वार्षिक प्रतिवेदन
ANNUAL REPORT
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ICAR

क्षेत्रीय परियोजना निदेशालय (क्षेत्र-V)
Zonal Project Directorate (Zone-V)
CRIDA, Santoshnagar,
Hyderabad-500059 A.P.

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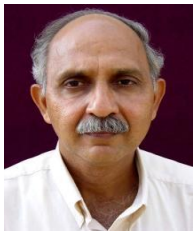
Citation

ZPD (Zone-V) Annual Report 2012-13.
Zonal Project Directorate (Zone-V), Hyderabad.

Published by

Zonal Project Directorate (Zone-V)
CRIDA Campus, Santoshnagar
Hyderabad-500059.



PREFACE

The Zonal Project Directorate (Zone-V), Hyderabad is vested with the responsibility of monitoring various transfer of technology projects funded by the Council in two states viz. Andhra Pradesh and Maharashtra. At present there are 78 KVKs in the Zone, including 34 in Andhra Pradesh and 44 in Maharashtra. During the year, KVKs assessed and refined 565 technologies through 4679 on-farm trials. A total of 1160 Front Line Demonstrations covering 461.05 ha under oilseeds, pulses and other field and horticultural crops was organized by KVKs in Zone-V. KVKs also conducted 1404 demonstrations on livestock related technologies.

KVKs conducted 6149 training programmes covering 196596 participants that include 155328 farmers and farmwomen, 24699 rural youth and 16569 extension functionaries besides organizing 21138 extension activities with a participation of 931624 farmers, farmwomen and extension personnel. To facilitate rapid dissemination of information on improved farm technologies, KVKs brought out 1384 publications. KVKs also produced 13996.11q of seed and 3081535 saplings of elite species of field and horticultural crops. KVKs also produced 4403.88q of bio-fertilizers and 431.74q of bio-pesticides and supplied to farmers.

In order to ascertain the soil health and to make crop specific nutrient recommendations in the prevailing micro-farming situations, KVKs analyzed a total number of 82914 samples including soil (66552), water (15033), plant (1195), etc. benefiting 71149 farmers of 6507 villages Andhra Pradesh and Maharashtra.

Under the Technology Demonstration component of NICRA, to help farmers to cope with the climate variability 13 KVKs in vulnerable districts have also undertaken various interventions viz. demonstrations, training, etc. on NRM, crop production, livestock and fisheries.

A total of 43 HRD activities benefiting 998 KVK staff in the Zone were jointly organized by the five directorates of extension and the ZPD (Zone-V). About 138120 farmers were given direct access to institutional resources through six Agricultural Technology Information Centres in Zone-V.

I express my gratitude to Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR, Dr. K. D. Kokate, Deputy Director General (AE) and Dr. V. Venkatasubramanian, Assistant Director General (AE) for their continued guidance and support in implementing the mandate.

I am thankful to Dr. K. Dattatri, Principal Scientist, Dr. G. Rajender Reddy, Senior Scientist, Mrs. B. Malathi, Scientist, Mrs. S. Hemalatha, Personal Assistant and Mrs. G. Navneetha, LDC for their immense help in analyzing huge data, preparing manuscript and bringing out the Annual Report.

N. Sudhakar
Zonal Project Director

कार्यकारी सारांश

वर्ष 2009 के दौरान क्षेत्रीय समन्वयन इकाई का उन्नयन कर भारतीय कृषि अनुसंधान परिषद द्वारा परियोजना निदेशालय का दर्जा दिया गया। क्षेत्रीय परियोजना निदेशालय(क्षेत्र V) के अधिदेश में, मुख्य रूप से क्षेत्र V, जिसमें आंध्र प्रदेश एवं महाराष्ट्र राज्य शामिल हैं, के कृषि विज्ञान केंद्रों द्वारा प्रौद्योगिकी मूल्यांकन, परिष्करण एवं प्रदर्शन पर विभिन्न अनुकूलताओं का निर्माण करना, कार्यान्वयन करना, मॉनिटरी करना एवं मूल्यांकन करना शामिल है।

क्षेत्र में अभी 78 कृषि विज्ञान केंद्र हैं जिसमें आंध्र प्रदेश के 34 एवं महाराष्ट्र के 40 शामिल हैं। आंध्र प्रदेश के 34 कृषि विज्ञान केंद्रों में से 23 राज्य कृषि विश्वविद्यालयों, 3 भारतीय कृषि अनुसंधान परिषद के संस्थानों एवं 8 गैर सरकारी संगठनों के अंतर्गत हैं। महाराष्ट्र में, 16 राज्य कृषि विश्वविद्यालयों, 1 भारतीय कृषि अनुसंधान परिषद का संस्थान, 26 गैर सरकारी संगठनों एवं एक मुक्त विश्वविद्यालय के अंतर्गत हैं।

वर्ष के दौरान, 4679 फार्म जांच प्रदर्शनों द्वारा कृषि विज्ञान केंद्र ने 565 प्रौद्योगिकियों को मूल्यांकित एवं परिष्कृत किया गया। जांचे गए 565 प्रौद्योगिकियों में, 432 प्रौद्योगिकियां फसलों पर उसके बाद पशुओं(64), महिलाओं एवं शिशुओं (69) से संबंधित प्रौद्योगिकियों को मूल्यांकित एवं परिष्कृत किया गया। पशुओं के मामले में शामिल किए गए मुख्य विषय जनन क्षमता प्रबंधन, पोषण एवं चारा प्रबंधन, पोषक प्रबंधन, नस्लों का मूल्यांकन, रोग प्रबंधन, उत्पादन प्रबंधन एवं नस्ल सुधार; जबकि फसलों के मामले के विषय क्षेत्र में किस्मों का मूल्यांकन, समेकित नाशीजीव प्रबंधन, समेकित पोषण प्रबंधन, संसाधन संरक्षण प्रौद्योगिकियां, समेकित कृषि प्रणालियां, खरपतवार प्रबंधन, समेकित रोग प्रबंधन तथा बीज एवं रोपण सामग्री उत्पादन शामिल हैं । ग्रामीण महिलाओं के सशक्तिकरण के अंतर्गत स्वास्थ्य एवं पोषण, कड़ी मज़दूरी की कटौती एवं ठेकेदारी का विकास जैसे विषय क्षेत्रों में ऑन फार्म जांच आयोजित किए गए।

आंध्र प्रदेश में कृषि विज्ञान केंद्रों ने 1638 ऑन फार्म जांचों के आयोजन द्वारा 252 प्रौद्योगिकियों मूल्यांकन किया, जबकि महाराष्ट्र में कृषि विज्ञान केंद्रों ने 2546 जांचों के आयोजन द्वारा 244 प्रौद्योगिकियों का मूल्यांकन किया। आंध्र प्रदेश में कृषि विज्ञान केंद्रों ने 141 जांचों का आयोजन कर कुल 25 प्रौद्योगिकियों को परिष्कृत किया गया एवं महाराष्ट्र में कृषि विज्ञान केंद्रों ने 44 प्रौद्योगिकियों के परिष्करण के लिए 354 जांचों का आयोजन किया।

क्षेत्र V में कृषि विज्ञान केंद्रों द्वारा तिलहनों के अंतर्गत 416.05 हेक्टेयर को शामिल कर कुल 1160 अग्रिम प्रदर्शनों का आयोजन किया गया। अग्रिम प्रदर्शनों के अंतर्गत शामिल किए गए मुख्य तिलहन फसलों में मूंगफली, सोयाबीन, अरंड़, सूरजमुखी, तिल, एवं कुसुंभ आदि शामिल किए गए। दलहनों के मामले में, खरीफ एवं रबि मौसमों के दौरान 1001.69 हेक्टेयर को शामिल कर कृषि विज्ञान केंद्रों द्वारा 2497 प्रदर्शनों का

आयोजन किया गया। प्रदर्शनों के अंतर्गत शामिल किए गए मुख्य फसल हैं अरहर, चना, मूंग, उड़द आदि । इसी प्रकार, आंध्र प्रदेश एवं महाराष्ट्र में कृषि विज्ञान केंद्रों ने अन्य फसलों जैसेकि मोटे अनाज, व्यवसायिक फसलों, चारा एवं बागवानी फसलों पर 1612.67 हेक्टेयर क्षेत्र में 4322 अग्रिम प्रदर्शनों का आयोजन किया। कृषि विज्ञान केंद्रों ने बेहतर औज़ारों एवं उपकरणों पर 1836 प्रदर्शनों का आयोजन किया। इसके साथ-साथ पशुधन प्रजातियों एवं महिला सशक्तिकरण पर क्रमशः 1404 तथा 742 प्रदर्शनों का भी आयोजन किया।

प्रशिक्षण कृषि विज्ञान केंद्र की प्रमुख गतिविधि है जो विभिन्न बेहतर प्रौद्योगिकियों के बारे में ज्ञान एवं कौशल की वृद्धि में प्रमुख भूमिका निभाता है। वर्ष के दौरान, क्षेत्र V में कृषि विज्ञान केंद्रों ने 196596 भागिदारियों को शामिल करते हुए 6149 प्रशिक्षण कार्यक्रमों का आयोजन किया जिसमें 155328 किसान एवं कृषि महिलाएं, 24699 ग्रामीण युवा एवं 16569 विस्तार कार्यकर्ता शामिल थे। आंध्र प्रदेश में कृषि विज्ञान केंद्रों ने 74032 किसान जिसमें कृषि महिलाएं, ग्रामीण युवा एवं विस्तार कार्यकर्ताओं के भागीदारी से 2169 प्रशिक्षण पाठ्यक्रमों का आयोजन किया गया जबकि महाराष्ट्र में कृषि विज्ञान केंद्रों ने कुल 122564 लाभान्वितों के लिए 3980 पाठ्यक्रमों का आयोजन किया। प्रशिक्षण के अंतर्गत शामिल किए गए मुख्य विषयों में समेकित फसल प्रबंधन, बेहतर औज़ार एवं उपकरण, क्षमता निर्माण एवं सामूहिक गतिविधि, महिला सशक्तिकरण, बागवानी फसलों के लिए बेहतर उत्पादन प्रणालियां, पशुधन नस्लों की उत्पादकता में वृद्धि, समेकित नाशीजीव प्रबंधन तथा मृदा स्वास्थ्य एवं उर्वरता प्रबंधन शामिल हैं।

क्षेत्र V में किसान विज्ञान केंद्रों द्वारा 28037 किसानों, कृषि महिलाओं एवं ग्रामीण युवाओं को शामिल करते हुए 1079 प्रायोजित प्रशिक्षण पाठ्यक्रमों का भी आयोजन किया गया। विशेषकर ग्रामीण एवं स्कूल ड्रापाउटों के बीच ठेकेदारी विकास, आय बढ़ाने एवं स्वरोज़गार को बढ़ावा देने के लिए कृषि विज्ञान केंद्र द्वारा 11303 लाभार्थियों को शामिल करते हुए 345 व्यावसायिक प्रशिक्षण कार्यक्रमों का आयोजन किया गया। इसमें शामिल किए गए मुख्य विषय हैं मूल्य संवर्धन, समेकित फसल प्रबंधन, मुरगी पालन, नर्सरी एवं रोपण, भेड़ एवं बकरी पालन आदि।

क्षेत्र V के कृषि विज्ञान केंद्रों ने बेहतर कृषि प्रौद्योगिकियों पर जागरूकता उत्पन्न करने के लिए 931624 किसानों, कृषि महिलाओं एवं विस्तार अधिकारियों की भागीदारी से 21138 विस्तार गतिविधियों का आयोजन किया गया। विस्तार गतिविधियों में सलाह सेवाओं, प्रदर्शन दौरे, पशु स्वास्थ्य कैंपों, प्रौद्योगिकी सप्ताह, सामूहिक विचार-विमर्शों, पद्धत्ति प्रदर्शनों, मृदा स्वास्थ्य कैंपों, किसान मेलों, किसान गोष्ठियों आदि को शामिल किया गया। बेहतर फार्म प्रौद्योगिकियों पर सूचना को त्वरित प्रसार को बढ़ावा देने के

लिए, क्षेत्र V में 1384 प्रकाशनों को निकाला गया। कृषि विज्ञान केंद्र ने किसानों को 13996.11 क्विंटल बीज एवं कृषि तथा बागवानी फसलों के स्वोंत्कृष्ट प्रजाति के 3081535 पौधों की भी आपूर्ति की। कृषि विज्ञान केंद्र ने 4403.88 क्विंटल जैव-नाशीजीवों एवं 431.74 क्विंटल जैव-कवकनाशी का उत्पादन कर किसानों को आपूर्ती की गई।

कृषि विज्ञान केंद्र ने मृदा एवं पोषण स्तर को जानने के लिए मृदा एवं जल जांच एवं साथ ही साथ जिले में जारी सूक्ष्म कृषि परिस्थितियों में पोषण सिफारिशों पर आधारित मृदा जांचों का भी आयोजन किया गया। कृषि विज्ञान केंद्रों के द्वारा कुल 82914 नमूनों, जिसमें मृदा (66552), जल (15033), पौधों (1195) शामिल हैं, का विश्लेषण किया गया जिससे आंध्र प्रदेश एवं महाराष्ट्र के 6507 गांवों के 71149 किसानों को लाभ हुआ।

राष्ट्रीय जलवायु समुत्थान कृषि पहल का अवयव प्रौद्योगिकी का प्रदर्शन के अंतर्गत, संवेदनशील जिलों के 13 कृषि विज्ञान केंद्रों में जलवायु विविधता से पार पाने में किसानों की सहायता के लिए प्राकृतिक संसाधन, फसल उत्पादन, पशुधन एवं मास्त्यिकी पर विभिन्न हस्तक्षेपों जैसेकि प्रदर्शन, प्रशिक्षण आदि का भी आयोजन किया गया।

राज्य कृषि विश्वविद्यालयों के विस्तार निदेशालय एवं क्षेत्रीय परियोजना निदेशालय को प्रौद्योगिकी सहायता प्रदान करता है एवं मानव संसाधन विकास कृषि विज्ञान केंद्रों को क्षमता निर्माण, सम्मेलनों, कार्यशालाओं आदि के द्वारा प्रशिक्षण प्रदान करता है। पांच विस्तार निदेशालयों एवं क्षेत्रीय परियोजना निदेशालय(क्षेत्र V) के द्वारा संयुक्त रूप से कुल 43 मानव संसाधन गतिविधियों का आयोजन किया गया जिससे 998 कृषि विज्ञान केंद्र के कर्मचारियों को लाभ हुआ।

संस्थागत संसाधनों को सीधे किसानों तक पहुंचाने के लिए, भा.कृ.अनु.प. ने विभिन्न प्रौद्योगिकी उत्पादों को सिंगल विंडो द्वारा प्रदान करने के उद्देश्य से क्षेत्र V में छः कृषि प्रौद्योगिकी सूचना केंद्रों को स्थापित किया। वर्ष के दौरान कुल 138120 किसानों ने अत्याधुनिक प्रौद्योगिकी सूचना एवं बीज एवं रोपण सामग्री जैसे क्रांतिक प्रौद्योगिकी उत्पादों के बारे में जानकारी प्राप्त करने के लिए छः कृषि प्रौद्योगिकी सूचना केंद्रों का दौरा किया।

EXECUTIVE SUMMARY

Indian Council of Agricultural Research upgraded the Zonal Coordination Unit to the status of Project Directorate during 2009. The mandate of Zonal Project Directorate is to formulate, implement, monitor and evaluate various strategies on technology assessment, refinement and demonstration mainly through Krishi Vigyan Kendras in Zone-V that includes Andhra Pradesh and Maharashtra states.

At present there are 78 KVKs in the zone which include 34 in Andhra Pradesh and 40 in Maharashtra. Out of 34 KVKs in Andhra Pradesh 23 are with State Agricultural Universities (SAU), 3 with ICAR institutes and 8 with Non-Governmental Organizations (NGO). In Maharashtra, 16 KVKs are with SAUs, 1 with ICAR institute, 26 with NGOs and one with the Open University.

During the year, KVKs assessed and refined 565 technologies by laying out 4679 on-farm trials. Out of 565 technologies tested, 432 technologies were assessed and refined on crops followed by the technologies related to animals (64) and women and children (69). The main thematic areas covered in case of animals are fertility management, feed and fodder management, nutrition management, evaluation of breeds, disease management, production and management and breed improvement, while in case of crops the thematic areas include varietal evaluation, integrated pest management, integrated nutrient management, resource conservation technologies, integrated farming systems, weed management, integrated disease management and seed and planting material production. Under empowerment of rural women the on-farm trials were conducted in thematic areas viz. health and nutrition, drudgery reduction and entrepreneurship development.

KVKs in Andhra Pradesh assessed 252 technologies by conducting 1638 on-farm trials, while KVKs in Maharashtra assessed 244 technologies by organizing 2546 trials. A total of 25 technologies were refined by KVKs in Andhra Pradesh by organizing 141 trials and KVKs in Maharashtra conducted 354 trials to refine 44 technologies.

A total of 1160 front line demonstrations covering 461.05 ha under oilseeds were organized by KVKs in Zone -V. The major oilseed crops that were covered under demonstrations include groundnut, soybean, castor, sunflower, niger and linseed. In case of pulses, KVKs organized 2497 demonstrations covering 1001.69 ha during kharif and rabi seasons. The major crops covered under demonstrations are redgram, bengalgram, greengram, blackgram etc. Similarly, KVKs in Andhra Pradesh and Maharashtra organized 4332 demonstrations covering 1612.67 ha on other crops i.e. cereals, commercial crops, fodder and horticultural crops. KVKs also organized 1836 demonstrations on improved tools and implements, 1404 and 742 demonstrations on livestock species and empowerment of women respectively.

Training is an important activity of KVK, which play a pivotal role in enhancing the knowledge and skill about various improved technologies. During the year, KVKs in Zone-V organized 6149 training programmes covering 196596 participants that include 155328 farmers, 24699 rural youth and 16569 extension functionaries. KVKs in Andhra Pradesh organized 2169 training courses with a participation of 74032 farmers including farmwomen, rural youth and extension functionaries, while the KVKs in Maharashtra conducted 3980 courses with a total of 122564 beneficiaries. The main thematic areas covered under training include integrated crop management, improved tools and

implements, capacity building and group dynamics, women empowerment, improved production practices for horticultural crops, productivity enhancement in livestock species, integrated pest management and soil health and fertility management.

KVKs in Zone-V also organized 1079 sponsored training programmes covering 28037 farmers and farmwomen and rural youth. In order to facilitate entrepreneurship development, income generation and self-employment especially among rural youth and school dropouts, KVK organized 345 vocational training programmes covering 11303 beneficiaries. The important thematic areas include value addition, integrated crop management, poultry farming, nursery and grafting, sheep and goat rearing etc.

