

# वार्षिक प्रतिवेदन ANNUAL REPORT

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## 2015-16



**भाकृअनुप – कृषितकनीकी अनुप्रयोग संस्थान (अटारी)**  
(पहले क्षेत्रीय परियोजना नदिशालय, क्षेत्र - V)

**ICAR-Agricultural Technology Application Research Institute (ATARI)**  
(Formerly Zonal Project Directorate, Zone-V)  
क्रीडा परसिर/CRIDA Campus, संतोषनगर/Santoshnagar,  
हैदराबाद/Hyderabad – 500 059



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ICAR-Agricultural Technology Application Research Institute (ATARI), Hyderabad

**Compiled and edited by:**

A.R. Reddy, J.V. Prasad, G. Rajender Reddy, K. Dattatri and Chari Appaji

**Editorial assistance by:**

G. Navneetha, P. Swapna and D.S. Prasad

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Dr. Y.G. Prasad

Director

ICAR-Agricultural Technology Application Research Institute (ATARI),  
Zone V CRIDA Campus, Santoshnagar, Hyderabad-500059.



## PREFACE

The ICAR-Agricultural Technology Application Research Institute (ATARI), Hyderabad is vested with the responsibility of coordination and monitoring of technology application and frontline extension education programs through Krishi Vigyan Kendras (KVKs) in three states viz. Andhra Pradesh, Telangana and Maharashtra. At present there are 78 KVKs in the Zone, including 21 in Andhra Pradesh, 13 in Telangana and 44 in Maharashtra. The ATARI is also vested with the responsibility of strengthening agricultural extension research and knowledge management.

During 2015-16, KVKs assessed 583 technologies and conducted 9565 Frontline demonstrations in farmer's fields, undertook 4898 training programmes covering 126492 participants including farmers, farm women, rural youth and extension functionaries.

In 2015-16, deficit rainfall conditions prevailed in all the three states which affected agriculture and allied sectors. NICRA KVKs in drought prone districts prepared village level monsoon action plans and demonstrated climate resilient technologies and practices in adopted villages.

Activities under the tribal sub plan were extended to tribal mandals in 13 districts in the zone. A new project on Attracting and Retaining Youth in Agriculture (ARYA) was launched in three districts at Nellore (Andhra Pradesh), Nalgonda (Telangana) and Nagpur (Maharashtra) with the aim of imparting skill and entrepreneurship development to rural youth.

With the support of National Food Security Mission (NFSM), 2586 cluster frontline demonstrations were conducted by 72 KVKs in rabi pulses covering an area of 1069 ha. Similarly, under National Mission on Oilseeds and Oil palm (NMOOP), 1205 cluster frontline demonstrations were conducted by 31 KVKs in rabi oilseeds covering an area of 512 ha.

Human Resource Development (HRD) activities were jointly organized by the five Directorates of Extension and ATARI benefiting 2336 KVK staff in the zone. About 156032 farmers were given direct access to institutional resources through six Agricultural Technology Information Centers in the Zone.

A number of Extension activities were taken up by the KVKs with the participation of 1832340 farmers, farm women and extension personnel. Pre-kharif and Pre-Rabi kisan sammelans were organized by 19 KVKs covering 127156 farmers. As part of World Soil Day celebrations on 5th December, 2015, 16338 soil health cards were distributed to farmers by 36 Hon'ble Members of Parliament (MPs) and Members of Legislative Assembly (MLAs). Awareness programme through farmers fair on Prime Ministers new flagship initiative on "Fasal Bheema Yojana" was taken up by 56 KVKs in which 4 Union Ministers, 3 State Ministers and 137 MPs participated.

We acknowledge the contribution of Vice-Chancellors and Directors of Extension of SAUs, Horticulture and Veterinary Universities and Directors of ICAR institutes in Zone-V for providing necessary technological backstopping to the KVKs.

We gratefully acknowledge the constant support, guidance and encouragement received from Dr. T. Mohapatra, Secretary, DARE and Director General, ICAR, Dr. S. Ayyapan Former Director General, ICAR, Dr. A.K.Singh, DDG (AE) and Dr.N. Sudhakar, Ex-Director, ICAR-ATARI, Zone V, Hyderabad.

I complement all the Senior Scientists & Heads, and staff of KVKs in the zone for their dedicated efforts in implementing and reporting the progress and all my colleagues at ATARI for compiling the Annual Report.

**Dr. Y. G. Prasad**  
Director



## कार्यकारी सारांश

भारतीय कृषि अनुसंधान परिषद् ने वर्ष 2015 में क्षेत्रीय परियोजना निदेशालय का नाम बदलकर कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान (कृषीअनुअनुसं) कर दिया। कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान के अधिदेश को परिशोधित कर कृषि विज्ञान केंद्रों द्वारा प्रौद्योगिकी अनुप्रयोग एवं अत्याधुनिक प्रसार शिक्षा कार्यक्रमों का समन्वयन एवं एवं मॉनीटर कर दिया गया। कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान ने आंध्र प्रदेश, तेलंगाना एवं महाराष्ट्र के राज्यों में कृषि प्रसार अनुसंधान एवं ज्ञान प्रबंधन को मज़बूत करने की जिम्मेदारी भी ले रखी है।

क्षेत्र-V में 78 कृषि विज्ञान केंद्र हैं जिनमें से आंध्र प्रदेश में 21, तेलंगाना में 13 एवं महाराष्ट्र में 44 शामिल हैं। आंध्र प्रदेश के 21 कृषि विज्ञान केंद्रों में से 15 राज्य कृषि विश्वविद्यालयों के साथ, 2 भाकृअनुप के संस्थानों के साथ एवं 4 गैर सरकारी संगठनों के साथ हैं। तेलंगाना में, 8 कृषि विज्ञान केंद्र राज्य कृषि विश्वविद्यालयों के साथ, एक भाकृअनुप के संस्थान के साथ एवं 4 गैर सरकारी संगठनों के साथ हैं। महाराष्ट्र में, 16 कृषि विज्ञान केंद्र राज्य कृषि विश्वविद्यालयों के साथ, एक भाकृअनुप के संस्थान के साथ, 26 गैर सरकारी संगठनों के साथ तथा एक मुक्त विश्वविद्यालय से जुड़ा है।

वर्ष के दौरान, कृषि विज्ञान केंद्रों द्वारा 4897 फार्म पर जांच प्रक्रिया से 583 प्रौद्योगिकियों का मूल्यांकन एवं परिष्करण किया गया है। जांचे गए इन प्रौद्योगिकियों में, 437 प्रौद्योगिकियां फसलों से संबंधित, 93 पशु संबंधी एवं 53 महिला एवं शिशु संबंधी हैं। फसलों के मामले में शामिल किए गए प्रमुख विषय क्षेत्र समेकित पोषक प्रबंधन, समेकित रोग प्रबंधन, समेकित खरपतवार प्रबंधन, कृषि यांत्रिकी, औज़ार एवं उपकरण, संसाधन संरक्षण प्रौद्योगिकी एवं सस्ययन प्रणालियां हैं। पशुओं के मामले में, चारा एवं पोषक प्रबंधन, नस्ल मूल्यांकन, रोग प्रबंधन, जनन क्षमता प्रबंधन, चारा एवं पोषण प्रबंधन, उत्पादन, प्रबंधन एवं नस्ल सुधार का मूल्यांकन एवं परिष्करण जैसे विषय शामिल हैं। ग्रामीण महिला के सशक्तिकरण के अंतर्गत, श्रम में कटौती, स्वास्थ्य एवं पोषण, मूल्य वर्धन एवं उद्यमिता विकास जैसे विषय क्षेत्रों में फार्म पर जांचों का आयोजन किया गया।

आंध्र प्रदेश के कृषि विज्ञान केंद्रों ने बागवानी सहित फसल प्रजातियों (752), पशुओं (109) एवं ग्रामीण महिला के सशक्तिकरण (33) को शामिल कर 894 फार्म जांचों के आयोजनों द्वारा 152 प्रौद्योगिकियों की उपयुक्तता का मूल्यांकन किया। तेलंगाना में बागवानी सहित फसल प्रजातियों (515), पशुओं (169) एवं ग्रामीण महिला के सशक्तिकरण (84) को शामिल कर 768 फार्म जांचों के आयोजनों द्वारा 121 प्रौद्योगिकियों की उपयुक्तता का मूल्यांकन किया गया। महाराष्ट्र में बागवानी प्रजातियों (2216) सहित फसलों, पशुओं (509) एवं ग्रामीण महिला के सशक्तिकरण (510) को शामिल कर 3235 फार्म जांचों के आयोजनों द्वारा 310 प्रौद्योगिकियों की उपयुक्तता का मूल्यांकन किया गया।

क्षेत्र-V में कृषि विज्ञान केंद्रों द्वारा तिलहनों के अंतर्गत 439 हेक्टेयर क्षेत्र में कुल 1080 अग्रिम प्रदर्शनों का आयोजन किया गया। प्रदर्शनों के अंतर्गत शामिल किए गए प्रमुख तिलहन फसलों में मूंगफली, सोयाबीन, अरंड, सूरजमुखी, तिल, शमतिल एवं अलसी शामिल हैं। दलहनों के मामले में, कृषि विज्ञान केंद्रों ने खरीफ एवं रबी मौसम के दौरान 868 हेक्टेयर क्षेत्र में 2176 प्रदर्शनों का आयोजन किया। दलहनों के प्रदर्शनों के अंतर्गत शामिल किए गए प्रमुख फसलों में अरहर, चना, मूंग, उड़द आदि हैं। इसी प्रकार, क्षेत्र-v में कृषि विज्ञान केंद्रों ने अन्य फसलों जैसेकि मोटे अनाज, व्यवसायिक फसल, मिलेट, चारा एवं बागवानी फसलों पर 1425 हेक्टेयर क्षेत्र में 3176 प्रदर्शनों का आयोजन किया। कृषि विज्ञान केंद्र ने उन्नत औज़ार एवं उपकरणों पर 748 प्रदर्शनों, पशुधन नस्लों पर 1547 प्रदर्शनों एवं महिला सशक्तिकरण पर 829 प्रदर्शनों का भी आयोजन किया।

क्षमता निर्माण कृषि विज्ञान केंद्र की एक मुख्य गतिविधि है, जो विभिन्न उन्नत प्रौद्योगिकियों के बारे में ज्ञान एवं कौशल को बढ़ावा देने में प्रमुख भूमिका निभाता है। वर्ष के दौरान, क्षेत्र-V में कृषि विज्ञान केंद्र द्वारा 126492 सहभागियों जिसमें 92790 किसान, 21056 ग्रामीण युवा एवं 12646 प्रसार अधिकारी को शामिल कर 4898 प्रशिक्षण कार्यक्रमों का आयोजन किया गया।

आंध्र प्रदेश में कृषि विज्ञान केंद्रों ने 23313 किसान जिसमें कृषि महिलाएं, ग्रामीण युवा एवं प्रसार अधिकारी को शामिल कर 794 प्रशिक्षण कार्यक्रमों का आयोजन किया, जबकि तेलंगाना में कृषि विज्ञान केंद्रों ने 22058 लाभार्थियों के लिए 623 पाठ्यक्रमों का आयोजन किया। प्रशिक्षण के अंतर्गत शामिल किए गए मुख्य विषय क्षेत्र समेकित फसल प्रबंधन, उन्नत औज़ार एवं उपकरण, क्षमता निर्माण एवं सामुहिक शक्ति, महिला सशक्तिकरण, बागवानी फसलों के लिए उन्नत उत्पादन प्रक्रियाएं, पशुधन नस्लों में उत्पादकता को बढ़ावा एवं मृदा स्वास्थ्य एवं उर्वरता प्रबंधन थे।

क्षेत्र-V में कृषि विज्ञान केंद्रों ने 17939 किसानों एवं कृषि महिलाओं, ग्रामीण युवा को शामिल कर 445 प्रायोजित प्रशिक्षण कार्यक्रमों का भी आयोजन किया है। उद्यमिता विकास को बढ़ावा देने, आय निर्माण एवं स्व-रोज़गार विशेषकर ग्रामीण युवा एवं बीच में ही शिक्षा छोड़ने वाले, 7794 लाभार्थियों के लिए कृषि विज्ञान केंद्रों द्वारा 303 व्यावसायिक प्रशिक्षण कार्यक्रमों का आयोजन किया गया। प्रमुख विषय क्षेत्रों में मूल्य वर्धन, समेकित फसल प्रबंधन, मुरगी पालन, नर्सरी प्रबंधन एवं कलम लगाना, भेड़ एवं बकरी पालन आदि शामिल थे।

उन्नत कृषि प्रौद्योगिकियों पर जागरूकता प्रदान करने के लिए क्षेत्र-V के कृषि विज्ञान केंद्रों द्वारा 1832340 किसानों, कृषि महिलाओं एवं प्रसार अधिकारियों की सहभागिता से 39317 प्रसार गतिविधियों का आयोजन किया गया। प्रसार गतिविधियों में सलाह सेवा, प्रदर्शन दौरे, पशु स्वास्थ्य शिविर, प्रौद्योगिकी सप्ताह, सामुहिक चर्चा, पद्धति प्रदर्शन, मृदा स्वास्थ्य शिविर, किसान मेला, किसान गोष्ठी आदि शामिल हैं। उन्नत कृषि प्रौद्योगिकियों पर सूचना के प्रसार में तेजी लाने के लिए, क्षेत्र-v के कृषि विज्ञान केंद्रों ने 1677 प्रकाशन प्रकाशित किए। कृषि विज्ञान केंद्रों ने किसानों को 6206 क्विंटल का बीज एवं क्षेत्र तथा बागवानी फसलों के अभिजात किस्मों के 4770270 पौधों की आपूर्ति भी की। कृषि विज्ञान केंद्रों ने 2019 क्विंटल का जैव-उर्वरक एवं 352 क्विंटल का जैव-कीटनाशक का भी उत्पादन कर किसानों तक पहुंचाया।

कृषि विज्ञान केंद्रों ने मृदा पोषण स्तर को जानने एवं जिले में व्याप्त सूक्ष्म कृषि परिस्थितियों में मृदा जांच आधारित पोषक सिफारिशों को तैयार करने के लिए मृदा एवं जल परीक्षणों का भी आयोजन किया। कृषि विज्ञान केंद्र द्वारा मृदा (218533), जल (17907), पौध (385) एवं उर्वरक/खाद (160) शामिल कुल 236985 नमूनों का विश्लेषण किया। जिससे आंध्र प्रदेश, तेलंगाना एवं महाराष्ट्र के 19805 गांवों में रहने वाले 203840 किसानों को लाभ हुआ। क्षेत्र-V के कृषि विज्ञान केंद्रों ने कुल 183358 मृदा स्वास्थ्य कार्ड वितरित किया गया। दिनांक 5 दिसंबर, 2015 को विश्व मृदा दिवस समारोहों के भाग के रूप में, 36 संसद सदस्यों एवं विधान सभा सदस्यों द्वारा किसानों को करीब 16338 मृदा स्वास्थ्य कार्ड वितरित किए गए। के दौरान 5 दिसंबर 2015 को 16338 मृदा स्वास्थ्य कार्ड किसानों को माननीय मंत्री, संसद और विधायकों द्वारा दिया गया।

राज्य कृषि विश्वविद्यालयों के प्रसार शिक्षा निदेशालय एवं क्षेत्रीय परियोजना निदेशालय प्रशिक्षणों, सम्मेलनों, कार्यशालाओं आदि द्वारा कृषि विज्ञान केंद्रों को प्रौद्योगिकी सहायता एवं मानव विकास संसाधन प्रदान करते हैं। पांच प्रसार निदेशालयों एवं क्षेत्रीय परियोजना निदेशालय द्वारा संयुक्त रूप से आयोजित किए गए कुल 61 मानव संसाधन विकास गतिविधियों से क्षेत्र में 2336 कृषि विज्ञान केंद्र के कर्मचारियों को लाभ मिला। संस्थागत संसाधनों को सीधे किसानों तक पहुंचाने के लिए, विभिन्न प्रौद्योगिकी उत्पादों को एकल गवाक्ष वितरण के लक्ष्य से क्षेत्र-V में भाकृअनुप ने



छह कृषि प्रौद्योगिकी सूचना केंद्रों की स्थापना की। वर्ष के दौरान कुल 156032 किसानों ने अद्यतन प्रौद्योगिकी सूचना एवं बीज तथा रोपण सामग्री जैसे क्रांतिक प्रौद्योगिकी उत्पादों के बारे में जानने के लिए छह कृषि प्रौद्योगिकी सूचना केंद्रों का दौरा किया।

15 कृषि विज्ञान केंद्रों द्वारा क्षेत्र-v में निम्न परियोजना का प्रौद्योगिकी प्रदर्शन घटक का कार्यान्वयन किया गया जिसमें तीन राज्यों के जलवायु समुत्थान प्रौद्योगिकियों एवं प्रक्रियाओं का प्रदर्शन किया गया। कृषि विज्ञान केंद्रों द्वारा प्राकृतिक संसाधन प्रबंधन में 1461 प्रदर्शनों, फसल उत्पादन प्रणालियों में 1305, पशुधन एवं मत्स्य उत्पादन प्रणालियों में 473, अपनाए गए गांवों में संस्थागत हस्तक्षेपों में 1098 प्रदर्शनों का आयोजन किया गया। इसके साथ ही 7458 सहभागियों को शामिल कर 248 प्रशिक्षण कार्यक्रम एवं 11767 किसानों एवं 2763 कृषि महिलाओं हेतु 630 प्रसार गतिविधियों का भी आयोजन किया गया।

वर्ष 2015-16 के दौरान 26 लाख रुपए के परिव्यय से क्षेत्र के तीन कृषि विज्ञान केंद्र (नेल्लूर, नलगोंडा एवं नागपुर) द्वारा आर्या(युवा को कृषि की ओर आकर्षित करना एवं उसे कृषि कार्य में बनाए रखना/Attracting and Retaining Youth in Agriculture) परियोजना का कार्यान्वयन किया गया। हरेक कृषि विज्ञान केंद्र ने संसाधनों की उपलब्धता पर आधारित उद्यमों एवं विशेष उत्पाद के लिए बाजारी मांग की पहचान की। हरेक कृषि विज्ञान केंद्र द्वारा करीब 200 ग्रामीण युवाओं को कौशल एवं उद्यमिता प्रदान किया गया जिन्हें आवश्यक कौशल, परियोजना परामर्श, क्रांतिक निवेश एवं बाजार संपर्क प्रदान कर कृषि आधारित उद्यमों की स्थापना में सहायता प्रदान किया जाएगा। कुछ उद्यमों की पहचान की गई वे हैं : वर्मी कंपोस्ट तैयार करना, सब्जियों एवं फलों की नर्सरियों को उगाना, मशरूम उत्पादन, बेकरी इकाइयां, मोबाइल मृदा परीक्षण इकाइयां, सौर कीट जाल तैयार करना एवं समेकित कृषि प्रणाली मॉडल।

आंध्र प्रदेश, तेलंगाना एवं महाराष्ट्र को शामिल कर रबी (2015-16) के दौरान क्षेत्र-v में 72 कृषि विज्ञान केंद्रों द्वारा राष्ट्रीय खाद्यान्न सुरक्षा मिशन (NFSM) के अंतर्गत दलहनों पर रबी केंद्रों में अग्रिम प्रदर्शनों का आयोजन किया गया। 1069 हेक्टेयर क्षेत्र में कुल 2586 क्षेत्र स्तरीय प्रदर्शनों का आयोजन किया गया। इसी प्रकार, रबी मौसम के दौरान 31 कृषि विज्ञान केंद्रों द्वारा तिलहन फसलों में एनएमओओपी के अंतर्गत 512 हेक्टेयर क्षेत्र में 1205 केंद्र अग्रिम प्रदर्शनों का आयोजन किया गया। जिला/राज्य की औसतों की तुलना में क्षेत्र स्तरीय प्रदर्शनों में दलहनों एवं तिलहनों की उत्पादकता अधिक थी जो पैदावार के अंतराल को दूर करने में सहायक हो सकते हैं।

उनतालीस कृषि विज्ञान केंद्रों एवं कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, हैदराबाद द्वारा 5740 किसानों, प्रसार अधिकारियों एवं वैज्ञानिकों के लिए पादप किस्मों का संरक्षण एवं किसान अधिकार अधिनियम (पीपीवी एवं एफआरए) पर 54 जागरूकता कार्यक्रमों का आयोजन किया गया।

वर्ष 2015-16 के दौरान जन प्रतिनिधियों सहित सभी पणधारियों की सहभागिता से कई प्रसार गतिविधियों का आयोजन किया गया। कृषि विज्ञान केंद्रों द्वारा 33 जन प्रतिनिधियों सहित 1,27,156 किसानों में कृषि प्रौद्योगिकियों एवं सरकार द्वारा चलाए जा रहे प्रयासों के बारे में जानकारी प्रदान करने के लिए खरीफ पूर्व एवं रबी पूर्व कुल 62 किसान सम्मेलनों का आयोजन किया गया।

56 कृषि विज्ञान केंद्रों द्वारा 'फसल बीमा योजना' पर प्रधान मंत्री की नई पहल पर किसान मेला द्वारा जागरूकता कार्यक्रम का आयोजन किया गया जिसमें 34367 किसानों सहित 4 केंद्रीय मंत्री, 37 संसद सदस्य, 18 विधानसभा सदस्य एवं 3549 सरकारी अधिकारियों ने भाग लिया।

## EXECUTIVE SUMMARY

Indian Council of Agricultural Research redesignated the Zonal Project Directorate (ZPD) as Agricultural Technology Application Research Institute (ATARI) in 2015. The institute is vested with the mandate of coordination and monitoring of technology application and frontline extension education programs through Krishi Vigyan Kendras (KVKs). The ATARI has the responsibility of strengthening agricultural extension research and knowledge management in the states of Andhra Pradesh, Telangana and Maharashtra.

There are 78 KVKs in Zone-V which include 21 in Andhra Pradesh, 13 in Telangana and 44 in Maharashtra. Of the 21 KVKs in Andhra Pradesh, 15 are with SAUs, 2 are with ICAR Institutes and 4 are with Non-Governmental Organizations (NGOs). In Telangana, 8 KVKs are with SAUs, one is with ICAR Institute and 4 are with NGOs. In Maharashtra, 16 KVKs are with SAUs, one with ICAR institute, 26 with NGOs one with Open University.

During the year, KVKs assessed 583 technologies by laying out 4897 on-farm trials. Of these technologies tested, 437 technologies are related to crops, 93 are related to animals and 53 are related to empowerment of women. The important thematic areas covered in case of crops included integrated crop management, varietal integrated nutrient management, evaluation, integrated pest management, integrated disease management, integrated weed management, resource conservation technology farm machinery, tools and equipment, and cropping systems. In case of animals, thematic areas such as feed and nutrition management, breed evaluation, disease management, fertility management, fodder management, livestock production and management were assessed. Under the empowerment of rural women, on-farm trials were conducted in thematic areas viz., drudgery reduction, health and nutrition, value addition and entrepreneurship development

KVKs in Andhra Pradesh assessed the suitability of 152 technologies by conducting 894 on-farm trials covering field crops, horticultural crops (752), animals (109) and empowerment of rural women (33). KVKs in Telangana assessed the suitability of 121 technologies by conducting 768 on-farm trials covering field crops, horticultural crops (515), animals (169) and empowerment of rural women (84). KVKs in Maharashtra assessed 310 technologies by organizing 3235 trials on fields crops, horticultural crops (2216), animals (509) and women empowerment (510).

During the year, KVKs conducted 9565 frontline demonstrations (FLDs) covering 2479 ha. Under oilseeds, 1080 FLDs were organized covering 439 ha. The major oilseed crops that were covered under demonstrations included groundnut, soybean, castor, sunflower, sesamum, niger and linseed. In case of pulses, KVKs organized 2176 demonstrations in 868 ha during kharif and rabi seasons. The major crops covered under pulses demonstrations are pigeonpea, chickpea, greengram, blackgram etc. Similarly, KVKs in Zone -V organized 3176 demonstrations in 1425 ha in cereals, millets, commercial crops, fodder and horticultural crops. KVKs also organized 748 demonstrations on improved tools and implements, 1547 demonstrations on livestock species and 829 demonstrations on empowerment of women.

Training is an important activity of KVK, which plays a pivotal role in enhancing the knowledge and capacity of farmers on various improved technologies. During the year, KVKs in Zone-V organized 4898 training programmes covering 126492 participants that include 92790 farmers, 21056 rural youth and 12646 extension functionaries.

KVKs in Andhra Pradesh organized 794 training courses with a participation of 23313 farmers including farm women, rural youth and extension functionaries, while the KVKs in Telangana conducted 623 courses for 22058

beneficiaries. KVKs in Maharashtra conducted 3481 courses for 77007 beneficiaries. The main thematic areas covered under training included 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 and soil health and fertility management.

KVKs in Zone-V also organized 445 sponsored training programmes covering 17939 farmers, farm women and rural youth. In order to facilitate entrepreneurship development, income generation and self-employment especially among rural youth and school dropouts, KVKs organized 303 vocational training programmes for 7794 beneficiaries. The important thematic areas included value addition, integrated crop management, poultry farming, nursery management and grafting, sheep and goat rearing etc.

To create awareness on improved agricultural technologies the KVKs of Zone-V organized 39317 extension activities covering 1832340 farmers, farm women 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 ghostis, etc. In order to accelerate rapid dissemination of information on improved farm technologies, KVKs in Zone V brought out 1677 publications. KVKs also supplied 6206 q of seed and 4770270 saplings of elite species of field and horticultural crops to farmers. KVKs also produced 2019 q of bio-fertilizers and 352 q of bio-pesticides and supplied to farmers.

KVKs also have undertaken soil and water testing to ascertain the soil nutrient status and also to make soil test based nutrient recommendations in the prevailing micro-farming situations in the district. A total of 236985 samples including soil (218533), water (17907), plant (385) and fertilizers/manures (160) were analyzed by the KVKs that benefited 203840 farmers belonging to 19805 villages in Andhra Pradesh, Telangana and Maharashtra.

