, New Delhi as a chief guest. During this workshop Dr. Srinivas shared knowledge of different agriculture enterprises which can be established by farmers and distributed Agriculture entrepreneurship certificates to the farmers. Also, inauguration of bulletin was done by DDG, ICAR and at last he visited the campus of KVK Rajnandgaon.

**KVK- Ratlam (M.P.): Unveiling the statue of founder of KVK Jaora, Ratlam (M.P.) by Honorable State Minister, Govt. of Madhya Pradesh**

On the occasion of the fifth death anniversary of the founder of Krishi Vigyan Kendra, Jaora, Ratlam Shri Mahendra Singh ji Kalukheda dated September 11th, 2022 in the administrative building of KVK, Unveiling of the statue of revered Mahendra Singh Ji Kalukheda was done by chief guest Honorable State minister Shri O.P.S. Bhadauria, minister in charge District Ratlam and Special Guest Honorable Minister of Madhya Pradesh, Mr. Bharat Dasji Bairagi. This occasion was graced by the presence of other dignitaries viz. Honorable MLA - Jaora Assembly Dr. Rajendra Pandey, Mr. Dilip Makwana, MLA - Ratlam (Rural), Mr. Rajendra Singh Lunera, Member - District Planning Committee, Karakamals of District Ratlam. After unveiling of the statue, visit of KVK campus was done by all the dignitaries.

# 16

# ATIC PROGRESS REPORT

Under ICAR-ATARI, Zone-IX, Jabalpur (MP), in states Madhya Pradesh and Chhattisgarh four ATICs are operational and serving to the farmers with technology, products and other services for agricultural development in the region. In these ATICs there were 10202 footfalls during the year 2022. Technological information was provided to 7690 farmers. A total 43074 publications (print & electronic media) were sold and generated revenue of Rs. 21.67 lakh.

**Table 16.1:** ATIC under Madhya Pradesh and Chhattisgarh

| S. No | Name of the ATIC | Name of the Host Institute | Name of the ATIC Manager |
|---|---|---|---|
| 1 | ATIC, Jabalpur | JNKVV, Jabalpur (M.P.) | Dr. Dinkar Prasad Sharma |
| 2 | ATIC, Raipur | IGKV, Raipur (C.G.) | Dr. Jyoti Bhatt |
| 3 | ATIC, RVSKVV | RVSKVV, Gwalior (M.P.) | Dr. Yagya Dev Mishra |
| 4 | ATIC, CIAE, Bhopal | Central Institute of Agricultural Engineering, Bhopal, (M.P.) | Dr. V.Bhushana Babu |

**Table 16.2**: Details of farmers visit

| S. No | Purpose of visit | Number of farmers visited |
|---|---|---|
| 1 | Technology Information | 8629 |
| 2 | Technology Products | 50 |
| 3 | Diagnostic Services | 12 |
| 4 | Purchase of Vegetables/Nursery | 155 |
| 5 | Exhibition of ATIC | 66 |
| 6 | Others, (Establishment of Nursery, Processing Units value addition, Students and training participants) | 1290 |
| | **Total** | **10202** |

**Table 16.3**: Facilities in the ATIC

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

## Technology information provided

**Table 16.4 :** 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 | Farm Mechanization and Value addition | Animal Husbandry and fisheries |
| 1 | Crop & Livestock | 2258 | 705 | 311 | 180 | 340 | 241 | 410 | 71 |
| 2 | Kisan Call Centre / other Phone calls from farmers | 459 | 120 | 12 | 17 | 136 | 61 | 68 | 45 |
| 3 | Training to farmers / technocrats / students | 4473 | 1400 | 0 | 22 | 2239 | 600 | 100 | 112 |
| 4 | Video shows | 492 | 0 | 0 | 0 | 370 | 0 | 110 | 12 |
| 5 | Letters received | - | - | - | - | - | - | - | - |
| 6 | Letters replied | - | - | - | - | - | - | - | - |
| 7 | Others (Fish culture) | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| | **Total** | **7690** | **2225** | **323** | **219** | **3085** | **902** | **688** | **248** |

**Table 16.5:** Publications (Print & Electronic media)

| S. No | Particulars | Numbers sold | Revenue generated (in Rs. lakh) | Number of farmers benefited |
|---|---|---|---|---|
| 1 | Books & Technical Bulletins | 571 | 33644 | 200 |
| 2 | Agro produce, kg | 620 Kg | 124000 | 50 |
| 3 | DVDs (Videos of CIAE Technologies) | 1 | 50 | 1 |
| 4 | **Others** Drawing CAD, Krishi Panchang, Krishi Darshika, Telephone Directory, Farm magazine & booklets | 42502 | 2010279 | 41002 |
| | **Total** | **43074** | **2167973** | **41253** |