To create awareness on improved agricultural technologies the KVKs of Zone-V organized 21138 extension activities with a participation of 931624 farmers, farmwomen and extension personnel. The extension activities included advisory services, exposure visits, animal health camps, technology week, group discussions, method demonstrations, soil health camps, kisan melas, kisan ghosti, etc. In order to accelerate rapid dissemination of information on improved farm technologies, KVKs in Zone-V brought out 1384 publications. KVKs also supplied 13996.11 q of seed and 3081535 saplings of elite species of field and horticultural crops to farmers. KVKs also produced 4403.88q of bio-fertilizers and 431.74q of bio-pesticides and supplied to farmers.

KVKs also have undertaken soil and water testing to ascertain the soil nutrient status and also to make soil test based nutrient recommendations in the prevailing micro-farming situations in the district. A total of 82914 samples including soil (66552), water (15033), plant (1195) and fertilizers/manures (134) were analyzed by the KVKs that benefited 71149 farmers belonging to 6507 villages in Andhra Pradesh and Maharashtra.

Under the Technology Demonstration component of NICRA, to help farmers to cope with the climate variability 13 KVKs in vulnerable districts have also undertaken various interventions viz. demonstrations, training, etc. on NRM, crop production, livestock and fisheries.

The Directorates of Extension Education of State Agricultural Universities and Zonal Project Directorate facilitate technological backstopping and Human Resource Development to the KVKs through training, seminars, workshop etc. A total of 43 HRD activities benefitting 998 KVK staff in the Zone were jointly organized by the five directorates of extension and the Zonal Project Directorate.

To facilitate direct access of farmers to institutional resources, ICAR established six Agricultural Technology Information Centres in Zone-V with the objective of single window delivery of various technology products. During the year a total of 138120 farmers visited the six ATICs to know the latest technology information and to obtain critical technology products viz. seed and planting material.

Contents

INTRODUCTION

Zonal Project Directorate

The National Organizing Committee constituted to celebrate the Golden Jubilee of the Indian Council of Agricultural Research (ICAR) during 1979-80 envisaged a massive programme viz. Lab to Land Programme for continuous flow of economically viable technology from laboratories to the farmers' fields. In this regard, it was decided to adopt 50000 small and marginal farmers and landless labourers throughout the country to transfer available farm technologies comprising of crop production, livestock farming, farm tools and implements, pisciculture, sericulture, apiculture etc. including crop-livestock integration and the same was implemented from September, 1979. In order to achieve the same, the country was divided into eight zones and as a result of this, the Zonal Coordination Unit for Transfer of Technology, Zone-V was established in September, 1979 as Cess Fund Scheme at Andhra Pradesh Agricultural University, Hyderabad primarily to monitor the activities of the Lab to Land Programme in the states of Andhra Pradesh and Maharashtra. Subsequently in 1985, the unit was shifted to the campus of Central Research Institute for Dryland Agriculture, Hyderabad. The Unit was given the responsibility of monitoring of Lab to Land Programme until 1986. Later during the year the unit was brought under the plan scheme of ICAR.

In 1987, the Council gave the unit additional responsibility of monitoring other ICAR supported Transfer Of Technology Projects viz. Krishi Vigyan Kendras (KVK), Trainers Training Centre (TTC), National Demonstration Scheme (NDS), Operational Research Projects (ORP), All India Coordinated Project on SC / ST (AICRP SC/ ST) and Special Projects on Oilseeds that were implemented in the zone. During 1990 and 1991, the Front Line Demonstrations (FLD) on oilseeds under Oilseeds Production Programme (OPP) and pulses under National Pulse Project (NPP), farm implements and cotton are also being monitored by Unit. In 1995, a pilot project on Institute Village Linkage Programme (IVLP) was undertaken and implemented in the zone. In 1998, Zonal Research Stations under the State Agricultural Universities (SAU) were strengthened to take up the additional functions of KVKs and these re-mandated KVKs are also monitored.

The X and XI Five Year Plan (FYP) period witnessed phenomenal growth of KVKs in the country including the establishment of new KVKs in Zone-V covering the states of Andhra Pradesh and Maharashtra. During XI FYP period, Council has approved establishment of 97 new KVKs which include establishment of 24 additional KVKs in geographically larger districts, 12 each in the states of Andhra Pradesh and Maharashtra. In view of this the Council has upgraded all the eight Zonal Coordination Units to the status of Directorates and thus Zonal Project Directorate (ZPD), Zone-V came into existence during the year 2009.

The Directorate has the following mandates

- To formulate, implement, monitor and evaluate strategies on technology assessment, refinement and demonstration programme of the Council in the zone
- To initiate, plan, coordinate and execute the extension research to support and improve technology dissemination system.
- To link KVK efforts to strengthen extension approaches viz. consortium, convergence, public-private partnership, farmer-led and market-lead extension in their respective regions.
- To coordinate the work relating to transfer of technology programme of various agencies such as agricultural universities, ICAR institutes, state and central govt. agencies, financial institutions, affiliated agriculture and home science colleges, voluntary agencies and the transfer of technology centres in their respective regions.
- To serve as feedback mechanism for technology generations system

The Directorate falls under the administrative control of Division of Agricultural Extension of ICAR headed by the Deputy Director General (Agricultural Extension). The Zonal Project Directorate is headed by Zonal Project Director who is assisted by the Principal Scientists, Senior Scientists and other technical and administrative staff. A modest infrastructure for smooth functioning of the Directorate was built in the campus of Central Research Institute for Dryland Agriculture, Santoshnagar, Hyderabad.

Krishi Vigyan Kendra

Krishi Vigyan Kendra (Farm Science Centers), an innovative science-based institution, was established to impart vocational skill training to the farmers and field-level extension workers. The need for vocational training in agriculture and allied fields through KVK grew substantially for catering to the increasing demand for improved/agricultural technology by farmers. The farmers not only require knowledge and understanding of intricacy of new technologies, but also more skills to adopt the same in varied and complex field situation on their farms. In view of this, the role of KVK was further enhanced by adding the responsibility of on-farm testing and front-line demonstrations of major agricultural technologies to dovetail the same in location specific environment. In order to equip the present day farmers to face the challenges of information explosion and to bridge the digital divide, KVKs were given the other responsibility of acting as knowledge and resource centre of agricultural and allied technologies. The mandate of KVKs is,

- On-farm testing to identify the location specificity of agricultural technologies under various farming systems.
- Organize frontline demonstrations to establish production potential of technologies on the farmerôs fields.
- Training of farmers to update their knowledge and skills in modern agricultural technologies and extension personnel to orient them in the frontier areas of technology development.
- To work as knowledge and resource centre of agricultural technology for supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district.

KRISHI VIGYAN KENDRA

Status

At present there are 78 KVKs in Zone-V which include 34 in Andhra Pradesh and 44 in Maharashtra (Table 1). Of the 34 KVKs in Andhra Pradesh, 23 are with SAU, 3 with ICAR institutes and 8 with Non-Governmental Organizations (NGO). In Maharashtra, 16 KVKs are with SAUs, one with ICAR institute, 26 with NGOs and one with Open University.

Table 1. Status of KVKs

State	No. of districts	No. of KVKs				Total
		SAU	ICAR	NGO	Others	
Andhra Pradesh	22	23	3	8	-	34
Maharashtra	33	16	1	26	1	44
Total	55	39	4	34	1	78

Staff

The details of staff position of different KVKs are given in Table 2. Out of 1248 posts sanctioned in the Zone, 895 are filled (71%). The Programme Coordinators are in position at 52 KVKs in the Zone, while the number of Subject Matter Specialists in position is 330 (70%) and the number of Programme Assistants is 141(60%).

Table 2. Consolidated staff position

Category	Andhra Pradesh			Maharashtra			Total		
	S	F	V	S	F	V	S	F	V
Programme Coordinator	34	27	7	44	25	19	78	52	26
Subject Matter Specialist	204	126	78	264	204	60	468	330	138
Programme Assistant	102	48	54	132	93	39	234	141	93
Administrative Staff	68	59	9	88	70	18	156	129	27
Auxiliary Staff	68	40	28	88	62	26	156	102	54
Supporting Staff	68	58	10	88	83	5	156	141	15
Total	**544**	**358**	**186**	**704**	**537**	**167**	**1248**	**895**	**353**

S : Sanctioned F : Filled V : Vacant

Infrastructure

In order to facilitate proper functioning of KVKs, modest infrastructure is provided by ICAR. The details of land, buildings, vehicles and other facilities are presented in Table 3. The other infrastructure such as soil and water testing lab, rainwater harvesting structure and e-connectivity are provided to only few selected KVKs, while the buildings and vehicles are provided to all the KVKs by ICAR.

Table 3. Details of infrastructure available with KVKs

State	Land (ha)			Buildings						DU	Vehicles		SWTL	RWHS	EL
				AB		FH		SQ							
	<10	10-20	>20	A	UP	A	UP	A	UP		Jeep	Tractor			
AP	1	21	12	20	8	22	8	17	0	18	32	32	18	1	12
MS	0	15	29	32	10	32	10	27	0	28	44	44	30	11	17
Total	1	36	41	52	18	54	18	44	0	46	76	76	48	12	29

AP : Andhra Pradesh; MS : Maharashtra; AB : Admn. Building; FH: Farmers Hostel; SQ: Staff Quarters; DU: Demo Unit; SWTL : Soil & Water Testing Lab; RWHS : Rain Water Harvesting Structure; EL : e-linkage; A : Available; UP: Under Progress

Revolving Fund

The total revolving fund generated by KVKs in the Zone is Rs. 377.46 lakh of which Rs.178.98 lakh is generated by KVKs in Andhra Pradesh and Rs. 198.48 lakh by KVKs in Maharashtra (Table 4).

Table 4. Status of revolving fund (Rs. in lakh)

State	Balance on 31.3.2013
Andhra Pradesh	178.98
Maharashtra	198.48
Total	377.46

AP : Andhra Pradesh; MS :Maharashtra

In Andhra Pradesh, KVK Kurnool has the highest balance of revolving fund (Rs. 40.10 lakh) followed by Chittoor (Rs. 21.55 lakh) and Krishna (Rs. 14.90 lakh) and KVK wise fund position is furnished in Table 5a. In Maharashtra, KVK Ahmednagar has the highest balance Rs. 26.88 lakh followed by Beed, Rs. 14.62 lakh and Pune-N, Rs. 10.13 lakh. The KVK wise fund position is presented in Table 5a& b.

Table 5a. Status of revolving fund in KVKs of Andhra Pradesh (Rs. in lakh)

KVK	Balance on 31.3.2013
Adilabad	3.12
Anantapur	1.09
Anantapur-K	0.00
Chittoor	21.55
Chittoor-K	0.00
East Godavari	7.48
East Godavari-P	3.19
Guntur	0.00
Guntur - LAM	0.00
Kadapa	8.74
Karimnagar	2.27
Karimnagar-R	1.00
Khammam	1.98
Krishna	14.90
Krishna-G	8.08
Kurnool	40.10
Kurnool-B	1.00
Mahaboobnagar	1.64
Mahabubnagar-P	2.46
Medak	0.00
Nalgonda	5.45
Nalgonda-K	4.64
Nellore	1.73
Nizamabad	9.67
Prakasam	0.00
Prakasam-K	1.00
Ranga Reddy	0.00
Srikakulam	1.43
Vishakapatnam	13.96
Vizianagaram	5.83
Warangal	9.99
Warangal-M	1.29
West Godavari	2.71
West Godavari-V	2.68
Total	**178.98**

Table 5b. Status of revolving fund in KVKs of Maharashtra (Rs. in lakh)

KVK	Balance on 31.3.2013
Ahmednagar	26.88
Ahmednagar-D	1.00
Amaravati-D	9.17
Amaravati-G	0.00
Akola-U	0.49
Aurangabad	1.52
Aurangabad-G	1.09
Beed	14.62
Beed -K	1.39
Bhandara	1.83
Buldhana	1.60
Buldhana (ARS)	7.78
Chandrapaur	5.82
Dhule	1.91
Gadchiroli	9.06
Gondia	1.09
Hingoli	2.15
Jalgaon	3.40
Jalgaon-M	2.29
Jalna	4.95
Kolhapur	2.56
Latur	6.41
Nagpur	1.78

KVK	Balance on 31.3.2013
Nanded	3.46
Nanded-S	0.71
Nandurbar	9.16
Nashik	2.96
Nashik-M	0.01
Osmanabad	5.94
Parbhani	2.44
Pune	3.70
Pune-N	10.13
Raigadh	6.91
Ratnagiri	6.54
Sangli	9.75
Sindhudurg	8.21
Solapur	5.37
Solapur-M	0.49

KVK	Balance on 31.3.2013
Satara	0.00
Satara-B	0.00
Thane	1.62
Wardha	9.79
Washim	1.23
Yavatmal	1.27
Total	**198.48**

Scientific Advisory Committee (SAC)

SAC Meetings

The number of Scientific Advisory Committee (SAC) meetings conducted by KVKs is given in Table 6. Out of 78 KVKs, 38KVKs conducted SAC meetings once, while 24 KVKs conducted the meeting twice.

Table 6. Details of SAC meeting conducted in Zone-V

State	No. of KVKs	No. of KVK			
		Once	Twice	Total	Not conducted
Andhra Pradesh	34	11	21	32	1
Maharashtra	44	27	3	30	14
Total	78*	38	24	62	15

*Includes 23 additional KVKs (12 in Andhra Pradesh and 11 in Maharashtra) under establishment

ACHIEVEMENTS

Technology Assessment and Refinement

KVKs play a key role in the assessment and refinement of technologies to location specific condition by organizing various on-farm trials. KVKs plan the trials based on problems in major crops/enterprises in the district. The problem identification and prioritization of thrust areas, planning, execution and evaluation of trials is the fundamental activity of KVKs. The details of thrust areas include,

- Yield optimization in field crops, fruits, vegetables and other commercial crops through improved varieties, integrated nutrient management and organic farming strategies
- Integrated pests and disease management in filed and horticultural crops
- Scientific management of dairy and small livestock with appropriate feeding, breeding and health management practices
- Introduction of improved varieties/hybrids of crops
- Crop diversification and alternate land use systems
- Empowerment of women through improved nutrition and health, income generation and drudgery reduction
- Promotion of horticulture as a mechanism of crop diversification, augmenting family income and national income through export
- Natural resource management for sustainable productivity
- Value addition, processing and market facilitation of household and commercial enterprises
- Soil and water conservation, watershed management for drought proofing and sustainable rained farming
- Small scale mechanization for saving time and reducing cost and drudgery
- Promotion of crop production technologies and integrated farm development strategies
- Increasing income from fishery enterprises through production, processing and marketing enhancing activities

During the year, KVKs have assessed and refined 565 technologies in different locations by laying out 4679 on-farm trials on the farmers' fields (Table 7). Out of 565 technologies tested, 432 technologies were assessed and refined on crops followed by animals (64), women and children (69).

The details on thematic area wise on-farm trials conducted by KVKs in Andhra Pradesh and Maharashtra are furnished in Table 8 to 10. The main thematic areas covered in case animals are fertility management, feed and fodder management, nutrition management, evaluation of breeds, disease management, production and management and breed improvement. In case of crops, the thematic areas include varietal evaluation, Integrated Pest Management (IPM), Integrated Nutrient Management (INM), resource conservation technologies, integrated farming systems, weed management, Integrated Disease Management (IDM) and seed and planting material production. Under empowerment of rural women, the on-farm trials were conducted in thematic areas viz., health and nutrition, drudgery reduction and entrepreneurship development.

Table 7. Details of technologies assessed and refined by KVKs (Zone V)

Particulars	State	Category	No. of technologies	No. of trials	No. of KVKs
Assessment	Andhra Pradesh	Animals	23	156	14
		Crops	211	1213	116
		Women Empowerment	18	269	17
		Sub Total	252	1638	
	Maharashtra	Animals	33	374	29
		Crops	169	1644	100
		Women Empowerment	42	528	33
		Sub Total	244	2546	
		Total	496	4184	
Refinement	Andhra Pradesh	Animals	4	14	4
		Crops	21	127	13
		Sub Total	25	141	
	Maharashtra	Animals	4	48	4
		Crops	31	260	26
		Women Empowerment	9	46	6
		Sub Total	44	354	
		Total	69	495	
Assessment & Refinement	Andhra Pradesh	Animals	27	170	18
		Crops	232	1340	129
		Women Empowerment	18	269	17
		Total	277	1779	
	Maharashtra	Animals	37	422	33
		Crops	200	1904	126
		Women Empowerment	51	574	39
		Total	288	2900	
	Grand Total		565	4679	

Table 8. Details of thematic area wise technologies assessed and refined by KVKs (Zone V)

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Breed Evaluation	8	73	7
	Breed Improvement	1	5	1
	Disease Management	14	167	14
	Fertility Management	2	29	2
	Fodder and Feed Management	2	14	2
	Feed and Nutrition Management	28	246	19
	Production and Management	8	53	5
	Integrated Farming System	1	5	1
	Total	64	592	
Crops	Cropping Systems	20	107	11
	Farm Machinery and Equipment	26	196	18
	Improved Tools and Implements	4	32	4
	Integrated Crop Management	58	482	37
	Integrated Disease Management	38	250	26
	Integrated Nutrient Management	97	803	53
	Integrated Pest Management	72	555	45
	Integrated Weed Management	20	161	15
	Resource Conservation Technologies	5	40	5
	Varietal Evaluation	92	618	41
	Total	432	3244	
Women Empowerment	Entrepreneurship Development	6	80	4
	Health and Nutrition	22	358	20
	Drudgery Reduction	35	361	26
	Value Addition	6	44	6
	Total	69	843	
Grand Total		565	4679	

Table 9. Details of thematic area wise assessment of technologies by KVKs (Zone V)

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Breed Evaluation	7	63	6
	Breed Improvement	1	5	1
	Disease Management	10	133	10
	Feed and Nutrition Management	28	246	19
	Fertility Management	2	29	2
	Integrated Farming System	1	5	1
	Production and Management	7	49	4
	Total	56	530	

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Crops	Cropping Systems	20	107	11
	Farm Machinery	26	196	18
	Improved Tools and Implements	2	20	2
	Integrated Crop Management	54	453	33
	Integrated Disease Management	31	211	21
	Integrated Nutrient Management	74	629	39
	Integrated Pest Management	59	445	34
	Integrated Weed Management	19	153	14
	Resource Conservation	4	30	4
	Varietal Evaluation	91	613	40
	Total	380	2857	
Women Empowerment	Entrepreneurship Development	6	80	4
	Health and Nutrition	22	358	20
	Drudgery Reduction	28	323	22
	Value Addition	4	36	4
	Total	60	797	
Total		496	4184	

Table 10. Details of thematic area wise refinement of technologies by KVKs (Zone V)

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Disease Management	4	34	4
	Feed and Fodder Management	2	14	2
	Breed Evaluation	1	10	1
	Production and Management	1	4	1
	Total	8	62	
Crops	Improved Tools and Implements	2	12	2
	Integrated Crop Management	4	29	4
	Integrated Disease Management	7	39	5
	Integrated Nutrient Management	23	174	14
	Integrated Pest Management	13	110	11
	Integrated Weed Management	1	8	1
	Resource Conservation	1	10	1
	Varietal Evaluation	1	5	1
	Total	52	387	
Women Empowerment	Value Addition	2	8	2
	Drudgery Reduction	7	38	4
	Total	9	46	
Total		69	495	

KVKs in Andhra Pradesh assessed the suitability of 252 technologies by conducting 1638 on-farm trials covering animals (156), crops including horticultural species (1213) and empowerment of rural women (269). Similarly, in case of Maharashtra KVKs assessed 244 technologies by organizing 2546 trials that include animals (374), crops including horticultural species (1644) and women empowerment (528). The state wise details of technologies assessed by KVKs are presented in Table11 and 12.

