वार्षिक प्रतिवेदन
ANNUAL REPORT
2011-12

ICAR

क्षेत्रीय परियोजना निदेशालय (क्षेत्र-V)

Zonal Project Directorate (Zone-V)

CRIDA, Santoshnagar,

Hyderabad-500059 A.P.

वार्षिक प्रतिवेदन

ANNUAL REPORT

2011-12

ICAR

क्षेत्रीय परियोजना निदेशालय (क्षेत्र-V)

Zonal Project Directorate (Zone-V)

CRIDA Campus, Santoshnagar
Hyderabad - 500059 A.P

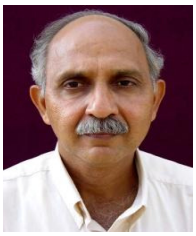
Citation

ZPD (Zone-V) Annual Report 2011-12.
Zonal Project Directorate (Zone-V), Hyderabad.

Published by

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

This report is in compliance with Economy order No.3/2010 of ICAR



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 4330 on-farm trials. A total of 8309 Front Line Demonstrations covering 2726 ha under oilseeds, pulses and other field and horticultural crops was organized by KVKs in Zone-V. KVKs also conducted 1613 demonstrations on livestock related technologies.

KVKs conducted 5667 training programmes covering 179482 participants that include 139070 farmers and farmwomen, 21737 rural youth and 18675 extension functionaries besides organizing 15953 extension activities with a participation of 574576 farmers, farmwomen and extension personnel. To facilitate rapid dissemination of information on improved farm technologies, KVKs brought out 1059 publications. KVKs also produced 7832.47q of seed and 1815801saplings of elite species of field and horticultural crops. KVKs also produced 3683.31q of bio-fertilizers and 392.51q of bio-pesticides 31.56 q of bio-fungicides 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 145283 samples including soil (112730), water (26692), plant (718), etc. benefiting 140205 farmers of 12695 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 46 HRD activities benefiting 1215 KVK staff in the Zone were jointly organized by the five directorates of extension and the ZPD (Zone-V). About 107525 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), Dr. A. K. Mehta, Assistant 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. K. Mahadeva Reddy, Senior Scientist, Dr. G. Rajender Reddy, Senior 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, 4330 फार्म जांच प्रदर्शनों द्वारा कृषि विज्ञान केंद्र ने 565 प्रौद्योगिकियों को मूल्यांकित एवं परिष्कृत किया गया। जांचे गए 565 प्रौद्योगिकियों में, 430 प्रौद्योगिकियां फसलों पर उसके बाद पशुओं(79), महिलाओं एवं शिशुओं (56) 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 1334 ऑन फार्म जांचों के आयोजन द्वारा 240 प्रौद्योगिकियों मूल्यांकन किया, जबकि महाराष्ट्र में कृषि विज्ञान केंद्रों ने 2471 जांचों के आयोजन द्वारा 250 प्रौद्योगिकियों का मूल्यांकन किया। आंध्र प्रदेश में कृषि विज्ञान केंद्रों ने 112 जांचों का आयोजन कर कुल 22 प्रौद्योगिकियों को परिष्कृत किया गया एवं महाराष्ट्र में कृषि विज्ञान केंद्रों ने 53 प्रौद्योगिकियों के परिष्करण के लिए 413 जांचों का आयोजन किया।

क्षेत्र V में कृषि विज्ञान केंद्रों द्वारा तिलहनों के अंतर्गत 415.40 हेक्टेयर को शामिल कर कुल 889 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 1101.10 हेक्टेयर को शामिल कर कृषि विज्ञान केंद्रों द्वारा 2656 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 1209.30 हेक्टेयर क्षेत्र में 2937 अग्रिम प्रदर्शनों का आयोजन किया। कृषि विज्ञान केंद्रों ने बेहतर औज़ारों एवं उपकरणों पर 1827 प्रदर्शनों का आयोजन किया। इसके साथ-साथ पशुधन प्रजातियों एवं महिला सशक्तिकरण पर क्रमशः 1613 तथा 578 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 179482 भागिदारियों को शामिल करते हुए 5667 प्रशिक्षण कार्यक्रमों का आयोजन किया जिसमें 139070 किसान एवं कृषि महिलाएं, 21737 ग्रामीण युवा एवं 18675 विस्तार कार्यकर्ता शामिल थे। आंध्र प्रदेश में कृषि विज्ञान केंद्रों ने 72845 किसान जिसमें कृषि महिलाएं, ग्रामीण युवा एवं विस्तार कार्यकर्ताओं के भागीदारी से 2194 प्रशिक्षण पाठ्यक्रमों का आयोजन किया गया जबकि महाराष्ट्र में कृषि विज्ञान केंद्रों ने कुल 106637 लाभान्वितों के लिए 3473 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 39798 किसानों, कृषि महिलाओं एवं ग्रामीण युवाओं को शामिल करते हुए 884 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 9942 लाभार्थियों को शामिल करते हुए 300 व्यावसायिक प्रशिक्षण कार्यक्रमों का आयोजन किया गया। इसमें शामिल किए गए मुख्य विषय हैं मूल्य संवर्धन, समेकित फसल प्रबंधन, मुरगी पालन, नर्सरी एवं रोपण, जैव-एजेंटो तथा जैव-कीटनाशकों का उत्पादन, भेड़ एवं बकरी पालन आदि।

क्षेत्र V के कृषि विज्ञान केंद्रों ने बेहतर कृषि प्रौद्योगिकियों पर जागरूकता उत्पन्न करने के लिए 574576 किसानों, कृषि महिलाओं एवं विस्तार अधिकारियों की भागीदारी से 15953 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 1527 प्रकाशनों को निकाला गया। कृषि विज्ञान केंद्र ने किसानों को

7832.47 क्विंटल बीज एवं कृषि तथा बागवानी फसलों के स्वोत्कृष्ट प्रजाति के 1815801 पौधों की भी आपूर्ति की। कृषि विज्ञान केंद्र ने 3683.1 क्विंटल जैव-नाशीजीवों एवं 31.56 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 145283 नमूनों, जिसमें मृदा (112730), जल (26692), पौधों (718) शामिल हैं, का विश्लेषण किया गया जिससे आंध्र प्रदेश एवं महाराष्ट्र के 12695 गांवों के 140205 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 46 मानव संसाधन गतिविधियों का आयोजन किया गया जिससे 1215 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 107525 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 4330 on-farm trials. Out of 565 technologies tested, 430 technologies were assessed and refined on crops followed by the technologies related to animals (79) and women and children (56). 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 240 technologies by conducting 1334 on-farm trials, while KVKs in Maharashtra assessed 250 technologies by organizing 2471 trials. A total of 22 technologies were refined by KVKs in Andhra Pradesh by organizing 112 trials and KVKs in Maharashtra conducted 413 trials to refine 53 technologies.

A total of 889 front line demonstrations covering 415.40 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 2656 demonstrations covering 1101.10 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 2937 demonstrations covering 1209.30 ha on other crops i.e. cereals, commercial crops, fodder and horticultural crops. KVKs also organized 1827 demonstrations on improved tools and implements, 1613 and 578 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 5667 training programmes covering 179482 participants that include 139070 farmers, 21737 rural youth and 18675 extension functionaries. KVKs in Andhra Pradesh organized 2194 training courses with a participation of 72845 farmers including farmwomen, rural youth and extension functionaries, while the KVKs in Maharashtra conducted 3473 courses with a total of 106637 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 844 sponsored training programmes covering 39798 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 300 vocational training programmes covering 9942 beneficiaries. The important thematic areas include value addition, integrated crop management, poultry farming, nursery and grafting, production of bio-agents and bio-pesticides, sheep and goat rearing etc.

To create awareness on improved agricultural technologies the KVKs of Zone-V organized 15953 extension activities with a participation of 574576 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 1527 publications. KVKs also supplied 7832.47 q of seed and 1815801 saplings of elite species of field and horticultural crops to farmers. KVKs also produced 3683.31q of bio-fertilizers,392.51q of bio-pesticides and 31.56 q of bio-fungicides 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 145283 samples including soil (112730), water (26692) and plant (718) were analyzed by the KVKs that benefited 140205 farmers belonging to 12695 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 46 HRD activities benefitting 1215 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 107525farmers 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 farmer's 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 VIGYANKENDRA

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, 829 are filled (66%). The Programme Coordinators are in position at 57 KVKs in the Zone, while the number of Subject Matter Specialists in position is 314 (67%) and the number of Programme Assistants is 128(55%).

Table 2. Consolidated staff position

Category	Andhra Pradesh			Maharashtra			Total		
	S	F	V	S	F	V	S	F	V
Programme Coordinator	34	26	8	44	31	13	78	57	21
Subject Matter Specialist	204	116	88	264	198	66	468	314	154
Programme Assistant	102	45	57	132	83	49	234	128	106
Administrative Staff	68	52	16	88	65	23	156	117	39
Auxiliary Staff	68	33	35	88	51	37	156	84	72
Supporting Staff	68	54	14	88	75	13	156	129	27
Total	544	326	218	704	503	201	1248	829	419

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	21	1	19	3	17	2	22	32	32	18	1	12
MS	0	15	29	31	2	30	2	27	1	33	43	43	30	11	17
Total	1	36	41	52	3	49	5	44	3	55	75	75	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. 526.37 lakh of which Rs.160.25 lakh is generated by KVKs in Andhra Pradesh and Rs. 366.12 lakh by KVKs in Maharashtra (Table 4).

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

State	Balance on 31.3.2012
Andhra Pradesh	160.25
Maharashtra	366.12
Total	526.37

In Andhra Pradesh, KVK Kurnool has the highest balance of revolving fund (Rs. 42.72 lakh) followed by Khammam (Rs. 21.84 lakh) and Chittoor (Rs. 15.93lakh) and KVK wise fund position is furnished in Table 5 a. In Maharashtra, KVK Amaravati (D) has the highest balance Rs. 86.22 lakh followed by Jalgaon, Rs. 39.51 lakh and Beed, Rs. 29.42 lakh. The KVK wise fund position is presented in Table 5a& b.

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

KVK	Balance on 31.3.2012
Adilabad	0.55
Anantapur	6.32
Anantapur (A)	1.17
Chittoor	15.93
East Godavari	0.58
East Godavari (A)	1.70
Kadapa	1.97
Karimnagar	6.12
Karimnagar (A)	1.04
Khammam	21.84
Krishna	10.65
Kurnool	42.72
Kurnool (A)	1.00
Mahaboobnagar	0.15
Mahaboobnagar (A)	0.15
Medak	-0.30
Nalgonda	15.90
Nalgonda (A)	0.46
Nizamabad	4.85
Prakasam	0.80
Srikakulam	9.85
Vishakapatnam	8.33
Vizianagaram	4.42
Warangal	0.98
West Godavari	0.53
West Godavari (A)	1.17
Total	**160.25**

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

KVK	Balance on 31.3.2012
Ahmednagar	20.54
Amaravati (D)	86.22
Akola	1.39
Aurangabad	15.03
Beed	29.42
Bhandara	15.96
Buldhana	13.15
Chandrapur	5.10
Dhule	1.72
Gadchiroli	6.70
Gondia	5.10
Hingoli	2.50
Jalgaon	39.51
Jalna	4.73
Kolhapur	2.20
Latur	2.18
Nagpur	1.38
Nanded	1.04
Nandurbar	7.40
Nashik	1.71
Osmanabad	4.13
Parbhani	2.81
Pune	0.32
Pune (A)	0.20
Raigadh	6.91
Ratnagiri	-1.45
Sangli	6.66
Satara	20.48
Sindhudurg	4.04
Solapur	5.37
Thane	12.52

KVK	Balance on 31.3.2012
Wardha	7.15
Washim	18.10
Yavatmal	15.90
Total	**366.12**

(SAC) SAC Meetings

The number of Scientific Advisory Committee (SAC) meetings conducted by KVKs is given in Table 6. Out of 78 KVKs, 36KVKs conducted SAC meetings once, while 14 KVKs conducted the meeting twice.

Scientific Advisory Committee

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	9	14	23	11
Maharashtra	44	27	0	27	17
Total	78	36	14	50	28*

* Includes 23 additional KVKs (12 in Andhra Pradesh and 11 in Maharashtra) sanctioned recently

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 4330 on-farm trials on the farmers' fields (Table 7). Out of 565 technologies tested, 430 technologies were assessed and refined on crops followed by animals (79), women and children (56).