A total of 183358 Soil Health Cards were distributed to farmers by KVKs in Andhra Pradesh (16786), Telangana (12595) and Maharashtra (153977). As part of World Soil Day celebrations on 5<sup>th</sup> December, 2015, nearly 16338 soil health cards were distributed to farmers by 36 Hon'ble Members of Parliament (MPs) and Members of Legislative Assembly (MLAs).

The Directorates of Extension Education of State Agricultural Universities and ATARI facilitate technological backstopping and Human Resource Development to the KVKs through training, seminars, workshop etc. A total of 61 HRD activities benefitting 2336 KVK staff in the Zone were jointly organized by the five directorates of extension and the ATARI. To facilitate direct access of farmers to institutional resources, ICAR established six Agricultural Technology Information Centers (ATICs) in Zone-V with the objective of single window delivery of various technology products. During the year a total of 156032 farmers visited the six ATICs to know the latest technology information and to obtain critical technology products viz. seed and planting material.

Technology Demonstration component of National Innovations in Climate Resilient Agriculture (NICRA) project in Zone V was implemented by 15 KVKs which demonstrated climate resilient agricultural technologies and practices across the three states. KVKs conducted 1461 demonstrations in Natural Resource Management (NRM), 1305 in crop production systems, 473 in livestock and fisheries production systems. About 1098 farmers assessed custom hiring centers for farm implements to adopt resilient practices in 1059 ha in adopted villages. Training programmes (248) were conducted to 7458 participants. Extension activities (630) were conducted covering 11767 farmers and 2763 farm women.

The project ARYA (Attracting and Retaining Youth in Agriculture) was implemented by three KVKs of the zone (Nellore, Nalgonda and Nagpur) with a budget outlay of Rs.26 lakhs during the year 2015-16. Each KVK identified enterprises based on the resources available and the market demand for a particular commodity. About 200 rural youth are to be imparted skill and entrepreneurship by each KVK which will facilitate establishment of agri-based enterprises by providing the requisite skills, project consultancy, critical inputs and market linkages. Some of the enterprises identified were vermicomposting, raising of vegetable and fruit nurseries, mushroom production, bakery units, mobile soil testing units, solar insect traps and Integrated farming system models.

Rabi Cluster Front Line Demonstrations on Pulses under NFSM were organized by 72 KVKs in Zone-V during Rabi (2015-16) comprising of Andhra Pradesh, Telangana and Maharashtra. A total of 2586 FLDs were conducted covering an area of 1069 ha. Similarly, 1205 cluster frontline demonstrations covering an area of 512 ha were conducted under NMOOP in oilseed crops by 31 KVKs during rabi season. Productivity of pulses and oilseeds realized in FLDs was higher than the district/ state averages indicating the scope for bridging the yield gap.

Thirty nine KVKs and ATARI, Hyderabad organized 54 awareness programmes on Protection of Plant Varieties and Farmers Rights Act (PPV&FRA) for 5740 farmers, extension personnel and scientists.

A number of extension activities were taken up during 2015-16 with the participation of all stakeholders including public representatives. A total of 62 KVKs organized pre-kharif and pre-rabi kisan sammelans creating awareness of agricultural technologies and ongoing government initiatives among 127156 farmers with the participation of 33 public representatives.

Awareness programme through farmers fair on Prime Ministers new flagship initiative on “Fasal Bheema Yojana” was taken up by 56 KVKs covering 34367 farmers in which 4 Union Ministers, 37 MPs, 18 MLAs and 3549 Government functionaries participated.

# CONTENTS

S.No.	Particulars	Page No.
	कार्यकारी सारांश	i
	<b>Executive Summary English</b>	iv
<b>1.</b>	<b>INTRODUCTION</b>	1
<b>2.</b>	<b>KRISHI VIGYAN KENDRAS</b>	3
	2.1 Status	3
	2.2 Staff	3
	2.3 Infrastructure	3
	2.4 Revolving Fund	4
	2.5 Scientific Advisory Committee	6
<b>3.</b>	<b>ACHIEVEMENTS</b>	7
	3.1 Technology Assessment	7
	3.1.1 Field crops	12
	Varietal evaluation	12
	Nutrient management	23
	Pest and disease management	27
	Weed management	32
	Cropping systems	34
	Integrated crop management	36
	3.1.2 Horticultural crops	38
	3.1.3 Improved tools and implements	56
	3.1.4 Livestock species	57
	3.1.5 Gender specific technologies	60
	3.2 Frontline Demonstrations	62
	3.2.1 Field crops	62
	Pulses	62
	Oilseeds	65
	Cereals	66
	Commercial crops	67
	Millets	67

S.No.	Particulars	Page No.
	3.2.2 Horticultural crops	68
	Vegetables	70
	Fruits	71
	Plantation crops	72
	Spices & Condiments	72
	Flowers	73
	3.2.3 Tools and Implements	74
	3.2.4 Livestock and other enterprises	76
	3.2.5 Gender specific technologies	78
	3.3 Training	80
	3.3.1 Sponsored Training	85
	3.3.2 Vocational Training	87
	3.4 Extension Activities	88
	3.5 Publications	97
	3.6 Critical Technology Products	97
	3.6.1 Seed and Planting Material	97
	3.6.2 Livestock Species	97
	3.6.3 Soil and water testing	100
	3.7 Rainwater Harvesting	101
	3.8 Technological backstopping	101
	3.9 Agricultural Technology Information Centre (ATIC)	102
	3.10 National Innovations in Climate Resilient Agriculture (NICRA)	103
	3.11 Attracting and Retraining Rural Youth in Agriculture (ARYA)	106
	3.12 Trial Sub Plan (TSP)	109
	3.13 Soil Health Cards	112
	3.14 Protection of Plant Varieties and Farmers Rights Act 2001 (PPVFRA)	113
	3.15 Cluster Frontline Demonstrations on Pulses under NFSN	114
	3.16 Cluster Frontline Demonstrations on Oilseeds under NMOOP	119
	3.17 Pradhan Mantri Fasal Bima Yojana (PMFBY)	123
	3.18 Kisan Sammelans	125
<b>4.</b>	<b>STAFF POSITION IN ZONAL PROJECT DIRECTORATE</b>	126
<b>5.</b>	<b>LIST OF KVKS IN ZONE V</b>	127

# 1. INTRODUCTION

## ICAR-Agricultural Technology Application Research Institute (ATARI)

A massive programme by the name “Lab to Land” was launched by the National Co-ordination committee during 1979-80, the golden jubilee year of ICAR for ensuring successful transfer of economically viable and socially acceptable technologies generated in the laboratories to farmers’ fields. To facilitate the implementation and monitoring of the Lab to Land programme, the country was divided into eight zones and Zonal Co-ordination units were established for each zone during the same year. 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. The unit was shifted to the campus of Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad during the year 1985 and it remained operational till 1986. It was later brought under the plan scheme of ICAR during the year 1986.

All the other ICAR supported Transfer of Technology Projects that were implemented in the zone 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 were brought under the umbrella of the Zonal Co-ordination unit during the year 1987. The additional responsibility of monitoring the Front Line Demonstrations (FLD) on oilseeds under Oilseeds Production Programme (OPP) and pulses under National Pulse Project (NPP), farm implements and cotton was entrusted with the ZC unit during the years 1990 and 1991. In 1995, a pilot project

on Institute Village Linkage Programme (IVLP) launched by the council for Technology Assessment and Refinement (TAR) was also implemented in the zone by the unit. 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 have also been monitored by the unit since then.

The X and XI Five Year Plan (FYP) period was marked by a phenomenal impetus in the establishment of new KVKs in Zone-V covering the states of Andhra Pradesh and Maharashtra. During XI FYP period, Council approved establishment of 97 new KVKs in the country which included 24 additional KVKs in geographically larger districts, 12 each in the states of Andhra Pradesh and Maharashtra. With the addition of several new KVKs in each zone, ICAR 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. It was in this year under report that another major change took place in the Division of Agricultural Extension, ICAR in terms of a change in the status of the ZPDs into Institutes with the mandate of Extension Research being added and the post of Zonal Project Director being upgraded to that of Director with effect from 2015. The ZPD is now redesignated as “Agricultural Technology Application Research Institute (ATARI).

## The ATARI has the following mandate

- Coordination and monitoring of technology application and Frontline Extension Education Programs
- Strengthening Agricultural Extension Research and Knowledge Management

The ICAR-ATARI, Hyderabad functions under the administrative control of Division of Agricultural Extension of ICAR headed by the Deputy Director General (Agricultural Extension). The ATARI is headed by the Director who is assisted by the Principal Scientists, Senior Scientists, technical, administrative and supporting staff. The requisite infrastructure for the smooth functioning of ATARI was built in the same premises as ICAR- Central Research Institute for Dryland Agriculture (CRIDA), Santoshnagar, Hyderabad.

## Krishi Vigyan Kendra

Krishi Vigyan Kendra (Agricultural Science Center) is a science/ technology-led, farmer-centric institution, established with the purpose of providing knowledge and skill training to the farmers, rural youth and field-level extension workers. Vocational training in agriculture and allied fields through KVK has become the need of the hour for ensuring livelihood security and enhancing farm income which is envisaged to be doubled by 2020. The farmers not only require knowledge and understanding of intricacies 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 with 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 also given the other responsibility of acting as knowledge and resource centre of agricultural and allied technologies. The use of ICT by KVKs has been substantial to provide necessary and timely information on weather, markets and solutions to various day to day problems faced by farmers.

### *The mandate of KVKs is*

- On-farm testing to assess the location specificity of agricultural technologies under various farming systems.
- Organize frontline demonstrations to establish production potential of technologies on the farmer's fields.
- Capacity development of farmers and extension personnel to update their knowledge and skills in frontier agricultural technologies and enterprises.
- Work as Knowledge and Resource Centre for improving overall agricultural economy in the operational area.



**Zonal Workshop cum Review Meeting of Cluster FLDs on Oilseeds and Pulses 4-5 March 2016**



**Zonal Workshop cum Training Programme on Cluster FLDs on Oilseeds and pulses, 21 – 22 December 2015**



## 2. KRISHI VIGYAN KENDRAS

### 2.1 Status

At present there are 78 KVKs in Zone-V which include 21 in Andhra Pradesh, 13 in Telangana and 44 in Maharashtra (Table 2.1). Of the 21 KVKs in Andhra Pradesh, 15 are with SAU, 2 with ICAR institutes and

4 are with Non-Governmental Organizations (NGO). In Telangana 8 KVKs are with SAUs, 1 with ICAR and 4 with NGOs. In Maharashtra, 16 KVKs are with SAUs, one with ICAR institute, 26 with NGOs and 1 with Open University.

**Table 2.1. Status of KVKs**

State	No. of districts	No. of KVKs				Total
		SAU	ICAR	NGO	Others	
Andhra Pradesh	13	15	2	4	-	21
Telangana	10	8	1	4	-	13
Maharashtra	33	16	1	26	1	44
<b>Total</b>	<b>56</b>	<b>39</b>	<b>4</b>	<b>34</b>	<b>1</b>	<b>78</b>

### 2.2 Staff

The details of staff position of KVKs in different states are given in Table 2.2. Out of 1248 posts sanctioned in the Zone, 970 are filled (78%). The Programme

Coordinators are in position at 57 KVKs in the Zone, while the number of Subject Matter Specialists in position is 364 (78%) and the filled number of Programme Assistants is 175 (75%).

**Table 2.2. Consolidated staff position**

Category	Andhra Pradesh			Telangana			Maharashtra			Total		
	S	F	V	S	F	V	S	F	V	S	F	V
Programme Coordinator	21	18	3	13	10	3	44	29	15	78	57	21
Subject Matter Specialist	126	91	35	78	61	17	264	212	52	468	364	104
Programme Assistant	63	48	15	39	30	9	132	97	35	234	175	59
Administrative Staff	42	31	11	26	20	6	88	69	19	156	120	36
Auxiliary Staff	42	32	10	26	18	8	88	70	18	156	120	36
Supporting Staff	42	36	6	26	21	5	88	77	11	156	134	22
<b>Total</b>	<b>336</b>	<b>256</b>	<b>80</b>	<b>208</b>	<b>160</b>	<b>48</b>	<b>704</b>	<b>554</b>	<b>150</b>	<b>1248</b>	<b>970</b>	<b>278</b>

S: Sanctioned ; F: Filled ; V: Vacant

### 2.3 Infrastructure

In order to facilitate proper functioning of KVKs, modest infrastructure is provided by ICAR. The details of land, buildings, vehicles and other facilities at KVKs

are presented in Table 2.3. The other infrastructure such as soil and water testing lab, rainwater harvesting structure and e-connectivity are provided to some selected KVKs, while the buildings and vehicles are provided to all the KVKs by ICAR.

**Table 2.3. Details of infrastructure available with KVKs**

Name	Andhra Pradesh	Telangana	Maharashtra	Total
<b>Land</b>				
10-20 ha	12	8	15	36
> 20 ha	9	5	29	43
<b>Admn. Building</b>				
Available	8	12	32	52
Under Progress	8	0	10	18
<b>Farmers Hostel</b>				
Available	9	13	32	54
Under Progress	8	0	10	18
<b>Staff Quarters</b>				
Available	11	6	27	44
Under Progress	6	4	0	10
<b>Demo Unit</b>	11	7	28	46
<b>Vehicles</b>				
Jeep	19	13	44	76
Tractor	19	13	44	76
<b>Soil &amp; Water Testing Lab</b>	11	7	30	48
<b>Rainwater Harvesting Structure</b>	0	1	11	12
<b>e-linkage (ernet)</b>	9	3	17	29

## 2.4 Revolving Fund

The total revolving fund generated by KVKs in the Zone stands at ₹ 1030.90 lakhs of which ₹ 267.10 lakhs is by KVKs in Andhra Pradesh, ₹ 114.36 lakhs is

by KVKs in Telangana and ₹ 649.44 lakhs is by KVKs in Maharashtra (Table 2.4).

**Table 2.4. Status of revolving fund (₹ in lakh)**

State	Balance on 31.3.2016
Andhra Pradesh	267.10
Telangana	114.36
Maharashtra	649.44
<b>Total</b>	<b>1030.90</b>

In Andhra Pradesh, KVK Krishna (Ghantasala) (₹ 47.38 lakh), KVK Kurnool (Yagantipalli) have the highest balance of revolving fund (₹ 31.20 lakh) followed by Srikakulam (₹ 25.71 lakh). In Telangana, KVK, Nalgonda (Kampasagar) has the highest balance of revolving fund (₹ 27.05 lakh) followed by KVK, Warangal (Malyal) (₹ 21.13 lakh) and

Nalgonda (Gadipalli) (₹ 20.66 lakh). In Maharashtra, KVK Amravati (Durgapur) has the highest balance of revolving fund (₹ 124.41 lakh) followed by Beed (Ambajogai) (₹ 59.06 lakh) and Ahmednagar (Babhaleshwar) (₹ 42.17 lakh). The KVK-wise fund position is presented in Table 2.5, 2.6 & 2.7.

**Table 2.5. Status of revolving fund in KVKs of Andhra Pradesh (₹ In lakh)**

KVK	Balance on 31.03.2016	KVK	Balance on 31.03.2016
Anantapur (Reddipalli)	8.44	Kurnool (Yagantipalli)	31.20
Anantapur (Kalyandurg)	2.04	Kurnool (Banavasi)	11.05
Chittoor (RASS)	21.67	Nellore	15.35
Chittoor (Kalikiri)	3.52	Prakasam (Darsi)	8.21
East Godavari (Kalvacherla)	3.29	Prakasam (Kandukur)	
East Godavari (Pandirimamidi)	11.04	Srikakulam	25.71
Guntur		Vishakapatnam	20.32
Guntur (Lam)	2.19	Vizianagaram	12.15
Kadapa	14.32	West Godavari (Undi)	6.45
Krishna (Garikapadu)	12.14	West Godavari (VRGudem)	10.63
Krishna (Ghantasala)	47.38	<b>Total</b>	<b>267.10</b>

**Table 2.6. Status of revolving fund in KVKs of Telangana (₹ In lakh)**

KVK	Balance on 31.03.2016	KVK	Balance on 31.03.2016
Adilabad	4.06	Nalgonda (Gaddipalli)	20.66
Karimnagar (Jammikunta)	7.72	Nalgonda (Kampasagar)	27.05
Karimnagar (Ramagirikhilla)	1.24	Nizamabad	6.86
Khammam	15.44	Ranga Reddy	0.00
Mahaboobnagar (Madanapuram)	2.12	Warangal (Malyal)	21.13
Mahaboobnagar (Palem)	2.98	Warangal (Mamnoor)	2.38
Medak	2.72	<b>Total</b>	<b>114.36</b>

**Table 2.7. Status of revolving fund in KVKs of Maharashtra (₹ In lakh)**

KVK	Balance on 31.03.2016	KVK	Balance on 31.03.2016
Ahmednagar (Babhaleshwar)	42.17	Nagpur	5.00
Ahmednagar (Dhahigaon)	3.86	Nanded (Pokharni)	4.56
Akola	5.82	Nanded(Sagroli)	3.78
Amaravati (Durgapur)	124.41	Nandurbar	8.06
Amaravati (Ghatkhed)	4.49	Nashik (YCMOU)	18.46
Aurangabad	19.71	Nashik(Malegaon)	0.57
Aurangabad (MGM Gandheli)	0.57	Osmanabad	11.61
Beed (Ambajogai)	59.06	Parbhani	1.16

KVK	Balance on 31.03.2016	KVK	Balance on 31.03.2016
Beed (Khamgaon)	0.92	Pune (Baramati)	0.66
Bhandara	29.98	Pune (Narayanagaon)	13.89
Buldana (Jalgaon Jamod)	31.68	Raigadh	11.84
Buldana (PDKV)	1.99	Ratnagiri	7.31
Chandrapur	7.16	Sangli	1.16
Dhule	3.83	Satara (Karad)	7.44
Gadchiroli	17.17	Satara(Borgaon)	0.71
Gondia	19.37	Sindhudurg	9.90
Hingoli	2.97	Solapur (Khed)	11.09
Jalgaon (Pal)	30.66	Solapur(Mohol)	3.47
Jalgaon(Mamurabad)	9.62	Thane	23.30
Jalna	5.81	Wardha	16.76
Kolhapur	4.84	Washim	10.09
Latur	30.37	Yavatmal	22.16
		<b>Total</b>	<b>649.44</b>

## 2.5 Scientific Advisory Committee (SAC) Meetings

The number of SAC meetings conducted by KVKs in the three states is given in Table 2.8. A total of 66 SAC meetings were conducted by KVKs.

**Table 2.8. Details of SAC meeting conducted in Zone-V**

State	No. of KVKs	SAC Meetings conducted by KVKs
Andhra Pradesh	21	16
Telangana	13	10
Maharashtra	44	40
<b>Total</b>	<b>78</b>	<b>66</b>



SAC Meeting , KVK,Beed (khamgaon)



SAC Meeting, KVK Prakasam (Darsi)

## 3. ACHIEVEMENTS

### 3.1. Technology Assessment

During the year, KVKs have assessed 583 technologies at different locations by laying out 4897 on-farm trials on farmers' fields (Table 3.1). Out of these 437 technologies were related to crops followed by animals (93) and women empowerment (53).

The details of thematic area-wise on-farm trials conducted by KVKs in Andhra Pradesh, Telangana and Maharashtra are furnished in Table 3.2. The main thematic areas covered in case of animals are Breed Evaluation, Breed Improvement, Disease Management, Feed and Nutrition Management, Integrated Farming Systems and Production & Management. In case of crops, the thematic areas include Varietal Evaluation, Cropping Systems, Integrated Disease Management, Integrated Pest Management, Integrated Nutrient Management, Integrated Weed Management, Integrated Crop Management, Resource Conservation technologies, Farm Machinery and Equipment. Under

empowerment of rural women, on-farm trials were conducted in thematic areas viz., drudgery reduction, health and nutrition, value addition and entrepreneurship development.

KVKs in Andhra Pradesh assessed the suitability of 152 technologies by conducting 894 on-farm trials covering animals (109), crops including horticultural species (752) and empowerment of rural women (33).

In Telangana, KVKs assessed the suitability of 121 technologies by conducting 768 on-farm trials covering animals (169), crops including horticultural species (515) and empowerment of rural women (84).

In case of Maharashtra, KVKs assessed 310 technologies by organizing 3235 trials that include animals (509), crops including horticultural species (2216) and women empowerment (510).



**Wheat variety Phule Samadhan**

**Table 3.1. Details of technologies assessed by KVKs**

Category	No.of Technologies	No. of Trials	No.of KVKs
<b>Andhra Pradesh</b>			
Crops	125	752	19
Animals	24	109	11
Women Empowerment	3	33	2
<b>Sub Total</b>	<b>152</b>	<b>894</b>	
<b>Telangana</b>			
Crops	88	515	13
Animals	20	169	7
Women Empowerment	13	84	8
<b>Sub Total</b>	<b>121</b>	<b>768</b>	
<b>Maharashtra</b>			
Crops	224	2216	43
Animals	49	509	25
Women Empowerment	37	510	24
<b>Sub Total</b>	<b>310</b>	<b>3235</b>	
<b>Zone V</b>			
Crops	437	3483	75
Animals	93	787	53
Women Empowerment	53	627	34
<b>Total</b>	<b>583</b>	<b>4897</b>	



**Castsor variety DCS 107, KVK Rangareddy**



**Black Bengal goat, KVK East Godavari (Pandirimamidi)**

**Table 3.2. Details of thematic area-wise technologies assessed by KVKs**

Thematic Area	No.of technologies	No. of trials	No.of KVKs
<b>Crops</b>			
Varietal Evaluation	114	883	62
Cropping Systems	25	178	20
Integrated Disease Management	29	208	23
Integrated Pest Management	78	658	46
Integrated Nutrient Management	81	665	52
Integrated Weed Management	24	194	23
Integrated Crop Management	49	419	39
Resource Conservation Technology	7	38	4
Farm Machinery and Equipment	27	210	20
Post Harvest Technology	3	30	3
<b>Sub Total</b>	437	3483	
<b>Animals</b>			
Breed Evaluation	20	161	20
Breed Improvement	2	8	2
Disease Management	15	139	13
Feed and Nutrition Management	45	439	30
Integrated Farming Systems	3	5	2
Production & Management	8	35	7
<b>Sub Total</b>	93	787	
<b>Women Empowerment</b>			
Drudgery Reduction	29	357	25
Entrepreneurship Development	1	10	1
Health and Nutrition	17	198	15
Value Addition	6	62	5
<b>Sub Total</b>	53	627	
<b>GrandTotal</b>	583	4897	

**Table 3.3. Details of thematic area wise assessment of technologies in Andhra Pradesh**

Thematic Areas	No.of technologies	No. of trials	No.of KVKs
<b>Crops</b>			
Varietal Evaluation	48	296	24
Cropping Systems	9	45	6
Integrated Disease Management	11	62	8
Integrated Pest Management	15	108	9
Integrated Nutrient Management	24	118	15
Integrated Weed Management	8	44	8
Integrated Crop Management	7	58	5
Farm Machinery and Equipment	3	21	3
<b>Sub Total</b>	<b>125</b>	<b>752</b>	
<b>Animals</b>			
Breed Evaluation	4	32	4
Breed Improvement	1	3	1
Disease Management	5	21	4
Feed and Nutrition Management	8	35	5
Integrated Farming Systems	2	2	1
Production & Management	4	16	3
<b>Sub Total</b>	<b>24</b>	<b>109</b>	
<b>Women Empowerment</b>			
Drudgery Reduction	3	33	2
<b>Total</b>	<b>152</b>	<b>894</b>	

**Table 3.4. Details of thematic area-wise assessment of technologies in Telangana**

Thematic Area	No.of technologies	No. of trials	No.of KVKs
<b>Crops</b>			
Varietal Evaluation	22	159	11
Cropping Systems	7	30	5
Integrated Disease Management	9	59	7
Integrated Pest Management	25	134	12
Integrated Nutrient Management	8	43	6
Integrated Weed Management	5	27	5
Integrated Crop Management	5	18	5
Resource Conservation Technology	5	25	2
Farm Machinery and Equipment	2	20	2
<b>Sub Total</b>	<b>88</b>	<b>515</b>	
<b>Animals</b>			
Breed Evaluation	6	49	6
Disease Management	3	28	2
Feed and Nutrition Management	7	83	3
Integrated Farming Systems	1	3	1
Production & Management	3	6	3
<b>Sub Total</b>	<b>20</b>	<b>169</b>	
Drudgery Reduction	9	62	8
Health and Nutrition	4	22	3
<b>Sub Total</b>	<b>13</b>	<b>84</b>	
<b>Grand Total</b>	<b>121</b>	<b>768</b>	



**Table 3.5. Details of thematic area-wise assessment of technologies in Maharashtra**

Thematic Areas	No.of technologies	No. of trials	No.of KVKs
<b>Crops</b>			
Varietal Evaluation	44	428	27
Cropping Systems	9	103	9
Integrated Disease Management	9	87	8
Integrated Pest Management	38	416	25
Integrated Nutrient Management	49	504	31
Integrated Weed Management	11	123	10
Integrated Crop Management	37	343	29
Resource Conservation Technology	2	13	2
Farm Machinery and Equipment	22	169	15
Post Harvest Technology	3	30	3
<b>Sub Total</b>	<b>224</b>	<b>2216</b>	
<b>Animals</b>			
Breed Evaluation	10	80	10
Breed Improvement	1	5	1
Disease Management	7	90	7
Feed and Nutrition Management	30	321	22
Production & Management	1	13	1
<b>Sub Total</b>	<b>49</b>	<b>509</b>	
<b>Women Empowerment</b>			
Drudgery Reduction	17	262	15
Entrepreneurship Development	1	10	1
Health and Nutrition	13	176	12
Value Addition	6	62	5
<b>Sub Total</b>	<b>37</b>	<b>510</b>	
<b>Grand Total</b>	<b>310</b>	<b>3235</b>	

## PERFORMANCE OF TECHNOLOGIES

### 3.1.1 FIELD CROPS

#### Varietal Evaluation

##### High yielding Rice varieties RNR 15048 and NDLR-7

Improved rice variety, RNR 15048 was evaluated by KVK Chittoor (RASS) while KVK Kurnool (Banavasi) evaluated NDLR-7. RNR 15048 gave higher yield (7125 kg/ha) and net returns when compared with locally dominant BPT-5204 in Chittoor district. Similarly NDLR-7 performed better than BPT-

5204 in Kurnool district. Farmers were satisfied with the improved varieties as they are comparable in all characters with that of the locally dominant BPT-5204. Net income and B:C ratio was also comparatively higher with the technology demonstrated.