Table 11. Details of thematic area wise assessment of technologies in Andhra Pradesh

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Breed Evaluation	4	36	3
	Disease Management	2	10	2
	Feed and Nutrition Management	11	72	6
	Integrated Farming System	1	5	1
	Production and Management	5	33	2
	Total	23	156	
Crops	Cropping Systems	19	97	10
	Farm Machinery	10	46	9
	Integrated Crop Management	18	103	14
	Integrated Disease Management	23	124	14
	Integrated Nutrient Management	29	180	17
	Integrated Pest Management	33	183	16
	Integrated Weed Management	10	61	9
	Resource Conservation	3	20	3
	Varietal Evaluation	66	399	24
	Total	211	1213	
Women Empowerment	Entrepreneurship Development	3	63	3
	Health and Nutrition	7	145	6
	Drudgery Reduction	6	45	6
	Value Addition	2	16	2
	Total	18	269	
Total		252	1638	

Table 12. Details of thematic area wise assessment of technologies in Maharashtra

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Breed Evaluation	3	27	3
	Breed Improvement	1	5	1
	Disease Management	8	123	8
	Feed and Nutrition Management	17	174	13
	Fertility Management	2	29	2
	Production and Management	2	16	2
	Total	33	374	
Crops	Cropping Systems	1	10	1
	Farm Machinery	16	150	9
	Improved Tools and Implements	2	20	2
	Integrated Crop Management	36	350	19
	Integrated Disease Management	8	87	7
	Integrated Nutrient Management	45	449	22
	Integrated Pest Management	26	262	18
	Integrated Weed Management	9	92	5
	Resource Conservation	1	10	1
	Varietal Evaluation	25	214	16
	Total	169	1644	
Women Empowerment	Entrepreneurship Development	3	17	1
	Health and Nutrition	15	213	14
	Drudgery Reduction	22	278	16
	Value Addition	2	20	2
	Total	42	528	
Total		244	2546	

A total of 25 technologies were refined by KVKs in Andhra Pradesh by conducting 141 trials covering animals (14) and crops (127). Similarly, KVKs in Maharashtra organized 354 trials to refine 44 technologies covering animals (48), crops (260) and women (46). The state wise details on refinement of technologies are furnished in Table 13 and 14.

Table 13. Details of thematic area wise refinement of technologies Andhra Pradesh

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Feed and Fodder Management	1	4	1
	Production and Management	1	4	1
	Disease Management	2	6	2
	Total	4	14	
Crops	Varietal Evaluation	1	5	1
	Integrated Disease Management	5	23	3
	Integrated Nutrient Management	10	64	4
	Integrated Pest Management	4	25	4
	Resource Conservation	1	10	1
	Total	21	127	
Total		25	141	

Table 14. Details of thematic area wise refinement of technologies in Maharashtra

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Breed Evaluation	1	10	1
	Disease Management	2	28	2
	Feed and Fodder Management	1	10	1
	Total	4	48	
Crops	Improved Tools and Implements	2	12	2
	Integrated Crop Management	4	29	4
	Integrated Disease Management	2	16	2
	Integrated Nutrient Management	13	110	10
	Integrated Pest Management	9	85	7
	Integrated Weed Management	1	8	1
	Total	31	260	
Women Empowerment	Value Addition	2	8	2
	Drudgery Reduction	7	38	4
	Total	9	46	
Total		44	354	

Performance of technologies
Field crops

Varietal evaluation

Evaluation of new released variety of Wheat

Improved varieties of wheat were evaluated by KVK, Amravati (Ghatked) and Pune (Baramati). In Amaravati, var. AKM-1071 matured earlier and also gave higher yield and net return than local check (LOK-1). Similarly, in Pune, var. MACS-6222 also matured earlier and gave higher yield and net return than local check (NIAW-301).

Technology assessed (KVK, Amaravati (G))	No. of Trials	Days to maturity	No. of tillers / Sq.m	Grains /ear head (g)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
cv.LOK-1 - Farmers Practice	8	115	349	39.02	20.30	19450	2.29
cv. AKW 1071- Recommended Practice		105	420	42.1	22.40	20200	2.73

Technology assessed (KVK, Pune)	No.of Trials	Average number of tillers/plant	Maturity period (days)	Yield (q/ha)	Net Return (Rs./ ha)	BCR
cv.NIAW-301-Farmers Practice	9	6.3	116	28.30	12012	1.43
cv.MACS-6222-Recommended Practice		7.2	108	35.97	22758	1.82

Evaluation of scented of Rice variety

In a study on the performance of scented rice variety by KVK, Pune, var. Pusa Sugandh-3 gave higher yield and net return besides coming to maturity earlier than the local check (var. Indrayani).

Technology assessed	No. of Trials	1000 grain weight (gm)	Maturity (days)	Kernel length (mm)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
cv.Indrayani --Farmers Practice	10	17.7	105	5	27.57	37396	2.43
cv.Pusa sugandh -3- Recommended Practice		21.3	94	7	28.02	42840	2.57

Varietal evaluation in sorghum

In a trail on varietal evaluation of Kharif Sorghum by KVK, Ranga Reddy the highest yield (16.25 q/ha) and net return (Rs. 9399/ha) were recorded by var. PSV-56 followed by var. CSV-23 (15 q/ha) and (Rs. 7837/ha).

Technology assessed (KVK, Ranga Reddy)	No of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
Local variety (Farmers Practice)	8	9.50	2380	1.25
Improved variety CSV-23		15.00	7837	1.72
Improved variety PSV-56		16.25	9399	1.86

In a trail on varietal evaluation of Rabi Sorghum by KVK, Beed improved var. Parbhani moti gave the highest yield (21.10 q/ha) and net return (Rs. 31800/ha) followed by var. PKV-Kranti (19.60q/ha) and (Rs. 31600/ha).

Technology assessed (KVK, Beed)	No. of Trials	Length of cobs (cm)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
cv.M-35-1- Farmers practice	10	16.02	16.00	22250	3.11
cv PKV Kranti-Recommended Practice		18.90	19.60	31600	3.46
cv-Parbhani moti -Recommended Practice		22.10	21.50	31800	3.43

Varietal evaluation in chickpea

In a trail on varietal evaluation of Chickpea by KVK, Ranga Reddy improved var. JAKI-9218 had low incidence of wilt and gave higher yield (13.75q/ha) and net return (Rs.29150/ha) than the local check (var. Jyothi).

Technology assessed	No. of trials	Incidence of wilt (%)	Yield (q/ha)	Net return (Rs./ha)	BCR
Local check - Var. Jyothi (Farmers Practice)	3	7.4	9.50	18300	2.79
Improved variety JAKI-9218		2.6	13.75	29150	3.40

Performance of groundnut varieties

In a varietal trail of Groundnut by KVK, Anantapur var. Narayani gave the highest yield (14.77 q/ha) and net return (Rs. 39988/ha) followed by var. K-9 and K-6.

Technology assessed	No. of trials	Shelling per cent	Yield (q/ha)	Net return (Rs./ha)	BCR
Local check (TMV-2)	5	60	10.66	21904	1.6
cv. Narayani		65	14.77	39988	2.2
cv. K-9		58	13.60	34840	2.0
cv. K-6		55	12.58	30352	1.9

Evaluation in Safflower

In a varietal trail of safflower by KVK, Nanded (Sagroli) improved var. PBNS-40 gave higher yield (9.13q/ha) and net return (Rs.10995/ha) than local check (var. Bhima).

Technology assessed	No. of Trials	No of capsules/plant	Yield (q/ha)	Net Return (Rs. / ha)	BCR
cv.Bhima -Farmers Practice	10	5	5.88	1692	1.08
cv.PBNS-40-Recommended Practice		32	9.13	10995	1.76

Nutrient management

Nutrient Management in rice

In a study on soil test based nutrient management in Kharif rice by KVK, Chittoor, the highest yield (63.05 q/ha) was recorded with soil test based nutrient application followed by the application of recommended dose of fertilizers.

Technology assessed	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
119:86:38 NPK kg/ha (Farmers practice)	5	59.18	36980	1.92
80:60:40 NPK kg /ha + 50 kg Zinc Sulphate/ha (Recommended dose)		60.63	39355	1.99
100:45:40 NPK kg/ha + 50 kg Zinc Sulphate/ha (Soil test based)		63.05	43975	2.15

Nutrient Management in Maize

Nutrient application as per the targeted yield equation in hybrid maize was evaluated by KVK, Ahmednagar. It was found that the yield components, grain yield (85.75q/ha) and net return (Rs.60335/ha) were considerably more with nutrient application as per the targeted yield equation than the farmers practice.

Technology assessed	No.of Trials	Comb wt (gm)	No of grains/ comb	100 grain wt.(gm)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
200:120:75Kg NPK /ha- Farmers practice	10	277.63	615.77	28.09	75.00	45630	1.93
170:138:106Kg NPK /ha- Targeted yield equation (80q/ha)		315.03	646.53	30.13	85.75	60335	2.27

Nutrient Management in Wheat

In a trail on micro nutrient management in wheat by KVK, Beed more number of tillers per plant and higher yield (20.12q/ha) were recorded with the application of recommended dose of fertilizers as compared the farmers practice.

Technology assessed	No.of Trials	No. tillers/plant	1000 seed weight(gm)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Application of 60:40:40 NPK (kg/ha) - Farmers practice	10	7	38	15.00	15250	2.20
Use of 100:50:50 NPK (kg/ha) + 20 kg/ha $ZnSO_4$, 20 kg/ha Fe_2SO_4 and seed treatment with Azatobactor 250 gm/10kg of seed- Recommended practice		10	52	20.12	21226	2.41

Nutrient Management in Soybean

In a study on nutrient management in Soybean by KVK, Dhule, application of nutrients as recommended by Dr. PDKV, Akola and MPKV, Rahuri resulted in improved yield components, higher yield and net return than the farmers practice.

Technology assessed	No. of Trials	1000 Seed wt. (g)	No. of pods/ plant	Weight of Pods/plant (g)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
23:57.6:0 N P2O5 K2O kg/ha - Farmers practice	7	129.91	42.73	14.43	15.17	21294	1.88
50:75:0 N P2O5 K2O kg/ha ï Recommended Practice (MPKV)		134.74	51.77	17.69	18.17	36731	3.07
35:75:30 N P2O5 K2O kg/ha - Recommended Practice (Dr. PDKV)		137.82	57.36	21.78	20.86	24201	2.26

Integrated pest and disease management

Bio Intensive Pest Management (BIPM) in Rice

The Bio Intensive Pest Management (BIPM) in Rice was assessed by KVK, Kadapa. The results indicated that the pest incidence (leaf folder and stem borer) was less under BIPM leading to higher yield (53.25q/ha) and net return (Rs.32148/ha) compared to the farmers practice of indiscriminate use of pesticides.

Technology assessed	No of trials	Pest incidence (%)		Yield (q/ha)	Net return (Rs./ha)	BCR
		Leaf folder	Stem borer (Dead hearts)			
Indiscriminate use of chemical pesticides ï Farmers practice	5	20.80	12.20	44.62	23858	1:2.90
BIPM module (ANGRAU) ï Recommended practice		1.80	3.40	53.25	32148	1:4.06

Management of Plant Hopper in Rice

The result of a study on management of plant hopper in rice by KVK, Gondia showed lower incidence of plant hopper, higher yield and net return with the spraying of Buprofenzin (IGR) @ 100g a.i. ha^{-1}.

Technology assessed	No.of Trials	Incidence of hoppers (%)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Farmers practice ï No treatment practice	10	52.33	12.16	8092	1.24
Use of *Metarrhizium anisoplea* @ 2.5 Kg ha^{-1} and withdrawal of water from field-Recommended Practice		28.58	22.50	20500	3.12
Spraying of Buprofenzin (IGR) @ 100 g a.i. ha^{-1} -Refinement		21.05	22.96	21052	3.24

Management of Helicoverpa armigera in Pigeon Pea

In a study on management of Helicoverpa armigera in Pigeon Pea by KVK, Buldana, lower pod damage, higher yield (9.77 q/ha) and net return (Rs.24395/ha) were noted with the recommended technology.

Technology assessed	No. of Trials	Pod damage %	Yield (q/ha)	Cost of plant protection (Rs/ha)	Net Return (Rs. / ha)	BCR
3-4 sprays of Quinolphos 60ml, Profenophos 60ml, Indoxicarb 15ml, imactin benzoate 10 gm / 15 lit water- Farmer practice	15	23.5	7.33	4700	15060	1.94
Spraying of Azadirectin 1000ppm @ 10ml at 50% flowering followed by Imactin Benzoate @ 3gm after 15 days, Deltamethrin 1% + Trizophos 35 EC @ 25ml per 10 lit water after 15 days of second spraying- Recommended Practice		5.2	9.77	3220	24395	2.66

Management of Helicoverpa armigera in Chick pea

In a study on control of Helicoverpa armigera in Chickpea by KVK, Pune (Baramati), lower pod damage, higher yield (16.95q/ha) and net return (Rs.33965/ha) were noted with the recommended technology.

Technology assessed	No.of Trials	No of Pod borers/Plant	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Chloropyriphos @ 20 ml and confidor 4 ml /10 lit of water - Farmers practice	10	1.2	12.48	20867	2.03
Two sprays of Deltamethrin 1% + Triazophos 35% @ 25 ml/10 lit of water and Emamectin Benzoate 5% @3 gm /10 lit of water-Recommended Practice		0.31	16.95	33965	2.55

Management of sucking pests in BT Cotton

In a trail on management of sucking pests in BT Cotton by KVK, Kurnool the recommended practice of IPM resulted in lower pest incidence, higher yield (22.37 q/ha) and net return (Rs.45285/ha).

Technology assessed	No of trials	Pest incidence (%)	Yield (q/ha)	Net return (Rs./ha)	BCR
Indiscriminate use of pesticides - Farmers practice	5	8.24	21.20	40,400	2.20
Seed treatment with Imidacloprid 70 WS @ 5g/kg, Maize/Sorghum as barrier crop, Yellow sticky traps 10/acre, stem application with Imidacloprid (1:20) at 20,40 & 60 DAS and need based spraying of pesticide. - Recommended Practice (ANGRAU)		2.25	22.37	45285	2.37

Weed management

Weed management in Cotton

In a study on weed management in BT Cotton by KVK, Ahmednagar, application of herbicide and one hand weeding resulted in lesser cost of weed management, higher yield (27.50q/ha) and net return (Rs.58795/ha) as compared to farmers practice of three hand weedings.

Technology assessed	No. of Trials	Cost of weed management (Rs/ha)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Hand weeding (3 times) - Farmerôs practice	10	12808	25.83	49265	1.91
Spray herbicides Quizalofop ethyl 5%EC @ 0.05 kg a.i. + one hand weeding – Recommended Practice		9100	27.50	58795	2.15

Weed management in Soybean

In a study on weed management in Soybean by KVK, Yavatmal, application of Imazethapyr 75g.a.i./ha+ one hoeing at 25 DAS gave higher yield than farmers practice (One hand weeding + Two hoeings).

Technology assessed	No. of Trials	Yield (q/ha)	Net Return (Rs. / ha)	BCR
One hand weeding + Two hoeings - Farmers Practice	13	16.23	40970	2.29
Imazethapyr 75 g a.i. ha^{-1} + one hoeing 25 DAS ï Recommended Practice		17.15	43550	2.64

Cropping systems

Assessment of Chickpea based cropping system

In a trail on assessment of Chick pea based cropping system by KVK, Kurnool, the cropping sequence of foxtail millet followed by chick pea gave higher net returns (Rs.39389/ha) as compared to the farmers practice (Fallow-Chickpea).

Technology assessed	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
Fallow ï Chick pea (Farmers practice)	5	15.56	35024	2.2
Foxtail millet ï Chick pea		19.10 & 13.58	39389	1.8
Greengram ï Chick pea		3.85 & 14.37	36268	2.0

Evaluation of Plant Density in Maize

In a study on evaluation of planting density in maize by KVK, Kurnool, ridge planting (60x20 cm) gave higher yield (68.42/ha) and net return (Rs.60617/ha) than farmers practice (paired row planting).

Technology assessed	No. of trials	No. of plants /ha	Yield (q/ha)	Net return (Rs./ha)	BCR
Paired row planting (Farmers practice)	5	138888	63.15	52815	2.6
Ridge planting (60x20 cm)		83333	68.42	60617	2.9

Evaluation of Transplanted in Pigeonpea

To increase the yield and net return KVK, Latur assessed the performance of transplanted pigeon pea as recommended by UAS, Raichur (Karnataka). Transplanting of Pigeon pea resulted in higher yield, net return and BCR as compared to farmers practice of direct sowing.

Technology assessed	No. of trials	Yield (q/ha)	Net returns (Rs./ha)	BCR
Farmers practice	5	11.5	40250	5.09:1
Transplantation of Pigeon pea (5 x 3 ft)		16.0	56000	6.29:1

Assessment of Pigeon pea by Transplanting method

Fodder crops

Evaluation of improved fodder variety of Sorghum

Different fodder varieties of Sorghum were evaluated by KVK, Ahmednagar. The results indicated that var. Phule Amruta gave higher fodder yield (51.3 t/ha) and net return (Rs.40940/ha) than local check.

Technology Assessed	No of trials	Milk Production per lactation (litres)	Fodder yield (t/ha)	Net return Rs./ha	BCR
Local variety	10	3229	31.5	21120	3.68
Cv Phule Amriuta		3318	51.3	40940	4.95

Evaluation of round the year fodder production system

KVK, Pune evaluated the round the year fodder production system (Marvel+cow pea-Lucerne). The results indicated that round the year fodder production system provided higher green fodder yield (147 t/ha) to get higher milk production of cows and net return (Rs.221550/ha).