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	34	254	13
		Crops	186	933	28
		Women Empowerment	18	137	9
		Sub Total	238	1324	
	Maharashtra	Animals	36	391	24
		Crops	170	1492	35
		Women Empowerment	41	558	24
		Sub Total	247	2441	
		Total	485	3765	
Refinement	Andhra Pradesh	Animals	3	12	1
		Crops	20	106	9
		Women Empowerment	1	4	1
		Sub Total	24	122	
	Maharashtra	Animals	6	49	6
		Crops	46	353	21
		Women Empowerment	4	41	3
		Sub Total	56	443	
		Total	565	4330	
Assessment & Refinement	Andhra Pradesh	Animals	37	266	14
		Crops	207	1045	28
		Women Empowerment	18	135	9
		Total	262	1446	
	Maharashtra	Animals	42	440	25
		Crops	223	1924	35
		Women Empowerment	38	520	25
		Total	303	2884	
	Grand Total		565	4330	

Table 8. Details of thematic area wise technologies assessed and refined in Zone V

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Breed Evaluation	13	122	11
	Breed Improvement	2	20	2
	Disease Management	14	117	12
	Fertility Management	6	178	4
	Fodder and Feed Management	16	90	14
	Nutrition Management	13	115	10
	Production and Management	15	64	9
	Total	79	706	
Crops	Cropping Systems	20	93	13
	Farm Machinery and Equipment	18	95	12
	Improved Tools and Implements	31	223	17
	Integrated Crop Management	61	478	38
	Integrated Disease Management	33	189	22
	Integrated Nutrient Management	84	603	45
	Integrated Pest Management	77	548	45
	Integrated Weed Management	14	129	12
	Resource Conservation Technologies	9	45	9
	Varietal Evaluation	75	481	36
	Total	422	2884	
Women Empowerment	Entrepreneurship Development	6	32	3
	Health and Nutrition	25	341	23
	Drudgery Reduction	33	367	23
	Total	64	740	
Grand Total		565	4330	

Table 9. Details of thematic area wise assessment of technologies in Zone V

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Breed Evaluation	13	122	11
	Breed Improvement	2	20	2
	Disease Management	12	101	11
	Feed and Nutrition Management	15	86	13
	Fertility Management	6	178	4
	Nutrition Management	12	112	10
	Production and Management	13	56	8
	Total	73	675	
Crops	Cropping Systems	20	93	13
	Farm Machinery	18	95	12
	Improved Tools and Implements	27	192	16
	Integrated Crop Management	51	408	35

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
	Integrated Disease Management	27	154	20
	Integrated Nutrient Management	60	434	42
	Integrated Pest Management	60	426	40
	Integrated Weed Management	11	107	9
	Resource Conservation	9	45	9
	Varietal Evaluation	75	481	36
	Total	358	2435	
Women Empowerment	Entrepreneurship Development	6	32	3
	Health and Nutrition	24	326	22
	Drudgery Reduction	29	337	22
	Total	59	695	
Total		490	3805	

Table 10. Details of thematic area wise refinement of technologies in Zone V

Category	Thematic area	No. of technologies	No. of trials	No. of KVKs
Animals	Disease Management	2	16	2
	Feed and Nutrition Management	1	4	1
	Nutrition Management	1	3	1
	Production and Management	2	8	1
	Total	6	31	
Crops	Improved Tools and Implements	4	31	4
	Integrated Crop Management	10	70	9
	Integrated Disease Management	6	35	3
	Integrated Nutrient Management	24	169	17
	Integrated Pest Management	17	122	14
	Integrated Weed Management	3	22	3
	Total	64	449	
Women Empowerment	Health and Nutrition	1	15	1
	Drudgery Reduction	4	30	3
	Total	5	45	
Total		75	525	

KVKs in Andhra Pradesh assessed the suitability of 240 technologies by conducting 1334 on-farm trials covering animals (254), crops including horticultural species (943) and empowerment of rural women (137). Similarly, in case of Maharashtra KVKs assessed 250 technologies by organizing 2471 trials that include animals (421), crops including horticultural species (1492) and women empowerment (558). 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	8	85	6
	Disease Management	4	15	4
	Feed and Nutrition Management	6	26	5
	Fertility Management	1	48	1
	Nutrition Management	4	49	3
	Production and Management	11	41	6
	Total	34	254	
Crops	Cropping Systems	17	78	10
	Farm Machinery	10	45	6
	Improved Tools and Implements	10	54	8
	Integrated Crop Management	19	90	15
	Integrated Disease Management	18	87	12
	Integrated Nutrient Management	22	114	16
	Integrated Pest Management	29	141	18
	Integrated Weed Management	6	45	5
	Resource Conservation	5	23	5
	Varietal Evaluation	52	266	21
	Total	188	943	
Women Empowerment	Entrepreneurship Development	5	22	2
	Health and Nutrition	6	72	5
	Drudgery Reduction	7	43	6
	Total	18	137	
Total		240	1334	

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	5	37	5
	Breed Improvement	2	20	2
	Disease Management	8	86	7
	Feed and Nutrition Management	9	60	8
	Fertility Management	5	130	3
	Nutrition Management	8	73	7
	Production and Management	2	15	2
	Total	39	421	
Crops	Cropping Systems	3	15	3
	Farm Machinery	8	50	6
	Improved Tools and Implements	17	138	8
	Integrated Crop Management	32	318	20
	Integrated Disease Management	9	67	8
	Integrated Nutrient Management	38	320	26
	Integrated Pest Management	31	285	22
	Integrated Weed Management	5	62	4
	Resource Conservation	4	22	4
	Varietal Evaluation	23	215	15
	Total	170	1492	
Women Empowerment	Entrepreneurship Development	1	10	1
	Health and Nutrition	18	254	17
	Drudgery Reduction	22	294	16
	Total	41	558	
Total		250	2471	

A total of 22 technologies were refined by KVKs in Andhra Pradesh by conducting 112 trials covering animals (12), crops (96) and women (4). Similarly, KVKs in Maharashtra organized 413 trials to refine 53 technologies covering animals (19), crops (353) and women (41). 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	2	8	1
	Total	3	12	
Crops	Improved Tools and Implements	1	10	1
	Integrated Crop Management	1	10	1
	Integrated Disease Management	5	25	2
	Integrated Nutrient Management	4	19	4
	Integrated Pest Management	6	28	5
	Integrated Weed Management	1	4	1
	Total	18	96	
Women Empowerment	Drudgery Reduction1	1	4	1
	Total	1	4	
Total		22	112	

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	Disease Management	2	16	2
	Nutrition Management	1	3	1
	Total	3	19	
Crops	Improved Tools and Implements	3	21	3
	Integrated Crop Management	9	60	8
	Integrated Disease Management	1	10	1
	Integrated Nutrient Management	20	150	13
	Integrated Pest Management	11	94	9
	Integrated Weed Management	2	18	2
	Total	46	353	
Women Empowerment	Health and Nutrition	1	15	1
	Drudgery Reduction	3	26	2
	Total	4	41	
Total		53	413	

Performance of technologies

Field crops

Varietal evaluation

Evaluation of blast resistant rice variety

In view of severe incidence of blast and bacterial leaf blight associated cv. BPT-5204, KVK, Mahaboobnagar, Andhra Pradesh assessed the performance of cv. RNR-2458 during kharif. Results showed higher no. of tillers (36.80/plant), grains (170/panicle), test weight (16.30 g), yield (50.20 q/ha), net profit (Rs. 23222/ha) and BCR (1.70) with RNR-2458 compared to BPT-5204.

Technology option	No. of trials	Tillers (No./plant)	1000 grain weight (g)	Grains (No./panicle)	Yield (q/ha)	Net return (Rs./ha)	BCR
cv. BPT-5204 – Farmers Practice	20	26.40	15.50	145	42.40	14564	1.30
cv. RNR-2458 – Recommended Practice		36.80	16.30	170	50.20	23222	1.70

Performance of rice variety cv. JGL-11727

In view of high incidence of rice blast, Brown Plant Hopper (BPH), gall midge and resultant yield loss in rice grown under intensive rice-rice system on black soils of Karimnagar, Andhra Pradesh, KVK assessed the performance of rice variety cv. JGL-11727 during kharif season. Results showed that cv. JGL-11727 recorded higher yield (65 q/ha), net return (Rs. 41970/ha), BCR (2.42) besides significant reduction in incidence of blast (5%), BPH (6%), and gall midge (8%) compared to variety, BPT-5204.

Technology option	No. of trials	% incidence			Yield (q/ha)	Net return (Rs./ha)	BCR
		Blast	BPH	Gall midge			
cv. BPT-5204 – Farmers Practice	6	21	38	28	60	29113	1.84
cv. JGL-11727 – Recommended Practice		5	6	8	65	41970	2.42

Varietal evaluation in sorghum

KVK, Pune, Maharashtra assessed the performance of dual purpose variety suitable for medium deep black soils under irrigated rabi sorghum based cropping systems. Result showed that cv. Phule Revati (RSV-1006) recorded higher plant height (211.10 cm), 1000 grain weight (6.22 g), fodder production (62.20 q/ha), grain yield (37.60 q/ha), net return (Rs. 91735/ha) and BCR (3.05) compared to old variety, M-35-1.

Technology option	No. of trials	Plant height (m)	1000 grain weight (g)	Fodder yield (q/ha)	Grain yield (q/ha)	Net return (Rs./ha)	BCR
cv. M-35-1- Farmers Practice	10	159.20	24.40	37.80	21.67	46676	1.94
cv. Phule Revati – Recommended Practice		211.10	30.55	62.20	37.60	91735	3.05

Performance of groundnut varieties

In view of stagnated yield of groundnut grown on red sandy loams, KVK, Chittoor, Andhra Pradesh assessed the performance of cv. Rohini (TCGS-913) in irrigated dry situations during kharif and rabi seasons and cv. Kadiri Harita in rainfed situation during kharif. Results showed that the no. of pods, yield, net return and BCR were higher with cv. Rohini compared to JL-24.

Technology option	No. of trials		No. of pods/plant		Days to maturity		Yield (q/ha)		Net return (Rs./ha)		BCR	
	K	R	K	R	K	R	K	R	K	R	K	R
cv. JL-24 – Farmers Practice	2	2	12.30	15.6	105	105	21.10	26.60	32760	51980	1.85	1.83
cv. Rohini (TCGS-913) – Recommended Practice			15.20	16.3	100	100	24.60	29.70	52485	65245	2.31	2.04

K: Kharif; R: Rabi

In rainfed situation, cv. Kadiri Harita gave higher no. of pods (11.00/plant), yield (11.00q/ha), net returns (Rs. 9125 /ha) and BCR (1.31) compared to cv. K-6.

Technology option	No. of trials	No. of pods/plant	Days to maturity	Yield (q/ha)	Net return (Rs./ha)	BCR
cv. K-6 – Farmers Practice	6	9.00	105	9.30	5080	1.18
cv. Kadiri Harita – Recommended Practice		11.00	100	11.00	9125	1.31

KVK, Nashik, Maharashtra assessed the performance of groundnut varieties suitable for medium light soils under rice-fallow system. Higher number of pods (32/plant), yield (9.45 q/ha), net return (Rs. 21060/ha) and BCR (2.26) were noted with cv. TG-37A compared to TAG-24 and SB-11.

Technology option	No. of trials	Pods (No./plant)	Yield (q/ha)	Net return (Rs./ha)	BCR
cv. SB-11 – Farmers Practice	10	14.8	6.30	10365	1.70
cv. TAG-24 – Recommended Practice		26.5	7.80	14630	1.88
cv. TG-37A – Recommended Practice		32.0	9.45	21060	2.26

Varietal evaluation in chickpea

To identify a chickpea variety suitable for medium clay loam soils under rice - fallow production system in Nashik district of Maharashtra, KVK conducted on-farm trials. Cv. Digvijay gave higher number of branches (8.5/plant) and pods (24/plant) besides higher yield (10.40 q/ha), net return (Rs. 18840/ha) and CBR (2.07) compared to cv. Vijay.

Technology option	No. of trials	Branches (No./plant)	Pods (No./plant)	Yield (q/ha)	Net return (Rs./ha)	BCR
Cv. Vijay – Farmers Practice	7	5.40	19	7.60	12020	1.82
Cv. Digvijay – Recommended Practice		8.50	24	10.40	18840	2.07

Performance of improved sugarcane variety

In order to combat the problem of severe lodging and resultant low yield of sugarcane grown on irrigated red sandy loams of Chittoor, Andhra Pradesh, KVK assessed the performance of cv. 2003 v 46. This variety gave higher yield and net return than local check, cv. 86v 96.

Technology option	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
cv. 86 v 96 – Farmers Practice	4	108.50	88000	1.78
cv. 2003 v 46 – Recommended Practice		132.50	121600	1.98

Integrated nutrient management

Soil test based nutrient management in rice

To minimize the cost of nutrients and increase the yield of rice grown on sandy clay loams, KVK, Chittoor, Andhra Pradesh conducted on farm trial to assess the performance of soil test based nutrient management during kharif season. Higher yield (64.40 q/ha), net return (Rs 39738/ha) and BCR (2.06) were recorded with soil test based recommended nutrients (150:57.5:32 NPK + Zinc Sulphate @ 50 kg/ha) compared to farmers practice.