##### KVK Chittoor RASS

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs./ha)	B:C Ratio
RNR 15048	10	7125	54815	2.09
Farmers' practice: BPT 5204		6600	44564	1.85

##### KVK Kurnool (Banavasi)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs./ha)	B:C Ratio
NDLR-7	5	7000	38300	1.77
Farmers' practice : BPT-5204		6400	30800	1.60



Rice variety RNR 15048, KVK Chittoor RASS



Rice variety NDLR-7, KVK Kurnool (Banavasi)

### Blast resistant and high yielding Rice variety NLR-34449

The ruling rice variety of Anantapur district, BPT-5204 is susceptible to Brown Plant Hopper, gallmidge, sheath blight, Bacterial Leaf Blight, blast and stem borer. This is leading to pest infestation and reduced yields. To overcome this problem, KVK Anantapur

(Kalyandurg) took a varietal trial with NLR-34449, which is a high yielder, having short duration and tolerance to blast. NLR-34449 has shown 14% increase in grain yield (3930kg/ha) with higher number of tillers when compared to BPT-5204. No blast symptoms were observed.

#### Anantapur (Kalyandurg)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs./ha)	B:C Ratio
Blast resistant and high yielding NLR-34449	2	3930	22628	1.47
Farmers' practice : BPT-5204		3450	14036	1.29

### Karjat 8: Blast resistant rice variety

For management of blast disease in rice, newly evolved resistant variety, Karjal 8 was tested by KVK, Sindhudurg and KVK, Thane against existing variety massoorie. The new variety was free from blast disease compared to 16.5% disease incidence in the check in

Sindhudurg district. An additional yield of 860 kg/ha and additional net returns of Rs.6755/ha was obtained. In Thane, Kajrat variety recorded higher yield of 10.17 q/ha over local variety.

#### KVK Sindhudurg

Technology Assessed	No. of Trails	Yield (Kg/Ha)	Net Returns (Rs. / ha)	B:C Ratio
Cultivation of moderately resistant variety Karjat-8	10	3980	10085	1.27
Farmers' practice: Cultivation of variety Masoorie		3120	3330	1.09



Rice variety Karjat 8, KVK, Sindhudurg

**KVK Thane**

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Karjat-9	05	33.83	9742	1.18
Farmers' practice : local variety		44.00	- 2851	0.94

**Rice variety RGL 11226**

RGL 11226 was evaluated against RGL 2537 for yield performance in irrigated situation. RGL-11226

performed well with 60.5q/ha yield over local variety (54.75q/ha).

**KVK Visakhapatnam**

Technology Assessed	No. of trials	Production ( kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
RGL 11226	5	6050	44783	1.97
Farmers' practice: RGL 2537		5475	37500	1.84

**Performance of wheat variety Netravati**

KVK Nandurbar assessed the performance of wheat variety Netravati under protective irrigation conditions. Netravati performed better than the farmer's variety

by giving higher yield and income. Yield obtained was 12.34 q/ha with Netravati while farmers' variety LOK 1 gave 10.16 q/ha. Net returns and B:C ratio were also higher.

**KVK Nandurbar**

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Wheat variety- Netravati	8	12.34	16648	1:2.59
Farmers' practice : LOK-1		10.16	12452	1:2.25

**Wheat variety HI- 8663**

KVK Buldhana (ARS) assessed the performance of wheat variety HI-8663 at 13 locations.

The variety HI-8663 performed better than the farmers' variety LOK- 1 in terms of yield and net

Technology Assessed	No. of trails	Production (kg/ha) <sup>income</sup>	Net Returns (Rs/ha)	BC Ratio
HI- 8663	13	2830	23018	1.77
Farmers' practice : LOK-1		2371	16250	1.58

**Wheat Variety NIAW-1994 (Phule Samadhan)**

Low yield of wheat in sugarcane based cropping system is mainly due to late sowing. KVK, Pune (Baramati) assessed of early maturing high yielding

wheat variety NIAW -1994 for late sown conditions. Phule Samadhan performed better and gave a grain yield of 3131kg/ha and net returns of Rs. 47706 per ha.

**KVK Pune (Baramati)**

Technology Assessed	No. of trails	Production (kg/ha)	Net Returns (Rs/ha)	BC Ratio
Variety NIAW-1994	7	3131	47706	3.09
Farmers' practice : LOK-1		2569	37710	2.87

**Assessment of Sorghum Variety CSV-31**

Sorghum variety CSV-31 was assessed at KVK (Mahaboobnagar, YFA). CSV-31 was tolerant to grey

grain mould and was superior yielder than local variety (Tella jonna) with higher net returns.

**KVK Mahaboobnagar (YFA)**

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs./ha)	B:C Ratio
CSV-31	5	9.97	15636	1.71
Farmers' practice : Tella Jonna		7.31	6700	1.32

**Fingermillet variety SCN-6**

KVK, Sindhurg tested newly released variety of fingermillet SCN-6 developed by Dr.BSKKV, Dapoli

against existing variety Dapoli-1 during *kharif* 2015-16. The variety SCN-6 gave an additional yield of 247 kg/ha and additional returns of Rs.5850/ha.

**KVK Sindhurg**

Technology Assessed	No. of Trails	Yield (Kg/Ha)	Net Returns (Rs. / ha)	B:C Ratio
Fingermillet variety SCN-6	17	1895	Rs.11,567	1.33
Farmers' practice: Dapoli 1		1648	Rs. 5717	1.16



Fingermillet variety SCN-6, KVK, Sindhurg

### Pearl millet Hybrid PHB-3

The performance of latest Pearl millet hybrid PHB-3 was tested against existing variety ICTP 8203 by KVK, Ranga Reddy. The hybrid performed well under drought conditions and gave an additional yield of 1600 kg/ha and increased returns. No incidence of downey mildew was noticed.



Pearl millet hybrid PHB-3, KVK Ranga Reddy

### KVK Ranga Reddy

Technology Assessed	No. of trials	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Pearl millet hybrid PHB-3	5	2650	22605	2.65
Farmers' practice- Local mixed variety/composite (ICTP 8203)		1050	685	1.05

### Pigeonpea varieties LRG-52, PRG-176 and BSMR-736

The leading Pigeonpea variety grown in many parts of Andhra Pradesh and Telangana (LRG -41), is prone to terminal moisture stress leading to crop failures and loss to farmers. As an alternative, KVK, Prakasam (Darsi) evaluated short duration pigeonpea variety (LRG-52) (140 days) which escapes terminal moisture stress. Results revealed that LRG-52 variety matured 10-15 days earlier than the farmers' variety (LRG-41) and gave 22 percent higher yield. Yield of LRG 52 was 1375 kg/ha while LRG 41 gave 1125 kg/ha. Net income and B:C ratio were also higher. Another

Drought resistant variety of pigeonpea (PRG-176) was assessed by KVK Kampasagar (Nalgonda) and KVK Mahaboobnagar (Madanapuram). The improved variety PRG-176 performed better in both the districts. The additional yield advantage with PRG-176 was 480 kg/ha at Nalgonda and 465kg/ha at Mahaboobnagar. In another trial, KVK Medak assessed the performance of BSMR-736 in Medak district. This variety also outperformed the farmers' variety and gave higher yield and net returns when compared with farmers' variety.



Pigeonpea variety LRG-52, KVK Prakasam (Darsi)



Pigeonpea variety PRG-176, KVK Mahaboobnagar (Madanapuram)

**KVK Prakasam (Darsi)**

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
High yielding variety LGR-52	5	1375	87750	3.90
Farmers' practice : LGR-41		1125	67750	3.04

**KVK Nalgonda (kampusagar)**

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
PRG-176	5	1690	137610	6.45
Farmers' practice : LRG-41		1210	92890	4.45

**KVK Mahaboobnagar (Madanapuram)**

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
PRG-176	10	16.5	168250	6.80
Farmers' practice : Pinky		11.85	112990	4.80

**KVK Medak**

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
BSMR-736	10	636	31391	2.60
Farmers' practice : Yerra kandi		460	17155	1.80

**Blackgram varieties tolerant to YMV diseases**

In Kurnool and Kadapa districts, the major diseases of Blackgram, occurring regularly are YMV, powdery mildew and leaf spot, which can cause more than 50% damage in severe cases. YMV resistant blackgram varieties (PU31 and MASH 338) were evaluated by KVK Kurnool (Y) while KVK Kadapa evaluated high yielding, YMV resistant PU-31 and TBG 104 varieties. Incidence of YMV was very less both in PU31 and MASH 338 compared to LBG 752 in

Kurnool district. PU 31 recorded highest yield and net income when compared to MASH – 338 and LBG 752. In Kadapa district both the varieties PU-31 and TBG 104 performed better by withstanding the YMV disease and gave higher yield when compared to LBG 752. Though PU 31 recorded higher yield (6.08 q/ha) than TBG-104 (5.82 q/ha) net returns was less due to lower price. Net return and B:C ratio were higher with TBG-104.

### KVK Kurnool (Yagantipalli)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs./ha)	B:C Ratio
PU 31	5	1860	136040	4.51
MASH - 338		1715	122410	4.15
Farmers' practice: LBG 752		1585	110190	3.84

### KVK Kadapa

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs./ha)	B:C Ratio
PU-31	5	608	37788	1:1.49
TBG-104		582	41488	1:1.60
Farmers' practice: LBG-752		333	14737	1:0.74

### Horsegram variety ATPHG-11

Horse gram is cultivated in a sizable area in the western region of Chittoor district. Farmers in this area cultivate local varieties which are poor yielders. KVK Chittoor (Kalikiri) introduced horsegram variety, ATPHG-11 at

5 locations. Results showed that the variety recorded an average yield of 450 kg/ha, which is 33% higher than the local variety (338kg/ha). Net income and B:C ratio were also higher.

### KVK Chittoor (Kalikiri)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs./ha)	B:C Ratio
ATPHG - 11	5	450	4550	1.7
Farmers' practice: Local		338	1850	1.2



Blackgram variety PU 31, Kurnool (Yagantipalli)



Horsegram variety ATPHG-11, KVK Chittoor (Kalikiri)



### Improved soybean varieties MAUS-162 MAUS-71

Performance of latest improved varieties of soybean MAUS-162 and MAUS-71 were tested against variety JS-9560. The variety MAUS-162 which is suitable for mechanical harvest gave highest yield of 1535 kg/ha

and MAUS-71 gave the yield of 1140 kg/ha which in 107 & 54 % increased yield over variety JS-9560 under drought conditions.

### KVK Beed (Ambajogai)

Technology Assessed	No. of Trails	Yield (Kg/Ha)	Net Returns (Rs./ha)	B:C Ratio
Varieties MAUS-162	5	1535	31225	7.4
Varieties MAUS-71		1140	17400	11.4
Farmers' practice: Variety JS-9560		740	3400	15.35



Soybean Varieties MAUS-71 and MAUS-162, KVK, Beed (Ambajogai)

### Soybean variety MAUS-158 & DS 228

Performance of MAUS-158 variety of soybean was assessed at KVK Buldhna (JJ) at 15 locations and DS 228 by KVK, Buldhana (ARS) at 13 locations. The

varieties performed better with higher yield and net income than the farmers' variety JS-335. At KVK Buldhana (ARS), the variety DS-228 recorded higher yields of 154 kg/ha over farmer's variety.

Technology Assessed	No. of trails	Production (kg/ha)	Net Returns (Rs/ha)	BC Ratio
<b>Buldhana (Jalgoan Jamod)</b>				
MAUS-158	15	1219	7720	1.24
Farmers' practice: JS-335		1083	4364	1.14
<b>KVK Buldhana (ARS)</b>				
DS-228	13	1202	6125	1.18
Farmers' practice: JS- 335		1048	4321	1.07

### Improved Groundnut varieties Kadiri-9 and LGN-1

High yielding recently released variety groundnut Kadri 9, was assessed by KVK, Khammam. Kadri 9

performed better than farmers' variety (Kadri 6) at all locations tested by giving higher yield and income.

#### Khammam

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Kadiri – 9	5	2592	87526	2.76
Farmers' practice: Kadiri – 6		2242	68976	2.38

#### Osmanabad

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs /ha)	B:C Ratio
LGN-1	2	3.0	11000	2.1
Farmers' practice: local variety		2.5	7500	1.75

### Caster variety PCH-111

KVK Kurnool (Banavasi) evaluated PCH-111, a wilt resistant castor variety at 5 locations. PCH-111 was found to be wilt tolerant with more auxiliary branching resulting in more number of spikes. PCH-111 yielded

about 100 kg higher yield per ha when compared with the farmers variety. Net income and B:C ratio were also comparatively high with the technology demonstrated.

#### KVK Kurnool (Banavasi)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Return (Rs./ha)	B:C Ratio
PCH-111	5	700	2600	1.12
Farmers' practice: local variety		602	-3634	0.84

### High yielding, wilt tolerant Castor variety DCS-107

The performance of latest wilt tolerant Castor variety DCS-107 was assessed against existing DCS-9 (Jyothi) variety under rainfed situation during *kharif*

2015-16 in Rangareddy district of Telangana. The variety performed better with increased yield of 520 kg/ha under drought conditions.

#### KVK Ranga Reddy

Technology Assessed	No. of trials	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Castor Variety DCS-107	5	1045	24000	2.34
Farmers' practice: Jyothi		525	4000	1.23

### Sugarcane variety 2003 T-121

The sugarcane variety (93V297) cultivated by the farmers of Chittoor district is highly susceptible to red rot disease leading to very low yields. Sugarcane variety 2003 T-121 is of non-flowering nature and resistant to red rot. KVK Chittoor (Kalikiri) evaluated this variety at 5 locations, and recorded an average yield of 90.75t/ha which is 9.5% higher than farmers' variety (83t/ha).



Sugarcane variety 2003 T-121, KVK Chittoor (Kalikiri)

### KVK Chittoor (Kalikiri)

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
2003 T-121	5	90.75	97875	1.78
Farmers' practice: 93 V 297		83.0	80625	1.6

### Fodder varieties CO-4 and Phule Jayavanth (RBN-13)

There is about 5.0 lack tonnes of green fodder deficit in Anantapur district resulting in sever demand and supply mismatch. Introduction and evaluation of high yielding fodder varieties CO-4 and Phule Jayavanth (RBN-13) against locally existing APBN-1 was taken

up by KVK, Anantapur (Kalyandurg) at 3 locations. Results showed that the fodder variety CO-4 recorded highest yield (125.5 t/ha/year) followed by Phule Jayavant (119.0 t/ha/year). farmers' variety yielded only 107.5 t/ha/year.

### KVK Anantapur (Kalyandurg)

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
CO-4	3	118.5	8540	1.86
Phule Jayavanth (RBN-13)		110.5	8360	1.64
Farmers' practice: APBN-1		101.5	5170	1.12

### Improved fodder variety DNH 6

KVK, Osmanabad assessed the performance of improved fodder variety DNH 6 at 10 locations. It was observed that both DNH-6 and Phule Jaywant

yielded > 200 t/ha. However, DHN-6 is a perennial grass which is more juicy, more sweet and devoid of hair on leaf and gives 8 cuts in a year.

### KVK Osmanabad

Technology Assessed	No. of trials	Yields (t/ha)	B:C Ratio
Improved fodder variety DHN.6	10	235	2.3:1
Farmers' Practice: Jaywant		200	1.7:1

### Performance of FC1 x FC2 bivoltine double hybrid of Silkworm

Yield and cocoon quality of bivoltine single hybrids of Silkworm is poor resulting in less income. KVK Chittoor (RASS) tested the suitability of FC1 x FC2 bivoltine double hybrid of Silkworm at 6 locations. bivoltine double hybrid gave higher yield (75

kg/100 DFLs) when compared with bivoltine single hybrids (60 kg/100 DFLs). Better crop stability and productivity of double hybrids in all seasons led to better acceptance by farmer. Net returns and B:C ratio were also higher.

### KVK Chittoor RASS

Technology Assessed	No. of trails	Yield (kg/100 DFLs)	Net Returns (Rs. / ha)	B:C Ratio
FC1 X FC2 bivoltine double hybrid	6	75	28800	2.9
Farmers' practice : bivoltine single hybrids		60	21600	2.0



FC1 x FC2 bivoltine double hybrid Silkworm, KVK Chittoor RASS

## Nutrient Management

### Liquid Bio-fertilizer in Rice

Liquid bio-fertilizer was assessed for its efficacy in rice along with 25% reductions in dose of recommended fertilizers against recommended dose and farmers' practice with an objective of reducing

cost of cultivation and to enhance the yields. There was only a marginal increase in yield in the treatment with bio-fertilizers compared to recommended dose of fertilizers.

### KVK Vizianagaram

Technology Assessed	No. of trials	Production (kg /ha)	Net Returns (Rs. /ha)	B:C Ratio
Liquid bio-fertilizer + 25% reduction in recommended dose of N & P fertilizers	5	5560	29650	0.73
Recommended dose: 32-24-20 kg NPK/ acre		5360	28150	0.69
Farmer practice: 40-15-15 kg NPK/ acre		4920	20500	0.46

### Application of potash @ 40 kg/ha in rainfed Chickpea for higher production

In Maharashtra, chickpea is cultivated as a major pulse crop under rainfed conditions. Imbalance in nutrient status in plant due to low availability and uptake of soil applied fertilizers and low or no use of Potash fertilizers is one of the reasons for low yields. KVK, Akola and KVK, Amaravati (Ghatkhed) evaluated the technology of application of potash @ 40 kg/ha

in rainfed chickpea at 13 locations. Application of Potash increased the yield up chickpea by 16.20 % when compared with no use of Potash at KVK Akola. At KVK, Amaravati higher yield (23.95 q/ha) was obtained when Potash 40 kg/ha was applied along with recommended dose of N and P as compared to the farmers' practice ( 19.90 q/ha).



Rice field applied with Liquid fertilizers, KVK Vizianagaram



Application of potash to chickpea, KVK Akola

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
<b>KVK Akola</b>				
Application of Potash @ 40 kg/ha	13	1671	43145	2.81
Farmers' practice: No use of Potash		1438	35830	2.47
<b>KVK Amaravati (Ghatkhed)</b>				
Application of Potash 40 kg/ha with Recommended dose of N and P	13	23.90	59365	4.29
Farmers' practice: No use of potash		19.10	81175	3.72

**Foliar application of Potassium Nitrate and DAP in Chickpea**

KVK, Kolhapur assessed effected of foliar application of Potassium Nitrate (1%) and DAP (2%) on chickpea at 11 locations. This resulted in good pod filling and

increase in grain weight and yield of gram. Average gram yield increase was 7.6 percent when compared with farmers' practice.

**KVK Kolhapur**

Technology Assessed	No. of Trails	Yield (kg/ha)	Net Returns (Rs./ha)	B:C Ratio
Application of 25 Kg N, 50 Kg P and 5 MT FYM / ha plus application of 1% Potassium Nitrate at 30 DAS and 2% DAP spraying at 45 DAS	11	1578	37547	2.12
Farmers' practice: application of 25 Kg N, 50 Kg P and 5 MT FYM/Ha.		1467	33556	2.03



Foliar application of Potassium Nitrate and DAP in Chick pea, KVK Kolhapur

### Nutrient management in groundnut based on STCR equation

Groundnut yields are declining due to conventional blanket and imbalanced usage of fertilizers. Soil test based nutrient application helps to realize higher response ratio and benefit: cost ratio as the nutrients are applied in proportion to the magnitude of the deficiency of a particular nutrient. Correction of the nutrient imbalances in soil helps to harness the synergistic effects of balanced fertilization. Fertilizer application based on quantitative approaches such as Soil Test Crop Response (STCR) can assist in improving yields and nutrient use efficiency in groundnut. The trail conducted on nutrient management in groundnut based on STCR equation indicated that the production cost can be reduced without compromising on yield. Though there was no significant difference in yield, the technology tested reduced the production cost by

Rs. 8100 per ha. This resulted in higher net income and benefit cost ratio with the technology tested when compared with the farmers' practice.



Nutrient management in groundnut, KVK Kurnool (Yagantipalli)

### Kurnool (Yagantipalli)

Technology Assessed	No. of trails	Yield (kg/ha)	Cost of production (Rs./ha)	Net Returns (Rs. / ha)	B:C Ratio
STCR	5	3802	46860	86196	2.84
Farmers' practice:		3778	54960	77270	2.41

### Micronutrient spray in Rabi Groundnut

Micronutrient deficiency is common in groundnut growing areas. Farmers go for the basal application of major nutrients like nitrogen, phosphorus and potassium. The practice of micro nutrient application is not common. KVK Anantapur (Kalyandurg) conducted a trial on application of micro nutrient

spray (Formula-4) @1.25 kg/ha at 30 and 60 DAS to the groundnut crop. Spraying of micronutrients gave 6.5% higher pod yield and 5.6% haulm yield compared to control. Net income and B:C ratio were higher with the technology assessed.

### KVK Anantapur (Kalyandurg)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. /ha)	B:C Ratio
Application of micronutrients (Formula-4) @ 1.25 kg/ha at 30 and 60 DAS	5	2444	83684	2.46
Farmers' practice: No application of Micronutrient		2294	72269	2.20

### Potash application to Soybean

KVK Washim has assessed the application of 30 kg potash (K<sub>2</sub>O) to soybean crop against the normal practice of farmers of only applying 30 kg N + 75 kg P in deep black soils. It was observed that 22.75% increased in yield in the treated plot with an additional net returns of Rs.11529/ha.



Potash application to soybean, KVK Washim

### KVK Washim

Technology Assessed	No. of Trails	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Application of 30 Kg N + 75 Kg P + 30 Kg K	14	2050	37558	2.16
Farmers' practice : Application of 30 Kg N+75 Kg P		1670	26029	1.85

### Nutrient Management in Cotton

Soil test based fertilizer application in cotton was assessed by KVK Nalgonda (Gaddipalli) at 5 locations. This technology reduced the cost of fertilizer by

Rs.500/ha with additional net income of Rs. 3370/ha and gave higher BC ratio.

### KVK Nalgonda (Gaddipalli)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Soil test based fertilizer application NPK (150:60:75)	5	2960	65460	2.34
Farmers' practice: NPK 176:86:75		2840	62090	2.31

### Soil test based nutrient management in sugarcane:

Soil test based nutrient management in sugar cane led to reduced cost of cultivation and enhanced productivity (11 t per ha) with a favourable BC ratio.

### KVK Visakhapatnam

Technology Assessed	No. of trials	Production (t/ha)	Net Returns (Rs. /ha)	B:C Ratio
Soil test based nutrient application (140N-100P-150K Kg/ha)	3	63	50704	1.7
Farmers' practice: 288N-58P-38K kg/ha		52	36500	1.5



## Pest and Disease Management

### Integrated management of BPH in Rice

KVK Warangal (Mamnoon) assessed the performance of integrated management of BPH in rice. This practice included, i) Seedling root dip with chlorpyrifos 0.02%, ii) Formation of alleys or pathways of 20 cm width for every 2 meters of planting to facilitate aeration, light, basal spraying, monitoring and other farm operations, iii) Avoiding of excessive doses of

nitrogen, iv) Draining the field during the middle of the season to suppress pest population, v) ETL based spraying of buprofezin @ 1.6 ml/l or acephate @ 1.5 g/l + dichlorvos @ 1 ml/l. This practice led to an increase of 12.1 % yield over farmers' practice by controlling the pest effectively.

### KVK Warangal (Mamnoon)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Technology assessed: Integrated management of BPH	3	52.56	65700	1.8
Farmers' practice: Spraying of acephate @ 1.5 g/l		46.85	58526	1.6

### Management of stem rot in rice

Management of stem rot caused by *Sclerotium oryzae* in rice was assessed by KVK Mahaboobnagar (Madanapuram). The improved practice of spraying

Validamycin @2ml/l and Propiconazole @ 2 ml/l not only reduced the incidence of stem rot but also improved the yields.

### KVK Mahaboobnagar (Madanapuram)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Spraying of Validamycin@2ml/l and Propiconazole @ 2 ml/l	10	57.13	50584	1.96
Farmers' practice: Spraying Tricyclozole@2ml/l 3-4sprays		48.67	28656	1.48



Management of BPH in rice, KVK Warangal (Mamnoon)



Management of panicle mite in rice, KVK Nalgonda (Gaddipalli)

### Management of panicle mite in Rice

Management of panicle mite in rice was assessed at KVK Nalgonda (Gaddipalli) by conducting 5 trials. The improved practice of spraying 5 ml/l of Dicofol

or Profenophos 2 ml/l recorded higher yield and net returns over the conventional practice of spraying Monocrotophos @ 1.6 ml/l.

#### KVK Nalgonda (Gaddipalli)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Dicofol ml/lit or Profenophos 2 ml/l	5	62	55600	1.99
Farmers' practice: Spraying of Profenophos @2 ml/l of water		56	50000	1.73

### Management of Pink stem borer in Maize

KVK, Karimnagar (Jammikunta) conducted a trail on management of Pink Stem Borer in Maize during *rabi* season. Spray of chlorantramilpole 0.3 ml/l against pink stem borer against normal practice of application

of monocrotophos by the farmers. The technology tested gave an additional yield of 6 q/ha and additional returns of Rs.11,135/ha and controlled the pest effectively, compared to farmers' practice.