Technology Assessed	No of trials	Milk yield/cow/ lactation (litres)	Green Fodder yield (t/ha)	Net return Rs./ha	BCR
Cultivation of Sorghum ï maize-Sorghum (Farmers Practice)	5	4200	130	160250	3.14
Marvel+ Cow pea -Lucerne (Recommended practice)		4800	147	221550	3.81

Horticultural crops

Fruits

Evaluation of high density planting in tissue culture Banana

High density planting in tissue culture banana was evaluated by KVK, Kurnool (Y). It was found that planting of banana at closer spacing of 1.8 x 1.5m resulted in higher yield (80.86q/ha) and net return (Rs.471052/ha) as compared to farmers practice (1.8 x 1.8m spacing).

Technology assessed	No of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
Spacing of 1.8 m x1.8 m ï Farmers practice	5	72.24	404868	3.16
Spacing of 1.8mt.x1.5m ï Recommended practice		80.86	471052	3.45

Use of polythene mulch in muskmelon to improve quality and yield

In a study by KVK, Pune, planting with poly mulch resulted in better weed management, improved quality of fruit, higher yield of muskmelon (22.69 t/ha) and net return (Rs. 213850/ha).

Technology assessed	No. of Trials	No. of lab our for weeding (man days/ha)	Saving in weed control (Rs/ha)	Quality A/B/C (t/ha)	Yield (t/ha)	Net Return (Rs. / ha)	BCR
Planting with no mulch- Farmers practice	10	34	1650	A Grade-8.25 B Grade- 5.29 C Grade- 3.10	16.64	133900	1.83
Planting with polymulch- Recommended Practice		2	7500	A Grade-11.25 B Grade- 7.15 C Grade- 4.20	22.6 9	213850	2.15

Control plot

Planting with polymulch

Evaluation of fertigation in tissue culture banana

In a trial conducted by KVK, Kolhapur, adoption of recommended fertigation schedule resulted in higher bunch weight, yield (255q/ha) and net return (Rs. 96200/ha) as compared to farmers practice of soil application of fertilizers.

Technology assessed	No. of Trials	Weight of bunch (Kg)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Soil application of chemical fertilizers - Farmers Practice	10	13.64	191	89700	1.63
Recommended fertigation schedule - 200 :40: 200 g NPK / Plant/ Year. 20% of above dose at the time of planting through fertilizers and 80% through liquid fertilizer at an interval of one month from date of planting in 10 equal doses.		18.21	255	96200	1.69

Vegetables

Pest management

Control of thrips in Chillies

In a trial on control of thrips in chillies by KVK, Kolhapur, the recommended practice of seed treatment with Thiamethoxam 70 WP @ 5 gm per kg of seed and four alternate sprays of 4% neemark and Fipronil 5 S.C. @15 ml in 10 litres of water resulted in lower pest incidence (9%), higher yield (19q/ha) and net return (Rs.86500/ha).

Technology assessed	No.of Trails	Incidence of thrips %	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Spraying diamethoate or chlorpyriphos- Farmer practice	12	61	07	24500	1.10
Seed treatment before sowing with Thiamethoxam 70 WP @ 5 gm per kg of seed and Four alternate sprays of 4% neem ark and Fipronil 5 S.C. 15 ml in 10 lit water- Recommended Practice		09	19	86500	2.16

Control of seedling blight in ginger

In a trial to control seedling blight in ginger by KVK, Ahmednagar, the treatment of rhizomes with carbendezim @ 10g/lit. of water before sowing resulted in lower incidence of the disease (22.77%), higher yield (110.33q/ha) and net return (Rs.284344/ha).

Technology assessed	No. of Trials	Incidence of Blight Disease (%)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
No seed treatment ï Farmers Practice	13	67.97	80.00	190871.29	1.91
Treatment of rhizomes with carbendezim @ 10g/lit water before sowing-Recommended Practice		22.77	110.33	284344.56	2.07

Management of early blight disease in Tomato

In a study on management of early blight in Kharif tomato by KVK, Ahmednagar, the recommended practice (Seedling dip in Carbendazim (0.1%) solution and 2 sprays of Tebuconazole 25 SC @ 1 ml/lit at 30 and 45 days after transplanting) resulted in lower incidence of the disease, higher yield (445 q/ha) and net return (Rs.212360/ha).

Technology assessed	No. of Trials	Disease intensity (0-4scale)	Average cost of plant protection (Rs/ha)	Yield (q/ha)	Net return (Rs. / ha)	BCR
Seedling dip in Carbendazim (0.1%)solution during transplanting and spraying Mancozeb/ Carbendazim / Propineb after occurrence of disease- Farmers practice	12	1.31	31750	400	186395	2.19
Seedling dip in Carbendazim (0.1%) solution and Tebuconazole 25 SC @ 1 ml/lit (2 sprays at 30 and 45 days after transplanting)- Recommended Practice		0.66	28125	445	212360	2.48

Nutrient Management

Foliar application of micronutrient on tomato

The effect of foliar application of micronutrients in tomato was evaluated by KVK, Buldana. The results indicated that foliar application of micro nutrients as recommended gave higher yield (150.50q/ha) and net return (Rs.561200/ha) as compared to farmers practice of applying fertilizers through soil.

Technology assessed	No. of Trials	Avg. no of fruits / plant	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Soil application of micronutrient (Zn, B, Mn, Fe)-Farmers Practice	13	105.5	124.66	407450	2.08
Foliar application of micronutrient (Zn, B, Mn, Fe) at 5, 6, 7, & one month after bunch emergence (0.5%) ï Recommended Practice		115.16	150.50	561200	2.50

Evaluation of fertigation in Onion

In a study to evaluate the effect of fertigation in Onion by KVK, Pune it was noted that application of recommended dose of nutrients through fertigation resulted in better quality of bulbs, higher yield (24.77 q/ha) and net return (Rs.99770/q) as compared to soil application of nutrients.

Technology assessed	No.of Trials	Cost of fertilizers (Rs/ha)	Quality A/B bulbs (t/ha)	Yield (t/ha)	Net Return (Rs. / ha)	BCR
150:50:80 Kg NPK/ha as a basal dose through soil application ï Farmers practice	10	18750	A grade-9.40 B grade -7.25	16.65	46355	1.49
50:50:80 Kg NPK/ha as a basal dose & 100 kg N through urea in 7 splits (Up to 70 Days) through fertigation ï Recommended Practice.		22500	A grade- 13.50 B grade- 11.20	24.77	99770	1.93

Nutrient management in Chillies based on STCR equation

The nutrient management in Chillies based on STCR equation was assessed by KVK, Kurnool (Y). It was found that nutrient application as per STCR equation resulted in higher yield (52.46 q/ha) and net return (Rs.133604 /ha) than farmers practice.

Technology assessed	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
NPK:500-450-75Kg/ ha (Farmers practice)	5	51.68	109322	1.89
NPK:390-65-85 kg/ha (STCR equation for 50q/ha)		52.46	133604	2.30

Soil test based fertilizer application in Chillies

KVK, Beed evaluated the soil test based fertilizer application (STBF) in Chillies. The results indicated that application of 100:50:50 kg NPK/ha as per STBF resulted in more number of fruits per plant, higher yield (130q/ha) and net return (Rs.46800/ha)

Technology assessed	No. of Trials	No. of fruits/plant	Average weight of fruit (g)	Yield (q/ha)	Net Return (Rs. / ha)	BCR
80:40:40 ï kg NPK /ha-Farmers Practice	10	180	3	69	7200	1.15
100:50:50 kg NPK/ha as per STBF-Recommended Practice		425	5	130	46800	1.66

Cultivation of chillies by precision farming techniques

In a study by KVK, Osmanabad, cultivation of chillies by adopting precision farming techniques resulted in lower mortality of plants, increased yield (353.12q/ha) and net return (Rs.380688/ha) as compared to farmers practice.

Technology assessed	No. of Trials	Mortality (%)	No. days required for first picking (red chillies)	No. of pickings	Yield (q/ha)	Net Return (Rs. / ha)	BCR
Cultivation of Chillies at a planting distance of 5x 1.5 ft with drip system of irrigation. (Farmers practice)	5	20.8	108.8	7.6	179.37	174545	3.27
Cultivation of chilli crop by adopting precision farming techniques i.e raised bed, fertigation & polymulch technology at a planting distance 5x1.5 ft. (Recommended Practice)		7.2	90	10.8	353.12	380688	4.34

Improved tools and implements

Assessment of vertical conveyor reaper for harvesting of Paddy

In a trial by KVK, Raigad and Bhandara, harvesting of rice with vertical conveyor reaper proved to be more efficient is terms of area coverage, labour saving and cost reduction than harvesting with sickles.

Technology assessed (KVK, Raigad)	No.of Trials	Harvesting time/acre (hrs)	No of labour required	Cost of harves ting (Rs./acre)	Visual grain loss (%)
Manual harvesting of paddy with sickle - Farmers Practice	4	4.50	7	1050	1.8
Use of vertical conveyor reaper for paddy harvesting		1.25	2	500	1.7

Technology assessed (KVK, Bhandara)	No.of Trials	Field capacity, (ha/hour)	Field efficiency (%)	Labour requirement Man-hours/ha	Cost of operation (Rs/ha)
Manual harvesting of paddy with sickle - Farmers Practice	10	0.02	40	110	2000
Use of vertical conveyor reaper for paddy harvesting		0.21	70	13	800

Assessment of tractor drawn BBF planter

The tractor drawn 4-row BBF planter developed by Dr. PDKV, Akola was tested by KVK, Latur along with the traditional bullock drawn *tifan* and tractor drawn seed drill used by the farmers. The tractor drawn seed drill recorded higher field capacity (4.2 ha/day) as compared to tractor drawn BBF planter (3.5 ha/day) and bullock drawn *tifan* (1.45 ha/day). However, the crop sown by BBF planter gave higher yield of soybean (27.2 q/ha), and Bengal gram (13.8 q/ha) as compared to crop sown by tractor drawn seed drill (25.8 & 11.7 q/ha) and bullock drawn *tifan* (23.8 & 11.2 q/ha) respectively.

Technology assessed	No of trials	Field capacity ha/day	Field efficiency, %	Cost of operation Rs./ha	Labour requirement man-hours/ha	Yield of crop q/ha		BC ratio	
						Soy bean	Bengal gram	Soy bean	Bengal gram
Traditional bullock drawn *tifan* – Farmers practice	13	1.45	54	618	11	23.8	11.2	2.07	2.57
Tractor drawn seed drill		4.2	63	701	3.8	25.8	11.7	2.18	2.64
Tractor drawn BBF planter		3.5	64	644	4.58	27.2	13.8	2.26	3.13

Testing of tractor drawn BBF planter

Broad-beds sown by BBF planter

Assessment of motor operated sugarcane bud chipper

As farmers need sugarcane seedlings for planting, some farmers initiated nurseries for supplying the sugarcane seedlings. However, they were faced with the problem of harvesting of buds on large scale. Since no such equipment is available, KVK, Latur developed a motor operated sugarcane bud chipper and tested it on farmers nurseries. The capacity of the developed bud chipper is 10000 buds/day. It has increased the output by 65% over hand operated bud chipper and saved time and cost of operation.

Technology assessed	No of trials	Bud chipping capacity (No. of buds/hour)	Labour requirement (Man-hours/ 10000 buds)	Cost of operation (Rs./ bud)	BC Ratio
Hand operated sugarcane bud chipper	11	452	22.2	0.082	1.08
Motor operated sugarcane bud chipper		1277	7.8	0.029	3.06

Testing of motor operated sugarcane bud chipper

Refinement of Hand operated Sugarcane Bud Chipper

Some of the problems in available manual bud chippers as reported by the farmers are pain in shoulder and forearm due to high handle lift, frequent replacement of spring inside the machine and low output. Hence, the existing sugarcane bud chipper was refined by KVK, Latur and tested on the farmersô field. The refined bud chipper increased capacity of the worker by 50% (448 buds/hour) and saved labour requirement by 37-50% as compared to the available bud chippers.

Bud chippers tested	No of trials	Bud chipping capacity, buds/h	Labour requirement, man-h/10000 buds	Cost of operation, Rs./10000 buds	BC Ratio
Local sugarcane bud chipper	13	206	48.5	1818.7	1:1.23
Sugarcane bud chipper		248	40.3	1511.2	1:1.46
Refined sugarcane bud chipper		448	22.3	836.2	1:2.68

Testing of refined bud chipper

Testing of refined bud chipper

Livestock species

Feed management in crossbred HF cows

In a study on feed management in crossbreed HF cows by KVK, Pune, feeding 1 kg of sprouted wheat grain along with 25 kg green + 5 kg Kadabi + 6 kg concentrate resulted in higher milk yield (19.95 liters/day) and net return (Rs. 162/day/cow).

Technology assessed	No. of Trials	Average Milk yield/ cow/day (Litres)	Fat %	Cost of feeding /day /cow (Rs.)	Gross return /day/cow (Rs.)	Net Return /day/cow (Rs.)	BCR
Feeding of 25 kg green + 5 kg kadabi + 7 kg concentrate -Farmers Practice	10	18.50	3.50	194	323	129	1.66
Feeding of 1 kg sprouted wheat grain + 25 kg greens + 5 kg Kadabi + 6 kg concentrate		19.95	3.66	192	354	162	1.84

Effect of feeding of Sunflower heads supplemented ration on milk production in buffaloes

In a study by KVK, Kurnool (Y), feeding of Sunflower heads supplemented ration (30% SF heads + 70% concentrates of 18% CP) to buffaloes, resulted in increased milk production and net return.

Technology assessed	No. of Trials	Fat %	Average milk yield/animal in 120 days (in liters)	Net Return (Rs.)	BCR
Farmers practice (feeding of Rice bran)	5	6.22	675.76	9106	2.58
Feeding of Sunflower heads supplemented ration (30%SF heads + 70% concentrates of 18% CP)		7.17	734.17	13551	3.82

Assessment of Azolla feeding to increase milk production

In a study on feed management in cattle by KVK, Jalna and Latur, feed supplementation with Azolla @ 2kg/buffalo/day was found to increase milk production and net return.

Technology Assessed (KVK, Jalna)	No of trials	Milk yield/ Buffalo/day (litres)	Net return Rs./ha	BCR
Roughages + 2-3 kg concentrate - Farmers practice (T1)	10	11.0	110	1.50
T1 + 2 kg Azolla / Buffalo/day		13.2	166	1.69

Technology assessed (KVK, Latur)	No of trials	Milk yield /cow/lactation (litres)	Net return (Rs.)	BCR
Feeding of roughages+1-2 kg concentrate - Farmers practice	5	1890	10080	1:1.41
Feeding of roughases+1-2 kg concentrate feed +2 kg azolla- Recommended practice		2142	16591	1:1.66

Evaluation of Crystoscope for right time of insemination for crossbreed cows

In a study by KVK, Nashik, insemination of crossbreed cows using Crystoscope for detection of heat in animals resulted in higher rate of conception.

Technology assessed	No of trials	Conception %
Insemination of cows as per local oestrus observations - Farmers practice	9	33.33
Use of Crystoscope for identification of proper heat and insemination accordingly - Recommended practice		88.88

Effect of Azolla supplementation on growth rate of backyard poultry

In a study by KVK, Kurnool (Y) supplementation of poultry feed for backyard poultry (Rajasri) with Azolla @50g/day resulted in better growth of the bird and net return (Rs. 189.05).

Technology assessed	No. of trials	Initial body weight (g)	Body weight after 150 days (g)	Egg weight (g)	Net Return (Rs.)	BCR
Scavenging + grain feeding (Farmers practice)	50 birds	431.72	1130.9	38.2	150.33	1.48
Scavenging +grain feeding + 50g azolla/day		399.48	1389.7	42.8	189.05	1.93

Breed evaluation for backyard poultry

In a study on breed evaluation for backyard poultry by KVK, Raigad, higher body weight, egg weight and net return were recorded with improved breed of Giriraja as compared to local poultry.

Technology assessed	No. of trials	Average body weight (kg)	Average egg Production per year (No.)	Average weight of egg (g)	Net return/ bird (Rs.)	BCR
Rearing of local poultry birds ï Farmers practice	5	2.96	81	41.8	557	2.35
Rearing of Giriraja poultry birds ï Recommended practice		4.74	170	53.4	1380	4.36

Evaluation of mash and pelleted feed in major carps

In a trail on feed management for major carps by KVK, Karimanagar, balanced formulated pelleted feed resulted in higher survival rate (85%), yield (92.40q/ha) and net return (Rs.240040/ha) as compared to farmers practice.

Technology option	No. of trials	Average survival rate (%)	Average body weight (g)	Feed Conversion Ratio	Yield (q/ha)	Net return (Rs./ha)	BCR
Feeding the carps with only DOB (De-oiled rice bran)ï Farmers practice	3	75	1000	2.85	52.50	43500	1.19

Technology option	No. of trials	Average survival rate (%)	Average body weight (g)	Feed Conversion Ratio	Yield (q/ha)	Net return (Rs./ha)	BCR
Feeding the carps with 70% DOB +20% GNOC + 10% Sunflower oil cake or Cotton seed oilcakae - Recommended Practice		73	1250	1.95	63.85	116600	1.43
Feeding the carps with balanced formulated pelleted feed - Refined Practice		85	1650	1.45	92.40	240040	1.66

Gender specific technologies

Evaluation of Moringa Spicy Powder (MSP) for improving the hemoglobin (Hb) levels in rural women and adolescent girls

Based on clinical observations (i.e. *paleness in eyes, nails)* 30 subjects were selected (Farm women-15 & Adolescent girls - 15) by KVK, Karimnagar to evaluate the effectiveness of supplementing their diet with Moringa Spicy Powder (1 table spoon/day) in improving their hemoglobin levels. After supplementation of MSP continuously for 5 months along with their normal diet (Rice, Curry or pickle), the Hb levels in the subjects have increased particularly in case of adolescent girls.

Hemoglobin levels before consumption of Moringa Spicy Powder

S. No	Respondents	HB level			Total
		Below 8%	8.1 to 9.0%	9.1 to 10 %	
1	Adolescent girls	1	7	7	15
2	Farm women	3	4	8	15
	Total	4	11	15	30

Hemoglobin levels after consumption of Moringa spicy Powder for 5 months

S. No	Respondents	HB level			Total
		Below 8%	8.1 to 9.0%	9.1 to 10 %	
1	Adolescent girls	-	4	11	15
2	Farm women	2	3	10	15
	Total	2	7	21	30

Assessment of fortification of wheat flour with iron supplement for women

In a study by KVK Ahmednagar, the effectiveness of fortification of wheat flour with iron supplement in women was evaluated. The results indicated that after 45 days of consumption, there was considerable improvement in Hemoglobin level due to fortification of wheat flour with iron supplement (Ragi flour).