Technology option	No. of trials	Tillers (no./hill	Cost of cultivation (Rs./ha)	Yield (q/ha)	Net return (Rs./ha)	BCR
184:115:75 NPK - Farmers practice	5	12.80	38988	60.03	33462	1.85
Soil test based RDF (150:57.5:32 NPK + Zinc Sulphate @ 50 kg/ha) – Recommended Practice		13.70	37438	64.40	39738	2.06

Foliar application of N and K in chickpea

To mitigate the effect of moisture severe stress at pod and grain filling in chickpea grown on medium deep black soils under rainfed cereal based production system (Bajra-Sorghum) in Pune district of Maharashtra, KVK assessed the performance of foliar spray of 0.5 % NPK (13:0:45) at flowering and pod filling stages + basal application of NPK (25:50:0). Higher number of branches (21.10/plant) and pods (82.50/plant) and higher grain yield (21.98q/ha), net return (Rs. 46536/ha) and BCR (2.80) were recorded with foliar spray of 0.5 % NPK compared to basal application of recommended dose of fertilizers or farmers method of application of DAP @ 125 kg/ha.

Technology option	No. of trials	Branches (No./plant)	Pods (No./plant)	Yield (q/ha)	Net return (Rs./ha)	BCR
DAP @ 125 kg/ha – Farmers Practice	9	15.20	70.30	18.02	33966	2.30
Basal application of RDF (25:50:0 NPK) – Recommended Practice		18.90	80.60	20.78	42974	2.60
Basal application of RDF (25:50:0 NPK) + foliar spray of 0.5 % NPK (13:0:45) at flowering and pod filling stages – Refined Practice		21.10	82.50	21.98	46536	2.80

Nutrient management in sugarcane

KVK, Chittoor, Andhra Pradesh conducted on-farm trials to assess proper dosage of nutrients in kharif grown sugarcane on red sandy loams. Application of 75 % RDF (Recommended Dose of Fertilizer) + 12.5 kg VAM + 10 kg Azospirillum significantly reduced the cost of

nutrients (Rs. 6162/ha) and gave higher yield (1028 q/ha), net returns (Rs. 82938/ha) and BCR (1.77) compared to farmers practice

Technology option	No. of trials	Cost of Nutrients (Rs./ha)	Yield (q/ha)	Net return (Rs./ha)	BCR
298:172:150 NPK – Farmers Practice	10	9150	955	69800	1.62
RDF (224:112:112 NPK) – Recommended Practice		6518	988	76982	1.72
75% RDF (224:112:112 NPK) + 12.5 Kg VAM + 10 Kg Azospirillum – Refined Practice		6162	1028	82938	1.77

Response of sugarcane to fertilizer briquettes

In order reduce the leaching losses of fertilizer nutrients and improve the yield response of sugarcane, KVK conducted on-farm trials to assess the performance of NPK Briquettes in sugarcane based cropping systems in Satara district of Maharashtra. Results showed that application of recommended dose of nutrients (400:170:170: NPK kg/ha) through NPK Briquettes gave higher number of millable canes (103565), cane weight (1.87 kg), yield (1838.30 q/ha), net return (Rs. 336055) and BCR (4.20) compared to drilling or farmers methods of broadcasting of fertilizers.

Technology option	No. of trials	Millable canes (No./ha)	Cane weight (kg)	Yield (q/ha)	Net return (Rs. ha)	BCR
Broadcasting of heavy dose fertilizer nutrients – Farmers Practice	27	85493	1.66	1392.40	235065	3.37
Placement of recommended nutrients (400:170:170: NPK kg/ha) through drilling at 30 cm depth – Recommended Practice		91256	1.76	1585.70	285572	4.01
Placement of recommended NPK briquetted nutrients (400:170:170: NPK kg/ha) at 30 cm depth – Refined Practice		103565	1.87	1838.30	336055	4.20

Integrated pest and disease management

Control of wheat aphids

To overcome the problem of endemic incidence of aphids in irrigated wheat, KVK, Dhule, Maharashtra assessed the performance of seed treatment with Imidacloprid 70 WS @ 0.5 g/kg one day before sowing. Seed treatment with Imidacloprid gave significantly higher yield (30.40 q/ha), net return (Rs. 25700/ha) and BCR (2.52) besides reducing the incidence of aphid compared to indiscriminate spray chemical pesticides.

Technology option	No of trials	Aphid incidence (count/plant) days after sowing					Yield (q/ha)	Net return (Rs./ha)	BCR
		30	45	60	75	90			
Indiscriminate sprays of chemical pesticides – Farmers Practice	7	10.53	7.72	6.95	6.43	9.26	24.60	16300	1.88
Seed treatment with Imidacloprid 70 WS @ 0.5 g/kg one day before sowing – Recommended Practice		1.81	1.85	2.56	3.55	4.80	30.40	25700	2.52

Management of rice blast

To overcome the problem of rice blast in endemic areas of Kurnool, Andhra Pradesh, KVK, Kurnool (B) conducted an on-farm trial during rabi season. Spraying Isoprothiolane 40 EC @1.5 ml/l effectively reduced the blast incidence (16%) and gave higher yield (57.00 q/ha), net return (Rs. 48000/ha) and BCR (2.28) compared to spraying of Triicyclozole @0.6 g/l.

Technology option	No. of trials	Blast incidence (%)	Yield (q/ha)	Net return (Rs./ha)	BCR
Spraying of Tricyclozole @0.6 g/l – Farmers Practice	5	25	52	33000	1.73
Spraying Isoprothiolane 40 EC @1.5 ml/l – Recommended Practice		16	57	48000	2.28

Management of sucking pests in cotton

In order to minimize the incidence of sucking pests in cotton grown on rainfed medium soils, KVK, Kurnool (B) assessed the performance of seed treatment during kharif season. Seed treatment with Imidacloprid 70% WS @ 5 g/kg seed effectively reduced the incidence of jassids (9/leaf), thrips (12/leaf) and white flies (11/leaf) besides increasing the yield (17.50 q/ha), net return (Rs. 28750/ha) and BCR (1.88) compared to seed treatment with Thiomethoxam 70% WS @ of 4 g/kg seed.

Technology option	No. of trials	Pest incidence (No./leaf)			Yield (q/ha)	Net return (Rs./ha)	BCR
		Jassids	Thrips	White flies			
Seed treatment with Thiomethoxam 70% WS @ 4 g/kg seed – Farmers Practice.	5	15	18	21	15.00	15000	1.40
Seed treatment with Imidacloprid 70% WS @ 5 g/kg seed – Recommended Practice		9	12	11	17.50	28750	1.88

Management of stem necrosis in groundnut

To minimize the incidence of stem necrosis disease in groundnut grow on irrigated alfisols in Anantapur, Andhra Pradesh, KVK, Ananatpur (R) assessed the performance of disease management option. Seed treatment and two sprays of thiomethoxam at 20 and 40 days after sowing significantly reduced the stem necrosis (10%) and increased the yield (9.8 q/ha) and net return (Rs. 17700/ha).

Technology option	No. of trials	Incidence of necrosis (%)	Yield (q/ha)	Net return (Rs./ha)	BCR
Seed treatment and spray of fungicides as per farmers own assessment – Farmers Practice	6	36	9.16	14120	1.5
Seed treatment and two sprays of thiomethoxam at 20 and 40 days		10	9.8	17700	1.7

Weed management

Weed management in sugarcane

To minimize the cost of weeding in sugarcane grown on irrigated red sandy loams in Chittoor, Andhra Pradesh, KVK conducted on-farm trials to assess the performance of chemical weed management options. Application of Atrazine @ 5 kg/ha at 1-3 DAP + Metribuzin @ 1.25 kg/ha + 2,4.D- amine salt @ 2.5 kg/ha gave higher yield (975 q/ha), net return (Rs. 76225/ha) and BCR (1.73) compared to Atrazine @ 5 kg/ha at 1-3 DAP + hand hoeing at 20 DAP.

Technology option	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
Atrazine @ 5 kg/ha at 1-3 DAP + hand hoeing at 20 DAP – Farmers Practice	15	942	67700	1.69
Atrazine @ 5 kg/ha at 1-3 DAP + Metribuzin @ 1.25 kg/ha + 2,4.D- amine salt @ 2.5 kg/ha – Recommended Practice		975	76225	1.73

Cropping systems

Evaluation of planting methods in cotton

To overcome canopy crowding in square and rectangular planting and resultant yield loss in rainfed cotton grown on medium heavy black soils, KVK, Aurangabad, Maharashtra assessed the performance of zig zag pattern in paired row system of planting. Higher plant height (245 cm), no. of bolls (80/plant), yield (18.50 q/ha), net return (Rs. 42000/ha) and BCR (2.4) were noted with zig zag patten compared to either rectangular or square pattern in paired row or normal row systems.

Technology option	No. of trials	Plant height (cm)	Boll (No./ plant)	Yield (q/ha)	Net return (Rs./ha)	BCR
90 X 60 cm normal planting – Farmers Practice	10	160	57	15.0	28500	1.9
Paired row (60 + 60) X 120 cm – Recommended Practice		210	62	17.0	36000	2.2
Zig Zag Paired row ((60 + 60) X 120 cm) – Refined Practice		245	80	18.5	42000	2.4

Horticultural crops

Fruits

Management of root knot nematodes in pomegranate

To overcome the problem of wilting due to severe infestation of root knot nematodes in pomegranate in Ahmednagar, Maharashtra, KVK assessed the performance of soil application of neem cake + carbofuran granules along with Paecilomyces @ 20 kg/ha 30 days after pruning. Results showed that improved management practice significantly reduced the incidence of wilt (0.2 %) and root galls (0.75/5 g of root) besides increasing the yield (172.50 q/ha), net return (Rs. 358785/ha) and BCR (3.06) compared to soil application of neem cake + carbofuran or root drenching with chloropyriphos.

Technology option	No of trials	Wilting (%)	Root galls (No. /5 g root mass)	Yield (q/ha)	Net return (Rs./ha)	BCR
Soil application of neem cake + carbofuran granules or root drenching with Chloropyriphos – Farmers Practice	16	6.28	3.19	156.20	293986	2.68
Soil application of neem cake + carbofuran granules along with Paecilomyces @ 20 kg/ha 30 days after pruning – Recommended Practice		0.20	0.75	172.50	358785	3.06

Management of boron deficiency in muskmelon

As the muskmelon grown on light soils of Kurnool-Cuddapah Canal area is more prone to fruit cracking, KVK, Kadapa, Andhra Pradesh conducted on-farm trials to increase its productivity during summer season. Foliar spray of Borax @ 3 g/l water at 3-4 leaf stage and 50 days after sowing gave higher yield (145.71 q/ha), net return (Rs. 72450/ha) and BCR (5.83) compared to no boron spraying.

Technology option	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
No spray of Borax – Farmers Practice	5	108.10	50860	4.63
Foliar spray of Borax @ 3 g/l water at 3-4 leaf stage and 50 days after sowing – Recommended Practice		145.71	72450	5.83

Management of papaya mealy bugs

To minimize the infestation of papaya mealy bugs and to curtail the cost on plant protection, KVK conducted on-farm trial to assess the performance of eco-friendly IPM method as recommended by MPKV, Rahuri in Dhule district of Maharashtra. Control of mealy bugs by IPM resulted in higher yield (970 q/ha), net return (Rs. 255116/ha) and BCR (4.10) besides significant reduction in cost of cultivation (Rs. 82250/ha) compared to traditional method of indiscriminate application of pesticides.

Technology option	No of trials	Mealy bug incidence after treatment (%)	Cost of cultivation (Rs./ha)	Yield (q/ha)	Net return (Rs./ha)	BCR
Indiscriminate use of Imidacloprid, Hiamethoxam, Dichlorovos and Chloropyrifos – Farmers Practice	10	63.57	101825	675	132940	2.32
IPM (Monitoring & scouting + pruning & burning of branches & residues + eradication of ant colonies + release of natural enemies Encyrtid, Acerophagus, Cryptolaemus jmontrouzieri, Scymnus, Brumoides @ 2500 adults/ha or Verticillium lecanii 1 x 1013 conidia/ha and need based spray with 2% neem oil or 5 % NSKE or other recommended chemical pesticides – Recommended Practice		61.98	82250	970	255116	4.10

Vegetables

Management of flower drop in chillies

To overcome the problem of severe flower drop and increase fruit setting and yield of irrigated chillies during summer season, KVK, Kolhapur, Maharashtra assessed the performance of growth hormone and boron spray. One spray of NAA @ 20 ppm and two sprays of 0.25 % Boron, once at 50 % flowering followed by the second after 15 days resulted in higher yield (177 q/ha) of green chillies, net return (Rs. 176000/ha) and BCR (4.03) than with or without the spray of grow hormone.

Technology option	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
No spray of hormones – Farmers Practice	10	77	104000	3.08
Spray of NAA at 50 % flowering – Recommended Practice		87	119000	3.16
One spray of NAA @ 20 ppm and two sprays of 0.25 % Boron, one at 50 % flowering followed by the second after 15 days – Refined Practice		177	176000	4.03

Management of plant population in cucumber

To overcome the problem of low soil temperature during September-October and resultant poor germination, uneven plant stand and low yield of late sown kharif cucumber in Solapur district of Maharashtra, KVK assessed the efficacy of polythene mulching (30 µ) on raised bed system under drip irrigation. Results showed that cucumber planted on raised seed bed with 30 µ polythene mulch significantly increased the germination (94%), number of pickings (17.17), yield (323.13 q/ha), net return (Rs. 315373/ha) and BCR (4.11) compared to planting on raised seed bed.