#### KVK Karimnagar (Jammikunta)

Technology Assessed	No. of trials	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Chlorantranilprole 0.3ml/l and Azadirachtin 1500 ppm 2.5 l/ha 15 days after 1 <sup>st</sup> spray + Installation of pheremone traps (10 per acre)	10	6860	58610	1:2.56
Farmers' practice: Monocrotophos 1000ml/ha, Chloropyriphos 1250 ml/ha 2-3 times after observing the incidence		6275	47475	1:2.17



Management of Pink stem borer in Maize, KVK Karimnagar (Jammikunta)

### Integrated management of *Maruca* in Pigeonpea

Assessment of integrated management of leaf webber and borer, *Maruca testulalis* in pigeonpea was taken up by KVK, Medak. Improved practice of management

reduced the damage by 8% over farmers' practice with higher yields of 102 kg/ha.

#### KVK Medak

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Spraying of neem oil @ 2% and erection of 50 bird perches per ha	5	602	30600	2.53
Farmers' practice: No spray of neem oil, no bird perches		500	22500	2.15

### Management of pod borer in Chickpea

Chickpea is the major *rabi* crop grown in Nandurbar district and pod borer is major pest affecting yield of Chickpea. Farmers resort to repeated sprays of insecticides for the control of pod borer which increases plant protection cost. KVK, Nandurbar tested the efficacy of Renaxypyr 20% 1.8 ml Flubendiamide 48% 2.5 ml per 10 litres of water, (need based 2<sup>nd</sup>

spraying after 15 days) for controlling pod borer. This technology effectively reduced the incidence of pod borer damage to 3.25 % from 7.28 % in farmers' practice. This reduction in the pod borer incidence increased the gram yield by 17.25 percent and also. Net returns and B:C ratio.

#### KVK Nandurbar

Technology Assessed	No. of trails	Pod borer incidence.	Plant protection cost.	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Spray of Renaxypyr 20% 1.8 ml or Flubendiamide 48% 2.5 ml per 10 lit.water (need base 2 <sup>nd</sup> spraying after 15 days)	10	3.25	3850	16.85	48995	2.92
Farmers' practice: Spray of insecticides. (Dimethoate, Quinalphos, Chloropyriphos)		7.28	3600	14.37	39211	2.63



Control of pod borer in Chick pea, KVK Nandurbar

### Seed biopriming with *Trichoderma viridae* against Chickpea wilt

KVK Satara (Karad) assessed the performance of Seed biopriming with *Trichoderma viridae* to manage wilt in Chickpea. The result revealed that the wilt percentage reduced to 2.82 from 11.47. Accordingly

yield increased to 17.36 q/ha compared to 14.52q/ha in the control. Net income and B:C ratio were also higher with the technology tested when compared with the farmers' practice.

#### KVK Satara (Karad )

Treatments	No. of trails	Yield (q/ha)	Net Returns (Rs./ha)	B:C Ratio	Wilt (%)		
					30 DAS	45 DAS	60 DAS
Seed treatment with 5g <i>Trichoderma viridae</i> / kg seed	8	16.91	20855.48	1.69	2.21	3.26	5.93
Seed biopriming with 5g <i>Trichoderma viridae</i> / kg seed		17.36	22075.97	1.73	1.27	1.56	2.82
Farmers' practice: No seed treatment		14.52	14434.27	1.49	4.91	6.30	11.47



Seed biopriming with *Trichoderma viridae* against Chickpea wilt, KVK Satara (Karad )

### Management of Tikka leaf spot and stem rot in Rabi Groundnut

Improved practice of seed treatment with Tebuconazole@1g/kg seed + Gypsum application @500kg/ha + soil application of *Trichoderma viridae* 5kg + 225kg FYM + 25kg Neem cake was assessed to manage tikka leaf spot and stem rot in groundnut

by KVK Mahaboobnagar. The improved technology resulted in 21.71% increase in yield with higher net returns of Rs. 7024/ha by controlling Tikka leaf spot and stem rot diseases.

#### KVK Mahaboobnagar (Madanapuram)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Seed treatment with Tebuconazole@1g/kg seed+Gypsum application @500kg/ha+soil application of <i>Trichoderma viridae</i> 5kg+225kg FYM+25kg Neem cake	10	17.34	12849	1.21
Farmers' practice: Application of chemicals only		13.95	5825	1.09

## Management of girdle beetle in Soybean

In recent times, girdle beetle in soybean is a problem in all the soybean growing areas in Telangana and Maharashtra. KVK, Adilabad tested application of Chlorantroniliprole (0.3ml/l) spray for controlling girdle beetle in soybean, which reduced pest infestation and recorded highest B:C ratio. In another trial, KVK Washim evaluated spraying of prophenophos 50% EC @ 2 ml /l for the control of girdle beetle. This intervention controlled the girdle beetle incidence upto 50 % against the existing practice of two sprays

of triazophos 40 EC 2.5 ml/l. Yield and net income were also higher. Similarly KVK Beed (Ambajogai) assessed combination of treatments i.e., soil application of phorate 10g@10kg/ha as basal and two sprays of ethofenprox 10% @ 2 ml/l + triazophos 40SC @ 2ml/l against the farmers' practice of chloropyriphos +cypermethrin. The assessed technologies checked the pest population below ETL and yield increase upto 17.72 % was realized.

### KVK Adilabad

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Chlorantroniliprole (0.3ml/l)	5	1575	31363	2.20
Farmers' practice: Monocrotophos @ 1.6ml /l		1150	18400	1.78

### KVK Washim

Technology Assessed	No. of Trails	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Two spraying of Prophenophos 50% EC 20ml+10lit of water against Girdle Beetle on soybean at ETL ( 3-5 Girdle Beetle / meter row before flowering)	14	1440	27220	1.98
Farmers' practice : Two sprays of Triazophos 40EC 25ml+10lit of water		1260	20380	1.74

### KVK Beed (Ambajogai)

Technology Assessed	No. of Trails	Yield ] (Kg/Ha)	Net Returns (Rs. / ha)	B:C Ratio
(1) Soil application of phorate 10G @ 10 kg/ha at time of sowing	5	2245	58123	3.8
(2) Spray of Ethofenprox 10% @ 20 ml/10 lit of water (3) Spraying of Triazophos 40 SC @ 2 ml/l				
Farmers' practice: Spraying of chlorpyriphos + cypermethrin 2ml/l		1907	47554	3.3

### Biological control of sucking pests in cotton

Management of sucking pests through bio control agents was assessed by KVK Nalgonda (Kampasagar). The practice of spraying of *Verticillium lecanii* 5 g/l at

the vegetative stage (25 days after sowing) and twice at an interval of 10 days enhanced yield and income when compared with the farmers' practice.

#### KVK Nalgonda (kampasagar)

Treatments	No. of trials	Production per unit (kg/ha)	Net Returns (Rs/ ha)	BC Ratio
Spraying of <i>Verticillium lecanii</i> 5 g/lit at the vegetative stage (25 days after sowing), twice at an interval of 10 days	5	2107	42570	2.51
Farmers' practice: Spraying of Neonicotinoids (Imidacloprid )		1694	22435	1.60

### Weed Management

#### Weed management in direct seeded rice

Pre-emergence application of pyrazosulfuron ethyl @ 80g/acre followed by Bispyribac sodium @100ml/acre at 20– 25 days after transplanting was tested by KVK Warangal (Mamnoor) to manage weeds in direct

seeded rice. This technology not only controlled the weeds, but also increased rice yield by 487kg/ha when compared with the farmers' practice.

#### KVK Warangal (Mamnoor)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Pre emergence application of pyrazosulfuron ethyl @ 80g/acre followed by Bispyribac sodium @100ml/acre at 20– 25 days after transplanting)	5	5437	48303	1.87 :1
Farmers' practice: Pre emergence application of Oxadiargyl @35g/ acre followed by Bispyribacsodium @100ml/acre at 20– 25 days after transplanting, running cono weeder at 35 days after transplanting		5025	40475	1.73:1

#### Weed Control in wheat

For effective and efficient control of weeds in wheat, application of herbicide metsulfuron methyl was tested by KVK Parbhani in *rabi* 2015-16. The treatment reduced initial weed populatin and weed

crop competitin and gave increased yield (350 kg/ha) and net returns of Rs.6838/ha. This method is an alternative to shortage of labour and high cost of hand weeding.

## KVK Parbhani

Technology Assessed	No. of Trails	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Application of Metsulfuron methyl	20	2000	17,500	2.34
Farmers' practice - Hand weeding		1650	10,662	1.73

## Weed Control in Groundnut

For effective control of weeds in groundnut, KVK Ratnagiri assessed both pre-emergence and post-emergence weedicides, pendimethalin 30 EC and quiazalofop ethyl 20 DAS against the normal practice

of manual weeding. The treatment controlled weeds effectively and low weed population was observed when compared with the farmers' practice. This led to substantial increase in yield and returns.

## KVK Ratnagiri

Technology Assessed	No. of Trails	Yield (Kg/Ha)	Net Returns	B:C Ratio
Pre emergence application of Penda-methylene and application of Quizalofop-Ethyl 20 DAS	4	2223	44715	2.0
Farmers' practice: 2 to 3 hand weeding		1510	17410	1.4

## Weed management in Bt Cotton

Weed problem in cotton is one of the important constraints for higher productivity. In irrigated conditions, cotton is planted adopting ridges & furrow method, in which mechanical weeding is difficult. Weed management is done by manual labour and 2-3 hand weeding are necessary for weed management. Due to shortage of labor in rainy season, timely weed management is difficult. KVK, Ahmednagar evaluated weedicide combination of Pyriithiobac sodium 10%

EC@ 75g/ha + quiazalofop-ethyl 5% EC@ 50g/ha at 30 DAS. The practice of combined herbicides, pyriithiobac sodium and quiazalofop-ethyl for weed management effectively minimized the number of hand weeding and the cost incurred on weed management. Control of both monocot and dicot weeds in time during the rainy season. This ultimately increased the yield and net income when compared with the farmers' practice.



Weed Control in Groundnut , KVK Ratnagiri



Weed management in Bt cotton, KVK Ahmednagar (Babhaleshwar)

### KVK Ahmednagar (Babhaleshwar)

Technology Assessed	No. of trails	Cost on weed management (Rs/ha)	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
Pyrethriobac sodium 10% EC@ 75g/ha + Quizalofop- Ethyl 5% EC@ 50g/ha at 30 DAS	10	5623	23.10	38374	1.65
Farmers' practice: 2-3 Hand weeding		8275	22.12	32261	1.53

### Cropping Systems

#### Castor based intercropping system in rainfed situation

In Kurnool district castor is being cultivated in an area of about 60000 ha and yields are limited by the amount and distribution of rainfall during monsoon period. Farmers get low net returns/ha due to changes in price of the marketable produce and incidence of pest and diseases which is also increasing year by year due to mono cropping. To overcome this situation, KVK, Kurnool (Yagantipalli) assessed castor based intercropping systems in rainfed situation. Both the intercropping systems tested i.e., Castor + Greengram and Castor + Clusterbean resulted in higher castor equivalent yield and net returns than sole crop. Intercropping of greengram with castor in 1:2 row proportion resulted in the highest net returns and B:C ratio.



Castor + Greengram, KVK Kurnool (Yagantipalli)

#### KVK Kurnool (Yagantipalli)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Castor + Greengram	5	813+249	19003	1.7
Castor + Clusterbean		649+1022	15896	1.6
Farmers' practice: Castor sole		990	13263	1.6

#### Intercropping system in Bt-Cotton

Three intercropping techniques in cotton (cotton +pigeonpea- 5:1 ; cotton + soybean 1:1, and cotton + green gram 1:1) were tested in the farmers fields to assess their suitability in adilabad district of Telangana during the *kharif* season of 2015-16. The yields in the intercropping system were 1500 Kg of cotton + 375 kg



Cotton + greengram intercropping, KVK, Adilabad



of pigeonpea; 1250 kg of cotton and 250 kg of soybean and 1375 kg of cotton and 450 kg of greengram as compared with 2050 kgs of cotton as sole crop. Higher

net returns were observed in cotton + greengram intercropping system, followed by cotton + pigeonpea.

### KVK Adilabad

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Cotton + Pigeonpea (5:1)	3	1500 + 375	40012	1:75
Cotton + Soybean (1:1)		1250 + 250	15012	1.32
Cotton + Greengram (1:1)		1375 + 450	46512	1.98
Farmers' practice: Sole Cotton		2050	33187	1.62

### Soybean-chickpea sequence-an alternative to Bt Cotton

Cotton is the major cash crop in Jalgaon district and low yield due to increasing pests and disease incidence is a serious constraint. To suggest alternative to Bt cotton, KVK, Jalgaon (Mamurabad) evaluated soybean- chickpea cropping sequence at 5 locations.

Though, there was reduction in soybean yield due shortfall of rain in the month of July, this sequence outperformed Bt cotton. Net returns and B:C ratio were comparatively high in soybean-chickpea sequence than in Bt cotton.

### KVK Jalgaon (Mamurabad)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. /ha)	B:C Ratio
Soybean-chickpea sequence	10	Soybean : 10.60 Chickpea : 12.88	Rs. 16652	1.21
Farmers' practice: Bt. Cotton		13.18	Rs. 5406	1.09

### Introduction of Sweet Corn in the tribal villages of Vizianagaram

Performance of Sugar-75, a sweet corn hybrid was assessed against the farmers' practice of growing maize in tribal areas of Vizianagaram district. Sweet

corn gave 85% increase in net returns per ha compared to maize substantially increases income of tribal farmers.

### KVK Vizianagaram

Technology Assessed	No. of trials	Production (kg /ha)	Net Returns (Rs. /ha)	B:C Ratio
Sweet corn : Sugar-75	5	125.50	78000	1.62
Farmers' practice: Normal maize		67.75	42010	1.09

## Integrated Crop Management

### Moisture conservation through sub-soiling with chisel plough

As most of the area in the district is under rainfed cultivation water conservation technologies play a major role in Anantapur district. Subsoiling helps to enhance infiltration and water holding capacity by breaking hard pan in the soil. KVK Anantapur

(Reddipalli) evaluated the impact of subsoiling by using chisel plough for planting groundnut crop. The practice of sub-soiling gave about 12% higher yield. Net income and B:C ratio were also higher.

#### KVK Anantapur (Reddipalli)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. ha)	B:C Ratio
Subsoiling with chisel plough	5	1452	51899	3.1
Farmers' practice : without subsoiling		1301	44931	2.9

### Moisture conservation in soybean

A trial was conducted by KVK Nanded (Pokharni) on conservation of moisture through opening of furrow after every 4 rows in soybean crop in medium black soils. The method gave an additional yield of 345 kg/

ha with an additional net returns of Rs.12700/ha by conserving the rainwater. One life saving irrigation given through this furrow under dry spell situation

#### KVK Nanded (Pokharni)

Technology Assessed	No. of Trails	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Opening furrow after every 4 rows.	10	1125	22700	2.07
Farmers' practice: No opening of furrow.		780	10000	1.0



Sub-soiling with chisel plough, KVK Anantapur (Reddipalli)



Opening of furrow in soybean, KVK Nanded (Pokharni)

### Transplanting in Pigeonpea

A trial was conducted on transplanting in pigeonpea by KVK, Hingoli and KVK Pune (Baramati) in heavy black soils. In this method timely planting of crop was possible with optimum plant population. An additional yield of 375 kg/ha and additional net returns of Rs.16328/ha was realised at KVK, Hingoli.

At KVK Pune (Baramati) also this method performed better and gave higher yield and net income. This method has the advantage of early sowing, saving of 8 to 10 kg seed / ha. , escape from dew condition in November, less pest & disease attack and maintenance of optimum plant population.

### KVK Hingoli

Technology Assessed	No. of Trails	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Seedling transplanting at 180 x 60 cm in heavy soil	4	1250	31425	2.15
Farmers' practice : direct sowing of Pigeonpea		875	15097	1.58

### KVK Pune (Baramati)

Technology Assessed	No. of trails	Production (kg/ha)	Net Returns (Rs/ha)	BC Ratio
Planting of 21-28 days pigeonpea seedlings (June first week planting in poly bags at nursery) spacing 90 x30 cm	13	1504	64184	2.40
Farmers' practice : sowing by seed drill		1016	39381	2.13

### Direct seeding of rice with drum seeder

The technology of direct seeding of rice with drum seeder was evaluated at KVK Kampasagar (Nalgonda). This practice reduced the cost of cultivation and gave higher yield over conventional practice of manual transplanting.



Direct seeded of rice with drum seeder, KVK Nalgonda (Kampasagar)

### KVK Nalgonda (Kampasagar)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Direct seeding with drum seeder	3	6795	92890	2.07
Farmers' practice: Manual Transplanting		6300	72260	1.31

### 3.1.2 Horticultural Crops

#### Crop diversification with Potato

Growing of traditional vegetables like tomato is sometimes not profitable due to glut in the market. Tomato is the major vegetable crop grown in *rabi* season and farmer on an average gets a price of Rs.3 /kg, which is not economical. KVK Kurnool

(Yagantipalli) tried potato as an alternative crop to tomato. Results indicated that net returns were higher in potato production and it was observed that the duration of the crop is shorter and harvesting costs are lower in comparison to tomato.

#### KVK Kurnool (Yagantipalli)

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
Potato	5	20.38	173903	2.50
Farmers' practice: Tomato		45.21	70145	1.64



Potato as alternative crop to tomato-KVK, Kurnool (Yagantipalli)

#### Onion variety Bhima Shakthi

A new variety of onion Bhima Shakthi, evolved by ICAR-NRC on Onion and Garlic was tested by KVK, Parbhani. The new variety Bhima Shakthi gave an additional yield of 800 kg/ha and additional returns of Rs.107800/ha. As per the feed back of the farmers no

bolting was found in this variety. Incidence of fungal diseases was not observed. Due to its shape and size as well as light red colour, its price was also good and it has four to five months storage life.



Onion variety Bhima Shakti, KVK Parbhani

### KVK Parbhani

Technology Assessed	No. of Trails	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Bhima Shakti	10	16900	153100	2.83
Farmers' practice : N-241		16100	45300	1.54

### Onion variety Arka Niketan

Assessment of onion variety Arka Niketan was conducted by KVK Nalgonda (Gaddipalli) during

Rabi 2015-16. In this trial the improved variety Arka Niketan gave higher yield, higher net returns and benefit cost ratio over farmers' variety.

### Nalgonda (Gaddipalli)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Arka Niketan	5	190	112250	3.87
Farmers' practice : White		132	66350	2.69

### STCR based site specific nutrient management in Onion

Nutrient management based on STCR in onion was tested against farmers' practice in onion by KVK Osmanabad. Results showed that use of Sulphur, Zinc and Boron with RDF at the time of planting increased

the yield by 24.97% (13.56 tonnes/ha) when compared to farmers' practice. Net income and B:C ratio were also higher.

### KVK Osmanabad

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
Application of RDF 100:50:50 NPK kg/ha. with sulphur, Boron and zinc sulphate based on soil test report.	10	13.56	85192	1.69
Farmers' practice: NP Fertilizer application without soil testing and no use of macro and micro nutrients		10.85	61780	1.32

### Planting of onion on Broad Bed and Furrow

In order to overcome the problems of low yield, wilting of plant due to water stagnation, high intensity of weeds, under irrigated situation of cultivation of onion, use of BBF planter for onion cultivation was tested over the traditional practice of cultivation of onion on ridges and furrow method in 10 farmers fields. The average yields and weight of bulbs was recorded. In the BBF planted fields average yield of 237 q/ha was recorded with an average bulb size of 63 grams, as compared to traditional method of cultivation where the average yield recorded was 212 q/ha and average weight of bulbs was about 57 grms.

The farmers observed 40% water saving, less intensity of weeds and uniformity in bulb size.



Onion on BBF, KVK Osmanabad

### KVK Osmanabad

Technology Assessed	No. of trials	Yield (q/ha)	Av. Wt. of bulbs gm
BBF method	10	236.9	62.7
Farmers' practice: Flat bed method		212.5	57

### Integrated crop management for sustainable onion production

Onion is a major bulb crop grown in Amaravati district covering about 4250 ha area. The yield of Onion crop is low due to growing of local varieties and imbalance in fertilizer use in the district. The storage capacity of the onion is also reduced due to imbalance fertilizer use. Amaravati (Ghatkhed) tested the technology of integrated crop management which includes improved

variety Akola Safed and application of 110:40:60:20 kg NPKS along with organic manures and *Azospirillum* and Phosphorus solubilizing bacteria @ 5 kg each/ha. The technology resulted in higher bulb size and yield when compared with farmers' practice. This technology also gave higher net returns and B:C ratio than the farmer's practice.



Integrated management of onion, KVK Amaravati (Ghatkhed)

### KVK Amaravati (Ghatkhed)

Technology Assessed	No. of trails	Average bulb size (cm)	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
Variety Akola Safed + application of 110:40:60:20 kg NPKS along with organic manures and <i>Azospirillum</i> and Phosphorus solubilizing bacteria @ 5 kg each/ha.	5	6.10	20.47	129582	2.72
Farmers' practice: Local seed and imbalanced fertilizer management		5.15	17.40	95508	2.31

### Use of growth retardant in onion

Spraying of Lihosin @ 6ml/l of water after 80 days of transplanting was tested in onion to reduce the vegetative growth and improve the yield and quality by KVK, Beed (Khamgaon). This technology reduced

vegetative growth and increased bulb yield and overall productivity by 7.2 %. Net returns and B:C ratio was also higher when compared with the farmers' practice.

### KVK Beed (Khamgaon)

Technology Assessed	No. of Trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Technology Assessed-Spraying of Lihosin @ 6 ml per lit of water 80 days after transplanting	10	19300	129000	2.04
Farmers' practice-No use of any growth retardant		18000	118000	1.52

### Performance of Garlic variety Phule Nilima in medium black soil

The size and number of cloves in bulb of local variety cultivated in Ahmednagar is less leading to low yield. There is a need to replace this variety with high yielding improved variety for increasing the yield of garlic. KVK Ahmednagar assessed the performance of improved garlic cultivar Phule Nilima. Phule Nilima gave 64.5 q/ha yield while farmer's variety yielded only 57.4 q/ha. Moreover market demand and price is more as colour of bulb of Phule Nilima is attractive and more pungent. Net returns and B:C ratio were also higher with Phule Nilima.



Garlic variety Phule Nilima, KVK Ahmednagar (Dahigaon)

**KVK Ahmednagar (Dahigaon)**

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Garlic variety Phule Nilima	5	64.50	186541	2.75
Farmers' practice : Local varieties.		57.40	147661	2.18

**Chilli variety LCA-625**

The improved variety LCA - 625 is tolerant to viruses and abiotic stress and is high yielding (60-68 q/ha) with highly pungent long pods (8-10 cm) which have good marketable value. It has more shelf life and is highly suitable for dry chilli purpose. This variety was evaluated by KVK Anantapur (Kalyandurg), Mahaboobnagar (Madanapuram) and Krishna (Ghantasala) . At all the three places, LCA-625 gave higher yield, net returns and B:C ratio when compared to the farmers' variety.



Chilli variety LCA-625, KVK Krishna (Ghantasala)

**KVK Anantapur (Kalyandurg)**

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs./ha)	B:C Ratio
LCA-625	2	6.46	190200	1.89
Farmers' practice : Local variety		6.15	156250	1.29

**KVK Mahaboobnagar (Madanapuram)**

Technology Assessed	No. of trails	Yield (q/ha)	B:C Ratio
LCA-625	8	45.32	1.56
Farmers' practice : Local variety		37.24	1.33

**KVK Krishna (Ghantasala)**

Technology Assessed	No. of locations	Production ( q / ha)	Net Returns ( Rs. / ha)	B: C Ratio
Improved variety : LCA-620		65.45	5,65,400.00	3.57
Farmers' Practice : Growing of OP variety Rubby	5	58.32	4,59,840.00	2.92



### Management of midge in chilli

Midge is one of the important insect pests in chilli crop. As the midge damages the fruits, the market value gets reduced and the income of the farmer is adversely affected. Indiscriminate and high doses pesticides used by the farmers is leading to high cost of cultivation without proper control of the pest. KVK Prakasam (Darsi) tested first spray of triazophos @ 1.25 ml/l or Carbosulfan @ 2 ml/l and second spray of Fipronil @ 2.0 ml/l one week after 1<sup>st</sup> spray to control the midge. This technology reduced the midge incidence from 39.4 percent to 21.2 percent. This led to 18.23 percent increase in yield in the technology assessed when compared with the farmers' practice.

Similarly KVK Nalgonda (Kampasagar) tested spraying of Triazophos 2 ml/l and Chloropyriphos 2.5 ml/l. at the bud formation stage to control midge incidence in chilli crop. Here also the tested technology increased the yield and net income by controlling the midge attack. In another trial KVK Karimnagar (Ramgirikilla) assessed the technology i.e. spray of carbosuphan @ 2ml/lit followed by Chloropyriphos @ 2.5 ml/l of water against farmers' practice of only acephate. The infestation of midge was reduced upto 70.6% and yield was increased 517 kg/ha with an additional net returns of Rs.38554/ha in the trial.

#### KVK Prakasam (Darsi)

Technology Assessed	No. of trails	Pest incidence %	Yield (kg/ha)	Net Returns (Rs. / ha)	BC Ratio
First spray of Triazophos @ 1.25 ml/l or Carbosulfan @ 2 ml/l and second spray of Fipronil @ 2.0 ml/l one week after 1 <sup>st</sup> spray	10	21.2	5650	193300	1.54
Farmers' practice:		39.4	5030	102550	0.64

#### KVK Nalgonda (Kampasagar)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Spraying of Triazophos 2 ml/l and Chloropyriphos 2.5 ml/l. at the bud formation stage	5	7690	590890	2.98
Farmers' practice: Acephate 1 g/l		6225	345990	2.10

#### KVK Karimnagar (Ramgirikilla)

Technology Assessed	No. of trials	Yield kg/ha	Net Returns (Rs./ha)	B:C Ratio
Carbosulphan @ 2 ml/l fallowed by Chloropyriphos @ 2.5 ml/l	10	4550	206200	2.18
Farmers' practice: Acephate 1 g/l		4033	167666	2.00

### Assessment of liquid bio-fertilizers in Chilli

Liquid bio-fertilizers incubated with FYM overnight and applied 7-10 days after transplanting along with 25% of recommended fertilizer dose gave 1030

kg higher yield and net returns of Rs. 27800 per ha compared to application of only recommended fertilizer dose in chillies.