Technology assessed	No. of trials	Hemoglobin level (g/dl)	
		Initial level	After 45 days
No fortification of chapatti with ragi flour - Farmers practice	10	7- 9	7-9
Fortification of chapatti with ragi flour ï Recommended practice		7- 9	9-10

Assessment of performance of Improved sickle

To reduce the drudgery of farmwomen in harvesting paddy, KVK Kurnool (Y) evaluated lightweight improved sickle (175g). It was observed that more area could be covered with less strain by harvesting with the improved sickle.

Technology assed	No of trials	Time taken to harvest one acre of paddy (No. of hours)
Local Sickle (350-380 g)	10	3.50
Improved Sickle (175 g)		3.00

Matrix ranking of drudgery for Farmwomen in using the sickles

Type of drudgery	Indices	
	Local sickle	Improved Sickle
Drudgery estimation at harvest	4	2
Stress Estimation	5	3
Body Strain while in operation	4	2
Estimation of feel while carrying weights	5	2
Estimation of operational difficulty	4	2
Psychological Stress due to work	5	2

Indices for drudgery: Severe-5, Moderate-4, Normal-3, Less-2, No drudgery-1

Assessment of efficiency of Bhendi cutter along with picking bag

In a study by KVK, Ahmednagar using bhendi cutter and picking bag was found to improve the harvesting efficiency of rural woman while reducing the drudgery.

Technology assessed	No. of trials	Per cent of pain (Numerical rating scale)	Quantity of fruit harvested (kg/hr.)
Hand picking (Farmers practice)	10	60	4.81
Use of Bhendi cutter (Recommended practice)		37	6.50
Use of Bhendi cutter and picking bag (Refined practice).		8	8.04

Assessment of hand operated oil expeller

To reduce the drudgery of tribal women KVK, Nandurbar evaluated the hand operated oil expeller in place of local wooden instrument. Using hand operated oil expeller resulted in higher crushing capacity and oil recovery (%) as compared to local practice.

Technology assessed	No. of trials	Crushing capacity (kg/hr)	Oil production per kg of Tolambi seeds (ml)	Oil recovery (%)
Oil extraction with local wooden instrument, *Shipda* (Farmers practice)	7	3.5	195	55
Hand operated oil expeller		5.5	272	72

Assessment of low cost solar dryer for drying of Aonla candy

In a study on drying of aonla candy by KVK, Nandurbar it was found that drying candy with low cost solar dryer resulted in drying of more quantity of aonla candy in lesser time with better quality that fetched higher price.

Technology assessed	No. of trials	Capacity (kg/batch)	Drying Time (No. of days/batch)	Colour of the candy	Price Rs./kg
Open drying of aonla candy ï Farmers practice	5	25-30	4 -5	Medium brown to Brown	150-160
Using low cost solar dryer		45-50	3	Whitish or yellowish	200

Evaluation of Maize husk remover

To reduce the drudgery in manual husking of maize cobs, KVK, Nandurbar assessed the performance of maize husk remover. It was found that number of cobs husked per hour was 32% more with the maize husk remover as compared to manual husking.

Technology assessed	No. of trials	No. of cobs husked/hr.	Labour required No. of Man-hrs/100 cobs
Husking maize cob with hands -Farmers practice	7	363	0.28
Husking maize cob with maize husk remover		480	0.20

Evaluation of pedal operated potato peeler and slicer

KVK, Latur assessed the pedal operated potato peeler and slicer developed by CIAE, Bhopal to reduce the drudgery and also provide income-generating activity for rural women. The results showed that the above equipment has fewer requirements of labour (0.53man h/q), higher peeling and slicing capacity (160 kg/hr) of potatoes as compared to traditional method.

Technology option	No of trials	Peeling capacity Kg/hr	Slicing capacity Kg/hr	Labour requirement for peeling Man-hr/q	Labour requirement for slicing Man-hr/q	Peeling losses (%)
Traditional method of potato peeling and slicing	10	8	12	14.28	7.69	20
Pedal operated potato peeler and slicer		160	160	0.53	0.53	4

Frontline Demonstrations

KVKs organize frontline demonstrations (FLDs) to demonstrate the production potential of the important varieties and various production technologies in a given farming situation. Training programmes and field days are organized for extension workers and farmers for rapid dissemination of improved technologies.

Field crops

A total of 6504 demonstrations covering 2619.92ha under pulses, cereals, oilseeds and fibres were organized by KVKs in Zone-V (Table 15). The major categories covered under FLDs in Andhra Pradesh include pulses (1015), cereals (1093) and oilseeds (282). In Maharashtra also the major categories of the demonstrations were pulses (1482), oilseeds (878) and cereals (403). In pulses, 915 demonstrations covering 357.25ha were organized on chickpea followed by pigeonpea (785), greengram (435) and blackgram (354). Among oilseed crops, 567 demonstrations covering 216.55ha were organized on soybean followed by groundnut (330), sesamum (65), linseed (63), sunflower (55), castor (44), mustard (30) and safflower (6). In cotton 643 demonstrations covering 285.60 ha were organized, while in sugarcane 127 demonstrations were organized in 57.78 ha.

Table15. Details of category wise area under FLD on field crops

Category	Crop	Andhra Pradesh		Maharashtra		Total	
		No. of Demos.	Area (ha)	No. of Demos.	Area (ha)	No. of Demos.	Area (ha)
Pulses	Greengram	222	85.80	213	85.00	435	170.80
	Black gram	164	60.82	190	69.00	354	129.82
	Pigeon pea	306	140.62	479	200.20	785	340.82
	Chickpea	315	132.30	600	224.95	915	357.25
	Rajmah	8	3.00	-	-	8	3.00
	Total	1015	422.54	1482	579.15	2497	1001.69
Oilseeds	Ground nut	168	101.80	162	55.00	330	156.80
	Soybean	15	6.00	552	210.55	567	216.55
	Castor	44	15.00	-	-	44	15.00
	Sunflower	55	40.10	-	-	55	40.10
	Linseed	-	-	63	9.40	63	9.40
	Mustard	-	-	30	9.00	30	9.00
	Safflower	-	-	6	2.40	6	2.40
	Sesamum	-	-	65	11.80	65	11.80
	Total	282	162.90	878	298.15	1160	461.05
Cereals	Maize	203	89.60	11	5.00	214	94.60
	Rice	890	385.20	253	108.80	1143	494.00
	Wheat	-	-	139	49.60	139	49.60
	Total	1093	474.80	403	163.40	1496	638.20
Millets	Finger millet	13	3.76	10	1.00	23	4.76
	Setaria	20	8.00	-	-	20	8.00
	Sorghum	35	10.40	337	123.44	372	133.84

Category	Crop	Andhra Pradesh		Maharashtra		Total	
		No. of Demos.	Area (ha)	No. of Demos.	Area (ha)	No. of Demos.	Area (ha)
	Total	68	22.16	347.00	124.44	415	146.60
Commercial Crops	Cotton	348	165.60	295	120.00	643	285.60
	Sugarcane	14	4.60	113	53.18	127	57.78
	Total	362	170.20	408.00	173.18	770	343.38
Fodder	Napier	111	17.00	20	5.00	131	22.00
	Maize	-	-	35	7.00	35	7.00
	Total	111	17.00	55	12.00	166	29.00
Total		**2931**	**1269.60**	**3573**	**1350.32**	**6504**	**2619.92**

Pulses

In Andhra Pradesh, frontline demonstrations on chickpea were organized at Anatapur, Nellore, Prakasam, Kurnool, Nizamabad, Adilabad, Kadapa, Mahaboobnagar, Medak and Rangareddy. Improved variety JAKI-9128 and JG-11 along with improved management gave higher yield (13.42 q/ha) compared to local check. In Maharashtra, higher yield response (16.29%) was noted with cv. JAKI-9218, AKM-8802 and Digvijay along with integrated nutrient and pest management practices compared to farmers practice at Ahmednagar, Beed, Bhandara, Chandrapur, Hingoli, Kolhapur, Latur, Nagpur, Nanded, Nadurbar, Osmanaba, Parbhani, Raigadh, satara, Washim, Yavatmal, Amaravati, Aurangabad, Buldana, Pune, Nasik, Solapur, and Jalgaon (Table 16).

Demonstrations on pigeonpea were organized by KVKs in Adilabad, Mahabubnagar, Medak, Nalgonda, Warangal, Srikakulam, Kurnool, Vizianagaram, Visakhapatnam, Chittoor, Kadapa, , Khammam and Rangareddy of Andhra Pradesh and improved varieties (cv. PRG-158 , TRG-38, Laxmi and LRG-41) and recommended package of practices gave 27.36 per cent higher yield compared to local check. In Maharashtra, improved varieties viz. BSMR-736 and BDN-708 along with improved management practices gave average yield increase of 35.01 per cent in demonstrations at Ahmednagar, Aurangabad, Beed, Bhandara, Hingoli, Nagpur, Parbhani, Pune, Solapur, Amaravati, Buldhana, Chandrapur, Jalna, Latur, Osmanabad, Washim and Yavatmal.

Table 16. Performance of Front Line Demonstrations on pulses

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Greengram	222	85.80	7.30	5.42	34.69
	Blackgram	164	60.82	9.00	7.44	20.97
	Pigeon pea	306	140.62	9.73	7.64	27.36
	Chickpea	315	132.30	13.42	11.75	14.21
	Rajmah	8	3.00	7.72	4.13	86.92
Maharashtra	Greengram	213	85.00	10.06	7.85	28.15
	Blackgram	190	69.00	8.75	6.87	27.37
	Pigeon pea	479	200.20	11.57	8.57	35.01
	Chickpea	600	224.95	16.29	12.63	28.98

In blackgram, demonstrations were conducted at Kadapa, Kurnool, East Godavari, Krishna, Nellore, Visakhapatnam and Srikakulam in Andhra Pradesh with improved variety (LBG-752 and LBG-645) and nutrient management, which resulted in higher yield response (20.97%) compared to local cheek. In Maharashtra, improved varieties viz. PKV-Udid-15, TAU-1 and AKU-15 and improved management gave higher average yield (8.75q/ha) compared to local check at Amaravathi, Beed, Nashik, Buldhana, Osmanabad and Washim. Frontline demonstrations on greengram were organized at Nalgonda, Medak, Nizamabad, Srikakulam, Karimnagar, Khammam, Mahaboobnagar, Visakhapatnam and Warangal in Andhra Pradesh and Ahmednagar, Dhule, Nashik, Sangli, Amaravati, Buldhana, Jalna, Parbhani and Washim in Maharashtra with improved management and high yielding varieties viz. WGG-37 and LGG-20 (Andhra Pradesh) and AKM-4 and AKM-8802 (Maharashtra). There was 34.69 per cent increase in yield of greengram in Andhra Pradesh and 28.15% in Maharashtra as compared to local check.

Oilseeds

KVKs organized frontline demonstrations on soybean in two districts of Andhra Pradesh (Karimnagar and Adilabad) and eighteen districts of Maharashtra (Amravati, Beed, Buldhana, Dhule, Hingoli, Jalgaon, Jalna, Latur, Nanded, Nasik, Osmanabad, Parbhani, Sholapur, Washim, Yavatmal, Kolhapur, Pune and Satara). Improved varieties MAUS-71, DS-228, JS-9305 and JS-335 were demonstrated in Maharashtra along with nutrient management and plant protection measures. Results showed that improved varieties and management practices gave higher yield in Andhra Pradesh (12.56 q/ha) and Maharashtra (19.49 q/ha) compared to local check (Table 17).

Frontline demonstrations on groundnut were conducted in eight districts of Andhra Pradesh, covering Anantapur, Chittoor, Kadapa, Khammam, Mahaboobnagar, Vizianagaram, Visakhapatnam and Nellore. Improved varieties K-6, TG-51 and TG37A along with balanced fertilization and pest management gave higher average yield (20.75q/ha) compared to local check. Similarly in Maharashtra, demonstrations were organized in seven districts (Nandurbar, Jalgaon, Pune, Raigadh, Satara, Solapur and Latur). Improved varieties viz. cv. TG-37A, TG-38, and JL-286 with nutrient management resulted in higher yield (18.74 q/ha) than local check (14.52 q/ha) (Table 17).

Table 17. Performance of Front Line Demonstrations on oilseeds

State	Crop	No. of demonstrations	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Castor	44	15.00	10.17	7.46	36.33
	Ground nut	168	101.80	20.75	17.93	15.73
	Soybean	15	6.00	12.56	11.79	6.53
	Sunflower	55	40.10	15.12	13.84	9.25
Maharashtra	Ground nut	162	55.00	18.74	14.52	29.06
	Linseed	63	9.40	8.42	5.79	45.42
	Musterd	30	9.00	9.70	6.79	42.86
	Safflower	6	2.40	7.88	6.00	31.33
	Sesamum	65	11.80	5.89	4.62	27.49
	Soybean	552	210.55	19.49	15.81	23.28

In case of sunflower improved management practices resulted in higher yield (15.12 q/ha in Andhra Pradesh) compared to local check (Table 17). Frontline demonstrations on sesamum organized in three districts viz. Chandrapur, Bhandara and Jalgaon (MS) with improved varieties (NT-11 and JLT-408) showed yield increase to the tune of 27.49 per cent as compared to local check. Frontline demonstrations on castor in Andhra Pradesh and linseed in Maharashtra gave higher yield (36.33 and 45.42 per cent in

castor and linseed respectively) compared to local check.

Cereals

Frontline demonstrations on rice were organized in eighteen districts of Andhra Pradesh (Anantapur, Chittoor, East Godavari, Karimnagar, Khammam, Krishna, Kurnool, Mahaboobnagar, Nalgonda, Nellore, Nizamabad, Vishakhapatnam, Vizianagaram, Prakasam, Rangareddy, Srikakulam, Warangal and West Godavari) and six districts of Maharashtra (Bhandara, Chandrapur, Kolhapur, Pune, Raigadh and Satara). Improved varieties viz. cv. RGL-2332, MTU-1075, NLR-3041 JGL-11470 (Andhra Pradesh) and cv. Indrayani, Karjat-3, Karjat-5 and Karjat-7 (Maharashtra) along with improved management resulted in higher yield as compared to local check (Table 18).

Maize demonstrations were organized in seven districts of Andhra Pradesh (East Godavari, Karimnagar, Kurnool, Mahaboobnagar, Rangareddy, Warangal and Nalgonda) and Jalna in Maharashtra with improved varieties viz. DHM-117 and Sugar-75 and improved management such as zero tillage, soil test based nutrient management etc. Results indicated that improved varieties along with improved crop management technologies recorded higher yields (12.19 and 18.51 per cent in Andhra Pradesh and Maharashtra respectively) compared to local check (Table 18).

Eight KVKs in Maharashtra (Chandrapur, Dhule, Jalgaon, Kolhapur, Pune, Sangli, Satara and Yavatmal) organized demonstrations on wheat with high yielding varieties viz. NIAW-301, AKAW-3722, AKW-4627, NIAW-1415, Tapowan and Raj-4037 along with management practices such as nutrient and weed management. There was higher yield response (20.53 %) to varieties and management practices compared to local check (Table 18).

Table 18. Performance of Front Line Demonstrations on cereals

State	Crop	No. of demonstrations	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Maize	203	89.60	70.51	62.85	12.19
	Rice	890	385.20	61.74	57.27	7.81
Maharashtra	Maize	11	5.00	12.87	10.86	18.51
	Rice	253	108.80	44.73	37.90	18.02
	Wheat	139	49.60	29.41	24.40	20.53

Commercial crops

Frontline demonstrations on cotton were organized by 9 districts in Andhra Pradesh (Adilabad, Karimnagar, Karimnagar, Khammam, Kurnool, Kadapa, Prakasam, Rangareddy, Warangal and Srikakulam) and 11 districts in Maharashtra (Amaravati, Beed, Buldhana, Dhule, Hingoli, Jalna, Nagpur, Nanded, Nandurbar, Parbhani and Yavatmal) with improved varieties and management practices (pest and nutrient management and row spacing). Results indicated that improved varieties and management technologies resulted in higher yield in Andhra Pradesh (18.39 q/ha) and Maharashtra (19.52 q/ha) compared to local varieties and management (Table 19).

Sugarcane demonstrations were organized in three districts of Andhra Pradesh (Khammam, Chittoor and srikakulam) and five districts of Maharashtra (Ahmednagar, Parbhani, Pune, Satara and Kolhapur) focusing mainly on biological control of early shoot borer and scales, management of white grub and integrated nutrient management. There was higher yield response to biological pest control

of early shoot borer (9.35%) in Andhra Pradesh and improved management practices for ratoon crop (26.33%) in Maharashtra (Table 19).

Table 19. Performance of Front Line Demonstrations on commercial crops

Crop	State	No. of demonstrations	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Cotton	Andhra Pradesh	348	165.60	18.39	15.89	15.73
	Maharashtra	295	120.00	19.52	14.85	31.45
Sugarcane	Andhra Pradesh	14	4.60	803.75	735.00	9.35
	Maharashtra	113	53.18	487.33	385.77	26.33

Millets

Frontline demonstrations on fingermillet were organized by three districts in Andhra Pradesh (Srikakulam, Vizianagaram and Vishakhapatnam) with improved package of practices and in Raigadh district of Maharashtra with improved variety Dapoli-1. In finger millet higher yield response (50%) was noted with cv. Dapoli-1(Maharashtra) and improved management practices (35.52% in Andhra Pradesh, Table20). In sorghum, two districts of Andhra Pradesh (Rangareddy and Mahabubnagar) and eleven districts of Maharashtra (Ahmednagar, Beed, Chandrapur, Jalna, Nandurbar, Osmanabad, Parbhani, Pune, Satara, Yavatmal and Solapur,) conducted frontline demonstrations. Improved varieties Phule Revati, Bagyalaxmmi-296, Parbhani Moti and PKV Kranti and integrated nutrient management resulted in higher yield in Andhra Pradesh (15.70q/ha) and Maharashtra (19.77q/ha).

KVK, Kurnool (Andhra Pradesh) conducted frontline demonstrations on foxtail millet with improved variety (SIA-3085). There was higher yield response with improved variety (33.10%).