Technology option	No of trials	Germination (%)	No. of pickings	Yield (q/ha)	Net return (Rs./ha)	BCR
Planting on raised seed bed – Farmers Practice	6	85	14.33	248.05	186822	3.26
Planting on raised seed bed with 30 µ polythene mulch – Recommended Practice		94	17.17	323.13	315373	4.11

Nutrient management in chillies

KVK, Kurnool (B), Andhra Pradesh conducted an on-farm trial to curtail usage of higher doses of nutrients and reduce the cost of cultivation in chillies grown on medium soils under irrigated conditions. Basal application of FYM @ 250 q and 2-3 q of neem cake/ha followed by top dressing with nutrients @ 120:26:100 kg NPK/ha significantly reduced the cost of cultivation (Rs. 62500/ha) besides recording higher yield (52.50 q/ha), net return (Rs. 200000/ha) and BCR (4.20) compared to application of nutrients as per framers own assessment.

Technology options	No. of trials	Cost of cultivation (Rs./ha)	Yield (q/ha)	Net return (Rs./ha)	BCR
Farmers own assessment (625:655:519 kg NPK/ha) – Farmers Practice	5	100000	50.00	150000	2.50
FYM @ 250 q + 2-3 q neem cake and 120:26:100 kg NPK/ha – Recommended Practice		62500	52.50	200000	4.20

In a similar study by KVK Karimnagar (R), Andhra Pradesh soil test based application of 120:27.5:50 kg NPK/ha gave higher yield (35.50 q/ha), net return (Rs. 67300/ha) and BCR (1.61) compared to farmers practice of indiscriminate nutrient application.

Technology options	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
Farmers own assessment (250:120:759 kg NPK/ha) – Farmers Practice	10	31.00	39400	1.34
120:60:60 NPK – Recommended Practice		33.40	53800	1.47
FYM @ 250 q + 2-3 q neem cake/ha and 120:26:100 kg NPK/ha – Recommended Practice		35.50	67300	1.61

Improved tools and implements

Assessment of rice transplanter

To combat labour shortage and high cost of transplantation in rice grown on red sandy loams, KVK, Chittoor, Andhra Pradesh assessed the performance of rice transplanter during both kharif and rabi seasons. Transplantation of rice by trasplanter significantly reduced the cost of cultivation (Rs. 32038/ha) besides increasing the yield (68.70 q/ha), net return (Rs. 29212/ha) and BCR (1.91) compared to farmers method of manual transplantation.

Technology option	No. of trials		Tillers (No./hill)		Cost of cultivation (Rs./ha)		Yield (q/ha)		Net return (Rs./ha)		BCR	
	K	R	K	R	K	R	K	R	K	R	K	R
Manual transplantation – Farmers Practice	2	10	13.1	12.3	36538	39238	58.4	56.1	17888	13262	1.48	1.33
Rice transplanter – Recommended Practice			14.5	13.7	32038	34738	68.7	62.3	29212	23362	1.91	1.67

K: Kharif; R: Rabi

Direct seeding in rice

To cope up with delayed release of water and acute shortage of labour in rice grown under irrigated conditions of Tungabhadra High Level Canal area of Anantapur, Andhra Pradesh, KVK, Anantapur (R) assessed the performance of direct seeding in rice. Results showed that direct seeding with Ananta Bullock Drawn Planter increased the yield (64.78

q/ha), net return Rs. (78568/ha) and BCR (3.2) compared to transplanted rice

Technology option	No. of trials	Yield (q/ha)	Net return (Rs./ha)	BCR
Transplanted rice – Farmers Practice	3	40.32	68388	2.1
Direct seeded rice with Ananta Bullock Drawn Planter– Recommended Practice		64.78	78568	3.2

Livestock species

Control of repeat breeding in milch cattle

In view of lack of suitable methods for identifying estrous period and resultant high rate of repeat breeding in stall fed crossbred cows, KVK, Nashik, Maharashtra assessed the performance of cysto-scope to regulate the time of insemination. Results indicated higher conception rate (77.77%) through heat detection using cysto-sope and artificial insemination compared to artificial insemination based on farmers own assessment of estrous.

Technology option	No. of trials	Conception (%)
Own assessment in heat detection and insemination – Farmers Practice	18	22.22
Insemination after detection of heat using Cysto-scope – Recommended Practice		77.77

Control of clinical mastitis in dairy cows

In view of severe incidence of clinical mastitis (30%) in dairy cows in Solapur and Nashik, Maharashtra, KVKs assessed the performance of Saaf Kit along with spray of antiseptic on udder and teats to control the disease and increase the production of clean milk. Use of Saaf Kit and spray of recommended antiseptic after milking significantly reduced the incidence of mastitis (100 % in Solapur and 97 % in Nashik) besides increasing the production of clean milk (12.90 l/day/cow in Solapur and 20.56 l/day/cow in Nashik) compared to traditional milking method.

Technology option	No of trials		Mastitis incidence (%)		Milk yield (l/cow/day)	
	Solapur	Nashik	Solapur	Nashik	Solapur	Nashik
Traditional milking – Farmers Practice	6	7	33.20	36.18	11.30	14.12
Use of Saaf Kit and spray of recommended antiseptic on udder and teats after miking – Recommended Practice			0.00	2.79	12.90	20.56

Nutrition management in sheep

In view of poor nutrition and resultant stunted growth and low net return in sheep fed by natural grazing, KVK, Rangareddy, Andhra Pradesh conducted on farm trial to optimize the growth through feed supplementation Semi-stall housing of sheep along with concentrate feed and mineral mixture, gave higher body weight (20.85 kg/animal), net return (Rs. 6246/animal) and BCR (2.56) compared to extensive grazing system.

Technology option	No. of trials	Body weight (kg/animal)	Net return (Rs./animal)	BCR
Sheep on extensive grazing system – Farmers Practice	5	15.60	4680	1.45
Semi-stall housing of sheep along with concentrate feed and mineral mixture – Recommended Practice		20.85	6246	2.56

Poultry breed improvement of Vanaraja

To reduce the mortality of Vanaraja breed and increase the net profit of backyard poultry in free-range system, KVK, Ahmednagar, Maharashtra assessed the performance of improved Vanaraja breed. Breed improvement of Vanaraja with local non-descript natives resulted in significant reduction in mortality (19%), net profit (Rs. 217/bird/annum) and BCR (1.47) compared to pure breed of Vanaraja.

Technology option	No of trials	Mortality (%)	Net return (Rs./bird/annum)	BCR
Vanaraja Breed – Farmers Practice	10	38.18	176	1.43
Non-descript Native Breed X Vanajara – Recommended Practice		19.00	217	1.47

Breed evaluation in backyard poultry

KVK, Solapur, Maharashtra conducted on-farm trial to assess the performance of improved poultry breed suitable for backyard poultry under free range system. Results showed that there was significant reduction in bird mortality at sexual maturity (4%) and higher live weight (1.76), egg production (78), net return (Rs. 465/bird) and BCR (2.66) with Gramapriya compared to non-descript local poultry breed.

Technology option	No of trials	Mortality at sexual maturity (%)	Live weight at sexual maturity (kg/bird)	Days to reach sexual maturity (days)	Egg production (number/laying cycle)	Net return (Rs./bird)	BCR
Non-descript local breed – Farmers Practice	7	24	0.82	203	21	203	1.33
Gramapriya – Recommended Practice		4	1.76	182	78	465	2.66

Gender specific technologies

IPM for management of mealy bug in mulberry

In view of endemic incidence and severe yield loss due to mealy bug in mulberry, KVK assessed the performance of Integrated Pest Management Package (IPM) in Chittoor district, Andhra Pradesh. Control of mealy bug by IPM resulted in reduced pest incidence (2 %) and increased leaf yield (55 kg/100 DFL unit), net return (Rs. 6760/100 DFL unit) and BCR (2.77).

Technology option	No. of trials	Leaf damage (%)	Leaf Yield (kg/100 DFL)	Net return (Rs./100 DFL)	BCR
No control – Farmers Practice	5	16	24	1320	1.40
IPM (bottom pruning of affected plants followed by two sprays of nuvon @ 2.5 ml/l at 10 day interval + release of predatory beetles (Acerophagus papaya) @ 625 beetles / ha) – Recommended Practice		2	55	6760	2.77

Suitable tool for maize de-husking

To reduce the drudgery of tribal women and improve their work output while de-husking maize cobs, KVK, Nandurbar, Maharashtra evaluated the performance of an improved tool for de-husking. There was significant increase in work output (468 cobs/hr) and reduction in labour requirement (0.214/100 cobs) in de-husking of maize cobs compared to de-husking by hand.

Technology option	No of trials	Work output (no. of cobs/hr)	Labour requirement (no./100 cobs)
Manual de-husking by hand – Farmers Practice	7	360	0.278
Improved de-husking tool – Recommended Practice		468	0.214

Low cost solar dryer for Aonla candy

Considering the inherent disadvantages associated with open drying of aonla candy viz. spoilage and product loss due to insects, birds and domestic pets and quality deterioration and discoloration due to fungal diseases, KVK, Nandurbar assessed the performance of low cost solar dryer developed by MPKV, Rahuri, Maharashtra. Drying of aonla candy by low cost solar dryer resulted in higher output (40-60 kg/batch) and significant improvement in quality (whitish to golden yellow colour) besides fetching higher market price (Rs. 200/kg) compared to traditional open air drying.

Technology option	No of trials	Output (kg/batch)	Colour	Market price (Rs./kg)
Traditional open air drying	5	25-30	Brown	140-160
Solar dryer		40-60	Whitish or Golden Yellow	200

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 in the demonstration plots for rapid dissemination of improved technologies.

Field crops

A total of 5475 demonstrations covering 2391.8ha under pulses, cereals, oilseeds, fibres were organized by KVKs in Zone-V (Table 15). The major categories covered under FLDs in Andhra Pradesh include pulses (887), cereals (452) and oilseeds (283). In Maharashtra also the major categories of the demonstrations were pulses (1769), oilseeds (606) and cereals (481). In pulses, 1027 demonstrations covering 417.3ha were organized on chickpea followed by pigeonpea (921), greengram (416) and blackgram (282). Among oilseed crops, 460 demonstrations covering 210.6ha were organized on soybean followed by groundnut (261), castor (66) and niger (50). In cotton 591 demonstrations covering 257.30 ha were organized, while in sugarcane 18 demonstrations were organized in 6.00 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	Blackgram	149	57.00	133	53.20	282	110.20
	Chickpea	234	98.00	793	319.30	1027	417.30
	Greengram	223	114.80	193	77.20	416	192.00
	Pigeonpea	281	125.20	640	255.40	921	380.60
	Cowpea	0	0	10	1.00	10	1.00
	Total	887	395.00	1769	706.10	2656	1101.10
Oilseeds	Soybean	19	7.50	441	203.00	460	210.60
	Groundnut	152	81.10	109	37	261	118.10
	Castor	66	28.80	-	-	66	28.80
	Sunflower	46	35.50	-	-	46	35.50

Category	Crop	Andhra Pradesh		Maharashtra		Total	
		No. of Demos.	Area (ha)	No. of Demos.	Area (ha)	No. of Demos.	Area (ha)
	Niger	-	-	50	20.00	50	20.00
	Linseed	-	-	6	2.40	6	2.40
	Total	283	153.00	606	262.40	889	415.40
Cereals	Maize	104	42.70	12	5.00	116	47.70
	Rice	348	195.30	308	99.60	656	294.90
	Wheat			161	63.80	161	63.80
	Total	452	238.00	481	168.40	933	406.40
Commercial Crops	Cotton	397	184.20	194	73.10	591	257.30
	Sugarcane	5	1.00	13	5.00	18	6.00
	Tobacco	29	11.00	-	-	29	11.00
	Total	431	196.20	207	78.10	638	274.30
Millets	Sorghum	25	10.00	25	66.40	50	76.40
	Fingermillet	-	-	23	6.00	23	6.00
	Foxtailmillet	10	10.00	-	-	10	10.00
	Total	35	20	48	72.40	83	92.40
Fodder	Napier	150	75	65	19.50	215	94.50
	Maize	-	-	8	1.00	8	1.00
	Sorghum	36	2.00	-	-	36	2.00
	Bajra	-	-	10	4.00	10	4.00
	Oats	-	-	7	0.70	7	0.70
	Total	186	77.00	90	25.20	276	102.20
Total		**2274**	**1079.20**	**3201**	**1312.60**	**5475**	**2391.80**

Pulses

In Andhra Pradesh, frontline demonstrations on chickpea were organized at Kurnool, Nizamabad, Adilabad, Kadapa, Rangareddy, Karimnagar, Mahaboobnagar, Medak and Rangareddy and improved variety cv. JAKI-9128 along with improved management gave higher yield (14.87 q/ha) compared to local check, while in Maharashtra, higher yield response (37.70%) was noted with cv. JAKI-9218 along with integrated nutrient and pest management practices compared to farmers practice at Amaravati, Aurangabad, Akola, Pune, Sangli, Solapur, Thane, Wardha and Jalgaon (Table 16).