### KVK Vizianagaram

Technology Assessed	No. of trails	Production (kg /ha)	Net Returns (Rs. /ha)	B: C Ratio
Liquid bio-fertilizers (Azatobactor 500ml+PSB 500ml + VAM 500ml mixed in 200 kg well rotten FYM) + 25 % of recommended fertilizer dose	5	4050	50500	2.65
Farmers' practice : 60:40:50 kg NPK/ha		3020	22700	1.60

### Improved production technology in Tomato:

A package of improved crop management practices including soil test based fertilizer recommendation, Trellising and Foliar application of micro nutrients

was assessed against the famers practice of applying recommended dose of fertilizers.

### KVK West Godavari (Venkataramannagudem)

Technology Assessed	No. of locations	Yield (q/ha)	Net Returns (Rs/ ha)	B:C Ratio
Soil test based fertilizer recommendation, trellising, Foliar application of micro nutrients	10	161	96276	2.98
Farmers' practice : RDF and transplanting		194	124508	3.48

### Fruit and shoot borer management in Brinjal

Installation of pheromone traps in the IPM plots reduced the need for pesticidal sprays considerably

and resulted in high net returns and favourable Benefit cost ratio.

### KVK Krishna (Ghantasala)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs/ ha)	B : C ratio
IPM : clipping shoots, removal of infested parts, mass trapping using pheromones, need based application of inecticides	10	650	51320	4.1
Farmers' practice: Scheduled spray of insecticides		612	28964	2.8

### Improved turmeric variety JTS-6

Heavy incidence of rhizome rot is observed in the cultivated varieties in Adilabad district which has led to losses to farmers. A new variety JTS-6 variety in turmeric developed by the state horticultural university and notified for cultivation with tolerance to rhizome rot was tested for its performance and disease tolerance in the district by KVK Adilabad. The improved variety JTS-6 yielded 47q/ha as compared to 43.2q/ha yield of farmers cultivated variety (Duggirala), showing an increase of over 6 per cent.



Turmeric variety JTS-6 KVK Adilabad

### KVK Adilabad

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
JTS-6	8	47.0	307710	2.57
Farmers' practice: Duggirala		43.2	261406	2.24

### Turmeric varieties Roma and Salem:

High yielding varieties of turmeric, Roma and Salem were evaluated against the local check in raifed situation of Vizianagaram district. Though both varieties under evaluation out yielded the local check, variety Roma was the highest yielder among the three. It was found that Variety Roma gave 7.5 t higher yield over check and Rs. 68,120/- higher net returns over the local check with a very favourable (3.96) BC ratio. In another trial Salem was evaluated against the local variety in red sandy loams in the tribal mandals of East Godavari district of A.P. The improved variety outyielded the local one by 50 q per ha while giving an additional net income of Rs. 22800 per ha.



Turmeric cv.Selam, East Godavari (Pandirimamidi)

### KVK Vizianagaram

Technology Assessed	No. of trials	Production (kg/ha)	Net Returns (Rs. / unit)	B:C Ratio
Salem	5	1642	113650	3.25
Roma		2005	149950	3.96
Farmers' practice: Local variety		1255	81800	2.87

### East Godavari (Pandirimamidi)

Technology Assessed	No. of trials	Production (q/ha)	Net Returns (Rs. /ha)	B: C
Turmeric cv.Selam	20	110	32250	3
Farmers' practice: Local variety		60	9450	2

### Pro-tray raised seedlings of Turmeric

With an objective of reducing the cost of cultivation on seed material and to have uniform plant stand, pro-tray raised seedlings of turmeric were assessed against

rhizomes with the variety Roma. Results showed that there was a saving of 800 kg/acre on seed material with an yield enhancement of 6.82% .

### KVK Visakhapatnam

Technology Assessed	No. of trials	Production (t/ha)	Net Returns (Rs. / ha)	B: C Ratio
Pro-tray raised seedling-Roma (200kg/acre)	10	20.96	157100	3.98
Farmer practice: Rhizomes of Local variety (1000kg/acre)		19.37	106470	2.21

### Soil application of Ferrous Sulphate in Turmeric

KVK Akola assessed the performance of application of Ferrous Sulphate to Turmeric crop for improvement of yield at 12 locations. Results showed that application of 10 Kg Feso4 with 100 kg P and 100 Kg K at the time of planting and 10 kg Feso4 with 100 Kg N at 105 days after planting gives more yield 60.53q/ha(Dry rhizome) than control plot yield 53.53 q/ha. There is also increase in plant height in demonstration (91.3 cm) than in the control plot(63.8 cm). net income and B:C ratio was also comparatively higher in the technology assessed when compared with the farmers' practice.



Ferrous Sulphate applied Turmeric field, KVK Akola

### KVK Akola

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Application of FeSo4 10 Kg with P 100 Kg+K100 Kg/ha at Planting 100 Kg N at 45 days after planting and Feso4 10 Kg+ N 100 Kg,ha at 105 days after planting	13	60.53	414002	3.55
Farmers' practice: 200:100:100 Kg NPK/ha, No application of Feso4		53.53	347196	3.15

### Introduction of improved Ginger varieties:

An improved variety of Ginger, Maran was assessed against the local variety for yield and quality in irrigated situation of East Godavari. An increase of 7.3

t/ha was noticed in the improved variety along with an increase of Rs. 1,41,000 per ha.

### East Godavari (Kalvacherla)

Technology Assessed	No. of trials	Production (t/ha)	Net Returns (Rs. / ha)	B: C Ratio
Variety 'Maran'	3	12.5	225000	2.5
Farmers' practice: Local Variety		5.20	84000	1.8

### Foliar application of Potassium Di-Hydrogen Phosphate (KH<sub>2</sub>PO<sub>4</sub>) and Urea on Banana bunch for improvement of yield

KVK Akola and KVK Jalgaon (Pal) assessed the technology of foliar spray of Potassium di-hydrogen phosphate and urea on Banana bunches to enhance yield and quality. Results showed that by spraying of Potassium Di-Hydrogen Phosphate 50 gms + Urea 100 gms in 10 litres of water after cutting of flower and another spray 20 days after first spray, increased the bunch weight from 17 kg to 21 kg in Akola. This

increased the yield from 627q/ha in farmers' practice to 764 q/ha in the technology demonstrated. This technology also gave higher net returns and B:C ratio than the farmer's practice. In Jalgaon this technology produced higher yield (59.86 t/ha) when compared with the farmers' practice (53.75 t/ha). This technology also gave higher net returns and B:C ratio than the farmer's practice.

### KVK Akola

Technology Assessed	No. of trails	Bunch weight(Kg)	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
Spraying of Potassium Di-Hydrogen Phosphate 50 gms + Urea 100 gms in 10 litres of water after cutting of flower and another spray 20 days later	13	21.00	76.4	223970	1.90
Farmers' practice: No spraying on Banana bunch		17.10	62.7	141232	1.56

### KVK Jalgaon (Pal)

Technology Assessed	No. of trails	Average fruit weight (g)	Yield (t/ha)	Net Returns (Rs. / ha)	BC Ratio
Technology accessed Spraying of Potassium Di-Hydrogen Phosphate 50 gms + Urea 100 gms in 10 litres of water after cutting of flower and another spray 20 days later	6	129	59.86	331140	2.86
Farmers' practice: No spraying		109	53.75	261175	2.55



**KVK Akola**



**KVK Jalgaon (Pal)**

**Banana bunch sprayed with  $KH_2PO_4$  and Urea**

**Integrated nutrient management in Banana**

Imbalanced use of fertilizers and micro nutrient deficiencies are adversely effecting field and quality of Banana. KVK Ahmednagar (Dahigaon) evaluated integrated nutrient management in banana to see its impact on yield and quality of fruits. The technology

tested increased the number of fruits per bunch and Weight of the bunch. This increased the yield and price of the banana fruits leading to higher income and B:C ratio when compared with the farmers’ practice.

**KVK Ahmednagar (Dahigaon)**

Technology Assessed	No. of trails	No of fruits per bunch	Weight of bunch in kg	Production per unit (q/ha)	Net Returns (Profit) in Rs. / unit	BC Ratio
Use of balanced fertilizer dose as STBF and micronutrient by ring method. Use of FYM @10 kg/plant or Vermicompost @5 kg/plant	10	165	26	1162.30	375475	1.42
Farmers’ practice: Imbalance use of Fertilizers and micronutrients		140	22	985.50	284900	1.11

**Effect of micro nutrients on banana bunch yield :**

With an objective of correcting micro-nutrient deficiencies in banana and to achieve good quality of fruit, ARKA Banana special , a micronutrient mixture developed by IIHR, Bangalore was evaluated on banana grown on irrigated sandy loams. The treatment

recorded 2.73 kg additional weight of the bunch with good quality of the fruit. Net returns of Rs.50000/- was obtained along with very favourable B:C ratio (2.07) in the trial.

### KVK Srikakulam

Technology Assessed	No. of locations	Yield (t/ha)	Net Returns (Rs. / ha)	B: C Ratio
NPK (Urea @ 440gm; SSP @ 300 gm; Mop @ 320 gm/plant) + Arka banana Special	5	41.50	196150	2.07
Farmers' Practice (only NPK) SSP @ 160 gm at the time of planting, Urea @ 400kg; DAP @ 200 kg and Mop @ 450 kg/acre in three splits		34.87	146840	1.51

### Stalk end nutrient feeding in banana

KVK, Karimnagar (Ramgirikilla) demonstrated the technique of nutrient feeding through stalk end method in Banana crop against normal practice of soil

application. The treatment gave an additional yield of 7500 kg/ha and an additional net returns of Rs.45000/ha in Karimnagar district.

Technology Assessed	No. of trials	Yield t/ha	Net Returns (Rs./ha)	B:C Ratio
Technology Assessed: Bunch feeding of SOP (10 g) + Urea (10 g) + Cow dung (500 g) + water (100 ml) per bunch	10	68	366500	3.06
Farmers' practice: -No feeding		60.5	321500	2.98

### Foliar Spray of Banana special

For increasing the yield and quality of Banana KVK, Hingoli assessed the performance of foliar spray formulation developed by ICAR-IIHR, Bangalore

against the practice of soil application of recommended fertilizers. It was found that the use of foliary nutrition spray increased yields by 8000 kg/ha and gave additional net returns of Rs.140290/ha.

### KVK Hingoli

Technology Assessed	No. of Trails	Yield t/ha	Net Returns (Rs./ha)	B:C Ratio
Spraying of Banana special	5	82.4	432220	3.80
Farmers' practice: Use of fertilizers only		74.4	291930	2.83



Stalk end nutrient feeding, KVK, Karimnagar (Ramgirikilla)



Crop sprayed with Banana special, KVK Hingoli

### Integrated Nutrient Management in Mandarin Orange

KVK Amaravati (Durgapur) assessed the technology of application of 75 % RDF (900:300:300 gm NPK) + 500gm VAM + 100gm Azospirillum + 100gm PSB + 100gm Trichoderma per plant. Result shows that the

technology tested recorded higher yield (257.23 q/ha) net returns (Rs. 132263/ha) and B:C ratio (1:1.79) as compared to farmers’ practice.

#### KVK Amaravati (Durgapur)

Technology Assessed	No. of trails	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
Application of 75% Recommended dose of Fertilizers (900:300:300g NPK)+500g VAM+100g Azospirillum+100g PSB+100g Trichoderma per plant	5	257	132263	1.79
Farmers’ practice: Application of 500:250:100g NPK per plant		219	96509	1.34

### Irrigation management in pomegranate

The farmers have undertaken pomegranate cultivation as a remunerative crop. Around 70% crop is grown as hasta bahar and ambe bahar crop where female:male flowering is poor during Jan-February months. Improper water stress and insufficient growing degree days reduce the male:female flower ratio and marketable yield of pomegranate. Acute shortage of irrigation water availability during March to June forces the farmers to start first irrigation early which leads to poor female:male flower ratio and hence poor fruit set and yield. KVK Ahmednagar (Babhaleshwar) evaluated the method of starting first irrigation for late hasta or ambe bahar crop on accumulated growing degree days of 616.1 as recommended by NRC on Pomegranate at 25 locations. Results showed that accumulated degree days based start of first irrigation

in pomegranate recorded highest yield (16.6 t/ha), B:C ratio (2.52), higher female:male flower ratio (1.14) compared to the farmers’ practice of first irrigation in January.



Fruit setting in pomegranate, KVK Ahmednagar (Babhaleshwar)

#### KVK Ahmednagar (Babhaleshwar)

Technology Assessed	No. of trails	Days from Defoliation to flowering	Fem:Male Flr ratio	Yield (t/ha)	Net Returns (Rs. / ha)	BC Ratio
Accumulated degree days based 1 <sup>st</sup> irrigation after more than 50%defoliation (FBD Stage)	25	42.5	1.14	16.6	576492	2.52
Farmers’ practice: 1 <sup>st</sup> irrigation in Dec-Jan		57.2	0.77	11.2	261679	1.69



## Management of root knot Nematode in Pomegranate



Management of root knot nematode in Pomegranate,  
KVK Pune (Baramati)

KVK Pune (Baramati) assessed the performance of soil application of carbofuran along with neem cake at the time of pruning and application of *Paceilomyces liliacinus* 20 kg/ ha with compost in controlling root knot nematode in Pomegranate. This improved technology resulted in reduction of number of plants wilted/ year, number of root nodule/ 25g root and number of nematodes/ 200g of soil. The yield increased from 72.3 q/ha in farmer's practice to 124 q/ha in the technology tested. The net returns and B:C ratio was also higher than the farmer's practice.

## KVK Pune (Baramati)

Technology Assessed	No. of trails	Production (q/ha)	Net Returns (Rs/ha)	BC Ratio
Soil application of carbofuran along with neem cake at the time of pruning and application of <i>Paceilomyces liliacinus</i> 20 kg/ ha with compost.	10	124.2	514300	4.82
Farmers' Practice: Application of chemicals only		72.3	212500	1.43

## Control of Papaya mealy bug through biological agents

Papaya is the major cash crop of Nandurbar district. Yield and quality of papaya was deteriorated due to attack of mealy bug. KVK Nandurbar tested the technology of spraying of *Verticillium lecani* and spot application of buprofezin 25%, 2 ml per litre to control mealy bug.

Result shows that the technology tested reduced the incidence of mealy bug to 3.05% compared to 14.25 % in the farmer's practice. The cost of mealy bug control is also comparatively less.

Higher yield (553 q/ha) and net returns (Rs. 143520/ ha) was realized with the technology tested when compared with the farmer's practice.



Control of Papaya mealy bug, KVK Nandurbar

### KVK Nandurbar

Technology Assessed	No. of trails	Mealy bug incidence. (Affected plant %)	Cost of plant protection	Yield (q/ha)	Net Returns (Rs. / ha)	B:C Ratio
1. Spraying of <i>Verticillium lecani</i> . 2. Spot application of buprofezin 25% 2 ml per l of water	7	3.05	1400	553	143520	3.07
Farmers' practice: Spraying of insecticides (Acetamiprid, Profenophos, Aceohate)		14.25	6850	520	128800	2.61

### Poly propylene Non-woven crop covers for Watermelon

The effect of Poly propylene Non-woven crop covers for improving fruit quality & reducing pest risk in Watermelon was assessed by the KVK Pune (Baramati). In the intervention plot only 2 % infestation of Leaf curl was observed as compared to 28% in control plot. The trial plot also required less sprays of insecticides and recorded increased yield of watermelon as compared to control plot.



Watermelon under Poly propylene Non-woven cover, KVK Pune (Baramati)

### KVK Pune (Baramati)

Technology Assessed	No. of trails	Production (Ton/ha)	Net Returns (Rs/ha)	BC Ratio
Poly propylene Non-woven crop covers for Watermelon	10	58.0	313425	3.8
Farmers' Practice – Planting on mulching without use of PP Nonwoven cover		41.2	190064	2.3

### Control of Phytophthora wilt by bioagents in betelvine



Phytophthora wilt is a major disease affecting betelvine crop resulting in huge yield loss. Farmers' practice of soil drenching with 3% CoC is not able to give good control of the disease. KVK Kadapa evaluated the efficacy of soil application of *Trichoderma viride* and *Pseudomonas* sp. at 15 DAT. This practice considerably reduced the disease incidence when

compared with the farmers' practice. The yield of the intervention was 5000 q per ha while the yield in the

### KVK Kadapa

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Soil application of 1 kg <i>Trichoderma viride</i> and 1kg <i>Pseudomonas</i> sps at 15DAT	6	5000	75000	1:30
Farmers' practice: Soil drenching with 3% CoC		4450	45125	1.82

### Introduction of Colacasia var.KCS 3

KVK Nellore evaluated improved variety of colacasia KCS 3 at 5 locations. There was an yield increase of 23.16 percent with this variety when compared with

farmers plot was 4450 q per ha. Net income and B:C ratio was also comparatively high with the technology demonstrated.

the farmers' variety Bhuvanewari. Net returns and B:C ratio were also higher with the technology tested when compared with farmers' practice.

### KVK Nellore

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs. / ha)	B:C Ratio
Colacasia var.KCS 3.	5	24.16	187737	3.13
Farmers' practice : Bhuvanewari		19.14	94298	1.76

### Virus free planting material in *Coccinia*

Tissue cultured disease free planting material of *Coccinia* was assessed against the farmers' practice of stem cuttings of local variety for yield and disease incidence. Tissue cultured plants were well established to this agro-climatic situation. No virus symptoms observed in farmers fields and also in KVK

demonstration block. Initial growth was vigorous with strong twining and early bearing was observed as the tissue cultured stumps started bearing within 45 days. There was an increase of net returns by Rs. 55,000/ ha over the local variety.



Colacasia var.KCS 3, KVK Nellore



Disease free *Coccinia*, KVK East Godavari (Kalvacherla)

### KVK East Godavari (Kalvacherla)

Technology Assessed	No. of trials	Production ( t /ha)	Net Returns ( Rs. / ha)	B:C Ratio
Tissue cultured Coccinia	3	14	68000	1.9
Selection from farmer’s field		6.5	27000	1:7
Farmers’ practice: Local Variety		4.5	13000	1.4

### Marigold as an alternative to tomato

Marigold was evaluated as an alternative crop for tomato, which is cultivated on large scale in Adilabad district. The results revealed that growing marigold was more profitable. Net income and B:C ratio were

higher in marigold cultivation than in tomato. The farmers were able to get daily income from marigold and it fetched higher price at the time of festivals.

### KVK Adilabad

Technology Assessed	No. of trials	Avg. Yield (Kg/ha)	Net Returns Rs. /ha	BC Ratio
Marigold	5	8000	28125	4.86
Farmers’ practice: Tomato		37500	18400	7.90

### Chrysanthemum variety PAU-B-107

Local varieties have low shelf life and less market value due to which farmers are getting less returns. KVK Chittoor (Kalikiri) evaluated chrysanthemum variety PAU-B-107 which has higher yield and good quality flowers. PAU-B-107 showed its superiority by giving

higher yield (92.5 q/ha) when compared with farmers’ variety (72.5 q/ha). Due to its higher market price (Rs. 36 /kg) it gave higher net returns (Rs. 331250/ha) and higher B:C ratio.



Marigold crop, KVK Adilabad



Chrysanthemum variety PAU-B-107, KVK Chittoor (Kalikiri)

### KVK Chittoor (Kalikiri)

Technology Assessed	No. of trails	Yield (kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
PAU-B-107	5	9250	331250	1.91
Farmers' practice: Paper white		7250	132500	1.50

### Marigold variety Arka Agni

KVK Anantapur (Kalyandurg) assessed the performance of marigold variety Arka Agni at 6 locations. The improved variety Arka Agni is high yielding and has good quality flowers and demands more price. In this trial Arka Agni proved superior by giving higher yield (6.67 t/ha) than the farmers'

variety (4.20 t/ha). This variety gave large flowers with attractive colour and good quality. Shelf life was also more (3-4 days) when compared with local variety (2-3 days). All these traits contributed to get higher net returns of Rs.1,63,450/- per ha.

### KVK Anantapur (Kalyandurg)

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs. /ha)	B:C Ratio
Arka Agni	6	6.67	163450	2.33
Farmers' practice: Local variety		4.20	65000	1.62

### Tuberose varieties Prajwal and Hyderabad Single

Tube rose is cultivated in eastern parts of Chittoor district in irrigated clay loam soils. The varieties cultivated by the farmers' have smaller size and the weight of the flower is also less. KVK Chittoor (RASS) evaluated the performance of Tuberose varieties Prajwal and Hyderabad Single which have comparatively bigger flowers in 5 locations. The performance of Tuberose varieties Prajwal and Hyderabad Single was evaluated by KVK Chittoor (RASS). Variety Prajwal gave highest flower yield and net returns than the other varieties.



### KVK Chittoor (RASS)

Technology Assessed	No. of trails	Yield (t/ha)	Net Returns (Rs. /ha)	B:C Ratio
Hyderabad single	5	5.24	90425	1.62
Prajwal		10.14	310925	3.14
Farmers' practice: Local		4.03	60975	1.51

### Introduction of China Aster variety Arka Kamini

Introduction of China aster has fetched more remunerative price than the conventional vegetables

during *rabi* which increased the net income of farmers by Rs.13250 per ha.

### West Godavari (V R gudem)

Technology Assessed	No. of trials	Production (q/ha)	Net Returns (Rs/ ha )	B: C Ratio
China Aster -Arka Kamini	5	210	51750	2.60
Farmers' practice: conventional vegetables		105	38500	2.22

### 3.1.3 Improved tools and implements

#### Assessment of Tractor Drawn BBF Planter in Osmanabad district

Tractor drawn BBF planter was assessed over the Tractor drawn seed drill being used by farmers for sowing soybean and Chick pea. The use of tractor drawn BBF planter arrested the rainwater run-off,

thereby reduced the soil loss and increased the yield of soybean by 33.33% and yield of Chick pea by 14.28% over the traditional practice.

#### KVK Osmanabad

Parameters	Crop - Soybean		Change in parameter in percent	Crop - Chick pea		Change in parameter in percent
	BBF Planter	Check (Seed Drill)		BBF Planter	Check (Seed Drill)	
Field capacity (ha/h)	0.4	0.6	33.33	0.4	0.6	33.33
Crop Yield (q/ha)	3.0	2.0	33.33	3.5	3.0	14.28
Labour Requirement (man hours/ha)	5.0	3.3	34.0	5.0	3.3	34.0

#### Testing of Mechanical Transplanting in Rice

Mechanical transplanting was evaluated against manual planting with an objective of bringing down cost of cultivation and to overcome the problem of scarcity of labour. At West Godavari (Undi) mechanically transplanted plot recorded 3.65 % increase in

yield over farmers’ practice and cost of cultivation reduced by Rs. 3136.00. At KVK Mahaboobnagar (Madanapuram) rice transplanter showed higher efficiency of 69% with improved yield of 7.45 q/ha over farmers’ practice of manual transplanting.



Nursery ready for mechanical transplanting, KVK West Godavari (Undi)



Mechanical transplanting of Rice KVK Mahaboobnagar (Madanapuram)

**KVK West Godavari (Undi)**

Technology Assessed	No of trails	Production (kg /ha)	Net Returns (Profit) in Rs. / unit	BC Ratio
Mechanical transplanting	6	7437	49573	2.18
Farmers' practice: Manual transplanting		7175	43217	1.96

**KVK Mahaboobnagar (Madanapuram)**

Technology Assessed	No. of trails	Production (q/ha)	Net Returns	CB Ratio
Rice transplanter	10	59.27	60046	2.59
Farmers' practice: manual transplation		51.82	38662	1.87

**3.1.4 Livestock****Regional Specific Mineral Mixture (RSMM) for milch animals**

Production and productivity of the cattle depends upon the feed fed to them. Due to high cost of feed farmers are not providing proper nutrition to the cattle leading to low productivity. Regional Specific Mineral Mixture supplements all the nutrients required to the cattle. Trails were conducted by KVK Anantapur (Kalyandurg) with Regional Specific Mineral Mixture

to evaluate its effects. Results showed that the cattle fed with RSMM yield higher average milk yield (444.4 lit) in 90 days compared to cattle which were fed with RSMM (357.98 l). Further fat content was improved by 1.5%, heat symptoms were exhibited by more than 50% of the animals compared to control.

**KVK Anantapur (Kalyandurg)**

Technology Assessed	No. of trails	Production litres/animal in 90 days)	Net Returns Rs. /3 months per animal	B:C Ratio
Open grazing + feeding RSMM @ 80g/day for 90 days	5	444.4	850	1.92
Farmers' practice: open grazing without feeding mineral mixture)		357.9	2006	1.73

**Use of mineral mixture and Di calcium phosphate to increase milk yield and to reduce repeat Breeding in crossbred HF cows**

KVK Pune (Baramati) assessed the Use of mineral mixture and Di calcium phosphate to increase milk yield and to reduce repeat breeding in crossbred HF cows. Results revealed that the use of 100 g mineral mixture + 50 gm Di calcium phosphat along with cereal

green fodder + dry fodder and 400gm concentrate per litre of milk production increased the milk yield and reduced repeat breeding. Milk yield increased to 5398 litre per lact. /cow with an average milk yield of 17.80 litre day/ Cow.