Table 20. Performance of Front Line Demonstrations on millets

State	Crop	No. of demonstrations	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Fingermilllet	13	3.76	11.18	8.25	35.52
	Foxtailmillet	20	8.00	22.84	17.16	33.10
	Sorghum	35	10.40	15.70	12.37	26.92
Maharashtra	Fingermilllet	10	1.00	12.60	8.40	50.00
	Sorghum	337	123.44	19.77	14.75	34.03

Fodder Crops

Frontline demonstrations on hybrid napier were organized in two districts of Andhra Pradesh (Rangareddy and East Godavari) and four districts of Maharashtra (Hingoli, sangli, Yavatmal and Raigadh). Improved management practice and high yielding varieties viz. APBN-1, Co-29, Co-4, RBN-13 and Phule Jayawant and management practices resulted in higher yield both in Andhra Pradesh and Maharashtra (Table21). In case of maize improved management practices resulted in higher yield (490 q/ha in Maharashtra) compared to local check (Table21).

Table 21. Performance of Front Line Demonstrations on fodders

State	Crop	No. of demonstrations	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Napier	111	17.00	733.33	520.00	41.03
Maharashtra	Napier	20	5.00	1675.00	1090.00	53.67
	Maize	35	7.00	490.00	360.00	36.11

Horticultural crops

A total of 1485 demonstrations covering 455.49 ha under fruits, vegetables, plantation crops, spices and condiments, were organized by KVKs in Zone-V (Table 22). The major categories covered in Andhra Pradesh include vegetables (369), fruits (166), spices and condiments (10). In Maharashtra also the demonstrations were conducted on vegetables (496), fruits (366), spices and condiments (16). In vegetables, 169 demonstrations were organized on tomato in 49ha followed by onion (153), chillies (142) and okra (88). Among 532 demonstrations on fruits, 165 demonstrations covering 60.20 ha were organized on mango followed by pomegranate (92), banana (85), watermelon (52) and sweet orange (30).

Table 22. Details of category wise area under FLD on horticultural crops

Category	Crop	Andhra Pradesh		Maharashtra		Total	
		No. of Demos.	Area (ha)	No. of Demos.	Area (ha)	No. of Demos.	Area (ha)
Vegetables	Bean	-	-	12	4.80	12	4.80
	Brinjal	22	8.40	73	13.80	95	22.20
	Cabbage	17	7.00	10	1.00	27	8.00
	Capsicum	6	2.00	10	0.40	16	2.40
	Cauliflower	-	-	8	0.80	8	0.80
	Chilli	100	43.00	42	11.40	142	54.40
	Cluster bean	-	-	30	3.00	30	3.00
	Cucumbers	-	-	8	3.20	8	3.20
	Cucurbits	10	2.00	-	-	10	2.00
	Dolichus bean	-	-	10	4.00	10	4.00
	Drum stick	-	-	7	0.25	7	0.25
	Fenugreek	-	-	10	2.00	10	2.00
	Garlic	-	-	5	0.40	5	0.40
	Ginger	-	-	13	5.00	13	5.00
	Little Gourd	-	-	5	1.00	5	1.00
	Moringa	4	0.64	-	-	4	0.64
	Okra	10	4.50	78	14.20	88	18.70
	Onion	39	9.60	114	25.38	153	34.98
	Pea	-	-	10	4.00	10	4.00
	Potato	-	-	11	6.00	11	6.00
	Ridgegourd	3	0.40	-	-	3	0.40
	Spinach	-	-	15	2.00	15	2.00
	Tapioca	14	5.00	-	-	14	5.00
	Tomato	144	42.00	25	7.00	169	49.00
	Total	**369**	**124.54**	**496**	**109.63**	**865**	**234.17**
Spices	Turmeric	10	4.00	16	3.40	26	7.40
	Total	**10**	**4.00**	**16**	**3.40**	**26**	**7.40**
Flowers	China aster	8	3.00	-	-	8	3.00
	Jasmine	20	7.00	-	-	20	7.00
	Marigold	4	1.00	7	1.00	11	2.00
	Mogra	-	-	6	2.00	6	2.00

Category	Crop	Andhra Pradesh		Maharashtra		Total	
		No. of Demos.	Area (ha)	No. of Demos.	Area (ha)	No. of Demos.	Area (ha)
	Total	**32**	**11.00**	**13**	**3**	**45**	**14.00**
Fruit crops	Acid Lime	8	2.90	-	-	8	2.90
	Banana	36	8.00	49	19.00	85	27.00
	Custard Apple	-	-	10	4.00	10	4.00
	Grapes	-	-	5	2.00	5	2.00
	Guava	-	-	12	4.80	12	4.80
	Kagzi lime	-	-	31	12.42	31	12.42
	Mango	66	31.20	99	29.00	165	60.20
	Nagpur Mandarin	-	-	32	10.00	32	10.00
	Papaya	10	2.00	-	-	10	2.00
	Pomegranate	-	-	92	31.20	92	31.20
	Sweet Orange	30	8.40	-	-	30	8.40
	Water melon	16	7.30	36	18.70	52	26.00
	Total	**166**	**59.80**	**366**	**131.12**	**532**	**190.92**
Plantation crops	Cashew nut	17	9.00	-	-	17	9.00
	Total	**17**	**9.00**	**-**	**-**	**17**	**9.00**
	Grand Total	**594**	**208.34**	**891**	**247.15**	**1485**	**455.49**

Vegetables

Two KVKs in Andhra Pradesh (Kurnool and Mahaboobnagar) and 9 KVKs in Maharashtra (Amravati, Aurangabad, Beed, Dhule, Hingoli, Nashik, Pune, Sangli and Solapur,) organized frontline demonstrations on onion with improved varieties (cv. Phule Baswant, AFLR, Akola Safed and Phule Safed) and management practices. There was higher yield response to varieties and management practices in Andhra Pradesh (25.77%) and Maharashtra (24.73%) compared to local check (Table 23). Frontline demonstrations on tomato were organized with improved varieties and management practices. Results showed that improved varieties and management practices recorded higher yield both in Andhra Pradesh (28.49%) and Maharashtra (18.34%) compared to local check (Table 23). Similarly, the yield response to improved management practices including varieties was higher in chillies (31.30% in Andhra Pradesh and 24.68% in Maharashtra) as compared to local check.

Table 23. Performance of Front Line Demonstrations on vegetables

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Local	
Andhra Pradesh	Brinjal	22	8.40	156.80	142.85	9.77
	Cabbage	17	7.00	167.30	99.50	68.14
	Capsicum	6	2.00	820.00	750.00	9.33
	Chilli	100	43.00	50.92	38.78	31.30
	Cucurbits	10	2.00	195.00	170.00	14.71
	Moringa	4	0.64	-	-	-
	Okra	10	4.50	36.89	35.37	4.30
	Onion	39	9.60	270.88	215.38	25.77
	Ridgegourd	3	0.40	7.25	6.00	20.83
	Tomato	144	42.00	340.08	264.68	28.49
	Tapioca	14	5.00	337.00	217.00	55.30
Maharashtra	Bean	12	4.80	8.75	7.50	16.67
	Brinjal	73	13.80	339.80	286.09	18.77

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Local	
	Cabbage	10	1.00	250.00	205.00	21.95
	Capsicum	10	0.40	652.70	561.80	16.18
	Cauliflower	8	0.80	174.25	159.37	9.34
	Chilli	42	11.40	64.00	51.33	24.68
	Cluster bean	30	3.00	128.00	92.00	39.13
	Cucumbers	8	3.20	30.92	24.60	25.69
	Dolichus bean	10	4.00	210.00	180.00	16.67
	Drum stick	7	0.25	53.75	32.25	66.67
	Fenugreek	10	2.00	65.00	40.00	62.50
	Garlic	5	0.40	98.00	76.00	28.95
	Ginger	13	5.00	30.00	26.00	15.38
	Little Gourd	5	1.00	175.00	135.00	29.63
	Okra	78	14.20	163.10	134.45	21.31
	Onion	114	25.38	198.36	159.03	24.73
	Pea	10	4.00	100.00	84.00	19.05
	Potato	11	6.00	180.40	172.72	4.45
	Spinach	15	2.00	72.00	50.00	44.00
	Tomato	25	7.00	390.95	330.37	18.34

Fruits

Frontline demonstrations on banana were conducted in three districts of Andhra Pradesh (East Godavari, Khammam, and Vishakhapatnam) and in four districts of Maharashtra (Hingoli, Kolhapur, Pune and Nanded) with improved management practices. There was higher yield with improved technology both in Andhra Pradesh (28.22%) and Maharashtra (35.38%) compared to local practice (Table 24). Similar response was also noted in pomegranate (26.37 % in Maharashtra) and mango (27.24% in Andhra Pradesh and 17.49% in Maharashtra) (Table 24).

Table 24. Performance of Front Line Demonstrations on fruits

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Local	
Andhra Pradesh	Acid Lime	8	2.90	108.40	68.50	58.25
	Banana	36	8.00	170.67	122.50	28.22
	Mango	66	31.20	84.23	66.20	27.24
	Papaya	10	2.00	750.00	350.00	114.29
	Sweet Orange	30	8.40	117.45	93.17	26.06
	Water melon	16	7.30	351.20	231.97	51.40
Maharashtra	Banana	49	19.00	243.00	179.50	35.38
	Kagzi lime	31	12.42	152.70	121.40	25.78
	Custard Apple	10	4.00	54.30	41.80	29.90
	Grapes	5	2.00	20.30	16.91	20.05
	Guava	12	4.80	249.27	213.33	16.85
	Mango	99	29.00	65.37	55.64	17.49
	Nagpur Mandarin	32	10.00	99.70	81.44	22.42
	Pomegranate	92	31.20	36.52	28.90	26.37
	Water melon	36	18.70	276.75	222.00	24.66

Plantation crops

Frontline demonstrations on cashew nut were organized in Vizianagaram district of Andhra Pradesh with improved management practices including pest and disease control and nutrient management. Results indicated that improved management practices gave higher yield (5.18 q/ha) than local check.

Table 25. Performance of Front Line Demonstrations on plantation crops

Crop	State	No. of demonstrations	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Local	
Cashewnut	Andhra Pradesh	17	9.00	5.18	4.00	29.50

Tools and Implements

KVKs organized 1836 demonstrations on 60 improved tools and implements to reduce the drudgery of farm women and facilitate timely field operations viz. land and seed bed preparation, planting/sowing, weeding and intercultural operations and harvesting and threshing (Table 26 and 27). Out of 1836 demonstrations, 570 demonstrations were organized to improve the farm operations in case of cotton followed by soybean (431), okra (179), rice (160), groundnut (108), pigeonpea (96), wheat (70), maize (65), sugarcane (35), chilli (30) and sorghum (25). Among various field operations, harvesting and threshing accounted for 525 demonstrations followed by planting and seeding (430), land and seed bed preparation (316), plant protection equipment (230) and weeding and inter-culture (226).

Table 26. Details of FLDs on improved tools and implements

Crop	Andhra Pradesh		Maharashtra		Total	
	NI	ND	NI	ND	NI	ND
Rice	3	80	4	80	7	160
Wheat			4	70	4	70
Sorghum			1	25	1	25
Maize	2	40	1	25	3	65
Pigeonpea	3	60	2	36	5	96
Bengalgram			3	21	3	21
Groundnut	3	42	4	66	7	108
Soybean			9	431	9	431
Cotton	3	210	7	360	10	570
Sugarcane			3	35	3	35
Turmeric			1	6	1	6
Okra	2	104	1	75	3	179
Chilli	1	30			1	30
Banna			1	20	1	20
Coconut			1	15	1	15
Orange			1	5	1	5
Total	**17**	**566**	**43**	**1270**	**60**	**1836**

NI: Number of implements ND: Number of demonstrations

Table 27. Details of operation wise FLDs on improved tools and implements

Name of operation	Andhra Pradesh	Maharashtra	Total
Land and seed bed Preparation	115	201	316
Planting & Seeding	125	305	430
Weeding and inter-culture	95	131	226
Plant protection equipments	75	155	230
Harvesting & Threshing	175	350	525
Post harvest technology	0	14	14
Other field operation	18	77	95
Total	603	1233	1836

The performance of improved tools and implements under FLDs vis-à-vis the relevant indicators of performance viz. saving of labour, time required for completing the field operation, energy expenditure, field performance, output, cost of field operations etc. are presented in Table 28.

Table 28. Performance of FLD on Improved Tools, Implements and Farm Equipment

Operation	Implement	No. of demos	Area (ha)	Parameter	Result		% increase
					Demo	Control	
Land Preparation	Bullock drawn ridger	50	35	ha/hr	0.133	0.1	33.00
	Rotavator	266	207	ha/hr	0.31	0.12	158.33
Planting & Seeding	Improved Planter	84	76	ha/hour	0.47	0.348	35.06
	Rice Drum seeder	30	15.44	ha/hr	0.31	0.11	181.82
	Rice transplanter	30	27	Cost of cultivation(Rs./ha)	32500	34210	-5.00
	Seed cum fertilizer drill	269	86	ha/hr	0.92	0.25	268.00
	Seed treatment drum	17	-	Min/ha seed	17	45	-62.22
Weeding and inter-culture	Conoweeder	65		ha/hour	0.022	0.01	120.00
	Cycle hoe	36	28	ha/day	0.2	0.03	566.67
	Fertilizer crowbar	11	9	ha/hr	0.125	0.2	-37.50
	Improved hoe	45	30	ha/hr	0.026	0.012	116.67
	Power weeder	69	42.6	ha/hr	0.06	0.018	233.33
Plant protection equipments	Aeroblast sprayer	230	250	ha/hour	1.5	0.1	1400.00
Harvesting	Bhindi plucker	189	18.8	kg/hr	19.56	13.86	41.13
	Fingerguards	30	2	Man/ day/ acre/Kg	60.8	53.6	13.43
	Conveyor Reaper	6	2.4	ha/day	1.75	0.37	372.97
	Improved sickle	194	4.8	ha/hr	0.015	0.006	150.00

Operation	Implement	No. of demos	Area (ha)	Parameter	Result		% increase
					Demo	Control	
	Sugarcane Detrasher	10		No. of Sugarcanes detrashed / hr	122	65	87.69
Threshing	Groundnut Decorticator	40		Kg/hr	58.9	18.9	211.64
	Groundnut stripper	21	2.4	kg/day	362.66	213.33	70.00
	Maize sheller	35		kg/hr	14.5	6.9	110.14
Post Harvest Technology	Double Screen Grain Cleaner	14		kg/hr	800	260	207.69
Others	Brush cutter	5	5	ha/hr	0.14	0.006	2233.33
	Marking nut	6	6	kg/hr	0.63	1.25	-49.60
	Cotton stalk puller	44	25	kg/8hr	22	12	83.33
	Stubble collector	25	10	ha/hr	0.12	0.01	1100.00
	Coconut Climber	15		trees/hr	3	1	200.00

Livestock and other enterprises

In order to demonstrate the efficacy of improved technologies, KVKs organized 1404 frontline demonstrations on various livestock species. The state and enterprise wise details of demonstrations are furnished in Table 29.

Table 29. Details of FLD on livestock and other enterprises

Category	Andhra Pradesh		Maharashtra		Total	
	NT	ND	NT	ND	NT	ND
Cattle	3	23	11	472	14	495
Sheep & Goat	5	81	3	39	8	120
Poultry	9	520	6	231	15	751
Fisheries	4	18	1	20	5	38
Total	**21**	**642**	**21**	**762**	**42**	**1404**

NT : No. of technologies ND : No. of demonstrations

The performance of various improved technologies vis-à-vis the indicators with regard to livestock species is presented in Table 30. The improved technologies significantly increased the milk yield and reduced the incidence of mastitis and other diseases in dairy animals. In case of poultry, improved breeds like Giriraja, Vanaraja and Gramapriya were demonstrated for meat and egg yield, while de-worming and mineral mixtures were tested for weight gain in sheep and goat.

Table 30. Performance of FLD on Livestock Enterprises

Enterprise	Thematic area	Technology	No. of demos.	Parameter	Demo	Check
Buffalo	Feed and Nutrition Management	25 % substitution of concentrate with Azolla	18	Milk yield (1/day/animal)	2.8	2
		Mineral mixtures	15	Milk yield (1/day/animal)	5.8	4.9

Enterprise	Thematic area	Technology	No. of demos.	Parameter	Demo	Check
		Urea treated paddy straw	9	Milk yield (1/day/animal)	2.35	1.9
		Supplemental Green fodder roughage	17	Milk yield (1/day/animal)	2.1	1.75
	Disease Manage-ment	Inj. Dorma-ctin	20	Parasite occurence (%)	0	12
		Clean Guard for mastitis control	100	Mastitis incidence (%)	0	9
		Anti parasitic drug	5	Parasite occurence (%)	0	22
Cow	Disease Management	Clean Guard for mastitis control	20	Mastitis incidence (%)	7	45
		Anti parasitic drug	20	Parasite occurence (%)	1.2	35
	Feed and Nutrition Management	Mineral mixtures	151	Milk yield (1/day/animal)	9.8	8.2
		Supplemental Green fodder roughage	40	Milk yield (1/day/animal)	3.5	2.4
		Silage making	80	Milk yield (1/day/animal)	2.2	1.5
Fish	Breed Evalution	Catla & Rohu	25	Yield(q/ha)	32.54	25.66
	Production and management	Composite fish culture	9	Yield(q/ha)	72.88	54.18
		Prawn	4	Yield(q/ha)	37.5	19.04
Goatary	Disease Management	Ecto/endo Parasitic Infestation	20	Parasite occurence (%)	0	15
		Anti parasitic drug	10	Parasite occurence (%)	2	40
	Breed evaluation	Osmanabadi	9	Weight(kg/8 month)	15.42	9.58
Sheep	Disease management	De-worming	19	Fecal egg count	0	31
	Nutrition management	Mineral mixtures	62	Body wt.(kg/animal) at marketable age	22.96	18.01
Poultry	Breed Evaluation	Giriraja	141	Live weight (kg/bird) at 12^{th} month	3.2	1.5
		Gram Priya	30	Live weight (kg/bird) at 12^{th} month	2.15	1.12
		Kalinga brown	10	Live weight (kg/bird) at 12^{th} month	2.4	1.75
		Vanaraja	176	Live weight (kg/bird) at 12^{th} month	3.7	1.5
		Samrat	5	Live weight (kg/bird) at 12^{th} month	2.1	1.25
	Disease Management	RD vaccination	369	Disease Incidence (%)	0	42
	Feed and Nutrion Management	Low cost home made feed	20	Differential weight (kg/bird)	1.25	0.9

Gender specific technologies

To relieve farmwomen of household drudgery and improve their health, nutritional status and income, KVKs organized 742 demonstrations (Table 31). There was higher thermal efficiency of fuel with Updraft stove (Table 32). Among technologies demonstrated on health and nutrition of women and children iron and protein fortified diet resulted in increased hemoglobin in pregnant women. Technologies for economic empowerment of rural women viz. Dry ginger and green chilli paste processing and production of Oyster mushrooms were also demonstrated by KVKs.