Demonstrations on pigeonpea were organized by KVKs in Adilabad, Srikakulam, Kurnool, Vizianagaram, Visakhapatnam, Chittoor, East Godavari, Kadapa, Prakasam, Anantapur, Khammam and Rangareddy of Andhra Pradesh and improved varieties (cv. PRG-158 and LRG-41) and recommended package of practices gave 29.66 per cent higher yield compared to local check. In Maharashtra, improved varieties viz. cv. BSMR-736 and PKV-TARA along with improved management practices gave average yield increase of 30.33 per cent in demonstrations at Akola, Amaravati, Buldhana, Chandrapur, Jalna, Latur, Osmanabad, Wardha, 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	Blackgram	149	57	8.66	6.09	42.20
	Chickpea	234	98	14.67	12.77	14.87
	Greengram	223	114.8	8.80	6.54	34.55
	Pigeonpea	281	125.2	11.67	9.00	29.66
Maharashtra	Blackgram	133	53.2	7.84	5.74	36.58
	Chickpea	793	319.3	19.54	14.19	37.70
	Greengram	193	77.2	7.47	5.50	35.81
	Pigeonpea	640	255.4	10.87	8.34	30.33
	Cowpea	10	1	12.78	9.58	33.40

In blackgram, demonstrations were conducted at East Godavari, Krishna, Nellore, Nizamabad, Vizianagaram, Visakhapatnam and Srikakulam in Andhra Pradesh with improved variety (cv.LBG-752) and nutrient management, which resulted in higher yield response (42.20%) compared to local cheek. In Maharashtra, improved varieties viz. cv. PKV-Udid-15 and AKU-15 and improved management gave higher average yield (7.47q/ha) compared to local check at Akola, Buldhana, Osmanabad and Washim. Frontline demonstrations on greengram were organized at Nalgonda, East Godavari, Karimnagar, Khammam, Mahaboobnagar, Visakhapatnam and Warangal in Andhra Pradesh and Akola, Amaravati, Buldhana, Jalna, Parbhani and Washim in Maharashtra with improved management and high yielding varieties viz. WGG-37 (Andhra Pradesh) and AKM-4 and AKM-8802 (Maharashtra). There was 34.55 per cent increase in yield of greengram in Andhra Pradesh and 35.81% in Maharashtra as compared to local check.

Oilseeds

KVKs organized frontline demonstrations on soybean with cv. MAUS-71, DS-228, JS-9305 and JS-335 in Maharashtra along with nutrient management and plant protection measures. Results showed that improved varieties and management practices gave higher yield in Andhra Pradesh (17.46 q/ha) and Maharashtra (20.70 q/ha) compared to local check (Table 17).

Frontline demonstrations on groundnut were conducted in twelve districts of Andhra Pradesh, covering Anantapur, Chittoor, Kadapa, Karimnagar, Kurnool, Khammam, Medak, Mahaboobnagar, Srikakulam, Vizianagaram, Visakhapatnam and Nellore. Improved varieties K-6, TG-51 and TG37A along with balanced fertilization and pest management gave higher average yield (18.23q/ha) compared to local check. Similarly in Maharashtra, demonstrations were organized in eleven districts (Akola, Amaravati, Hingoli, Jalgaon, Nashik, Pune, Raigadh, Satara, Sindhudurg, Solapur and Thane). Improved varieties viz. cv. TG-37A, TG-38, Konkan Gaurav and JL-286 with nutrient management resulted in higher yield (14.08 q/ha) than local check (10.07 q/ha) (Table 17).

Table 17. Performance of Front Line Demonstrations on oilseeds

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Groundnut	152	81.10	18.23	15.19	20.01
	Castor	66	28.80	9.65	6.65	45.11
	Sunflower	46	35.50	13.10	11.71	11.87
	Soybean	19	7.60	17.46	15.89	9.88
Maharashtra	Soybean	441	203.00	20.70	17.49	18.35
	Groundnut	109	37	14.08	10.07	39.82
	Niger	50	20	5.85	3.81	53.54
	Sunflower	23	7.40	11.23	8.18	37.29
	Linseed	6	2.40	11.00	8.50	9.75

In case of sunflower improved management practices resulted in higher yield (13.10 and 11.23 q/ha respectively in Andhra Pradesh and Maharashtra) compared to local check (Table 17). Frontline demonstrations on niger organized in two districts viz. Nashik and Thane (MS) with improved varieties (cv. Phule Karla) showed yield increase to the tune of 53.54 per cent as compared to local check. Frontline demonstrations on castor in Andhra Pradesh and linseed in Maharashtra gave higher yield (45.11 and 9.75 per cent in castor and linseed respectively) compared to local check.

Cereals

Frontline demonstrations on rice were organized in fifteen districts of Andhra Pradesh (Anantapur, Chittoor, East Godavari, Karimnagar, Khammam, Krishna, Kurnool, Mahaboobnagar, Nalgonda, Nellore, Prakasam, Rangareddy, Srikakulam, Warangal and West Godavari) and ten districts of Maharashtra (Bhandara, Chandrapur, Gadchiroli, Gondia, Kolhapur, Pune, Raigadh, Thane, Satara and Sindhudurg). Improved varieties viz. cv. NLR-3041 and JGL-11470 (Andhra Pradesh) and cv. Karjat-3, Karjat-5, and Sye-2001 (Maharashtra) along with improved management resulted in higher yield as compared to local check (Table 18).

Similarly maize demonstrations were organized in twelve districts of Andhra Pradesh (Anantapur, East Godavari, Karimnagar, Krishna, Kurnool, Mahaboobnagar, Rangareddy, Srikakulam, Vizianagaram, Visakhapatnam, Warangal and West Godavari) and four districts of Maharashtra (Jalna, Raigadh, Sindhudurg, Sangli and Wardha) with improved varieties viz. cv. 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 (8.23 and 17.36 per cent in Andhra Pradesh and Maharashtra respectively) compared to local check (Table 18).

Fifteen KVKs in Maharashtra (Ahmednagar, Akola, Amaravati, Beed, Buldhana, Dhule, Hingoli, Jalna, Kolhapur, Nagpur, Pune, Sangli, Satara, Solapur and Wardha) organized demonstrations on wheat with high yielding varieties viz. cv. AKW-4627, NIAW-1415, NIAW-301 and Raj-4037 along with management practices such as nutrient and weed management. There was higher yield response (17.84 %) to varieties and management practices compared to local check (Table 18).

Table 18. Performance of Front Line Demonstrations on cereals

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Maize	104	42.70	66.51	61.45	8.23
	Rice	348	195.30	62.60	57.79	8.32
Maharashtra	Maize	12	5.00	62.90	53.60	17.36
	Rice	308	99.60	38.43	31.86	20.62
	Wheat	161	63.80	28.33	24.04	17.84

Commercial crops

Frontline demonstrations on cotton were organized by 12 KVKs in Andhra Pradesh (Adilabad, Anantapur, Karimnagar, Karimnagar, Khammam, Krishna, Kurnool, Visakhapatnam, Nalgonda, Prakasam, Rangareddy and Srikakulam) and 13 KVKs in Maharashtra (Ahmednagar, Akola, Amaravati, Aurangabad, Beed, Buldhana, Dhule, Hingoli, Jalna, Nagpur, Nanded, Nandurbar 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 (18.94 q/ha) and Maharashtra (19.40 q/ha) compared to non-descript varieties and local management practices (Table 19).

Similarly in sugarcane, KVK in Srikakulam district of Andhra Pradesh and three KVKs in Maharashtra (Pune, Satara and Kolhapur) conducted frontline demonstrations focusing mainly on biological control of early shoot borer and scales and management of white grub and integrated nutrient management. There was higher yield response to biological pest control of early shoot borer (6.13%) in Andhra Pradesh and improved management practices for ratoon crop (15.72%) in Maharashtra (Table 19).

Table 19. Performance of Front Line Demonstrations on commercial crops

Crop	State	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Cotton	Andhra Pradesh	397	184.20	18.94	16.84	12.47
	Maharashtra	194	73.10	19.40	16.19	19.82
Sugarcane	Andhra Pradesh	5	1.00	1125	1060	6.13
	Maharashtra	13	5	1229	1062	15.72

Millets

Frontline demonstrations on fingermillet were organized by two KVKs in Maharashtra (Thane and Raigadh) with improved variety, Dapoli-1. The results indicated higher yield response (27.38%) with cv. Dapoli-1 (Table20). In sorghum, two KVKs of Andhra Pradesh (Rangareddy and East Godavari) and six KVKs of Maharashtra (Akola, Beed, Gadchiroli, Jalna, Kolhapur, Nandurbar, Pune, Sangli and Solapur,) conducted frontline demonstrations. Improved varieties Parbhani Moti and PKV Kranti and integrated nutrient management resulted in higher yield in Andhra Pradesh

(12.80q/ha) and Maharashtra (17.54q/ha).

Table 20. Performance of Front Line Demonstrations on millets

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Foxtailmillet	10	10.00	12.32	2.99	93.00
	Sorghum	25	10.00	12.80	7.50	70.00
Maharashtra	Fingermilllet	23	6.00	12.00	9.42	27.38
	Sorghum	25	66.40	17.54	14.23	23.60

Fodders

Frontline demonstrations on hybrid napier were organized by two KVKs in Andhra Pradesh (West Godavari and Rangareddy) and Aurangabad, Beed, Chandrapur, Hingoli, Jalna, Kolhapur, Latur, Solapur, Osmanabad, Yavatmal and Pune in Maharshtra. Improved management practice and high yielding varieties viz. Co-4, RBN-13 and Phule Jayawant and management practices resulted in higher yield both in Andhra Pradesh and Maharashtra (Table21).

Table 21. Performance of Front Line Demonstrations on fodders

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Andhra Pradesh	Napier	35	6.20	140.00	120.0	16.67
	Sorghum	36	2.00	50	25	100.00
Maharashtra	Napier	65	19.53	207.78	170.75	21.68
	Bajra	10	4.00	55.00	40.00	37.50
	Maize	6	1.00	323	265.00	21.89
	Oat	7	0.70	578	480.00	20.00

Horticultural crops

A total of 1007 demonstrations covering 334.00 ha under fruits, vegetables, plantation crops and spices and condiments, were organized by KVKs in Zone-V (Table 22). The major categories covered in Andhra Pradesh include vegetables (245), fruits (109) and spices and condiments (20). In Maharashtra also the demonstrations were conducted on vegetables (317), fruits (231) and spices and condiments (35). In vegetables, 195 demonstrations were organized on onion in 55.10 ha followed by tomato (111), chillies (109) and bhendi (58). Among 340 demonstrations on fruits, 98 demonstrations covering 37.00 ha were organized on banana followed by pomegranate (56), mango (49) and sweet orange (47).

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	Bhendi	40	9.00	18	4.20	58	13.20
	Brinjal	10	1.50	41	4.40	51	5.90
	Cabbage	7	3.00	-	-	7	3.00
	Chillies	69	28.50	40	13.00	109	41.50

Category	Crop	Andhra Pradesh		Maharashtra		Total	
		No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)
	Field bean	2	3.00	-	-	2	3.00
	Onion	28	10.00	167	45.10	195	55.10
	Ridgegourd	4	0.80	-	-	4	0.80
	Tapioca	12	2.00	-	-	12	2.00
	Tomato	73	24.80	38	11.40	111	36.20
	Dolichos Bean	-	-	8	1.00	8	1.00
	Drumstick	-	-	5	0.50	5	0.50
	Total	**245**	**82.60**	**317**	**79.60**	**562**	**162.20**
Species & Condiments	Turmeric	20	8.00	35	11.20	55	19.20
	Total	**20**	**8.00**	**35**	**11.20**	**55**	**19.20**
Ornamental crops	Marigold	9	3.00	10	1.50	19	4.50
	Jasmine	10	4.00	-	-	10	4.00
	Total	**19**	**7.00**	**10**	**1.50**	**29**	**8.50**
Fruits	Banana	21	6.00	77	31.00	98	37.00
	Custard Apple	-	-	10	2.00	10	2.00
	Dates	-	-	10	2.50	10	2.50
	Mandarin	-	-	24	10.00	24	10.00
	Mango	24	8.50	25	14.00	49	22.50
	Pomegranate	-	-	56	21.40	56	21.40
	Sapota	-	-	10	5.00	10	5.00
	Sweet Orange	38	21.60	9	2.80	47	24.40
	Watermelon	11	5.30	10	1.50	21	6.80
	Papaya	10	2.00	-	-	10	2.00
	Acid Lime	5	0.50	-	-	5	0.50
	Total	**109**	**43.90**	**231**	**90.20**	**340**	**134.10**
Plantation crops	Cashew nut	16	8.00	5	2.00	21	10.00
	Total	**16**	**8.00**	**5**	**2.00**	**21**	**10.00**
Total		**409**	**149.50**	**598**	**184.50**	**1007**	**334.00**