### KVK Pune (Baramati)

Technology Assessed	No. of trails	Yield (lit/day/cow)	Net Returns Rs./ cow/ lact.	BC Ratio
30 kg cereal green fodder + 3 kg dry fodder + 400 gm concentrate per litre milk +100g mineral mix.+ 50g DCP per day/ cow .	20	5398	40991	1:1.61
Farmers' Practice – 30 kg Cereal green fodder + 3 kg dry fodder + 400g concentrate per litre milk +30g mineral mix.		5000	34252	1:1.51

### Eradication of ecto and endo parasites in Goat



Parasite free Goats, KVK Raigad

For eradication of ecto and endo parasites in Goats KVK Raigad evaluated Neomec tablets (Ivermectin). The treatment has given better result and body weight was increased to 4.68 from 3.0 kg compare to control. The animal was found healthy.

### KVK Raigad

Technology Assessed	No. of Trails	Body weight gain in 4 month (kg)	Net Returns Rs. /Goat	B:C Ratio
Use of Neomec 4.68 kg	5	4.68	498	1.89
Farmers' practice : No medicine used		3.00	135	1.25

### Azolla as a creep feed in sheep lambs

Due to high cost of feed supplement sheep growers are not able to utilize it in the sheep production. Azolla is feed supplement which can be produced by the farmers with very less infrastructure at low cost. Azolla was

introduced as a creep feed to minimize the cost of production on feed concentrates . 100 g of the feed concentrate was substituted for Azolla.

### KVK Vizianagaram

Technology Assessed	No. of trials	Production per unit	Net Returns (Rs. / unit)	B: C Ratio
150 grams Concentrates + 100 grams azolla	5	25.2	4536	1.51
Farmers' practice:: 250 grams Concentrates only		24.2	4356	1.25



### To assess the performance of Satpuda breed of backyard poultry

Low productivity of non-descript and local birds kept in backyard system are giving very less income. Satpuda is a poultry breed with high productivity. This breed was evaluated by KVK Jalgaon (Pal). Satpuda

breed recorded 162 eggs per laying period where as local burds gave 64 eggs per laying period. Moreover mortality was less with satpuda breed when compared with the local bird.

#### KVK Jalgaon (Pal)

Technology Assessed	No. of trails	Production Eggs/birds	Mortality %
Rearing of improved poultry breed Satpuda in backyard system.	10	162	18
Farmers' practice: Rearing of non-descript birds.		64	24

### Management of Mixobolus and other parasitic diseases in carp culture.

Mortality of fish and low yield due to infestation of Mixobolus and other parasites is a major problem in carp culture and application of salt @30 kg /acre + Formalin @ 1litre/acre for every month during culture period was assessed against the farmers' practice of

resorting to chemicals to overcome the problem. Results showed that higher yields (1724kg/ha) were observed due to less mortality (4.5%) in tanks where prophylactic treatment for mixobolus and other parasitic diseases was given over farmers' practice.

#### KVK Srikakulam

Technology Assessed	No. of locations	Production (Kg/ha)	Net Returns (Rs. / ha)	B:C Ratio
Application of salt @50 kg /acre + Formalin @ 1lit / acre for every month during culture period.	5	1724	25860	1.27
Farmers' practice; Using chemicals after noticing incidence of disease		1582	15920	1.16



Management of Mixobolus in Fish, KVK Srikakulam

### 3.1.5 Gender specific technologies

#### Cotton Pellets: An Alternative cooking fuel

Burning of wood and agro residue is expensive and cause environmental pollution. It also causes health hazards and drudgery to rural farm women. ICAR-CIRCOT, Mumbai developed the technology of converting cotton stocks to cotton pellets which can be used as an alternative fuel. KVK Nagpur evaluated

its efficacy. It was observed that food cooked using cotton pellets is cost effective and eco friendly. It reduced the cost of cooking by 56 % and time required by 26 % when compared with traditional cooking with wood and cotton stocks.

#### KVK Nagpur

Treatments	Quantity required (g)	Cost (Rs)	Time Required for cooking (minutes)	Ash recovered (g)
Cotton Pellets	260	3.9	23	2.5
Farmers' practice: wood and agro residue	310	8.7	29	06
% saving over farmers' practice	19	56	26	50



Cotton pellets and food cooked with pellets



ICAR-CIRCOT Cooking stove

#### Low cost weaning food for Tribal toddler (7 to 18 Months)

Protein energy malnutrition (PEM) is the most widely prevalent form of malnutrition in the tribal areas of Amaravati district among children in the age group of 7 to 18 months. Amaravati (Ghatkhed) assessed low cost weaning food to combat this problem. Low cost protein energy rich supplementary food (finger millets

50g. + Groundnut Powder 15g + Chick pea dal flour 10g + Sugar 15g + Ghee/Oil 10g) was given to tribal toddler @ 100g/1 day for was given for 90 days in daily diet. This diet increased the average height and the weight of the children when compared with the regular diet.

### KVK Amaravati (Ghatkhed)

Performance Indicators	Regular diet			Protein energy rich food (Supplementary food)		
	Before OFT	After OFT	increase	Before OFT	After OFT	increase
Average Height (cm)	87.9	88.1	.02	80.8	81.1	0.3
Average Weight (kg)	13.17	13.54	.37	9.54	11.73	2.19

### Okra mitten for harvesting

Harvesting of okra is laborious process and the hair on the fruit causes irritation to the fingers. To reduce the drudgery in harvesting okra, KVK Satara (Karad ) evaluated the efficiency of Okra mitten. Using of Okra mitten increased the work output and reduced

operating cost per quintal of okra harvested. Due to the convenience provided by the okra mitten fruits harvested per day per person increased to 128.24 q/day from 110.08 q/day when harvested without mitten.

### KVK Satara (Karad )

Treatments	Work output kg/hr	work output kg /worker/day	Operating cost Rs/q	% Saving in operating cost
Harvesting without mitten	13.76	110	139	-
Harvesting with mitten	16.03	128	119	16.82



Harvesting okra with mitten, KVK Satara (Karad )

## 3.2 Frontline Demonstrations

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

### 3.2.1 Field crops

A total of 5284 demonstrations covering 2078.85 ha under pulses, cereals, oilseeds, commercial crops (cotton & sugar cane) and fodder crops were organized by KVKs in Zone-V (Table 3.2.1). The major categories covered under FLDs in Andhra Pradesh include pulses (221), cereals (223) and oilseeds (217). In Telangana pulses (321), cereals (121) and oilseeds (26). In Maharashtra the major categories of the demonstrations were pulses (1634), millets (661),

oilseeds (837) and cereals (250). In pulses, 1455 demonstrations covering 581.8ha were organized on chickpea followed by pigeonpea (453), green gram (148) and black gram (75). Among oilseed crops, 580 demonstrations covering 233.5ha were organized on soybean followed by sunflower (254), groundnut (124), linseed (60), castor (14), sesamum (10), and niger (20). In cotton 345 demonstrations covering 148.6 ha were organized, while in sugarcane 45 demonstrations were organized in 15.75 ha. In Sorghum 835 demonstrations were conducted in 335.9 ha. Among fodder crops, 146 demonstrations covering 19.8ha were organized.

#### Pulses

In Andhra Pradesh, frontline demonstrations on chickpea were organized at Anatapur, Kadapa, with Improved variety JG-11. Improved management gave higher yield (8.19 q/ha) compared to local check. In



Chickpea variety NBeG-3, KVK Medak

**Table 3.2.1: . Details of category wise area under FLD on field crops**

Crop/ Category	Andhra Pradesh		Telangana		Maharashtra		Total	
	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)
<b>Cereal crop</b>								
Maize	112	45.00	31	12.40	20	8.00	163	65.40
Rice	111	49.00	90	41.80	155	45.50	356	136.30
Wheat					75	28.20	75	28.20
<b>Total</b>	<b>223</b>	<b>94.00</b>	<b>121</b>	<b>54.20</b>	<b>250</b>	<b>81.70</b>	<b>594</b>	<b>229.90</b>
<b>Millets</b>								
Sorghum	200	80.00	20	8.00	615	247.90	835	335.90
Foxtail Millet	2	0.80					2	0.80
Finger Millet			5	2.00			5	2.00
Pearl Millet			10	4.00	46	15.80	56	19.80
<b>Total</b>	<b>202</b>	<b>80.80</b>	<b>35</b>	<b>14.00</b>	<b>661</b>	<b>263.70</b>	<b>898</b>	<b>358.50</b>
<b>Oil Seeds</b>								
Castor	5	1.20	9	3.60			14	4.80
Groundnut	82	44.80	7	4.00	35	7.00	124	55.80
Sesamum	10	4.00					10	4.00
Sunflower	120	48.00			134	50.40	254	98.40
Linseed					60	24.00	60	24.00
Niger					20	8.00	20	8.00
Safflower					18	10.00	18	10.00
Soybean			10	4.00	570	229.50	580	233.50
<b>Total</b>	<b>217</b>	<b>98.00</b>	<b>26</b>	<b>11.60</b>	<b>837</b>	<b>328.90</b>	<b>1080</b>	<b>438.50</b>
<b>Pluses</b>								
Blackgram	75	31.00					75	31.00
Chickpea	18	7.20	166	67.60	1271	507.00	1455	581.80
Fieldbean	20	8.00					20	8.00
Greengram	63	21.60	65	26.00	20	8.00	148	55.60
Pigeonpea	45	18.40	65	25.80	343	137.20	453	181.40
Horsegram			25	10.00			25	10.00
<b>Total</b>	<b>221</b>	<b>86.20</b>	<b>321</b>	<b>129.40</b>	<b>1634</b>	<b>652.20</b>	<b>2176</b>	<b>867.80</b>
<b>Comercial crop</b>								
Cotton	43	28.00	123	49.00	179	71.60	345	148.60
Sugarcane					45	15.75	45	15.75
<b>Total</b>	<b>43</b>	<b>28</b>	<b>123</b>	<b>49</b>	<b>224</b>	<b>87.35</b>	<b>390</b>	<b>164.35</b>
<b>Fodder crop</b>								
APBN-1	10	0.40					10	0.40
Hybrid Napier	5	1.00			40	3.00	45	4.00
CO-4			24	1.40			24	1.40
Maize					20	4.00	20	4.00
Marvel					5	1.00	5	1.00
Phule jaywant					16	3.40	16	3.40
Sorghum					26	5.60	26	5.60
<b>Total</b>	<b>15</b>	<b>1.40</b>	<b>24</b>	<b>1.40</b>	<b>107</b>	<b>17.00</b>	<b>146</b>	<b>19.80</b>
<b>Grand Total</b>	<b>921</b>	<b>388.40</b>	<b>650</b>	<b>259.60</b>	<b>3713</b>	<b>1430.85</b>	<b>5284</b>	<b>2078.85</b>

Telangana Karimnagar, Mahaboobnagar, Adilabad, RangaReddy and Medak with improved variety JAKI-9218, JG-11 and NBeG-3 along with improved management gave higher yield (12.31q/ha) compared to local check. In Maharashtra, higher yield response (30.78%) was noted with cv. BDN-797, JAKI-9218, Vijay and Digvijay along with integrated nutrient management practices compared to farmers practice at Chandrapur, Ahmednagar, Akola, Beed, Dhule, Gondia, Hingoli, Kolhapur, Latur, Nagpur, Nanded, Nadurbar, Osmanabad, Parbhani, Satara, Sangli, Washim, Amaravati, Aurangabad, Buldana, Pune, Nasik, Solapur and Jalna (Table 3.2.2).

Demonstrations on pigeonpea were organized by KVKs in Andhra Pradesh (Anantapur and Chittoor) with improved varieties (cv. PRG-158, CPL-161 and LRG-41) gave higher yield (5.95 q/ha) compared to local check. Medak, Mahabubnagar, Karimnagar and Nalgonda of Telangana and improved varieties (cv. PRG-176, PRG-158 and LRG-41) gave higher yield (8.86 q/ha) compared to local check. In Maharashtra, improved varieties viz. BDN-711, BSMR-736, Vishal, PKV-TARA and BDN-708 along with improved management practices gave average yield increase of 25.14 percent in demonstrations at Aurangabad, Solapur, Washim, Amravati, Beed, Buladana, Jalna, Hingoli and Chandrapur.

**Table 3.2.2: Performance of Front Line Demonstrations on pulses**

State	Crop	No. of Demos	Area(ha)	Yield (q/ha)		Increase (%)
				Demo	Check	
Andhra Pradesh	Chickpea	18	7.20	8.19	7.73	5.95
	Greengram	63	21.60	10.38	7.36	41.03
	Pigeonpea	45	18.40	5.95	4.93	20.69
	Blackgram	75	31.00	8.02	5.79	38.51
	Fieldbean	20	8.00	8.00	5.70	40.35
Telangana	Chickpea	166	67.60	12.31	9.28	32.65
	Greengram	65	26.00	8.15	6.95	17.27
	Pigeonpea	65	25.80	8.86	6.73	31.65
	Horsegram	25	10.00	7.00	4.50	55.56
Maharashtra	Chickpea	1271	507.00	14.53	11.11	30.78
	Greengram	20	8.00	6.86	6.25	9.76
	Pigeonpea	343	137.20	9.06	7.24	25.14

In blackgram, demonstrations were conducted at Vishakapatnam, East Godavari, Nellore in Andhra Pradesh with improved variety (LBG-752) and nutrient management, which resulted in higher yield response (38.51%) compared to local check.

Frontline demonstrations on greengram were organized at Visakhapatnam with improved management and

high yielding varieties viz. TM96-2 which resulted in higher yield response (10.38q/ha) compared to local check in Andhra Pradesh. Khammam, Nalgonda, Nizamabad, and Medak in Telangana with nutrient management. There was 17.27 and 9.76 per cent increase in yield of greengram in Telangana and Maharashtra as compared to local check respectively.

## Oilseeds

KVKs organized frontline demonstrations on soybean in seventeen districts of Maharashtra (Ahmednagar, Pune, Sholapur, Jalgaon, Satara, Aurangabad, Beed, Buldhana, Hingoli, Jalna, Latur, Nanded, Osmanabad, Parbhani, Washim, Amravati and Wardha.). Improved varieties KDS-344, MAUS-158, MAUS-16, JS-336, MAUS-71, JS-9305 and DS-228 were demonstrated along with nutrient management and plant protection measures. Results showed that improved varieties and management practices gave higher yield in Maharashtra (12.13 q/ha) compared to local check (Table 3.2.3). In Telangana, improved variety viz. Basara along with improved management practices gave average yield 18.75 (q/ha) in demonstrations at Adilabad.

Frontline demonstrations on groundnut were conducted in Andhra Pradesh, covering Anantapur, Chittoor, Kadapa and Nalgonda in Telangana Improved varieties Dharani, K-6 and TAG-24 gave higher average yield (16.68q/ha) in Andhra Pradesh

and Telangana (26.21q/ha) compared to local check. Similarly in Maharashtra, demonstrations were organized at Satara, Pune, Sindhudurg, and Nanded. Improved varieties viz. cv. TG-37A, TG-24 and JL-286 with nutrient management resulted in higher yield (22.25q/ha) than local check (18.79q/ha) (Table 3.2.3).

In case of sunflower, improved management practices resulted in higher yield 17.49q/ha in Andhra Pradesh and 12.82q/ha in Maharashtra compared to local check (Table 3.2.3). Frontline demonstrations on sesamum organized in Vishakapatnam with improved varieties of YLM-66 gave yield of 5 q/ha in Andhra Pradesh. In safflower at Latur and Osmanabad in Maharashtra with improved varieties of PBNS-12 showed yield increase to the tune of 16.95percent as compared to local check. Frontline demonstrations on castor in Andhra Pradesh, Telangana and linseed in Maharashtra gave higher yield (10, 26.47 and 8 per cent) respectively compared to local check.



**FLD on Integrated Pest Management in Soybean KVK Jalna**

**Table 3.2.3: . Performance of Front Line Demonstrations on oilseeds**

State	Crop	No. of Demos	Area(ha)	Yield (q/ha)		Increase (%)
				Demo	Check	
Andhra Pradesh	Groundnut	82	44.80	16.68	14.88	12.10
	Sunflower	120	48.00	17.49	15.44	13.28
	Sesamum	10	4.00	5.00	-	-
	Castor	5	1.20	7.52	6.83	10.10
Telangana	Groundnut	7	4.00	26.21	22.36	17.22
	Soybean	10	4.00	18.75	10.00	87.50
	Castor	9	3.60	17.58	13.90	26.47
Maharashtra	Soybean	570	229.50	12.13	9.48	27.95
	Sunflower	134	50.40	12.82	10.35	23.86
	Linseed	60	24.00	2.70	2.50	8.00
	Groundnut	35	7.00	22.25	18.79	18.41
	Niger	20	8.00	7.00	6.00	16.67
	Safflower	18	10.00	6.90	5.90	16.95

### Cereals

Frontline demonstrations on rice were organized in Andhra Pradesh (Krishna, Srikakulam, Vishakhapatnam, Nellore, Kurnool, Kadapa, Krishna, West Godavari, Chittoor and East Godavari). In Telangana Karimnagar, Mahaboobnagar, Nalgonda and Warangal and in Maharashtra (Gondia, Gadchiroli, Bhandara, Satara, Nasik Pune and Raigadh). Improved varieties viz. cv. RGL-2332, MTU-1061, NLR-34449 JGL-3844, RNR-15048, JGL-18047 (Andhra Pradesh and Telangana) and cv. Phule Samrudhi, Sahyadri, Indrayani, PKV-HMT (Maharashtra) along with improved management resulted in higher yield as compared to local check (Table 3.2.4).

Maize demonstrations were organized in Andhra Pradesh (Vishakhapatnam and East Godavari) and in Telangana (Karimnagar, Rangareddy and Warangal) and Pune and Jalna in Maharashtra with improved varieties viz. DHM-117, Kaveri 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 (8.44, 15.9 and 19.44percent in Andhra Pradesh, Telangana and Maharashtra respectively) compared to

local check (Table 3.2.4).

In Maharashtra (Satara, Nasik, Kolhapur, Pune, Amravati and Ahemednagar) organized demonstrations on wheat with high yielding varieties viz. Phule Samadhan, NIAW-301, AKAW-3722, MACS-6222, and Triambak along with management practices such as nutrient and weed management. There was increase in yield (17.71%) due to improved varieties and management compared to local check (Table 3.2.4).



**Zero till maize, KVK Mahaboobnagar (Madanapuram)**



**Table 3.2.4: . Performance of Front Line Demonstrations on cereals**

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase (%)
				Demo	Check	
Andhra Pradesh	Maize	112	45.00	66.20	61.05	8.44
	Rice	111	49.00	58.46	53.96	8.34
Telangana	Maize	31	12.40	67.71	58.42	15.90
	Rice	90	41.80	61.80	55.49	11.37
Maharashtra	Rice	155	45.50	44.46	35.11	26.63
	Wheat	75	28.20	35.03	29.76	17.71
	Maize	20	8.00	19.05	15.95	19.44

### Commercial crops

Frontline demonstrations on cotton were organized in Andhra Pradesh (Guntur, Prakasam, Srikakulam, and Kadapa), Telangana (Adilabad, Mahaboobnagar, Rangareddy, Karimnagar, Khammam, Nalgonda and Warangal) and Maharashtra (Ahmednagar, Akola, Aurangabad, Amaravati, Beed, Buldhana, Dhule, Hingoli, Jalna, Nanded, Nandurbar, Parbhani and Yavatmal) with improved varieties and management practices (Pest and nutrient management). Results indicated that improved varieties and management

technologies resulted in higher yield in Andhra Pradesh (24.09q/ha), Telangana (18.73q/ha) and Maharashtra (18.23 q/ha) compared to local varieties and management (Table 3.2.5).

Sugarcane demonstrations were organized in Maharashtra (Ahmednagar, Pune, Nashik, Satara and Kolhapur) focusing mainly on integrated nutrient management along with improved management practices which gave an yield increase of 24.0% (Table 3.2.5)

**Table 3.2.5: . Performance of Front Line Demonstrations on commercial crops**

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase (%)
				Demo	Check	
Andhra Pradesh	Cotton	43	28.00	24.09	21.57	11.68
Telangana	Cotton	123	49.00	18.73	17.19	8.96
Maharashtra	Cotton	179	71.60	18.23	15.20	19.93
	Sugarcane	45	15.75	948.68	764.75	24.05

### Millets

Frontline demonstrations on sorghum were conducted in Andhra Pradesh (East Godavari), Telangana (RangaReddy, Adilabad) and Maharashtra (Latur, Solapur, Beed, Pune, Satara). Improved varieties viz., Phule Revati, Phule vasudha, Parbhani Moti and PKV Kranti and integrated nutrient management resulted in higher yield in Andhra Pradesh (16 q/ha) and Maharashtra (14.99q/ha). Finger millet were organized in Telangana (RangaReddy) with improved improved variety (PRS-2) which resulted in higher

yield (15.95q/ha) compared to check.

Pearl millet in Telangana (Mahbubnagar) with improved management resulted in higher yield in Telangana (86.27 %). In Maharashtra (Dhule, Nashik, Pune) demonstrations with improved variety Dhanshakti, increased yield by 36.18% (Table 3.2.6). KVK, Kurnool (Andhra Pradesh) conducted frontline demonstrations on crop diversification with foxtail millet using the improved variety Suryanadi. This variety gave an average yield of 23.5 q/ha.



PKV Kranti- Rabi sorghum variety- KVK Buldhana (ARS)

**Table 3.2.6: . Performance of Front Line Demonstrations on millets**

State	Crop	No. of Demos	Area(ha)	Yield (q/ha)		Increase (%)
				Demo	Check	
Andhra Pradesh	Sorghum	200	80.00	16.00	8.50	88.24
	Foxtail Millet	2	0.80	23.50	-	
Telangana	Sorghum	20	8.00	4.50	3.48	29.31
	Finger Millet	5	2.00	15.95	10.25	55.61
	Pearl Millet	10	4.00	9.50	5.10	86.27
Maharashtra	Pearl Millet	46	15.80	17.69	12.99	36.18
	Sorghum	615	247.90	14.99	11.64	28.78

### 3.2.2 Horticultural crops

A total of 1157 demonstrations covering 400 ha under fruits, vegetables, plantation crops, spices and condiments were organized by KVKs in Zone-V (Table 3.2.7). The major categories covered in Andhra Pradesh include vegetables (68), fruits (63), spices and condiments (63) and Flowers (24). In Telangana the demonstrations include vegetables (60), fruits (35), spices and condiments (72) and Flowers (17). In Maharashtra also the demonstrations were conducted on vegetables (190), fruits (268),

spices and condiments (248) and Flowers (19). In vegetables, 137 demonstrations were organized on Tomato in 50 ha followed by Okra(59), Brinjal (41) and Potato(24). Among 366 demonstrations on fruits, 139 demonstrations covering 58.2 ha were organized on Banana followed by Pomegranate (57), watermelon (47), Mango (35), Mandrin (27) and Orange (23). In Plantation crops 30 demonstrations covering 8.4 ha were organized.

**Table 3.2.7: . Details of category wise area under FLDs on Horticultural crops**

Crop/ category	AP		TS		MS		Total	
	No. of Farmers	Area (ha)	No. of Farmers	Area (ha)	No. of Farmers	Area (ha)	No. of Farmers	Area (ha)
<b>Vegetable</b>								
Dolichos Bean	6	2.60					6	2.60
Tomato	62	27.80	32	9.40	43	12.80	137	50.00
Brinjal			5	2.00	36	13.40	41	15.40
Coriander			5	0.40			5	0.40
Cucumber			4	1.60			4	1.60
Gerkhin			10	4.00			10	4.00
Ridge gourd			4	0.80			4	0.80
Bitter Guard					15	1.50	15	1.50
Capsicum					13	1.60	13	1.60
Okra					59	15.30	59	15.30
Potato					24	10.00	24	10.00
<b>Total</b>	<b>68</b>	<b>30.40</b>	<b>60</b>	<b>18.20</b>	<b>190</b>	<b>54.60</b>	<b>318</b>	<b>103.20</b>
<b>Spices &amp; Condiments</b>								
Chilies	35	18.00	52	16.80	25	9.00	112	43.80
Ginger	5	1.00					5	1.00
Onion	10	4.00	10	2.00	164	42.20	184	48.20
Turmeric	13	5.00	10	4.00	10	3.00	33	12.00
Fennel					9	0.50	9	0.50
Garlic					31	1.90	31	1.90
Ajawan					9	0.50		
<b>Total</b>	<b>63</b>	<b>28.00</b>	<b>72</b>	<b>22.80</b>	<b>248</b>	<b>57.10</b>	<b>383</b>	<b>107.90</b>
<b>Flower Crops</b>								
Chrysanthemum	8	1.20					8	1.20
Marigold	16	8.00	17	11.00	10	2.00	43	21.00
Aster					9	1.80	9	1.80
<b>Total</b>	<b>24</b>	<b>9.20</b>	<b>17</b>	<b>11.00</b>	<b>19</b>	<b>3.80</b>	<b>60</b>	<b>24.00</b>
<b>Fruit Crop</b>								
Banana	16	9.00			123	49.20	139	58.20
Mango	5	1.00	15	11.00	15	5.00	35	17.00
Musk melon	12	4.80					12	4.80
Sweet Orange	15	8.00	3	2.00	5	2.00	23	12.00
Water melon	15	9.00	17	9.60	15	6.00	47	24.60
Lime					13	5.20	13	5.20
Mandarin					27	10.80	27	10.80
Papaya					13	5.20	13	5.20
Pomegranate					57	19.00	57	19.00
<b>Total</b>	<b>63</b>	<b>31.80</b>	<b>35</b>	<b>22.60</b>	<b>268</b>	<b>102.40</b>	<b>366</b>	<b>156.80</b>

Crop/ category	AP		TS		MS		Total	
	No. of Farmers	Area (ha)	No. of Farmers	Area (ha)	No. of Farmers	Area (ha)	No. of Farmers	Area (ha)
<b>Plantation Crop</b>								
Cashew					6	0.60	6	0.60
Drumstick					24	7.80	24	7.80
Total					30	8.40	30	8.40
<b>Grand Total</b>	<b>218</b>	<b>99.40</b>	<b>184</b>	<b>74.60</b>	<b>755</b>	<b>226.30</b>	<b>1157</b>	<b>400.30</b>

## Vegetables

Six districts in Andhra Pradesh (Chittoor, Visakhapatnam, East Godavari, Kadapa, Krishna, Kurnool) and five districts in Telangana (Nalgonda, Mahabubnagar, Medak, Ranga Reddy, Adilabad) and 12 districts in Maharashtra (Ahmednagar, Amravati, Aurangabad, Dhule, Hingoli, Jalgaon, Jalna, Kolhapur, Nashik, Osmanabad, Pune, Solapur) organized

frontline demonstrations on tomato, Brinjal, Okra, Potato etc. with improved varieties and management practices. Results showed that improved varieties and management practices on tomato recorded higher yield in Andhra Pradesh (259.48q/ha), Telangana (295.68q/ha) and Maharashtra (429.83q/ha) compared to local check (Table 3.2.8).