Table 31. Details of FLDs on Gender Specific Technologies

Thematic area	Andhra Pradesh		Maharashtra		Zone	
	NT	ND	NT	ND	NT	ND
Entrepreneurship Development	7	95	4	62	11	157
Health and Nutrition	4	262	5	218	9	480
House hold drudgery reduction	0	0	1	20	1	20
Drudgery reduction	0	0	1	85	1	85
Total	11	357	11	385	22	742

NT: No. of technologies; ND: No. of demonstrations

Table 32. Performance of FLDs on Gender Specific Technologies

Thematic area	Technology	No. of Demos.	Parameter	Demo	Control
Enterpreneurship Development	Mini Dal Mill	21	kg/hr	60	15
	Oyster Mushrooms	21	Yield (kg/bed)	0.75	0.5
	Dry Ginger	10	Income from 1 q Processing (Rs)	8800	4000
	Chili Paste	10	Income from 1 q Processing (Rs)	4000	1800
Health and nutrition	Amylase Rich diet for preschool Children	155	Weight gain(kg)at 6 months	0.5	0.2
	Bajra Laddoo for Adolescent girls	5	Hb level (%) increased	25	
	Iron & protein fortified diet	254	Hb content (mg/dL)	11.5	8.5
	Nutritional Garden	165	Expenditure (Rs./month)	450	780
House hold Drudgery Reduction	Smoke less chula	10	Fuel (g/kg food)	549	1147
	Updraft stove(Dr.PDKV)	6	Thermal efficiency(%)	115	-
Drudgery Reduction	Cotton Picking Coat	85	Kg/8 hours of day	73	58

Training

Training is an important activity of KVK which play a pivotal role in enhancing the knowledge and skill about various improved technologies. KVKs assess the training needs and prioritize them and based on the need skill oriented training programmes for various clientele groups were organised. The training for farmers and farmwomen is primarily focused on knowledge and skills, while it is entrepreneurship development and knowledge on frontier areas of science and technology for rural youth and extension personnel respectively.

In all, 6149 training programmes were conducted with 196596 participants including 155328 farmers, 24699 rural youth and 16569 extension functionaries (Table 33). KVKs in Andhra Pradesh organized 2169 training courses with a participation of 74032 farmers, rural youth and extension functionaries, while the KVKs in Maharashtra conducted 3980 courses with a total participation of 122564 beneficiaries.

The main thematic areas covered under training include integrated crop management, improved tools and implements, capacity building and group dynamics, women empowerment, improved production practices for horticultural crops, productivity enhancement in livestock species, integrated pest management and soil health and fertility management.

The details of training courses vis-à-vis coverage of disciplines for farmers are given in Table 34. A total of 3044 training courses were conducted for 1.07 lakh farmers on various subjects, 1147 courses were conducted with 35837 participants for empowerment of women followed by 904 (32299) on crop production, 721 (24714) on plant protection, 701 (25724) on horticulture, 467 (14632) on livestock production and management, etc.

Table 33. Details of client wise training programmes organized by KVKs in Zone V

Clientele	Number of courses	Other beneficiaries			SC/ST beneficiaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Andhra Pradesh										
EF	192	2042	3600	5642	542	1040	1582	2584	4640	7224
FFW	1690	25068	12294	37362	14306	9713	24019	39374	22007	61381
RY	287	1758	1933	3691	759	977	1736	2517	2910	5427
Total	2169	28868	17827	46695	15607	11730	27337	44475	29557	74032
Maharashtra										
EF	319	5301	1586	6887	1677	781	2458	6978	2367	9345
FFW	2931	50805	14085	64875	19258	9814	29072	70063	23899	93947
RY	730	9451	4030	13481	3828	1963	5791	13279	5993	19272
Total	3980	65557	19701	85243	24763	12558	37321	90320	32259	122564
Zone										
EF	511	7343	5186	12529	2219	1821	4040	9562	7007	16569
FFW	4621	75873	26379	102237	33564	19527	53091	109437	45906	155328
RY	1017	11209	5963	17172	4587	2940	7527	15796	8903	24699
Total	6149	94425	37528	131938	40370	24288	64658	134795	61816	196596

EF : Extension Functionaries FFW : Farmers and Farm Women RY : Rural Youth

Table 34. State wise and discipline wise training programmes conducted for farmers

Discipline	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Agricultural Engineering	20	714	197	5142	217	5856
Capacity Building and Group Dynamics	46	1152	165	5547	211	6699
Crop Production	330	11476	574	20823	904	32299
Fisheries	46	1099	46	1099	146	4594
Women empowerment	375	12576	397	10685	1147	35837
Horticulture						
a. Fruits	137	8388	164	5457	301	13863
b. Medicinal & Aromatic plants	7	247	0	0	7	247
c. Ornamental Plants	13	374	13	278	26	652
d. Plantation crops	12	606	9	236	16	485
e. Spices	10	198	16	485	26	683
f. Tuber Crops	4	226	11	340	15	566
g. Vegetable Crops	104	3231	206	5997	310	9228
Total	287	13270	419	12793	701	25724
Livestock Production and Management	102	3977	365	10655	467	14632
Plant Protection	260	9276	461	15438	721	24714
Production of Inputs at site	19	546	28	1465	47	2011
Soil Health and Fertility Management	128	4233	279	10335	407	14568
Total	1083	44572	1971	63479	3044	107373

NC : Number of courses NB : No. of beneficiaries

A total of 965 training programmes covering 23494 rural youth were conducted by KVKs in Zone-V (Table 35). The main thematic areas of training include integrated farming (84), value addition (94), dairying (57), poultry (59) etc.

Table 35. Details of training programmes for rural youth

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Bee-keeping			11	371	11	371
Commercial fruit production	1	61	26	941	27	1002
Composite fish culture	2	59	8	179	10	238
Dairying	3	116	54	1454	57	1570
Income generating activity			4	73	4	73
Integrated Farming	37	343	47	1310	84	1653
Mushroom Production	6	107	12	460	18	567
New orchard plantation preparation for site			2	78	2	78
Nursery Management of Horticulture crops	6	185	23	492	29	677
Ornamental fisheries			9	213	9	213
Para extension workers	4	119	22	529	26	648
Pearl culture			2	93	2	93
Piggery			3	115	3	115
Planting material production			4	103	4	103
Post Harvest Technology	13	393	35	965	48	1358

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Poultry Production	8	164	51	1155	59	1319
Preparation of Govt. Scheme			4	66	4	66
Production of organic inputs	17	427	28	682	45	1109
Production of quality animals products			34	780	34	780
Protected cultivation of vegetable crops	3	111	20	1147	23	1258
Repair and maintenance of farm machinery and implements	20	213	41	1153	61	1366
Rural crafts	16	348	21	327	37	675
Seed production	6	221	20	578	26	799
Sericulture			4	136	4	136
Sheep and goat rearing	7	237	43	985	50	1222
Shrimp farming			1	20	1	20
Small scale processing	19	453	50	987	69	1440
Soil and Water conservation			12	376	12	376
Tailoring and Stitching	44	526			44	526
Training and pruning of orchards	38	127	9	296	47	423
Value addition	28	908	66	1644	94	2552
Vermi-culture	2	85	19	583	21	668
Total	**280**	**5203**	**685**	**18291**	**965**	**23494**

NC: Number of courses NB: No. Of beneficiaries

Processing of Pulses

Azolla Production

On Campus Training, KVK Latur.

In Zone-V, 513 training courses with a participation of 16548 extension personnel covering various thematic areas viz. productivity enhancement in field crops (58), group dynamics and farmers organizations (37), low cost and nutrient efficient diet designing (45), women and child care (45), integrated pest management (60) etc., were organized by KVKs (Table 36).

Table 36. Details of training for extension functionaries

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Capacity building for ICT application	8	248			8	248
Care and maintenance of farm machinery and implements	4	97	8	186	12	283
Climatic change			3	78	3	78

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Design and development of low and minimum cost diet	1	60			1	60
Gender mainstreaming through SHGS	8	266	12	440	20	706
Group Dynamics and farmers organization	9	261	28	697	37	958
Household food security	17	1170	10	345	27	1515
Information networking among farmers			10	307	10	307
Integrated Nutrient Management	6	164	31	1226	37	1390
Integrated Pest Management	11	516	49	1454	60	1970
Livestock feed and fodder production	10	254	20	551	30	805
Low cost and nutrient efficient diet designing	29	808	16	362	45	1170
Management in farm animals	5	86	19	511	24	597
Processing and Value addition			11	334	11	334
Production and use of organic inputs	10	272	6	160	16	432
Productivity enhancement in field crops	20	712	38	970	58	1682
Protected cultivation technology	4	128	17	447	21	575
Quail Management			5	122	5	122
Rejuvenation of old orchards	2	60	6	222	8	282
Soil and Water conservation			10	243	10	243
Vermicomposting			1	18	1	18
Women and Child care	36	2142	9	280	45	2422
WTO and IPR issues	1	25	6	180	7	205
Other (Training on use of JCB in Agriculture)	17	146			17	146
TOTAL	**198**	**7415**	**315**	**9133**	**513**	**16548**

NC : Number of courses NB : No. of beneficiaries

Sponsored Training

With the available infrastructure and technical manpower, KVKs facilitate various research institutes, line departments of state and central government, financial institutions etc. in organizing sponsored training in rural areas. KVKs organized 1079 sponsored training programmes covering 28037 farmers and rural youth (Table 37). The important organizations that contributed to sponsored training include Agricultural Technology Management Agency (ATMA), National Horticultural Mission (NHM), National Bank for Agriculture and Rural Development (NABARD), etc. The important thematic areas include capacity building of rural youth (5826), integrated farming (5896), commercial horticulture (7821), value addition (1545), dairying (1579) etc.

Vocational Training

In order to facilitate entrepreneurship development, income generation and self-employment especially among rural youth and school dropouts, KVKs organized vocational training programmes. In all, 345 vocational training programmes covering 11303 rural youth were organized by KVKs during 2012-13 (Table 38). The important thematic areas include processing and income generation (71), value addition (63), commercial horticulture (45), integrated farming (37), poultry (28), dairy (19), vermiculture (13) etc.

Table 37. Details of sponsored training programmes

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NP	NC	NP	NC	NP
Apiculture			20	60	20	60
Capacity Building	26	2120	114	3706	140	5826
Commercial horticulture	90	6516	79	1305	169	7821
Dairying	6	147	71	1432	77	1579
Drudgery reduction			5	176	5	176
Fisheries	6	66	7	184	13	250
Income generation for women	124	2620	23	623	147	3243
Integrated farming	175	1607	228	4289	403	5896
Mushroom			6	30	6	30
Planting materieal production	6	232	1	44	7	276
Poultry	1	14	17	615	18	629
Protected cultivation	2	79	10	287	12	366
Seed production			1	36	1	36
Sheep and Goat rearing	2	41	7	214	9	255
Value addition	10	277	39	1268	49	1545
Vermiculture	1	23	2	26	3	49
TOTAL	**449**	**13742**	**630**	**14295**	**1079**	**28037**

NC : Number of courses NP : No. of participants

Table 38. Details of vocational training programmes organized by KVKs

Thematic area	Andhra Pradesh		Maharashtra		Total	
	NC	NP	NC	NP	NC	NP
Apiculture			3	107	3	107
Commercial horticulture	12	251	33	952	45	1203
Dairy			19	560	19	560
Fisheries	6	119	9	244	15	363
Income generation	35	1045	36	1445	71	2490
Integrated farming	5	86	32	966	37	1052
Lac culture			3	173	3	173
Mushrooms	1	5	6	340	7	345
Para extension activity	2	355	3	117	5	472
Planting material production			1	28	1	28
Poultry			28	763	28	763
Seed production	2	76	7	147	9	223
Sericulture	1	15	2	56	3	71
Sheep and goat rearing			14	402	14	402
Stitching, tailoring, etc	5	133	4	85	9	218
Value addition	27	773	36	1548	63	2321
Vermiculture	2	67	11	445	13	512
TOTAL	**98**	**2925**	**247**	**8378**	**345**	**11303**

NC: Number of courses NP: No. Of Participants

Extension Activities

In order to create awareness among farmers about improved agricultural technologies, KVKs in Zone-V organized 21138 extension activities covering 931624 participants (Table 39). The extension activities included advisory services, exposure visits, animal health camps, technology week, group discussions, method demonstrations, soil health camps, kisan melas, kisan ghosti, etc. KVKs in Andhra Pradesh organized 7979 extension activities covering 592357 participants and the corresponding figures for Maharashtra are 13159 and 339267(Table 40 and 41).

Table 39. Details of Extension Activities organized by KVKs in Zone V

Activity	No. of activities	Farmers			Extension functionaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory services	3832	55226	3451	58677	434	223	657	55654	3674	73627
Agri mobile clinic	18	1613	3	1616	50	0	50	1663	3	1666
Animal health camps	115	4419	1141	5560	121	18	139	4540	1159	12106
Celebration of important days	169	10625	7964	18589	865	459	1324	11490	8423	32044
Diagnostic visits	1806	7718	1477	9195	514	134	648	8232	1611	20865
Exhibitions	202	65431	36145	101576	2043	922	2965	67474	37037	214584
Exposure visits	196	4139	1190	5329	207	59	266	4346	1249	9035
Ex-trainee Sammelan	18	485	409	894	16	7	23	501	416	1770
Farm Science Club Conveners meet	85	1609	208	1817	75	11	86	1684	219	1912
Farmers field school	5	48	101	149	20	5	25	68	106	174
Farmers foot prints	2006	67448	17782	85230	1219	223	1442	68667	18005	141031
Farmers rallies	16	2904	224	3128	85	21	106	2989	245	9469
Farmers seminar	88	5359	874	6233	288	45	329	5647	919	10016
Field days	462	14804	3108	17912	997	191	1188	15801	3299	34466
Field Visits	81	1266	18	1284	21	4	28	1287	22	4011
Film shows	280	6008	2574	8582	375	147	522	6383	2721	19667
Group discussions	49	1013	304	1317	19	7	26	1032	311	2941
Kisan ghosties	310	12854	4652	17506	558	181	740	13412	4833	31957
Kisan melas	181	28821	11768	40589	1956	1125	3081	30777	12893	73839
Lecture Delivered as a Resource Persons	1259	44134	12081	56215	2901	927	3828	47035	13008	107241
Mahila mandals conveners meetings	51	332	1769	2101	18	72	90	350	1841	2951
Method demonstrations	958	12437	5070	17507	573	139	712	13010	5209	42618
News paper coverage	2532	0	0	0	0	0	0	0	0	0
Radio talks	1267	0	0	0	0	0	0	0	0	0
Scientific visit to farmers field	3594	13266	4678	17944	277	134	415	13543	4812	33802
Self help group conveners meetings	894	8795	4765	13560	515	240	755	9239	5005	20609
Soil health camps	277	13875	1273	15148	245	20	265	14120	1293	18558
TV shows	231	0	0	0	0	0	0	0	0	0
Workshops and meetings	156	3148	1165	4313	2739	270	3009	5887	1435	10665
TOTAL	**21138**	**387777**	**124194**	**511971**	**17131**	**5584**	**22719**	**404831**	**129748**	**931624**

Table 40. Details of Extension Activities organized by KVKs in Andhra Pradesh

Activity	No. of activities	Farmers			Extension functionaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory services	1065	5294	853	6147	280	190	470	5574	1043	20916
Animal health camps	39	2490	654	3144	31	9	40	2521	663	9591
Celebration of important days	67	2041	3528	5569	232	231	463	2273	3759	18163
Diagnostic visits	1174	3767	893	4660	184	80	264	3951	973	15946
Exhibitions	75	30893	22879	53772	715	512	1227	31608	23361	165042
Exposure visits	58	1272	346	1618	57	16	73	1329	362	5131
Ex-trainee Sammelan	5	87	332	419	3	2	5	90	334	1277
Farm Science Club Conveners meet	9	0	0	0	0	0	0	0	0	9
Farmers foot prints	681	20541	6010	26551	180	108	288	20721	6118	81198
Farmers rallies	15	2800	210	3010	80	20	100	2880	230	9345
Farmers seminar	44	1306	301	1607	65	31	96	1371	332	5153
Field days	178	5790	1321	7111	396	87	483	6186	1408	22960
Field Visits	81	1266	18	1284	21	4	28	1287	22	4011
Film shows	121	3255	1589	4844	258	119	377	3513	1708	15784
Group discussions	26	653	124	777	6	3	9	659	127	2384
Kisan ghosties	113	4908	1539	6447	260	92	353	5168	1631	20511
Kisan melas	33	11046	3126	14172	616	280	896	11662	3406	45237
Lecture Delivered as a Resource Persons	518	16367	5620	21987	920	433	1353	17287	6053	70538
Mahila mandals conveners meetings	24	0	326	326	0	42	42	0	368	1128
Method demonstrations	673	7988	3447	11435	317	111	428	8305	3558	36262
News paper coverage	1367	0	0	0	0	0	0	0	0	0
Radio talks	234	0	0	0	0	0	0	0	0	0
Scientific visit to farmers field	1001	5318	1646	6964	160	99	259	5478	1745	22670
Self Help Group Conveners meetings	149	1995	1070	3065	28	15	43	1952	1085	9402
Soil health Camp	45	1212	296	1508	35	7	42	1247	303	4695
TV shows	163	0	0	0	0	0	0	0	0	0
Workshops and meetings	21	933	605	1538	79	44	123	1012	649	5004
TOTAL	**7979**	**131222**	**56733**	**187955**	**4923**	**2535**	**7462**	**136074**	**59238**	**592357**

Table 41. Details of Extension Activities organized by KVKs in Maharashtra

Activity	No. of activities	Farmers			Extension Functionaries			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory services	2767	49932	2598	52530	154	33	187	50080	2631	52711
Agri mobile clinic	18	1613	3	1616	50	0	50	1663	3	1666
Animal health camps	76	1929	487	2416	90	9	99	2019	496	2515
Celebration of important days	102	8584	4436	13020	633	228	861	9217	4664	13881

Activity	No. of activities	Farmers			Extension Functionaries			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Diagnostic visits	632	3951	584	4535	330	54	384	4281	638	4919
Exhibitions	127	34538	13266	47804	1328	410	1738	35866	13676	49542
Exposure visits	138	2867	844	3711	150	43	193	3017	887	3904
Ex-trainee Sammelan	13	398	77	475	13	5	18	411	82	493
Farm Science Club Conveners meet	76	1609	208	1817	75	11	86	1684	219	1903
Farmers field school	5	48	101	149	20	5	25	68	106	174
Farmers foot prints	1325	46907	11772	58679	1039	115	1154	47946	11887	59833
Farmers rallies	1	104	14	118	5	1	6	109	15	124
Farmers seminar	44	4053	573	4626	223	14	233	4276	587	4863
Field days	284	9014	1787	10801	601	104	705	9615	1891	11506
Film shows	159	2753	985	3738	117	28	145	2870	1013	3883
Group discussions	23	360	180	540	13	4	17	373	184	557
Kisan ghosties	197	7946	3113	11059	298	89	387	8244	3202	11446
Kisan melas	148	17775	8642	26417	1340	845	2185	19115	9487	28602
Lecture Delivered as a Resource Persons	741	27767	6461	34228	1981	494	2475	29748	6955	36703
Mahila mandals conveners meetings	27	332	1443	1775	18	30	48	350	1473	1823
Method demonstrations	285	4449	1623	6072	256	28	284	4705	1651	6356
News paper coverage	1165		0		0	0	0	0	0	0
Radio talks	1033	0	0	0	0	0	0	0	0	0
Scientific visit to farmers field	2593	7948	3032	10980	117	35	156	8065	3067	11132
Self help group conveners meetings	745	6800	3695	10495	487	225	712	7287	3920	11207
Soil health camps	232	12663	977	13640	210	13	223	12873	990	13863
TV shows	68	0	0	0	0	0	0	0	0	0
Workshops and meetings	135	2215	560	2775	2660	226	2886	4875	786	5661
TOTAL	**13159**	**256555**	**67461**	**324016**	**12208**	**3049**	**15257**	**268757**	**70510**	**339267**

Fourteen KVKs in Andhra Pradesh and 23 KVKs in Maharashtra organized Technology Week to show case and popularize the latest technologies for the benefit of farmers. The details of various activities organized during technology week are presented in Table 42. Similarly, KVKs also provided Kisan Mobile Advisory on weather information, market prices of various commodities, weather and crop based technology advisory etc. (Table 43).