Vegetables

Three KVKs in Andhra Pradesh (Kurnool, Vizianagaram and Mahaboobnagar) and 13 KVKs in Maharashtra (Amravati, Ahmednagar, Aurangabad, Chandrapur, Dhule, Hingoli, Latur, Nashik, Pune, Satara, Solapur, Wardha and Yavatmal) organized frontline demonstrations on onion with improved varieties (cv. ALFR, Akola Safed and Phule Safed) and improved management practices. There was higher yield response to varieties and management practices in Andhra Pradesh (9.47%) and Maharashtra (24.23%) 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 (32.77%) and Maharashtra (13.95%) compared to local check (Table 23). Similarly, the yield response to improved management practices including varieties was higher in chillies (18.88% in Andhra Pradesh and 17.60% 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	Bhendi	40	9.00	65.02	54.46	19.39
	Brinjal	10	1.50	225.60	198.20	13.82
	Cabbage	7	3.00	182.57	138.61	31.70
	Chillies	69	28.50	45.76	38.49	18.88
	Field bean	2	3.00	55.79	9.88	464.60
	Onion	28	10.00	216.72	197.96	9.47
	Ridgegourd	4	0.80	10.20	6.20	64.50
	Tapioca	12	2.00	140.00	90.00	55.50
	Tomato	73	24.80	330.07	248.60	32.77
Maharashtra	Bhendi	18	4.20	93.20	83.50	11.61
	Brinjal	41	4.40	307.54	266.19	15.53
	Chillies	40	13.00	62.00	52.72	17.60
	Dolichos Beans	8	1.00	84.00	59.00	29.76
	Drumstick	5	0.50	76.50	50.00	53.00
	Onion	167	45.10	253.78	204.27	24.23
	Tomato	38	11.40	854.54	749.89	13.95

Fruits

Frontline demonstrations on banana were conducted in three districts of Andhra Pradesh (East Godavari, Khammam, and Warangal) and in five districts of Maharashtra (Ahmednagar, Kolhapur, Jalgaon, Nandurbar and Satara) with improved management practices. There was higher yield with improved technology both in Andhra Pradesh (28.40%) and Maharashtra (11.95%) compared to local practice (Table 24). Similar response was also noted in pomegranate (15.68 % in Maharashtra), mango (22.43% in Andhra Pradesh and 15.37% 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	5	0.50	478.88	408.44	17.23
	Banana	21	6.00	289.30	225.31	28.40
	Mango	24	8.50	52.71	43.05	22.43
	Papaya	10	2.00	75.00	38.00	97.36
	Sweet Orange	38	21.60	161.60	133.59	20.96
	Watermelon	11	5.30	591.03	406.60	45.35
Maharashtra	Banana	77	31.00	628.03	560.96	11.95
	Custard Apple	10	2.00	41.63	35.53	17.16

State	Crop	No. of demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Local	
	Dates	10	2.50	13.59	11.66	8.07
	Mandarin	24	10.00	104.84	80.05	30.96
	Mango	25	14.00	50.89	44.11	15.37
	Pomegranate	56	21.40	144.99	125.33	15.68
	Sapota	10	5.00	179.50	144.00	24.65
	Sweet Orange	9	2.80	144.41	121.50	19.67
	Watermelon	10	1.50	350.52	288.84	21.35

Plantation crops

Frontline demonstrations on cashew nut were organized in three districts of Andhra Pradesh (East Godavari, Srikakulam and Vizianagaram) and Maharashtra (Gadchiroli, Sindhudurg and Thane) with improved management practices including pest and disease control and nutrient management. Results indicated that improved management practices gave higher yield i.e. 4.06 q/ha in Andhra Pradesh and 9.98 q/ha in Maharashtra.

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	16	8.00	4.06	3.41	19.06
	Maharashtra	5	2.00	9.98	7.65	30.45

Tools and Implements

KVKs organized 1827 demonstrations on 52 improved tools and implements to reduce the drudgery of farm women and facilitate timely field operations viz. land and seed bed preparation, planting and sowing, weeding and intercultural operations and harvesting and threshing (Table 26 and 27). Out of 1827 demonstrations, 364 demonstrations were organized to improve the farm operations in case of cotton followed by rice (331), soybean (219), groundnut (114) and wheat (45) and sorghum (45) and among various field operations, harvesting and threshing accounted for 848 demonstrations followed by planting and seeding (380), weeding and inter-culture (227) and land and seed bed preparation (150).

Table 26. Performance of FLD on improved tools and farm implements

Crop	Andhra Pradesh		Maharashtra		Total	
	NI	ND	NI	ND	NI	ND
Banana	1	20	2	20	3	40
Bhendi	1	53	1	40	2	93
Chickpea			1	20	1	20
Coconut			1	30	1	30

Crop	Andhra Pradesh		Maharashtra		Total	
	NI	ND	NI	ND	NI	ND
Cotton	3	91	6	364	9	455
Groundnut	2	13	6	114	8	127
Maize	1	6	1	41	2	47
Mango			2	26	2	26
Pigeonpea	1	7	1	5	2	12
Rice	4	331	4	331	8	662
Sorghum			2	45	2	45
Soybean			9	219	9	219
Sunflower	1	6	0		1	6
Wheat			2	45	2	45
Total	14	527	38	1300	52	1827

NI: Number of implements ND: Number of demonstrations

Table 27. Details on operation wise FLD on improved tools and farm implements

Name of operation	Andhra Pradesh	Maharashtra	Total
Harvesting and Threshing	124	724	848
Land and Seed Bed Preparation	25	125	150
Other field operations	21	95	116
Planting and seeding	303	77	380
Post Harvest Processing	18	15	33
Spraying and Plant protection	25	48	73
Weeding and inter-culture	11	216	227
Total	527	1300	1827

NI: Number of implements ND: Number of demonstrations

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 and farm implements

Operation	Implement	No. of demos	Parameter	Result		% increase
				Demo	Control	
Land Preparation	Rotavator	150	ha/hr	0.34	0.13	161.53
	Bullock Drawn Rider	25	ha/hr	0.133	0.10	25
Planting & Seeding	Rice Drum Seeder	284	ha/hr	0.27	0.10	170
	Improved Planters	96	ha/hr	0.8	0.2	300
	Rice Transplanter	1	Cost of cultivation (Rs./ha)	30100	31225	
	Seed Treatment Drum	25	Min/ha seed	17	45	62.22
Weeding and	Improved hoe	139	ha/hr	0.03	0.015	100

Operation	Implement	No. of demos	Parameter	Result		% increase
				Demo	Control	
inter-culture	Cono Weeder	36	hr/ha	7	8	12.50
	Self Propelled Weeder	27	ha/hr	0.17	0.14	21.42
	Cycle hoe	10	ha/day	0.2	0.04	400
Spraying	Aeroblast Sprayer	73	ha/hr	2.00	0.66	203
Harvesting	Bhendi Plucker	93	kg/hr	45	38	18.42
	Cotton Apron/coat	204	kg/8 hr	82	60	36.66
	Conveyor Reaper	8	ha/day	1.9	0.45	322.22
	Groundnut Digger	12	ha/day	0.60	0.44	36.36
	Mango harvester	25	No./hr	75	25	200
	Sickles	355	ha/hr	0.012	0.007	70.42
	Banana Fibre Extractor	20	-	-	-	-
	Banana Shredder	10	Stems/ha	54	30	80
Threshing	CIAI Grain Cleaner	6	kg/hr	460.00	127.50	260.78
	Groundnut Decorticator	78	kg/hr	65.00	16.00	306.25
	Groundnut Stripper	16	kg/day	531	170	212.35
	Maize Sheller	54	kg/hr	16	4	300
	Rice Thresher	25	t/hr	0.2	0.05	300
Post Harvest Technology	Mini Dal Mill	5	kg grade 1 Grain	100	44	66
Others	Cotton Stalk Puller	10	kg/8 hr	20	10	100
	Coconut Climber	30	trees/hr	2	0.1	90
	Dung Collector	10	% drudgery	0	100	100

Livestock and other enterprises

In order to demonstrate the efficacy of improved technologies, KVKs organized 1613 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	5	60	18	253	23	313
Fisheries	12	77	2	20	14	97
Others	4	42	1	10	5	52
Poultry	13	662	10	288	23	950
Sheep & Goat	5	81	8	120	13	201
Total	39	922	39	691	78	1613

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 Giriraja, Vanaraja and Gramapriya were evaluated 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 % feed substitution with Azolla	40	Milk yield (l/day/animal)	2.5	2.00
		Mineral mixtures	10		5.7	3.8
Cow	Breed Evaluation	HF	8	Weight (kg/3 month)	82	71
	Disease management	Saaf and CMT Kit	5	Milk (l/animal/lactation)	3276	3244
		Anti parasitic drug	50	% parasite occurrence	0	50
		Clean Guard for mastitis control	20	% mastitis incidence	10	100
	Feed and Nutrition Management	Supplemental Green fodder roughage	40	Milk yield (l/day/animal)	2.07	1.79
		Urea treated paddy or wheat straw	30		2.25	1.88
		Mineral mixtures	40		12.70	11.00
Goat	Disease management	De-worming	99	Fecal egg count	0	20
	Nutrition Management	Mineral mixtures	44	Body weight at marketable age (kg/animal)	18.00	14.00
Poultry	Breed Evaluation	Giriraja	88	Weight at 12th month (kg/bird)	3.00	1.50
		Gramapriya	15	Weight at 12th month (kg/bird)	2.00	1.00
		Rajashree	56	Weight at 3rd month (kg/bird)	0.88	0.55
		Vanaraja	131	Weight at maturity (kg/bird)	3.00	1.50
	Feed and Nutrition Management	Low cost home made feed	10	Differential weight (kg/bird)	1.18	1.19
Fish	Breed Evaluation	Catla & Rohu	15	Yield (q/ha)	28.31	23.52
		Magur	10	% survival	71.20	56.33
	Production and Management	Plankton density	19	Yield (q/ha)	29.7	26.17
		Composite fish culture	28	Yield (q/ha)	22.10	19.30

Enterprise	Thematic area	Technology	No. of demos.	Parameter	Demo	Check
Sericulture	Disease Management	Disinfectant	30	Silk yield (q/ha/year)	63	53
Mushroom	Species introduction	Milky mushroom	5	Weight of fruiting body (g)	55.5	20.0

Gender specific technologies

To relieve farmwomen of household drudgery and improve health, nutritional status and income, KVKs organized 578 demonstrations (Table 31). The improved cookers viz. Kisan cooker, Arti chullah and Lakshmi chullah showed significant reduction in fuel requirement compared to traditional stoves (Table 32).

Similarly, there was higher thermal efficiency of fuel with Updraft stove and Multifuel stove compared to local stoves. Among technologies 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. noodles making and production of Oyster mushrooms were also demonstrated by KVKs.

Table 31. Details of FLD on livestock and other enterprises

Thematic area	Andhra Pradesh		Maharashtra		Zone	
	NT	ND	NT	ND	NT	ND
Entrepreneurship Development	2	40	5	51	7	91
Health and Nutrition	4	247	2	183	6	430
House hold drudgery reduction	0	0	5	57	5	57
Total	6	287	12	291	18	578

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

Table 32. Performance of FLD on Empowerment of Rural Women

Thematic area	Technology	No. of Demos.	Parameter	Demo	Control
Entrepreneurship Development	Mini dal mill	10	Kg/hr	70	15
	Noodles Making	5	Minutes/kg	10	120
	Oyster Mushrooms	10	Yield (kg/bed)	1.1	0.9
Health and Nutrition	Iron & protein fortified diet	105	Increased Hb (g/dl)	11	8.2
	Amylase Rich Food	100	Weight (kg)	1.69	0.95
	Nutritional garden	188	Expenditure (Rs./month)	426	886
	Scientific Grain Storage	26	Damaged Grain (%)	3.7	16.28
House Hold Drudgery Reduction	Smokeless chullah	20	Fuel (g/kg food)	685	1010
	Kisan cooker	10	minutes/kg food	35	100
	Arti Chula	15	Fuel (kg/day)	0.6	
	Updraft stove (Dr.PDKV)	6	Thermal efficiency (%)	102	
	Multifuel stove (CIAE)	6	Thermal efficiency (%)	115	

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 need based training programmes for various clientele groups. 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 in case of rural youth and extension personnel respectively.