**Table 3.2.8: . Performance of Front Line Demonstrations on vegetables**

State	Crop	No of Demos	Area (ha)	Yield (q/ha)		Increase (%)
				Demo	Local	
Andhra Pradesh	Tomato	62	27.80	259.48	242.58	6.97
	Dolichos Bean	6	2.60	166.17	85.06	95.36
Telangana	Tomato	32	9.40	295.68	241.00	22.69
	Brinjal	5	2.00	195.00	175.00	11.43
	Coriander	5	0.40	124.59	78.39	58.94
	Cucumber	4	1.60	87.40	72.10	21.22
	Gerkhin	10	4.00	135.26	129.67	4.31
	Ridge gourd	4	0.80	320.00	170.00	88.24
Maharashtra	Tomato	43	12.80	429.83	369.90	16.20
	Okra	59	15.30	117.99	102.97	14.59
	Brinjal	36	13.40	274.50	233.13	17.75
	Potato	24	10.00	147.00	126.67	16.05
	Bitter Guard	15	1.50	85.43	73.93	15.56
	Capsicum	13	1.60	716.00	659.60	8.55



**FLD on Control of leaf spot in onion KVK Ahmednagar (Dahigaon)**

## Fruits

Frontline demonstrations on banana were conducted in three districts of Andhra Pradesh (Anantapur, Kadapa and Kurnool) and four district of Maharashtra (Akola, Pune, Ahmednagar and Jalgaon) with improved management practices. There was higher yield with improved technology both in Andhra Pradesh (526.7q/ha) and Maharashtra (739.34q/ha) compared

to local practice (Table 3.2.9). Similar increase in yield was also noted in pomegranate (12% in Maharashtra) and mango (18.92% in Andhra Pradesh, Telangana (39.69%) and 27.8% in Maharashtra) and Sweet Orange (Andhra Pradesh 17.49%, Telangana (21.84%) & Maharashtra (21.13%) (Table 3.2.9).



**Irrigation management in Pomegranate KVK Ahmadnagar (Bableswar)**



**Management of Watermelon Production, KVK Pune (Baramati)**

**Table:3.2.9 . Performance of Front Line Demonstrations on fruits**

State	Crop	No of Demos	Area (ha)	Yield (q/ha)		Increase (%)
				Demo	Local	
Andhra Pradesh	Banana	16	9.00	526.70	479.90	9.75
	Sweet Orange	15	8.00	115.65	87.45	32.25
	Water melon	15	9.00	225.00	167.00	34.73
	Musk melon	12	4.80	35.25	32.75	7.63
	Mango	5	1.00	11.00	9.25	18.92
Telangana	Water melon	17	9.60	232.23	207.58	11.87
	Mango	15	11.00	87.08	62.34	39.69
	Sweet Orange	3	2.00	25.00	20.00	25.00
Maharashtra	Banana	123	49.20	739.34	627.41	17.84
	Pomegranate	57	19.00	270.53	241.51	12.02
	Mandarin	27	10.80	312.55	259.34	20.52
	Mango	15	5.00	60.20	49.70	21.13
	Water melon	15	6.00	198.20	156.70	26.48
	Lime	13	5.20	181.76	124.07	46.50
	Papaya	13	5.20	378.50	306.20	23.61
	Sweet Orange	5	2.00	480.00	450.00	6.67

### Plantation crops

Frontline demonstrations on cashew nut were organized in Sindhudurg of Maharashtra with improved management practices including pest and disease control and nutrient management. Results indicated that improved management practices gave

higher average yield of 13.34q/ha over local check (Table 3.2.10). Similar response was also noted at Nanded and Sholapur in Drumstick (81.96%) in Maharashtra.

**Table:3.2.10 Performance of Front Line Demonstrations on plantation crops**

State	Crop	No of Demos	Area (ha)	Yield (q/ha)		Increase (%)
				Demo	Local	
Maharashtra	Cashew	6	0.60	13.34	8.92	49.55
	Drumstick	24	7.80	179.16	98.46	81.96

### Spices & condiments

Frontline demonstrations on turmeric were organized with improved varieties and management practices. Results showed that improved varieties and management practices recorded higher yield in Andhra Pradesh (154.16q/ha), Telangana (230q/ha) and Maharashtra (125.65q/ha) compared to local check (Table 3.2.11). Similarly, the yield response to

improved management practices including varieties was higher in garlic (29.48% in Maharashtra) as compared to local check. Similar results were found in ginger, fennel and ajwain in Maharashtra.

Frontline demonstrations were organized on onion with improved varieties (cv. Bhima Shakti, Agrifound Light Red, Akola Safed, Bhima Supar,

N-53, Puna phursungi, Phule Samarth, Panchaganga) and management practices. There was higher yield response to varieties and management practices in Andhra Pradesh (19.68%), Telangana (48.05%) and Maharashtra (24.19%) compared to local check.

Frontline demonstrations on chilies were conducted in Andhra Pradesh, covering Kurnool, Nellore, Krishna and in Telangana covering Ranga Reddy, Khammam and Karimnagar districts. Improved varieties Super Delux,

LCA 620, Meghana and Jwala gave higher average yield (52.76q/ha) in Andhra Pradesh and Telangana (88.33q/ha) compared to local check. Similarly in Maharashtra, demonstrations were organized at Kolhapur, Parbhani and Jalna with improved varieties viz. LCA – 625, VNR-145, Wonderhot, Phule Jyoti, Sitara and nutrient management which resulted in higher yield (122.60q/ha) than local check (72.86q/ha).

**Table 3.2.11: Performances of Frontline Demonstrations on Spices**

State	Crop	No of Demos	Area (ha)	Yield (q/ha)		Increase (%)
				Demo	Local	
Andhra Pradesh	Chilies	35	18.00	52.76	51.98	1.50
	Turmeric	13	5.00	154.16	134.75	14.40
	Onion	10	4.00	205.50	201.50	1.99
	Ginger	5	1.00	23.80	13.44	77.08
Telangana	Chilies	52	16.80	88.33	67.13	31.58
	Onion	10	2.00	261.00	252.00	3.57
	Turmeric	10	4.00	230.00	195.00	17.95
Maharashtra	Onion	164	42.20	235.17	205.15	14.63
	Garlic	31	1.90	52.18	40.30	29.48
	Chilies	25	9.00	122.60	72.86	68.27
	Turmeric	10	3.00	125.65	106.72	17.74
	Ajawan	9	0.50	3.01	2.52	19.44
	Fennel	9	0.50	6.72	5.92	13.51

### Flowers

In Andhra Pradesh frontline demonstrations were organized on Marigold and Chrysanthemum. Improved varieties and management practices resulted in 23.21% yield increase in Marigold, Chrysanthemum increase of 33% in Andhra Pradesh. Marigold with improved varieties and management practices resulted in 25.83%

yield increase over local practice in Telangana.

In Maharashtra frontline demonstrations were organized in Marigold and Aster. Demonstration of Marigold showed an increase of 25.64% yield followed by Aster (39.28%).

**Table 3.2.12: Performances of Frontline Demonstrations on Flowers**

State	Crop	No of Demos	Area (ha)	Yield (q/ha)		Increase (%)
				Demo	Local	
Andhra Pradesh	Marigold	16	8.00	105.10	85.30	23.21
	Chrysanthemum	8	1.20	105.50	79.25	33.12
Telangana	Marigold	17	11.00	95.00	75.50	25.83
Maharashtra	Marigold	10	2.00	98.00	78.00	25.64
	Aster	9	1.80	92.90	66.70	39.28

### 3.2.3 Tools and Implements

KVKs organized 748 demonstrations on 40 improved tools and implements to reduce the drudgery of farm women and facilitate timely field operations viz. land and seed bed preparation, planting/sowing, weeding and intercultural operations and harvesting and threshing (Table 3.2.13). Out of 748 demonstrations, 162 demonstrations were organized to improve the farm operations in case of Soybean followed by

groundnut (131), rice (105), chickpea(96), sorghum (64), cotton(58), pigeonpea (50) and brinjal (15). Among various field operations, demonstrations were conducted on land and seed bed preparation (205) followed by weeding and inter-culture operations(130), planting and seeding (123), post harvest technology (107), other equipment (89), harvesting and threshing (84) and plant protection equipment (10).

**Table 3.2.13: Details of FLDs on improved tools and implements**

Crop	AP		TS		MS		Total	
	NI	ND	NI	ND	NI	ND	NI	ND
Rice	2	50	2	15	3	40	7	105
Sorghum					2	64	2	64
Wheat					1	2	1	2
Groundnut	4	39			3	92	7	131
Soybean					7	162	7	162
Chickpea					4	96	4	96
Pigeonpea					1	50	1	50
Cotton					4	58	4	58
Brinjal					1	15	1	15
Chilli					1	10	1	10
Onion					1	10	1	10
Fodder					1	10	1	10
Gerkhin			1	10			1	10
Sweet Orange					1	10	1	10
Water melon					1	15	1	15
<b>Total</b>	<b>6</b>	<b>89</b>	<b>3</b>	<b>25</b>	<b>31</b>	<b>634</b>	<b>40</b>	<b>748</b>

NI: Number of implements ND: Number of demonstrations

**Table 3.2.14: Details of operation wise FLDs on improved tools and implements**

Name of operation	AP	TS	MS	Total
Land and seed bed preparation	10	10	185	<b>205</b>
Planting and seeding	64	5	54	<b>123</b>
Weeding and Intercultural operations	15	10	105	<b>130</b>
Plant protection equipments			10	<b>10</b>
Harvesting			17	<b>17</b>
Post harvest technology			107	<b>107</b>
Threshing			67	<b>67</b>
Other			89	<b>89</b>
<b>Total</b>	<b>89</b>	<b>25</b>	<b>634</b>	<b>748</b>



The performance of improved tools and implements under FLDs vis-à-vis the relevant indicators of performance viz. saving of labor, time required for

completing the field operation, energy expenditure, field performance, output, cost of field operations etc. are presented in Table 3.2.15.

**Table 3.2.15: Performance of FLD on Improved Tools, Implements and Farm Equipment**

Implement Type	No. of Farmer	Area (ha)	Parameters	Demo	Check
<b>Land and seed bed preparation</b>					
BBF Planter	125	54.6	ha/hr	0.76	0.63
Ridger	25	14.0	ha/hr	0.21	0.11
Rotavator	35	14.0	ha/hr	1.15	0.12
Sub soiler & Dead furrow	10	4.0	ha/hr	0.19	0.09
Two Tyne Furrower	10	8.0	ha/hr	0.95	0.05
<b>Planting and seeding</b>					
Bullock drawn planter	27	10.0	ha/hr	0.42	0.15
Paddy Drum seeder	60	24.0	ha/hr	0.55	0.03
Rice Transplanter	10	4.0	ha/hr	0.75	0.08
Tractor Drawn seed cum ferti-drill	26	18.0	ha/hr	0.78	0.28
<b>Weeding and Intercultural operations</b>					
Cono weeder	10	10.0	ha/hr	0.03	0.01
Cycle hoe	30	11.2	ha/day	0.22	0.02
Peg tooth weeder	7	2.0	ha/day	0.12	0.05
Power weeder	28	18.4	ha/day	1.17	0.48
Wheel Hoe	55	21.0	ha/hr	0.12	0.07
<b>Plant protection equipments</b>					
Solar Sprayer	10	5.0	ha/hr	0.75	0.08
<b>Harvesting</b>					
Naveen Serrated Sickle	17	5.0	ha/day	0.17	0.07
<b>Threshing</b>					
Groundnut decorticator	67		kg/hr	52	19
<b>Post harvest technology</b>					
Spiral gravity separator	107		q/hr	3.95	0.09
<b>Other</b>					
Brush cutter	10	12.0	ha/hr	0.24	0.09
Cotton Slasher	25	10.0	ha/hr	0.18	0.05
Sorghum uprooter	54	7.0	ha/day	0.11	0.07
<b>Total</b>	<b>748</b>	<b>252.2</b>			

### 3.2.4 Livestock and other enterprises

In order to demonstrate the efficacy of improved technologies, KVKs organized 1547 demonstrations on various livestock species. The state and enterprise

wise details of demonstrations are furnished in Table 3.2.16.

**Table 3.2.16: Details of FLD on livestock and other enterprises**

Category	Andhra Pradesh		Telangana		Maharashtra		Total	
	NT	ND	NT	ND	NT	ND	NT	ND
Cattle	3	56			5	427	8	483
Sheep & Goatery	3	12	2	40	4	271	9	323
Poultry	3	161	4	60	4	462	11	683
Fisheries	4	36	3	22			7	58
<b>Total</b>	<b>13</b>	<b>265</b>	<b>9</b>	<b>122</b>	<b>13</b>	<b>1160</b>	<b>35</b>	<b>1547</b>

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

The performance of various improved technologies vis-à-vis the indicators with regard to livestock species are presented in Table 3.2.17. The improved technologies significantly increased the milk yield and reduced the incidence of mastitis and other diseases

in dairy animals. In case of poultry, improved breeds like Rajasree, Suwarandhara, Giriraja, Vanaraja and Gramapriya were demonstrated for meat and egg yield, while de-worming and mineral mixtures were tested for weight gain in sheep and goat.



Common carp culture, KVK Warangal (Mamnoon)



Use of Mineral Mixture and Di calcium phosphate in crossbred HF cows KVK Pune Baramati

**Table 3.2.17: Performance of FLD on Livestock Enterprises**

Enterprise /Thematic area	Technology	No. of Farmer	Major parameters	Demo	Check
<b>Buffalo</b>					
Feed and Nutrition Management	25% substitution of concentrate with Azolla	78	Milk yield(l/day/Animal)	8.25	7.22
	Urea treated with low grade roughages	46	Milk yield(l/day/Animal)	7.58	5.39
	Mineral mixture	91	Milk yield(l/day/Animal)	9.2	7.8
<b>Cow</b>					
Feed and Nutrition Management	Mineral mixture	163	Milk yield(l/day/Animal)	11.25	9.41
	25% substitution of concentrate with Azolla	98	Milk yield(l/day/Animal)	8.86	7.05
Disease managemnt	Anti parasitic drug	35	Parasite control (%)	4.25	43.12
	Saaf Kit	30	Milk yield in cows (lit.)	2046	1411
<b>Goatary</b>					
Nutrition Management	Mineral mixture	107	Body weight at 12 month (kg/goat)	17.32	12.24
Disease Management	control of Ecto &Endo parasites	25	Parasite occurance (%)	0	18.24
Breed evaluation	Upgradation of local goat with Osmanabadi	53	Body weight at 12 month (kg/goat)	28.63	25.47
<b>Sheep</b>					
Nutrition Management	Mineral mixture	46	Body weight at 12 month (kg/goat)	27.30	23.90
Breed evaluation	Jodipi Rams	20	Body weight at 12 month (kg/goat)	32.15	29.38
	Nellore Brown	4	Body weight at 12 month (kg/goat)	30.10	24.90
	Sangamaneri	10	Body weight at 12 month (kg/goat)	12.90	8.95
<b>Poultry</b>					
Breed evaluation	Giriraja	215	Live weight (kg/bird) at 12th Month	2.72	1.25
	Grampriya	87	Live weight (kg/bird) at 12th Month	1.43	1.14
	Kadakhnadh	26	Live weight (kg/bird) at 12th Month	2.7	1.6
	Rajasri	115	Live weight (kg/bird) at 12th Month	2.5	1.2
	Satpuda	5	Live weight (kg/bird) at 12th Month	1.2	0.75
	Sreenidhi	20	Live weight (kg/bird) at 12th Month	1.95	0.87
	Vanaraja	215	Live weight (kg/bird) at 12th Month	2.86	1.76
<b>Fisheries</b>					
Production and Management	Brackish water shrimp	3	Yield (q /ha)	39.80	22.19
	Common carps	5	Yield (q /ha)	17.43	14.30
	Composite fish culture	22	Yield (q /ha)	134.83	72.24
	Indian major carps	5	Yield (q /ha)	58.50	42.70
	Murrel fish culture	3	Yield (q /ha)	45.00	21.50
	Prawn Production	20	Yield (q /ha)	48.55	36.57

### 3.2.5 Gender specific technologies

To relieve farmwomen of household drudgery and improve their health, nutritional status and income, KVKs organized 829 demonstrations (Table 3.2.18). Among technologies demonstrated on health and nutrition of women and children, iron and protein fortified diet resulted in increased hemoglobin

in pregnant women. Technologies for economic empowerment of rural women viz. papad making processing and production of Oyster mushrooms, sericulture, vermicompost, mini dal mill were also demonstrated by KVKs

**Table 3.2.18: Details of FLDs on Gender Specific Technologies**

Thematic area	Andhra Pradesh		Telangana		Maharashtra		Total	
	NT	ND			NT	ND	NT	ND
Drudgery reduction	5	40	3	37	3	105	11	182
Entrepreneurship Development	7	154	1	5	4	73	12	232
Household Drudgery reduction					10	161	10	161
Household food security					1	68	1	68
Value Addition	3	20			5	166	8	186
<b>Total</b>	<b>15</b>	<b>214</b>	<b>4</b>	<b>42</b>	<b>23</b>	<b>573</b>	<b>42</b>	<b>829</b>

NT: No. of trials ND: No. of demos



Milking stool, KVK Warangal (Mamnoor)



Wheel hoe for weeding KVK Aurangabad

**Table 3.2.19: Performance of FLDs on Gender Specific Technologies**

Thematic Area /Technology	No. of demons	Parameter	Demo	Check
<b>Drudgery reduction</b>				
Cotton picking bag	40	Work output(kg/day)	59.1	34.2
Cycle hoe	5	Cost of operation (Rs/ha)	955.0	2850.0
Dung collectors	10	Time (Min)	20.0	60.0
Finger guard	15	quantity(kg/hr)	58.9	50.4
Improved Sickle	3	Harvesting area(ha)/hr	0.0	0.0
Mango plucker	10	Fruit Damage (%)	0.0	15.0
Okra Plucker	65	Kg/day/Person	57.2	30.7
Use of aprons, gloves and caps	34	ha/hr	14.7	10.0
<b>Entrepreneurship Development</b>				
Apiary Production	20	Yield(lit/Box)	3.4	1.7
Back yard poultry	5	Income/Year	4883.0	3215.0
Mushroom Production	22	Yield kg/bag	1.4	0.9
Nutrition garden	40	Expenditure on vegetables Rs/5 Months	1245.0	3576.0
Sericulture	125	Cocoon yield (kg/100 DFLs)	65.5	50.0
Vegetable Nursery production	2	Income/Year/0.1ha	32500.0	21300.0
Vermi compost production	18	Yield t/bed/Annum	2.9	2.3
<b>Household Drudgery reduction</b>				
Kissan cooker	20	Cooking time Min.(Rice,Dal,Potato))	48.0	80.0
Marking nut breaker	10	Kg/hr	1.5	0.9
Multi Fuel Cooking Stove	7	Cooking time Min.(Rice,Dal,Potato))	52.0	78.0
Nagali and Soya Biscuit	3	Kg/hr	3.5	1.4
Paneer Press Device	25	Kg/hr	5.3	0.2
Potato peeling & chips Maker	13	Kg/hr	2.9	0.5
Ripening Chamber	5	Ripening (%) 250 hrs	100	19.0
Sarai Cooker	28	Cooking time Min.(Rice,Dal,Potato))	50.0	75.0
Solar Dryer with Chilies	50	Moisture (%) /After 3 days	12.0	69.0
<b>Household food security</b>				
Grain storage bag (PCI)	68	Pest infestation %	1.9	36.8
<b>Value Addition</b>				
Dal Processing	102	Recovery of Dal (%)	110.0	72.0
Mineral Licks	5	Milk yield lit/cow/day	2.6	2.3
Multigrain Atta	10	Additional income/q	725.0	
Soy paneer	35	Kg/day/Person	55.0	41.0
Soya poha	34	Gross return Rs./q	7600.0	4020.0

### 3.3 Training

Training is one of the important manded of KVK which plays a pivotal role in enhancing the knowledge and skill, attitude and other attributes of trainees about various improved technologies. KVKs assess the training needs and prioritize them and based on the need, skill oriented training programs for various clientele groups were organized. The training for farmers and farm women is primarily focused on knowledge and skills of improved crop and allied technologies, while it is entrepreneurship development and knowledge on frontier areas of science and technology for rural youth and extension personnel respectively.

In all, 4898 training programs were conducted with 126492 participants including 92790 farmers, 21056 rural youth and 12646 extension functionaries in the Zone (Table 3.3.1). KVKs in Andhra Pradesh organized 794 training courses with the participation of 27427 farmers, rural youth and extension functionaries and in Telangana they organized 623 training courses with a participation of 22058 farmers,

rural youth and extension functionaries, while the KVKs in Maharashtra conducted 3481 courses with a total participation of 77007 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 organized under various disciplines for farmers are given in Table 3.3.2. A total of 3644 training courses were conducted for 92790 farmers on various subjects; 848 (19542) on crop production followed by 618 (21104) on Horticulture, 488 courses were conducted with 9742 participants for Plant Protection, 584 (11330) on Women Empowerment, 191 (7926) on Soil Health and Fertility Management, 397 (11684) on livestock production and management, etc.

**Table: 3.3.1 Details of client wise training programs organized by KVKs in Zone V**

Clientele	No. of Courses	Other Beneficiaries			SC/ST Beneficiaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Andhra Pradesh</b>										
EF	28	1128	127	1255	239	130	369	1367	257	1624
FFW	688	10993	3956	14949	5502	2862	8364	16495	6818	23313
RY	78	849	703	1552	471	467	938	1320	1170	2490
<b>Total</b>	<b>794</b>	<b>12970</b>	<b>4786</b>	<b>17756</b>	<b>6212</b>	<b>3459</b>	<b>9671</b>	<b>19182</b>	<b>8245</b>	<b>27427</b>
<b>Telangana</b>										
EF	42	755	159	914	127	99	226	882	258	1140
FFW	495	9390	2550	11940	3956	2332	6288	13346	4882	18228
RY	86	1285	704	1989	452	249	701	1737	953	2690
<b>Total</b>	<b>623</b>	<b>11430</b>	<b>3413</b>	<b>14843</b>	<b>4535</b>	<b>2680</b>	<b>7215</b>	<b>15965</b>	<b>6093</b>	<b>22058</b>

<b>Maharashtra</b>										
EF	315	5040	1960	7000	2176	706	2882	7216	2666	9882
FFW	2461	22407	8556	30963	14136	6150	20286	36543	14706	51249
RY	705	8952	2755	11707	2729	1440	4169	11681	4195	15876
<b>Total</b>	<b>3481</b>	<b>36399</b>	<b>13271</b>	<b>49670</b>	<b>19041</b>	<b>8296</b>	<b>27337</b>	<b>55440</b>	<b>21567</b>	<b>77007</b>
<b>Zone</b>										
EF	385	6923	2246	9169	2542	935	3477	9465	3181	12646
FFW	3644	42790	15062	57852	23594	11344	34938	66384	26406	92790
RY	869	11086	4162	15248	3652	2156	5808	14738	6318	21056
<b>Total</b>	<b>4898</b>	<b>60799</b>	<b>21470</b>	<b>82269</b>	<b>29788</b>	<b>14435</b>	<b>44223</b>	<b>90587</b>	<b>35905</b>	<b>126492</b>

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

**Table: 3.3.2 State wise and discipline wise training programs conducted for farmers**

Discipline	Andhra Pradesh		Telangana		Maharashtra		Total		
	NC	NB	NC	NB	NC	NB	NC	NB	
Agril. Engineering	1	28	17	500	140	1966	158	2494	
Capacity Building & Group Dynamics	56	1942	24	868	223	4383	303	7193	
Crop Production	152	5032	105	3917	591	10593	848	19542	
Fisheries	15	577	27	826	2	45	44	1448	
Home Science/Women empowerment	112	3676	82	2766	390	4888	584	11330	
<b>Horticulture</b>									
a) Vegetable Crops	57	2002	58	2188	181	6015	296	10205	
b) Fruits	53	2074	26	858	123	3887	202	6819	
c) Ornamental Plants	11	304	6	187	16	426	33	917	
d) Plantation crops	34	1195			1	43	35	1238	
e) Tuber crops	1	34	2	79	1	23	4	136	
f) Spices	16	384	5	207	20	918	41	1509	
g) Medicinal & Aromatic Plants	4	118			3	162	7	280	
<b>Total</b>	<b>176</b>	<b>6111</b>	<b>97</b>	<b>3519</b>	<b>345</b>	<b>11474</b>	<b>618</b>	<b>21104</b>	
Livestock Production & Management	50	1741	26	562	321	9381	397	11684	
Plant Protection	98	3119	78	3131	312	3492	488	9742	
Production of Inputs at site			3	132	10	195	13	327	
Soil Health & Fertility Management	28	1087	36	2007	127	4832	191	7926	
<b>Grand Total</b>	<b>688</b>	<b>23313</b>	<b>495</b>	<b>18228</b>	<b>2461</b>	<b>51249</b>	<b>3644</b>	<b>92790</b>	

NC : Number of courses NB: No. of beneficiaries

A total of 869 training programs covering 21056 rural youth were conducted by KVKs in Zone -V (Table 3.3.3). The main thematic areas of training include integrated farming (10), Integrated Crop Management (36), Post Harvest Management (104), Animal

Husbandry & Dairying (60), Production and use of Organic Inputs (42) Poultry Management (35), Soil health management (163) and women empowerment (93) etc.