Table 42. Details of technology week celebration in KVKs of Zone V

Activity	Andhra Pradesh		Maharashtra		Total	
	Q	NF	Q	NF	Q	F
1. Diagnostic Practical	6	1122	18	6473	24	7595
2. Exhibition	35	7509	49	20637	84	28146
3. Farm Visit	18	2424	48	13779	66	16203
4. Film show	9	1967	42	11122	51	13089
5. Gosthies	29	3746	13	1211	42	4957
6. Lectures organized	49	11117	140	33036	189	44153
7. Fair	0	0	0	0	0	0
8. Distribution of material	0	0	0	0	0	0
a. Bio Fertilizers (q)	0.1	35	1281.1	223	1281.3	258
b. Bio Product (kg)	171	346	2479	299	2650	345
c. Livestock specimen (No.)	6	650	25	5	31	655
d. Planting materials (No.)	156	371	278390	1130	278546	1447
e. Seed (q)	7.54	452	32.5	144	40.0	596
f. Literature (No.)	12	3043	31	15393	43	18436
Total	**498.64**	**32782**	**282548.6**	**103452**	**283047.3**	**135880**

Q: Quantity; NF: No. of farmers

Table 43. Details of Kisan Mobile Advisory by KVKs in Zone V

Category	Group	Andhra Pradesh		Maharashtra		Total	
		NM	NF	NM	NF	NM	NF
Animals	Dairy	1	42	80	48086	81	48128
	Fisheries	32	3111	15	5945	47	9056
	Poultry	6	2680	15	11884	21	14564
	Sheep and Goat	2	751	71	14269	73	15020
	Total	**41**	**6584**	**181**	**80814**	**222**	**86768**
Crops	Cereals	204	96463	49	31504	253	127967
	Commercial Crops	30	14457	325	134033	355	148490
	Fodders	1	655	14	12215	15	12870
	Fruits	18	25021	164	108517	182	133538
	Oilseeds	23	28631	242	71770	265	100401
	Ornamental Crops						
	Pulses	129	102106	57	34013	186	136119
	Spices			18	4327	18	4327
	Vegetables	249	33484	377	89897	626	120351
	Total	**654**	**300817**	**1246**	**486276**	**1900**	**784063**
Others	Agro Advisories			56	34752	56	34752
	Critical Tech. Products			39	21063	39	21063
	KVK Programmes	15	2782	57	39512	72	42294
	Market information	9	5475			9	5474
	Weather Information	24	13568	336	203250	360	216818
	Women and Children	18	16490			18	16490
	Total	**66**	**38315**	**488**	**298577**	**554**	**336891**

NM: No. of messages NF: No. of farmers

Publications

To disseminate the information on improved agricultural technologies, KVKs of Zone-V brought out 1384 publications which include 391 popular articles, 164 technical reports, 223 leaflets and folders and 189 electronic publications viz. CD/VCD/DVDs etc. The details of publications brought out by the KVKs are given in Table 44.

Table 44. Details of Publications by KVKs

Type of publication	Andhra Pradesh		Maharashtra		Total	
	Number	No. of copies	Number	No. of copies	Number	No. of copies
Books/booklets	42	18390	16	10200	58	28590
Electronic publications	33	5	156	5950	189	5955
Leaflets/folders	73	109700	150	128398	223	238098
News letters	38	1200	38	500	76	1700
Other extension literature	81	30990	100	44575	181	75565
Popular articles	114	1000	277	2600	391	3600
Research papers	29	0	21	0	50	0
Technical bulletins	19	19400	33	5850	52	25250
Technical reports	95	510	69	0	164	510
Total	524	181195	860	198073	1384	379268

Critical Technology Products

In order to facilitate rapid transfer of improved technologies, KVKs produce improved seed and planting material of elite species, various bio-products, improved livestock breeds and species and supplied them to farmers and farmwomen.

Seed and Planting Material

KVKs produced 13996.11 q of seed material (cereals ï 12249.76q, oilseeds ï 1026.65 q, pulses ï 543.01 q, Vegetables ï 120.46 q etc.) and supplied to 9336 farmers (Table 45). KVKs also produced 3081535 saplings (930223 - vegetables, flower crops ï 741533, fruits - 493747, 474515 fodders, 303066 ï forest spp., etc.) supplied to 16182 farmers (Table 46).

Table 45. Details of production and supply of seed

Category	Andhra Pradesh			Maharashtra			Total		
	Quantity (q)	Value (Rs.)	No. of farmers	Quantity (q)	Value (Rs.)	No. of farmers	Quantity (q)	Value (Rs.)	No. of farmers
Cereals and Millets	9696.27	6384650	4226	2553.49	1402007	1371	12249.76	7786657	5597
Commercial Crops	0.35	1400	15	24.05	15980	10	24.4	17380	25
Flower Crops	0.42	10990	40	0.04	540	56	0.47	11530	96
Oilseeds	105.3	657950	487	921.35	3962790	1303	1026.65	4620740	1790
Others (specify)	0	0	0	0.73	1778	36	0.73	1778	36
Pulses	76.60	339874	746	466.41	1048813	780	543.01	1388687	1526
Vegetables	9.01	72500	27	111.45	438795	232	120.46	511295	259
Species & Condiments	0	0	0	30	100000	2	30	100000	2
Fodder	0	0	0	0.6	1500	5	0.6	1500	5
Total	**9887.95**	**7467364**	**5541**	**4108.12**	**6972203**	**3795**	**13996.11**	**14439567**	**9336**

Table 46. Details of production and supply of planting material

Category	Andhra Pradesh			Maharashtra			Total		
	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers
Commercial crops	0	0	0	19890	49725	14	19890	49725	14
Flower Crops	182000	51000	41	559533	240550	322	741533	291550	363
Fodders	359200	134317	319	115315	113397.5	471	474515	247714.5	790
Forest species	22100	76000	237	280966	1655881	2888	303066	1731881	3125
Fruits	73294	1113460	2018	420453	10862320	3578	493747	11975780	5596
Plantation Crops	22654	44840	89	19836	334180	3549	42490	379020	3638
Spices	0	0	0	336	1440	216	336	1440	216
Vegetables	516989	145985	219	413234	431767	979	930223	577752	1198
Ornamental Crops	44075	101500	498	14523	205375	371	58598	306875	869
Tuber Crop	0	0	0	700	275	30	700	275	30
Others (Specify)	2000	20000	55	14437	42187.5	288	16437	62187.5	343
Total	**1222312**	**1687102**	**3476**	**1859223**	**13937098**	**12706**	**3081535**	**15624200**	**16182**

KVKs produced 440388 kg of bio-fertilizers and 43174 kg of bio-pesticides and supplied to farmers. The details of production of bio-products are given in Table 47.

Table 47. Details of production and supply of bio-products and bio-agents by KVKs

Product	Andhra Pradesh			Maharashtra			Total		
	Quantity		Value (Rs.)	Quantity		Value (Rs.)	Quantity		Value (Rs.)
	Number	Kg		Number	Kg		Number	Kg	
Bio-agents				1429	1985	141272	1429	1985	141272
Bio-fertilizers		163324	1063981	20117	277064	4968305	20117	440388	6032286
Bio-foods & herbal medicines					110	82273		110	82273
Bio-pesticides		6211	370320		36963	3144510		43174	3514830
Total		**169535**	**1434301**	**21546**	**316122**	**8336360**	**21546**	**485657**	**9770661**

Livestock Species

KVKs produced 304665 no. of fish fingerlings, 121145 poultry birds, 124 sheep and goat etc. of elite species and supplied to 13049 farmers (Table 48).

Table 48. Details of production and supply of livestock, sheep and goat and poultry breeds and fish fingerlings

Category	Andhra Pradesh			Maharashtra			Total		
	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers
Dairy	3	4500	3	59	653333.6	59	62	657834	62
Fisheries	201665	175370	72	103000	45600	130	304665	220970	202
Poultry	29565	1983328	3813	91580	3933104	8735	121145	5916432	12548
Sheep & Goat	808	727525	113	306	846191	124	1114	1573716	237
Total	**232041**	**2890723**	**4001**	**194945**	**5478229**	**9048**	**426986**	**8368952**	**13049**

Soil and water testing

KVKs undertake soil and water testing primarily to ascertain the nutrient status of fields earmarked for technology assessment and refinement so as to make soil test based nutrient recommendations in various micro-farming situations in the district. A total number of 82914 samples including soil (66552), water (15033), plant (1195), etc. were analyzed by the KVKs benefitting 71149 farmers of 6507 villages (Table 49).

Table 49. Details of soil and water testing by KVKs of Zone-V

Sample	Andhra Pradesh				Maharashtra				Total			
	NS	NB	NV	Amount (Rs.)	NS	NB	NV	Amount (Rs.)	NS	NB	NV	Amount (Rs.)
Soil	10418	8862	1000	111106	56134	49928	3494	9182632	66552	58790	4494	9293738
Water	1006	903	252	10244	14027	10691	1560	586860	15033	11594	1812	597104
Plant	64	64	2	384	1131	681	193	57775	1195	745	195	58159
Fertilizers /manures	0	0	0	0	134	20	6	4535	134	20	6	4535
Total	11488	9829	1254	121734	71426	61320	5253	9831802	82914	71149	6507	9953536

NS : No. of samples NB: No. of beneficiaries NV: No. of villages

Rainwater Harvesting

The details of training programmes on rainwater harvesting conducted by KVKs are given in Table 50. A total of 40 courses were conducted for 1384 farmers and farmwomen and extension personnel.

Table 50. Details of training programmes conducted by KVK in rainwater harvesting

State	KVK	No. of courses	Beneficiaries		
			Male	Female	Total
Andhra Pradesh	Rangareddy	2	30	0	30
	Total	2	30	0	30
Maharashtra	Amaravati(D)	9	521	126	647
	Beed	4	47	0	47
	Buldhana	2	100	16	116
	Hingoli	2	61	7	68
	Thane	8	99	0	99
	Yavatmal	2	56	0	56
	Jalna	11	297	24	321
	Total	38	1181	173	1354
Total		40	1211	173	1384

National Initiative on Climate Resilient Agriculture (NICRA)

Under the Technology Demonstration component of NICRA, the available options from the National Agricultural Research System that help farmers to cope with the climate variability are being tested in 100 village panchayats in the vulnerable districts. In Zone V, 13 districts (6 in Andhra Pradesh and 7 in Maharashtra) were selected for conducting such technology demonstrations. During the year under report KVKs conducted 2659 demonstrations under NRM interventions viz. in-situ moisture conservation practices, water harvesting and recycling, ground water recharge, improved drainage in flood prone area, micro irrigation systems and various resource conservation technologies. A total of 1324 crop production demonstrations were conducted in 1160 ha on drought tolerant and short duration varieties, location specific inter cropping systems, crop diversification, disease and pest management, nutrient management etc. Under livestock and fisheries interventions, KVKs covered 1610 farmers on breed up gradation, deworming of animals, mitigation of mineral deficiency, improved birds for backyard poultry, preventive vaccination, livestock insurance, fodder production, management of fishponds, etc. Similarly, KVKs also covered 2547 farmers under institutional interventions viz. use of community lands for seed production, fodder bank, custom hiring of farm implements, formation of commodity groups etc. KVKs also organized 110 training programmes for 3510 participants (3101 farmers and 409 farmwomen) on soil health management, contingency cropping, vegetable production, farm mechanization, pest and disease management, live stock management, etc.

TECHNOLOGICAL BACKSTOPPING

The Directorates of Extension of State Agricultural Universities (SAU) and Zonal Project Directorates facilitate technological backstopping and Human Resource Development (HRD) to the KVKs through Extension training, seminars, workshop etc. There are five Directorates of SAUs in Zone-V under Acharya N. G. Ranga Agricultural University, Hyderabad and Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Mahatma Phule Krishi Vidyapeeth, Rahuri, Marathwada Krishi Vidyapeeth, Parbhani and Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Akola in Maharashtra. A total of 43 training programmes benefitting 998 KVK staff in Zone-V were jointly organized by the directorates of extension and the Zonal Project Directorate (Table 51). To review the progress of KVKs, various officials of Directorate of Extension of SAU made 140 visits to KVKs under their operational jurisdiction (Table 52).

Table 51. Details of training programmes and meetings conducted by ZPD and SAUs of Andhra Pradesh and Maharashtra

SAU/ZPD	No. of meetings	No. of participants	No. of KVKs
ANGRAU, Hyderabad	14	243	27
BSKKV, Dapoli	6	50	34
MKV, Parbhani	4	166	44
MPKV, Rahuri	6	287	103
PDKV, Akola	10	198	86
ZPD, Hyderabad	3	54	43
Total	43	998	

Table 52. Details of visits by the officials of Directorate of Extension of SAU

SAU	No. of visits	No. of KVK
ANGRAU, Hyderabad	44	24
BSKKV, Dapoli	29	2
MKV, Parbhani	14	8
MPKV, Rahuri	37	12
PDKV, Akola	16	9
Total	140	55

AGRICULTURAL TECHNOLOGY INFORMATION CENTRE

In view of greater need for direct access of farmers to institutional resources, ICAR established 44 Agricultural Technology Information Centres (ATIC) at some of the renowned institutions of National Agricultural Research System during 1997-98. In Zone-V, six ATIC were established, one each at five State Agricultural Universities viz. Acharya N. G. Ranga Agricultural University (A.P.), Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Mahatma Phule Krishi Vidyapeeth, Marathwada Krishi Vidyapeeth and Dr. Punjabrao Deshmukh Krishi Vidyapeeth in Maharashtra and one at Central Research Institute for Cotton Research, Nagpur, Maharashtra.

During the year, a total of 138120 farmers visited the ATICs to access the latest technological information and critical technology products viz. seed and planting material (Table 53). ATICs published latest technical information in the form of books, bulletins and electronic print format viz. compact disks and digital virtual discs for the benefit of farmers. The details on number of publications by ATICs are furnished in Table 54. A total of 117495 copies of 164 publications were sold by ATICs, which benefitted 48128 farmers with a revenue of Rs. 3252337/-.

Table 53. Details of visits of farmers to ATICS

Nature of visit	No. of farmers
Agro-advisory	41491
Diagnostic services	42
Technology information	67682
Technology products	27355
Farmer Scientists forum	1550
Total	138120

Table 54. Details of publication by ATICs

Publication	Number	No. of copies	Revenue (Rs.)	No. of farmers
Books	63	35150	2678330	34346
CD & DVDs	20	450	0	0
Leaflets	22	20049	0	8000
Booklet & Pamplet	33	34064	95807	0
Technical bulletins	26	27782	478200	5782
Total	164	117495	3252337	48128

Similarly, various critical technology products such as seed and planting material of improved varieties of crops, elite breeds of livestock, improved farm implements etc. were sold by ATICs which a generated revenue of Rs. 13801489/- and benefitted 54830 farmers and farmwomen (Table 55). ATICs in Zone-V also facilitated other technology advisory and services viz. soil and water testing, plant diagnostics, mobile advisory and service to line departments, which benefitted 29933 farmers (Table 56).

Table 55. Details of technology products produced and supplied by ATICs

Product	Quantity	Revenue (Rs.)	No. of farmers
Bio-products (q)	12760.39	1085038	1110
Sericulture (kg)	130	24000	100
Implements (No.)	6284	633731	3593
Livestock species (No.)	120	518750	54
Planting material (No.)	64306	2613430	1453
Processed products (No. of packets)	13306	1123752	40510
Seed (q)	1958.03	7211652	5056
Marigold seedling(African)	30000	0	3
Medicinal plant seedling PDKV	250	0	1
Soil, water & plant analysis	3000	571066	2850
Zygogramme	20070	20070	100
Total		13801489	54830

Table 56. Details of technology services provided by ATICs

Technology service	Number	No. of farmers
Animal diagnostic visits/treatment	17	25
Special Extension Programme	100	2108
Mobile advisory	86094	25516
Implements & Machinery	8	8
Services rendered to line Departments	180	2008
Soil and Water Testing	274	268
Total	86673	29933

STAFF POSITION IN ZONAL PROJECT DIRECTORATE

S. No.	Name	Designation
1.	Dr. N. Sudhakar	Zonal Project Director
2.	Dr. K. Dattatri	Principal Scientist, Agril. Extn.
3.	Dr. G. Rajender Reddy	Senior Scientist, Soil Science
4.	Smt. B. Malathi	Scientist (Economics)
5.	Shri B. Amaranath	Asst. Adm. Officer
6.	Shri. S. Bala Kamesh	Asst. Fin. & Acct. Officer
7.	Smt. S. Hemalatha	Personal Assistant
8.	Shri. V.V. Ramana	Assistant
9.	Ms. N. Archana	Lower Division Clerk
10.	Smt. G. Navneetha	Lower Division Clerk
11.	Shri. N. Vijay Kumar	Lower Division Clerk
12.	Shri. M. Sadanand	Driver
13.	Smt. Subbalakshmi	SSS

ICAR

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