In all, 5667 training programmes were conducted with 179482 participants including 139070 farmers, 21737 rural youth and 18675 extension functionaries (Table 33). KVKs in Andhra Pradesh organized 2194 training courses with a participation of 72845farmers, rural youth and extension functionaries, while the KVKs in Maharashtra conducted 3473 courses with a total participation of 106637 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 840 courses covering 26435 participants on women empowerment was conducted by KVKs followed by 746 (28056) on crop production, 640 (20847) on horticulture, 496 (18341) on livestock production and management, 468 (15330) on plant protection 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	244	2613	4908	7521	728	1330	2058	3341	6238	9579
FFW	1684	25642	13898	39540	9529	6029	15558	35171	19927	55098
RY	266	2187	3748	5935	771	1462	2233	2958	5210	8168
Total	2194	30442	22554	52996	11028	8821	19849	41470	31375	72845
Maharashtra										
EF	289	5174	1525	6699	1630	767	2397	6804	2292	9096
FFW	2525	40919	13577	54496	19731	9745	29476	60650	23322	83972
RY	659	6587	2639	9226	2847	1496	4343	9434	4135	13569
Total	3473	52680	17741	70421	24208	12008	36216	76888	29749	106637
Zone										
EF	533	7787	6433	14220	2358	2097	4455	10145	8530	18675
FFW	4209	66561	27475	94036	29260	15774	45034	95821	43249	139070
RY	925	8774	6387	15161	3618	2958	6576	12392	9345	21737
Total	5667	83122	40295	123417	35236	20829	56065	118358	61124	179482

EF : Extension Functionaries FFW : Farmers and Farm WomenRY : 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	31	901	194	4988	225	5889
Capacity Building and Group Dynamics	76	1834	132	4590	208	6424
Crop Production	315	11584	431	16472	746	28056
Fisheries	67	2051	80	1287	147	3338
Women empowerment	460	15643	380	10792	840	26435
Horticulture						
a. Fruits	103	3552	136	4655	239	8207
b. Medicinal & Aromatic plants	16	389	7	213	23	602
c. Ornamental Plants	18	498	10	351	28	849
d. Plantation crops	5	273	11	276	16	549
e. Spices	9	259	23	796	32	1055
f. Tuber Crops	1	30	21	609	22	639
g. Vegetable Crops	93	2733	164	5531	257	8264
Total	264	8346	376	12501	640	20847
Livestock Production and Management	100	3579	396	14762	496	18341
Plant Protection	191	6072	277	9258	468	15330
Production of Inputs at site	33	1099	28	1127	61	2226
Soil Health and Fertility Management	147	3989	231	8195	378	12184
Total	1684	55098	2525	83972	4209	139070

NC : Number of courses NB : No. of beneficiaries

A total of 925 training programmes covering 21737 rural youth were conducted by KVKs in Zone-V (Table 35). The main thematic areas for training include integrated farming (145), value addition (74), dairying (62), poultry (61) etc.

Table 35. Details of training programmes for rural youth

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Bee-keeping	1	30	8	310	9	340
Commercial fruit production	2	210	11	279	13	489
Composite fish culture	8	271	41	123	49	394
Dairying	5	129	57	883	62	1012
Floriculture			4	93	4	93
Integrated Farming	22	737	123	3160	145	3897
Lac Cultivation			1	73	1	73
Mushroom Production	10	227	7	171	17	398
Nursery management of horticulture crops	12	259	40	827	52	1086
Ornamental fisheries			3	80	3	80
Para extension workers			28	605	28	605
Post Harvest Technology	24	660	19	409	43	1069
Poultry production	12	523	49	951	61	1474
Production of organic inputs	11	177	27	654	38	831
Protected cultivation of vegetable crops	6	155	25	555	31	710

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Rabbit farming			3	52	3	52
Repair and maintenance of farm machinery and implements	13	398	43	456	56	854
Rural crafts	14	348	3	55	17	403
Seed production	9	231	12	306	21	537
Sericulture	2	30	15	178	17	208
Sheep and goat rearing	1	28	37	601	38	629
Small scale processing	26	922	31	749	57	1671
Tailoring and stitching	44	1124	10	374	54	1498
Training and pruning of orchards	2	75	5	135	7	210
Value addition	24	1080	50	1262	74	2342
Vermi-culture	18	554	7	228	25	782
Total	266	8168	659	13569	925	21737

NC: Number of courses NB: No. Of beneficiaries

In Zone-V, 532 training courses with a participation of 18632 extension personnel covering various thematic areas viz. productivity enhancement in field crops (117), group dynamics and farmers organizations (70), low cost and nutrient efficient diet designing (57), women and child care (47), integrated pest management (39) 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	11	406	10	238	21	644
Care and maintenance of farm machinery and implements	7	172	13	423	20	595
Climatic change	1	45	1	25	2	70
Composite fish culture			1	19	1	19
Gender mainstreaming through SHGs	12	364	17	797	29	1161
Group dynamics and farmers organization	19	556	51	1673	70	2229
House hold food security	17	1372	7	275	24	1647
Integrated nutrient management	5	100	18	678	23	778
Integrated pest management	16	471	23	659	39	1130
Livestock feed and fodder production	7	146	9	247	16	393
Low cost and nutrient efficient diet designing	52	1383	5	119	57	1502
Management in farm animals	5	179	16	473	21	652
Processing and value addition			5	138	5	138
Production and use of organic inputs	7	261	4	97	11	358
Productivity enhancement in field crops	36	1214	81	2441	117	3655
Protected cultivation technology	5	118	10	228	15	346
Quail Management			2	20	2	20
Rejuvenation of old orchards	5	111	2	38	7	149
Women and Child care	37	2596	10	404	47	3000
Women and child care			2	51	2	51

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
WTO and IPR issues	1	42	2	53	3	95
Total	243	9536	289	9096	532	18632

NC : Number of courses NB : No. of beneficiaries

Sponsored Training

As there is better infrastructure and qualified 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 844 sponsored training programmes covering 39798 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 lac culture (10140), capacity building of rural youth (8512), integrated farming (8462), commercial horticulture (4544), value addition (1542), dairying (1493) 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, 300 vocational training programmes covering 9942 rural youth were organized by KVKs during 2011-12 (Table 38). The important thematic areas include processing and value addition (65), income generation (46), poultry (24), planting material production (20), commercial horticulture (20), dairy (19), vermiculture (18), integrated farming (18) etc.

Table 37. Details of sponsored training programmes

Thematic Area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Capacity building	59	1599	179	6913	238	8512
Integrated farming	64	3768	104	4694	168	8462
Commercial horticulture	43	2349	47	2195	90	4544
Lac culture			76	10140	76	10140
Dairying	1	30	58	1462	59	1492
Value addition	20	824	22	718	42	1542
Income generation for women	17	417	21	630	38	1047
Poultry	1	146	28	955	29	1101
Fisheries	8	208	18	260	26	468
Sheep and goat farming			26	363	26	363
Sericulture	8	376	11	97	19	473
Mushrooms			9	377	9	377
Vermi-culture	7	240	1	100	8	340
Seed production	6	217			6	217
Planting material production	1	49	4	103	5	152
Protected cultivation			3	126	3	126
Apiculture			1	400	1	400
Drudgery reduction			1	42	1	42
Total	235	10223	609	29575	844	39798

NC : Number of courses NB : No. of beneficiaries

Table 38. Details of vocational training programmes organized by KVKs

Thematic area	Andhra Pradesh		Maharashtra		Total	
	NC	NB	NC	NB	NC	NB
Apiculture			3	472	3	472
Commercial horticulture	5	167	15	542	20	709
Dairy			19	632	19	632
Fisheries	2	65	4	66	6	131
Income generation	24	719	22	956	46	1675
Integrated farming	6	107	12	314	18	421
Mushrooms	1	13	7	221	8	234
Para-extension activity	3	78	10	233	13	311
Planting material production	7	184	13	278	20	462
Poultry			24	911	24	911
Seed production	4	156	3	51	7	207
Sericulture			4	78	4	78
Sheep and goat rearing			12	344	12	344
Stitching, tailoring etc.	14	405	3	48	17	453
Value addition	17	525	48	1739	65	2264
Vermi-culture	12	401	6	237	18	638
Total	95	2820	205	7122	300	9942

NC: Number of courses NB: No. Of beneficiaries

Extension Activities

In order to create awareness among farmers about improved agricultural technologies KVKs in Zone-V organized 15953 extension activities covering 574576 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 7240 extension activities covering 226479 participants and the corresponding figures for Maharashtra are 8713 and 348097(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	2443	34027	2849	36876	577	172	749	34604	3021	37625
Animal health camps	120	3165	460	3625	196	35	231	3361	495	3856
Celebration of important days	150	5170	5092	10262	575	221	796	5745	5313	11058
Diagnostic visits	1600	9743	1557	11300	883	248	1131	10626	1805	12431
Exhibitions	137	100582	16351	116933	2216	742	2958	102798	17093	119891
Exposure visits	265	6792	981	7773	407	122	529	7199	1103	8302
Ex-trainee sammelan	21	647	179	826	20	12	32	667	191	858
Farm science club conveners meet	73	1501	256	1757	110	6	116	1611	262	1873
Farmers field school	5	150	0	150	30	2	32	180	2	182
Farmers foot prints	1535	73519	13608	87127	1060	524	1584	74579	14132	88711

Activity	No. of activities	Farmers			Extension functionaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Farmers rallies	49	4347	367	4714	119	20	139	4466	387	4853
Farmers seminar	73	7106	692	7798	383	60	443	7489	752	8241
Field days	348	11208	1938	13146	1018	253	1271	12226	2191	14417
Film shows	366	39917	2595	42512	448	185	633	40365	2780	43145
Kisan ghosthies	1192	29381	8572	37953	1047	250	1297	30428	8822	39250
Kisan melas	128	47910	13093	61003	2189	604	2793	50099	13697	63796
Lecture delivered as resource Person	1111	47894	13085	60979	2739	410	3149	50633	13495	64128
Mahila mandals conveners meetings	37	137	1351	1488	22	38	60	159	1389	1548
Method demonstrations	708	11359	4198	15557	210	103	313	11569	4301	15870
News paper coverage	2277	0	0	0	0	0	0	0	0	0
Radio talks	443	0	0	0	0	0	0	0	0	0
Scientist visit to farmers fields	2299	17528	3325	20853	318	143	461	17846	3468	21314
Self help group conveners meetings	141	1399	2359	3758	12	112	124	1411	2471	3882
TV shows	154	0	0	0	0	0	0	0	0	0
Women and child health camps	10	565	618	1183	1	5	6	566	623	1189
Workshops and meetings	268	4727	1111	5838	2103	215	2318	6830	1326	8156
Total	15953	458774	94637	553411	16683	4482	21165	475457	99119	574576

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	1320	5617	904	6521	232	147	379	5849	1051	6900
Animal health camps	68	1294	330	1624	91	35	126	1385	365	1750
Celebration of important days	60	752	1869	2621	108	103	211	860	1972	2832
Diagnostic visits	534	4018	682	4700	187	75	262	4205	757	4962
Exhibitions	55	44413	7244	51657	889	490	1379	45302	7734	53036
Exposure visits	51	1426	601	2027	273	67	340	1699	668	2367
Ex-trainee sammelan	5	98	161	259	0	10	10	98	171	269
Farm science club conveners meet	14	319	137	456	33	6	39	352	143	495
Farmers foot prints	522	26591	4185	30776	357	194	551	26948	4379	31327
Farmers rallies	15	2800	210	3010	80	20	100	2880	230	3110
Farmers seminar	6	907	184	1091	226	56	282	1133	240	1373
Field days	113	3312	709	4021	205	61	266	3517	770	4287
Film shows	127	33894	1813	35707	128	84	212	34022	1897	35919
Kisan ghosthies	584	18024	5822	23846	452	179	631	18476	6001	24477
Kisan melas	22	14051	3446	17497	650	155	805	14701	3601	18302
Lecture delivered as resource Person	466	8302	3388	11690	169	104	273	8471	3492	11963
Mahila mandals conveners meetings	21	0	585	585	0	13	13	0	598	598
Method demonstrations	431	6056	2200	8256	143	66	209	6199	2266	8465

Activity	No. of activities	Farmers			Extension functionaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
News paper coverage	1394	0	0	0	0	0	0	0	0	0
Radio talks	168	0	0	0	0	0	0	0	0	0
Scientist visit to farmers fields	987	7104	1074	8178	101	70	171	7205	1144	8349
Self help group conveners meetings	71	1156	1674	2830	0	32	32	1156	1706	2862
TV shows	106	0	0	0	0	0	0	0	0	0
Women and child health camps	5	545	478	1023	0	0	0	545	478	1023
Workshops and meetings	95	1272	373	1645	117	51	168	1389	424	1813
Total	7240	181951	38069	220020	4441	2018	6459	186392	40087	226479