**Table 16.6:** Technology Products provided

| Table 16.6: Technology Products provided | Quantity | Unit of quantity | Value in Rs. | Number of farmers benefited |
|---|---|---|---|---|
| Animal Feed | 8555 | kg | 1,71,100 | 130 |
| Bio Agents (Worms) | 15 | Kg | 7500 | 15 |
| Chickpea | 21 | kg | 1,260 | 20 |
| Chickpea flour | 3851 | kg | 2,69,570 | 350 |
| Wheat flour | 3548 | kg | 88,725 | 300 |
| Maize flour | 372 | kg | 7,440 | 35 |
| Moong Dal (Chilka) | 35 | kg | 2,275 | 30 |
| Moong Dal (Dhuli) | 18 | kg | 1,260 | 15 |
| Pigeon pea dal | 540 | kg | 40,500 | 50 |

| Table 16.6: Technology Products provided | Quantity | Unit of quantity | Value in Rs. | Number of farmers benefited |
|---|---|---|---|---|
| Chilli seedlings | 4000 | Number | 2800 | 70 |
| Chilli | 5 | Kg | 200 | |
| Chilli Powder | 1000 | Packets | 25000 | |
| Coriander Powder | 800 | Packets | 32000 | |
| Turmeric | 103.5 | kg | 15,525 | 200 |
| Turmeric Powder | 900 | Packets | 45000 | |
| Brinjal seedlings | 7900 | Number | 6900 | 76 |
| Brinjal | 20 | Kg | 500 | |
| Cabbage seedlings | 8450 | Number | 7000 | 64 |
| Cauliflower seedlings | 5450 | Number | 3500 | 70 |
| Tomato seedlings | 10550 | Number | 19000 | 269 |
| Moringa saplings | 2500 | Number | 50000 | 530 |
| Lemon saplings | 300 | Number | 15000 | 150 |
| Guava saplings | 200 | Number | 6000 | 40 |
| Mango saplings | 50 | Number | 3000 | 25 |
| Pomegranate saplings | 100 | Number | 2000 | 25 |
| Marigold seedlings | 4800 | Number | 4800 | 50 |
| Gaillardia seedlings | 3200 | Number | 3200 | 535 |
| Honey | 750 | Bottels | 1,20,000 | |
| Soya Ladoo | 42.5 | kg | 8,500 | 8 |
| Multinutrient Biscuit | 1,558 | Packet | 15,580 | 1000 |
| Value added Products of potato, millets, pickles, Moringa powder, Aonla Murabba, Candy, Garlic Powder, Soybean Namkeen etc. | - | - | 19700 | |

**Table 16.7:** Technology services provided

| S. No | Particulars | Number of farmers benefited |
|---|---|---|
| 1 | Details about the services to line Departments | 0 |
| 2 | Farmers' visited ATIC | 8775 |
| 3 | Mechanization Planning Advisory | 482 |
| 4 | Plant diagnostics | 12 |
| 5 | Soil Health Cards issued & Farmers' training conducted in KVKs & NGOs | 1143 |
| 6 | Through Kisan Call Centre | 277 |
| 7 | Through Letters | 0 |
| 8 | Others (Technologies on freshwater aquaculture ( hatchery management, grow out culture and post harvest technology) | 67 |
| | **Total** | **10756** |

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# LIST OF SCIENTIFIC, TECHNICAL AND ADMINISTRATIVE STAFF

**Director (Acting)**

Dr. S. R. K. Singh

**Scientific**

Dr. Dwaipayan Bardhan, Principal Scientist (Vet. Economics)

Dr. A.A. Raut, Scientist (Agril. Extension)

**PME Cell**

Dr. A.A. Raut, Scientist (Agril. Extension)

**Technical**

Sh. Ashok Kumar Dubey, Driver

**Assistant Adminstrative Officer**

Sh. Sunil Kumar Gupta

**Finance and Accounts Section**

Shri. Rajeev Kulshrestha, Finance and Account Officer (Additional Charge)

Shri. Ram Sandesh Gupta, LDC

**PS to Director**

Sh. A.K. Bhowal

**Technical Officer**

Sh. R.K. Soni

**Supporting**

Sh. Sukhchain Das (Supernuniated on 31st August 2022)

Notes

Notes

हर कदम, हर डगर
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**ICAR-Agricultural Technology Application Research Institute, Zone IX**

जबलपुर, मध्य प्रदेश - 482 004 | Jabalpur, Madhya Pradesh - 482 004