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

Activity	No. of activities	Farmers			Extension functionaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory services	1123	28410	1945	30355	345	25	370	28755	1970	30725
Animal health camps	52	1871	130	2001	105	0	105	1976	130	2106
Celebration of important days	90	4418	3223	7641	467	118	585	4885	3341	8226
Diagnostic visits	1066	5725	875	6600	696	173	869	6421	1048	7469
Exhibitions	82	56169	9107	65276	1327	252	1579	57496	9359	66855
Exposure visits	214	5366	380	5746	134	55	189	5500	435	5935
Ex-trainee sammelan	16	549	18	567	20	2	22	569	20	589
Farm science club conveners meet	59	1182	119	1301	77	0	77	1259	119	1378
Farmers field school	5	150	0	150	30	2	32	180	2	182
Farmers foot prints	1013	46928	9423	56351	703	330	1033	47631	9753	57384
Farmers rallies	34	1547	157	1704	39	0	39	1586	157	1743
Farmers seminar	67	6199	508	6707	157	4	161	6356	512	6868
Field days	235	7896	1229	9125	813	192	1005	8709	1421	10130
Film shows	239	6023	782	6805	320	101	421	6343	883	7226
Kisan ghosthies	608	11357	2750	14107	595	71	666	11952	2821	14773
Kisan melas	106	33859	9647	43506	1539	449	1988	35398	10096	45494
Lecture delivered as resource person	645	39592	9697	49289	2570	306	2876	42162	10003	52165
Mahila mandals conveners meetings	16	137	766	903	22	25	47	159	791	950
Method demonstrations	277	5303	1998	7301	67	37	104	5370	2035	7405
News paper coverage	883	0	0	0	0	0	0	0	0	0
Radio talks	275	0	0	0	0	0	0	0	0	0
Scientist visit to farmers fields	1312	10424	2251	12675	217	73	290	10641	2324	12965
Self help group conveners meetings	70	243	685	928	12	80	92	255	765	1020
TV shows	48	0	0	0	0	0	0	0	0	0
Women and child health camps	5	20	140	160	1	5	6	21	145	166
Workshops and meetings	173	3455	738	4193	1986	164	2150	5441	902	6343
Total	8713	276823	56568	333391	12242	2464	14706	289065	59032	348097

Fourteen KVKs in Andhra Pradesh and 22 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	13	1953	31	15537	44	17490
2. Exhibition	21	7971	19	18603	40	26574
3. Farm Visit	54	5781	77	26104	131	31885
4. Film show	20	3101	49	12280	69	15381
5. Gosthies	31	4390	23	2925	54	7315
6. Lectures organized	123	8462	115	53549	238	62011
7. Fair	3	1563	5	14481	8	16044
8. Distribution of material						
a. Bio Fertilizers (q)	57.15	155	125.67	90	182.82	245
b. Bio Product (kg)	1849.6	6885	2848.54	77	4698.14	6962
c. Livestock specimen (No.)	282	967	1076	52	1358	1019
d. Planting materials (No.)	1268	1157	11120	125	12388	1282
e. Seed (q)	66.005	970	234.35	163	300.355	1133
f. Literature (No.)	62	5270	102	15371	164	20641
Total		48625	15825.56	159357	19675.315	207982

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	7	40	63	2041	70	2081
	Fisheries	26	130			26	130
	Poultry	2	50	9	576	11	626
	Sheep and Goat	2	18	14	164	16	182
	Total	37	238	86	2781	123	3019
Crops	Cereals	74	3320	64	2562	138	5882
	Commercial Crops	13	473	171	8379	184	8852
	Fodders			10	358	10	358
	Fruits	15	743	223	12897	238	13640
	Oilseeds	60	2339	134	2713	194	5052
	Ornamental Crops	1	3	5	0	6	3
	Pulses	24	582	75	2400	99	2982
	Spices	3	59	51	405	44	464

Category	Group	Andhra Pradesh		Maharashtra		Total	
		NM	NF	NM	NF	NM	NF
	Vegetables	22	1098	153	9048	175	10146
	Total	212	8617	874	38762	1086	47379
Others	Advisory	5	60	160	3091	165	3151
	Critical Tech. Products	23	1020	38	2052	61	3072
	KVK Programmes	12	366	106	4748	118	5114
	Market information	2	392	38	2479	40	2871
	Weather Information	13	1960	80	15995	93	17955
	Total	55	3798	422	28365	477	32163
Women	Women and Children	30	1281	36	1038	66	2319
Total		334	13934	1420	70946	1754	84880

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

Publications

To disseminate the information on improved agricultural technologies, KVKs of Zone-V brought out 1527 publications which include 413 popular articles, 412 technical reports, 246 leaflets and folders and 143 electronic publications viz. CD/VCD/DVDs etc. The details of publications by the KVKs are given in Table 44.

Table 44. Details of Publications by KVKs

Type of publication	Andhra Pradesh		Maharashtra		Total	
	NP	NC	NP	NC	NP	NC
Books/booklets	13	6900	27	12030	40	18930
Electronic publications	63	2170	80	860	143	3030
Leaflets/folders	88	136850	158	167600	246	304450
News letters	28	1000	28	3800	56	4800
Other extension literature	84	101115	54	23350	138	124465
Popular articles	160	0	253	0	413	0
Research papers	28	0	19	0	47	0
Technical bulletins	12	3950	20	18150	32	22100
Technical reports	247	1090	165	241	412	1331
Total	723	253075	804	226031	1527	479106

NP: No. of publications; NC: No. of copies

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 7832.47 q of seed material (cereals - 5613.37 q, oilseeds – 817.44 q, commercial crops – 416.75 q, pulses - 365.33 q etc.) and supplied to 7366 farmers (Table 45). KVKs also produced 1815801 saplings (773213 - vegetables, 528159 - fruits, 194541 fodders, 148543 – forest spp.,

etc.) and supplied to 11608 farmers (Table 46).

Table 45. Details of production and supply of seed

Category	Andhra Pradesh			Maharashtra			Total		
	Quantity (q)	Value (Rs.)	Farmers (No.)	Quantity (q)	Value (Rs.)	Farmers (No.)	Quantity (q)	Value (Rs.)	Farmers (No.)
Cereals and Millets	4895.66	7382098	2755	717.71	1447144	1636	5613.37	8829242	4391
Commercial Crops	241.25	0	0	175.50	55386	30	416.75	55386	30
Flower & Ornamental Crops	0.001	1296	0	65.59	6220	37	65.59	7516	37
Fodders	237.85	20050	16	10.04	5445	18	247.89	25495	34
Oilseeds	126.91	814895	376	744.53	2258241	915	871.44	3073136	1291
Others	1.84	8870	32	3.29	22300	41	5.13	31170	73
Plantation Crops				6.74	52748	40	6.74	52748	40
Pulses	108.85	342892	427	256.48	874678	908	365.33	1217570	1335
Spices & Condiments	2.00	0	4	129.10	178850	40	131.10	178850	44
Vegetables	18.33	1550	8	90.81	160060	83	109.14	161610	91
Total	5632.69	8571651	3618	2199.78	5061072	3748	7832.47	13632723	7366

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	30000	30000	18	19240	48100	9	49240	78100	27
Flower and Ornamental Plants	18000	27495	400	66756	70120	141	84756	97615	541
Fodders				194541	158096	248	194541	158096	248
Forest species	28508	582620	664	120035	820765	323	148543	1403385	987
Fruits	75124	986579	1723	453035	7263081	6188	528159	8249660	7911
Medicinal and aromatic crops	10000	20000	5	500	7500	0	10500	27500	5
Plantation Crops	14683	50000	500	12026	323080	246	26709	373080	746
Spices				140	1460	16	140	1460	16
Vegetables	339850	90030	370	433363	324881	757	773213	414911	1127
Total	516165	1786724	3680	1299636	9017083	7928	1815801	10803807	11608

KVKs produced 368331.95 kg of bio-fertilizers and 39251.80 kg of bio-pesticides 3156 kg of bio-fungicides 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	33000			898	175.00	37435	33898	175.00	37435
Bio-fertilizers		130808.45	1225022		237523.50	2798356		368331.95	4023378
Bio-foods		4.00	400000		55.85	74645		59.85	474645

& herbal medicines									
Bio-fungicides		535.00	42800		2621.00	247800		3156.00	290600
Bio-pesticides		7310.00	284800		31941.80	3003933		39251.80	3288733

Livestock Species

KVKs produced 106900 fingerlings, 74619 poultry species, 542 sheep and goat etc. of elite species and supplied to 278415 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				68	534502	5	68	534502	5
Fisheries	83900	259190	688	23000	24650	23	106900	283840	711
Poultry	22469	858075	1386	52150	1793522	1761	74619	2651597	3147
Sheep & Goat	82	141096	27	460	1243604	232	542	1384700	259
Total	106451	1258361	2101	75678	3321985	276314	182129	4580346	278415

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 145283 samples including soil (112730), water (26692), plant (718), etc. were analyzed by the KVKs benefitting 140205 farmers of 12695 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.)
Fertilizer/ manure					223	23	9	3900	223	23	9	3900
Petiole					170	42	10	7325	170	42	10	7325
Plant	64	64	2	38400	809	654	127	113347	873	718	129	151747
Soil	11773	9883	944	674390	104657	102847	8159	16277030	116430	112730	9103	16951420
Water	2420	2413	322	61465	25167	24279	3122	1934470	27587	26692	3444	1995935
Total	14257	12360	1268	774255	131026	127845	11427	18336072	145283	140205	12695	19110327

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

Rainwater Harvesting

The details of training programmes on rain water harvesting conducted by KVKs are given in Table 50. A total of 45 courses were conducted for 1821 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	10	605	143	748
	Total	10	605	143	748
Maharashtra	Amaravati (D)	2	35	0	35
	Beed	3	52	0	52
	Bhandara	2	76	24	100
	Buldhana	1	50	0	50
	Hingoli	3	154	22	176
	Jalna	5	129	29	158
	Nandurbar	3	77	1	78
	Thane	12	204	68	272
	Yavatmal	4	139	13	152
	Total	35	916	157	1073
Total		45	1521	300	1821

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) are selected for conducting such technology demonstrations. During the year KVKs conducted 1441 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 1594 crop production demonstrations were conducted in 508 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 978 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 1250 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 189 training programmes for 6029 participants (4768 farmers and 1261 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 training, seminars, workshop etc. There are five Directorates of SAUs in Zone-V under Acharya N. G. Ranga Agricultural University and Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Mahatma Phule Krishi Vidyapeeth, Marathwada Agricultural University and Dr. Punjabrao Deshmukh Krishi Vidyapeeth in Maharashtra. A total of 46 programmes benefitting 1215 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 79 visits under their operational jurisdiction (Table 52).

Table 51. Details of training programmes and meetings conducted by ZPD/SAUs

SAU/ZPD	No. of meetings	No. of participants	No. of KVKs
ANGRAU, Hyderabad	8	138	22
BSKKV, Dapoli	1	15	4
MAU, Parbhani	3	150	20
MPKV, Rahuri	17	388	18
PDKV, Akola	7	229	13
ZPD, Hyderabad	10	295	78
Total	46	1215	

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

SAU	No. of visits	No. of KVK
ANGRAU, Hyderabad	22	18
KKV, Dapoli	5	2
MAU, Parbhani	5	3
MPKV, Rahuri	37	9
PDKV, Akola	10	8
Total	79	

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, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Mahatma Phule Krishi Vidyapeeth, Marathwada Agricultural University and Dr. Punjabrao Deshmukh Krishi Vidyapeeth in Maharashtra and one at ICAR research institute i.e. Central Research Institute for Cotton Research, Nagpur, Maharashtra.

During the year, a total of 107525 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 1275981 copies of 85 publications were sold by ATICs which benefitted 29800 farmers with a revenue of Rs. 1048542/-.

Table 53. Details of visits of farmers to ATICS

Nature of visit	No. of farmers
Agro-advisory	27334
Diagnostic services	414
Technology information	54990
Technology products	24787
Total	107525

Table 54. Details of publication by ATICs

Publication	Number	No. of copies	Revenue (Rs.)	No. of farmers
Books	70	1096465	706292	11815
CD & DVDs	2	875	42000	5000
Leaflets	2	-	2040	-
Posters	4	800	-	-
Technical bulletins	44	180741	298210	12985
Total	122	1278881	1048542	29800

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. 26549083/- and benefitted 33686 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 387326 farmers (Table 56).

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

Product	Quantity	Revenue (Rs.)	No. of farmers
Bio-products (q)	4.45	1138279	2084
BT Kits (No.)	57	48760	2100
Implements (No.)	4320	1023485	2757
Livestock species (No.)	110	491155	69
Planting material (No.)	557313	4802469	2261
Processed products (No. of packets)	10792	670000	8162
Seed (q)	5072.86	18359935	16045
Vermi-compost	-	15000	208
Total		26549083	33686

Table 56. Details of technology services provided by ATICs

Technology service	Number	No. of farmers
Animal diagnostic visits/treatment	64	256
Campaigns	2	12800
Mobile advisory	42104	47970
Plant diagnostic visits	1178	2596
Services rendered to line Departments	367	320800
Soil and Water Testing	736	2904
Total	44449	387326

STAFF POSITION IN ZONAL PROJECT DIRECTORATE

S. No.	Name	Designation
1.	Dr. N. Sudhakar	Zonal Project Director
2.	Dr. K. Dattatri	Principal Scientist
3.	Dr. K. Mahadeva Reddy	Senior Scientist
4.	Dr. G. Rajender Reddy	Senior Scientist
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. Navaneetha	Lower Division Clerk
11.	Shri. N. Vijay Kumar	Lower Division Clerk
12.	Shri. M. Sadanand	Driver
13.	Smt. Subbalakshmi	SSS

ICAR

क्षेत्रीय परियोजना निदेशालय (क्षेत्र-V)
Zonal Project Directorate, Zone-V
CRIDA Campus, Santoshnagar, Hyderabad-500059
Tel: 040-24530300, 24536517, Telefax: 24533543
E-mail: zcu5hyd@yahoo.com, zcu5hyd@rediffmail.com