**Table: 3.3.3 Details of training programs for rural youth**

Thematic area	AP		TS		MS		Total	
	NC	NB	NC	NB	NC	NB	NC	NB
Agro Tourism					5	132	5	132
Animal Husbandry & Dairying	2	63	5	167	53	1322	60	1552
Apiculture					1	20	1	20
Awareness on Govt. Schemes for RY					6	249	6	249
Bee keeping	3	75			4	143	7	218
Cocoon Production	3	60			2	60	5	120
Goat and sheep rearing			1	40	43	1484	44	1524
Group Dynamics	1	150			13	267	14	417
Installation and maintenance of micro irrigation systems			2	35	5	110	7	145
Integrated Crop Management	6	144	6	318	24	1193	36	1655
Integrated Farming System	1	10	1	22	8	287	10	319
Integrated Nutrient Management	1	9			9	246	10	255
Integrated Pest Management	2	172	6	242	22	663	30	1077
Marketing Techniques					2	58	2	58
Micro nutrient deficiency in crops			1	7	3	57	4	64
Mobilization of social capacity					1	12	1	12
Mushroom Production	12	591	4	111	9	185	25	887
Organic farming					2	104	2	104
Packaging					1	6	1	6
Para extension workers			1	39	10	325	11	364
Post Harvest Management	7	170	13	325	84	2308	104	2803
Poultry Management			1	24	34	877	35	901
Prawn culture			14	379	1	20	15	399
Precision Farming					1	27	1	27



Thematic area	AP		TS		MS		Total	
	NC	NB	NC	NB	NC	NB	NC	NB
Production Technology of Horticultural Crops	7	187	8	229	56	1306	71	1722
Production and use of organic inputs	1	30	6	142	35	808	42	980
Production of low volume and high value crops					2	63	2	63
Production technology in Horticulture, Onion & Garlic			1	42			1	42
Repair & Maintenance of farm machinery & implements	1	47	3	75	25	578	29	700
Rural Crafts	2	20			3	72	5	92
Seed Production	3	75			15	233	18	308
Sericulture	1	39	1	40	4	190	6	269
Soil Health and Fertility Management	1	20	1	32	161	1079	163	1131
Use of ICT for capacity building					1	15	1	15
Use of Plastics in Farming Practices					2	63	2	63
Women Empowerment	24	628	11	421	58	1314	93	2363
<b>TOTAL :</b>	<b>78</b>	<b>2490</b>	<b>86</b>	<b>2690</b>	<b>705</b>	<b>15876</b>	<b>869</b>	<b>21056</b>

*NC: Number of courses NB: No. of beneficiaries*

In Zone-V, 385 training courses with a participation of 12646 Extension Personnel covering various thematic areas viz. Integrated Crop Management (98), Group

Dynamics and Farmers Organizations (21), Women Empowerment (46), Dairy Management (26) etc., were organized by KVKs (Table 3.3.4).



Capacity building programme on soil health improvement



Training on organic farming KVK Karimnagar (Ramgirikhilla)

**Table: 3.3.4 Details of training for Extension Functionaries:**

Thematic area	AP		TS		MS		Total	
	NC	NB	NC	NB	NC	NB	NC	NB
Awareness on Improved Agriculture technology	1	90	3	121	4	73	8	284
Capacity Building	1	90	1	24	32	607	34	721
Carp culture			2	61			2	61
Climate change impact on livestock					1	13	1	13
Dairy Management	1	90	1	9	24	633	26	732
Dryland farming					1	27	1	27
Entrepreneurship development					9	240	9	240
Export potential fruit					2	26	2	26
Group Dynamics & farmers organization of SHGs					21	875	21	875
Home science			1	16	5	109	6	125
Horticulture			1	65	11	445	12	510
House Hold Food Security			1	16	5	143	6	159
Hydroponics					1	50	1	50
ICT application for capacity building			1	45	2	40	3	85
Income generation activities for empowerment of rural					1	19	1	19
Integrated Crop Management	16	957	16	422	66	2506	98	3885
Integrated Farming System					11	269	11	269
Leadership development	1	95			1	44	2	139
Management of farm animal			2	79	5	198	7	277
Market intelligence					2	28	2	28
Mobilization of social capacity					8	320	8	320
Mushroom production					2	35	2	35
Post Harvest Technology on Turmaric & Ginger					6	207	6	207
Poultry management					3	83	3	83
PRA					3	82	3	82
Production and use of organic inputs					3	170	3	170
Production of high value crops					1	21	1	21
Protective cultivation	1	30					1	30
Quail Management					1	18	1	18
Repair and maintenance of farm machinery and implements			1	37	5	200	6	237
Soil & Water testing & Management	1	30			37	1192	38	1222
Strategic Research & Extension Planning					2	25	2	25
Value addition & processing			1	32	8	212	9	244
Women Empowerment	6	242	10	208	30	910	46	1360
<b>TOTAL :</b>	<b>28</b>	<b>1624</b>	<b>42</b>	<b>1140</b>	<b>315</b>	<b>9882</b>	<b>385</b>	<b>12646</b>

NC: Number of courses NB: No. of beneficiaries

### 3.3.1. Sponsored Training

With the available infrastructure and technical manpower, KVKs facilitate various research institutes, line departments of state and central government, financial institutions etc. in organizing sponsored training in rural areas. KVKs organized 445 sponsored training programmes covering 17939 farmers and rural youth (Table 3.3.5). 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 Integrated Crop Management (3868), Integrated Farming (320), Value Addition (1868), Dairying (499) etc.

**Table: 3.3.5 Details of sponsored training programs**

Thematic area	AP		TS		MS		Total	
	NC	NB	NC	NB	NC	NB	NC	NB
Agri Mechanization					1	23	1	23
Awareness creation					3	473	3	473
Bee keeping	3	75					3	75
Capacity Building					15	186	15	186
Crop Management	27	1627			26	1050	53	2677
Cultivation of Fruit	2	69			4	88	6	157
Dairy management	1	20	1	42	14	437	16	499
Drought Management	1	100					1	100
Entrepreneurship Development					13	429	13	429
Export Potential Vegetable					2	51	2	51
Gender mainstreaming through SHGs					2	49	2	49
Goat Management					2	41	2	41
Group Dynamics & farmers organization					4	299	4	299
Horticulture Leafy vegetables cultivation	1	35			1	50	2	85
Household food security by kitchen gardening and nutrition gardening			1	45			1	45
HRD					4	295	4	295
Income Generation	9	227	1	35	6	202	16	464
Integrated Crop Management	28	585	4	124	16	695	48	1404
Integrated Disease Management	1	25					1	25
Integrated Nutrient management	8	233			5	133	13	366
Integrated Pest Management	6	320			18	1611	24	1931
Integrated Farming System			3	167	2	153	5	320
IPDM	1	30					1	30
Layout and Management					1	25	1	25
leadership development	1	95			4	280	5	375
Low cost and nutrient efficient diet designing	1	27			1	30	2	57
Management of young plants/orchards	1	30			3	75	4	105

Thematic area	AP		TS		MS		Total	
	NC	NB	NC	NB	NC	NB	NC	NB
Methods					1	17	1	17
Micro irrigation systems of orchards	2	80					2	80
Micro nutrient deficiency in crops	4	85					4	85
Mobilization of social capacity					1	52	1	52
Mushroom cultivation	4	176					4	176
Nursery management	1	10			3	91	4	101
Off-season vegetables	1	47					1	47
Organic Farming			8	205	2	85	10	290
Para Extension workers					5	152	5	152
Post Harvest management	1	32			7	183	8	215
Post Harvest Technology					10	255	10	255
Poultry Management	2	185			5	275	7	460
PPV & FR					1	40	1	40
PRA					2	64	2	64
Processing and value addition					5	138	5	138
Production of low volume and high value crops					1	190	1	190
Production of organic inputs					1	28	1	28
Protected cultivation technology					8	235	8	235
Pulses	2	112					2	112
Repair and maintenance of farm machinery and implements					2	63	2	63
Seed production	1	20			6	260	7	280
Sheep and Goats management					1	45	1	45
Small scale income generating enterprise			2	50	2	151	4	201
Soil & water conservatioin	1	20	1	30	2	167	4	217
Soil Health and Fertility Management	5	131			13	402	18	533
Soil Sampling					2	112	2	112
SREP					1	11	1	11
Training and Pruning	1	48					1	48
Value addition	8	399	8	266	34	1065	50	1730
vermicompost Production					2	70	2	70
Weed Management	1	20			10	309	11	329
Women Empowerement	2	50	4	162	6	512	12	724
WTO and IPR issues	2	100	3	153			5	253
<b>TOTAL :</b>	<b>129</b>	<b>5013</b>	<b>36</b>	<b>1279</b>	<b>280</b>	<b>11647</b>	<b>445</b>	<b>17939</b>

NC: Number of courses NP : No. of participants

### 3.3.2. Vocational Training

To promote entrepreneurship development, income generation and self-employment especially among rural youth and school dropouts, KVKs organized vocational training programs. In all, 303 vocational training programs covering 7794 rural youth were

organized by KVKs during 2015-16 (Table 3.3.6). The important thematic areas include Value Addition (49), Income Generation for Women (12), Poultry (25), Nursery Management (15), Dairy (29) and Women Empowerment (13) etc.

**Table: 3.3.6 Details of vocational training programs organized by KVKs**

Thematic area	AP		TS		MS		Total	
	NC	NB	NC	NB	NC	NB	NC	NB
Agricultural Business					1	35	1	35
Agro Processing					1	15	1	15
Agro Service Center					1	23	1	23
Agro Tourism					1	52	1	52
Bee keeping	1	25			1	26	2	51
Bio Pesticides Production					1	17	1	17
Cocoon Production					1	30	1	30
Crop Diversification	1	10					1	10
Cropping Systems	1	10					1	10
Dairy Management	1	30			28	763	29	793
Disease management					3	89	3	89
Entrepreneurship Development	4	222					4	222
Farm Machinery and its maintenance					6	79	6	79
Feed Management					1	30	1	30
FPO					1	33	1	33
Goat and sheep rearing					28	955	28	955
Horticulture			1	25	6	132	7	157
Income generating activities					12	358	12	358
Installation & maintenance of micro irrigation systems					1	24	1	24
Integrated Crop Management	1	25			7	150	8	175
Integrated Farming System	1	10			4	105	5	115
Integrated Nutrient Management					1	34	1	34
Low cost and nutrient efficient diet designing	1	30			6	152	7	182
Micro Irrigation/irrigation	1	10					1	10
Mushroom Production					2	16	2	16
Nursery management					15	341	15	341
Para Extension Worker					1	51	1	51
Post Harvest Management					8	163	8	163

Thematic area	AP		TS		MS		Total	
	NC	NB	NC	NB	NC	NB	NC	NB
Poultry Management	1	30			24	587	25	617
Precision Farming					1	27	1	27
Production of organic inputs					10	198	10	198
Production of quality animal products					4	123	4	123
Protected Cultivation					14	293	14	293
Rearing Technology					1	19	1	19
Repair and maintenance of farm machinery and implements					1	33	1	33
Rural Crafts					2	42	2	42
Seed Production					10	125	10	125
Self employment	5	140					5	140
Sericulture					1	19	1	19
Sheep and Goats management					3	176	3	176
Skills in using the climbing device	4	80					4	80
Small scale processing					3	85	3	85
Soil & Water Testing					3	41	3	41
Value Addition	13	467	1	15	35	706	49	1188
Vermi-compost production					1	26	1	26
Veterinary science					3	40	3	40
Women Empowerment	5	275	1	12	7	165	13	452
<b>TOTAL :</b>	<b>40</b>	<b>1364</b>	<b>3</b>	<b>52</b>	<b>260</b>	<b>6378</b>	<b>303</b>	<b>7794</b>

NC: Number of courses NP: No. Of Participants

### 3.4 Extension Activities

To create awareness among farmers about improved agricultural technologies, KVKs in Zone-V organized 39317 extension activities covering 1832340 participants (Table 3.4.1). 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 8758 extension activities covering 227728 participants, in Telangana organized 6443 extension activities covering 94102

participants and the corresponding figures for Maharashtra are 24116 and 1510510 (Table 3.4.2, 3.4.3 and 3.4.4).



Method demonstration on seed treatment for groundnut, KVK Anantapur (Kalyandurg)

**Table: 3.4.1 Details of Extension Activities organized by KVKs in Zone V**

Activity	No.of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory Services	2739	470931	4489	475420	846	505	1351	471777	4994	<b>476771</b>
Agri mobile clinic	101	715	208	923	108	72	180	823	280	<b>1103</b>
Animal Health Camp	142	3611	548	4159	112	8	120	3723	556	<b>4279</b>
Breast feeding week	60	0	912	912	0	50	50	0	962	<b>962</b>
Campaign on effect of unseasonal rainfall and dew on crop	104	801	159	960	62	36	98	863	195	<b>1058</b>
campaign on Oily Spot disease management in Pomegranate	55	60	65	125	0	0	0	60	65	<b>125</b>
Celebration of important days	384	21598	15156	36754	961	397	1358	22559	15553	<b>38112</b>
Diagnostic Visit	3207	13322	1803	15125	670	213	883	13992	2016	<b>16008</b>
Exhibition	250	651018	59343	710361	6288	1773	8061	657306	61116	<b>718422</b>
Exposure Visit	221	5270	1223	6493	212	50	262	5482	1273	<b>6755</b>
Ex-trainee Sammelan	66	1457	260	1717	21	2	23	1478	262	<b>1740</b>
Farm Science Club Conveners meet	75	947	145	1092	29	6	35	976	151	<b>1127</b>
Farmers Field School	82	673	37	710	3	0	3	676	37	<b>713</b>
Farmers visit to KVK	18748	137995	35659	173654	2329	430	2759	140324	36089	<b>176413</b>
Farmer-scientist interaction meet	309	6806	1374	8180	452	167	619	7258	1541	<b>8799</b>
Field day	395	15650	2549	18199	1220	225	1445	16870	2774	<b>19644</b>
Film Show	162	3335	986	4321	110	41	151	3445	1027	<b>4472</b>
Group Meeting	913	18619	2785	21404	1041	225	1266	19660	3010	<b>22670</b>
Grow safe food campaign	55	460	199	659	23	45	68	483	244	<b>727</b>
Health Camp	65	1523	1740	3263	7	19	26	1530	1759	<b>3289</b>
Innovative Couple farmer forum meeting	66	105	92	197	0	0	0	105	92	<b>197</b>
Innovative Farmers Meet	69	3452	126	3578	43	24	67	3495	150	<b>3645</b>
Kisan Ghosthi	322	15770	3210	18980	400	173	573	16170	3383	<b>19553</b>
Kisan Mela	215	35896	7345	43241	1667	364	2031	37563	7709	<b>45272</b>
KVK at Village	197	16	1	17	6	0	6	22	1	<b>23</b>
Lectures delivered as resource persons	1264	40821	8958	49779	3605	1144	4749	44426	10102	<b>54528</b>

Activity	No.of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Mahila Mandals Conveners meetings	61	50	268	318	4	2	6	54	270	324
Method Demonstrations	973	16703	6177	22880	1203	398	1601	17906	6575	24481
News paper coverage	2096	26580	14612	41192	944	502	1446	27524	15114	42638
Nutrition week	66	328	1067	1395	22	35	57	350	1102	1452
Phone in programme	118	134	41	175	15	9	24	149	50	199
Plant Clinic	137	81	0	81	7	3	10	88	3	91
PRA Survey / Village Survey	96	2175	734	2909	78	53	131	2253	787	3040
Radio Talk	618	9346	4651	13997	1752	135	1887	11098	4786	15884
Scientific visit to farmers field	3762	13897	2323	16220	602	121	723	14499	2444	16943
Self Help Group Conveners meetings	128	296	3359	3655	36	107	143	332	3466	3798
Soil health Camp	172	4433	794	5227	126	36	162	4559	830	5389
TV Talks	410	45869	24997	70866	10180	181	10361	56049	25178	81227
Video conference	74	0	0	0	2	2	4	2	2	4
Workshops & Meeting	306	6047	1075	7122	1667	445	2112	7714	1520	9234
Others	34	1097	76	1173	39	17	56	1136	93	1229
<b>Grand Total</b>	<b>39317</b>	<b>1577887</b>	<b>209546</b>	<b>1787433</b>	<b>36892</b>	<b>8015</b>	<b>44907</b>	<b>1614779</b>	<b>217561</b>	<b>1832340</b>



Field day at KVK Beed (Ambajogai)



**Table: 3.4.2 Details of Extension Activities organized by KVKs in Andhra Pradesh**

Activity	No. of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory Services	825	6052	1405	7457	633	443	1076	6685	1848	8533
Agri mobile clinic	15	675	208	883	89	62	151	764	270	1034
Animal Health Camp	28	790	387	1177	22	6	28	812	393	1205
Breast feeding week	17	0	670	670	0	41	41	0	711	711
Campaign on effect of unseasonal rainfall and dew on crop	18	631	124	755	56	32	88	687	156	843
Campaign on oily Spot disease management in Pomegranate	14	0	0	0	0	0	0	0	0	0
Celebration of important days	44	1083	810	1893	84	53	137	1167	863	2030
Diagnostic Visit	995	3747	979	4726	212	143	355	3959	1122	5081
Exhibition	68	10699	4200	14899	1666	1089	2755	12365	5289	17654
Exposer Visit	33	820	116	936	18	13	31	838	129	967
Ex-trainee Sammelan	14	0	0	0	0	0	0	0	0	0
Farm Science Club Conveners meet	15	90	30	120	0	0	0	90	30	120
Farmers Field School	13	0	0	0	0	0	0	0	0	0
Farmers visit to KVK	3667	5317	1793	7110	201	115	316	5518	1908	7426
Farmer-scientist interaction meet	21	1306	476	1782	133	66	199	1439	542	1981
Field day	83	3257	697	3954	136	97	233	3393	794	4187
Film Show	15	90	50	140	10	10	20	100	60	160
Group Meeting	130	3460	772	4232	161	97	258	3621	869	4490
Grow safe food campaign	13	382	183	565	23	45	68	405	228	633
Health Camp	13	0	0	0	0	0	0	0	0	0
Innovative Couple farmer forum meeting	13	0	0	0	0	0	0	0	0	0
Innovative Farmers Meet	13	80	35	115	15	21	36	95	56	151
Kisan Ghosthi	37	1586	862	2448	87	68	155	1673	930	2603
Kisan Mela	27	6263	1507	7770	410	187	597	6673	1694	8367
KVK at Village	13	0	0	0	0	0	0	0	0	0
Lectures delivered as resource persons	176	2907	683	3590	602	315	917	3509	998	4507
Mahila Mandals Conveners meetings	15	0	86	86	0	0	0	0	86	86
Method Demonstrations	334	5743	2605	8348	263	138	401	6006	2743	8749
News paper coverage	687	24954	14263	39217	915	489	1404	25869	14752	40621
Nutrition week	22	328	624	952	15	19	34	343	643	986
Phone In Programme	23	134	41	175	15	9	24	149	50	199
Plant Clinic	20	0	0	0	0	0	0	0	0	0

Activity	No. of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
PRA Survey / Village Survey	45	1458	658	2116	67	50	117	1525	708	2233
Radio Talk	224	8121	4415	12536	1752	135	1887	9873	4550	14423
Scientific visit to farmers field	724	987	582	1569	19	8	27	1006	590	1596
Self Help Group Conveners meetings	15	0	964	964	0	0	0	0	964	964
Soil health Camp	49	1145	497	1642	21	26	47	1166	523	1689
TV talks	213	45473	24733	70206	10154	169	10323	55627	24902	80529
Video conference	22	0	0	0	0	0	0	0	0	0
Workshops & Meeting	45	1862	704	2566	227	177	404	2089	881	2970
Others	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>8758</b>	<b>139440</b>	<b>66159</b>	<b>205599</b>	<b>18006</b>	<b>4123</b>	<b>22129</b>	<b>157446</b>	<b>70282</b>	<b>227728</b>

**Table: 3.4.3 Details of Extension Activities organized by KVKs in Telangana**

Activity	No. of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory Services	1067	7415	818	8233	105	44	149	7520	862	8382
Agri mobile clinic	11	0	0	0	0	0	0	0	0	0
Animal Health Camp	15	380	73	453	11	2	13	391	75	466
Breast feeding week	13	0	95	95	0	5	5	0	100	100
Campaign on effect of unseasonal rainfall and dew on crop	11	5	35	40	0	4	4	5	39	44
campaign on Oily Spot disease management in Pomegranate	11	0	0	0	0	0	0	0	0	0
Celebration of important days	39	1198	915	2113	59	22	81	1257	937	2194
Diagnostic Visit	530	2323	328	2651	132	42	174	2455	370	2825
Exhibition	37	9139	5266	14405	64	37	101	9203	5303	14506
Exposure Visit	49	1667	305	1972	40	4	44	1707	309	2016
Ex-trainee Sammelan	13	17	21	38	1	2	3	18	23	41
Farm Science Club Conveners meet	13	73	0	73	0	0	0	73	0	73
Farmers Field School	11	0	0	0	0	0	0	0	0	0
Farmers visit to KVK	2119	14498	3024	17522	236	64	300	14734	3088	17822
Farmer-scientist interaction meet	39	2320	364	2684	94	39	133	2414	403	2817
Field day	42	2030	394	2424	69	13	82	2099	407	2506
Film Show	45	813	280	1093	31	14	45	844	294	1138

Activity	No.of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Group Meeting	172	3274	724	3998	44	13	57	3318	737	4055
Grow safe food campaign	11	78	16	94	0	0	0	78	16	94
Health Camp	16	1450	1600	3050	3	4	7	1453	1604	3057
Innovative Couple farmer forum meeting	11	0	0	0	0	0	0	0	0	0
Innovative Farmers Meet	11	11	2	13	0	0	0	11	2	13
Kisan Ghosthi	23	1723	425	2148	15	8	23	1738	433	2171
Kisan Mela	25	5584	932	6516	82	33	115	5666	965	6631
KVK at Village	154	0	0	0	0	0	0	0	0	0
Lectures delivered as resource persons	257	9559	1552	11111	428	186	614	9987	1738	11725
Mahila Mandals Conveners meetings	11	0	0	0	0	0	0	0	0	0
Method Demonstrations	136	3061	1025	4086	110	63	173	3171	1088	4259
News paper coverage	451	0	0	0	0	0	0	0	0	0
Nutrition week	12	0	224	224	5	7	12	5	231	236
Phone In Programme	51	0	0	0	0	0	0	0	0	0
Plant Clinic	11	0	0	0	0	0	0	0	0	0
PRA Survey / Village Survey	11	221	51	272	0	0	0	221	51	272
Radio Talk	115	1010	226	1236	0	0	0	1010	226	1236
Scientific visit to farmers field	704	3403	398	3801	221	49	270	3624	447	4071
Self Help Group Conveners meetings	12	0	14	14	0	2	2	0	16	16
Soil health Camp	15	504	43	547	12	3	15	516	46	562
TV Talks	79	0	0	0	0	0	0	0	0	0
Video conference	13	0	0	0	0	0	0	0	0	0
Workshops & Meeting	77	620	125	745	21	8	29	641	133	774
Others	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>6443</b>	<b>72376</b>	<b>19275</b>	<b>91651</b>	<b>1783</b>	<b>668</b>	<b>2451</b>	<b>74159</b>	<b>19943</b>	<b>94102</b>



Diagnostic visit by the scientists of KVK, East Godavari (Pandirimamidi)



Training on value addition, KVK Kurnool (Banavasi)



TV Programme on melon production, KVK Karimnagar (Ramgirikhilla)

**Table: 3.4.4 Details of Extension Activities organized by KVKs in Maharashtra**

Activity	No.of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory Services	847	457464	2266	459730	108	18	126	457572	2284	<b>459856</b>
Agri mobile clinic	75	40	0	40	19	10	29	59	10	<b>69</b>
Animal Health Camp	99	2441	88	2529	79	0	79	2520	88	<b>2608</b>
Breast feeding week	30	0	147	147	0	4	4	0	151	<b>151</b>
Campaign on effect of unseasonal rainfall and dew on crop	75	165	0	165	6	0	6	171	0	<b>171</b>
campaign on Oily Spot disease management in Pomegranate	30	60	65	125	0	0	0	60	65	<b>125</b>
Celebration of important days	301	19317	13431	32748	818	322	1140	20135	13753	<b>33888</b>
Diagnostic Visit	1682	7252	496	7748	326	28	354	7578	524	<b>8102</b>
Exhibition	145	631180	49877	681057	4558	647	5205	635738	50524	<b>686262</b>
Exposer Visit	139	2783	802	3585	154	33	187	2937	835	<b>3772</b>
Ex-trainee Sammelan	39	1440	239	1679	20	0	20	1460	239	<b>1699</b>
Farm Science Club Conveners meet	47	784	115	899	29	6	35	813	121	<b>934</b>
Farmers Field School	58	673	37	710	3	0	3	676	37	<b>713</b>
Farmers visit to KVK	12962	118180	30842	149022	1892	251	2143	120072	31093	<b>151165</b>
Farmer-scientist interaction meet	249	3180	534	3714	225	62	287	3405	596	<b>4001</b>
Field day	270	10363	1458	11821	1015	115	1130	11378	1573	<b>12951</b>
Film Show	102	2432	656	3088	69	17	86	2501	673	<b>3174</b>
Group Meeting	611	11885	1289	13174	836	115	951	12721	1404	<b>14125</b>
Grow safe food campaign	31	0	0	0	0	0	0	0	0	<b>0</b>
Health Camp	36	73	140	213	4	15	19	77	155	<b>232</b>
Innovative Couple farmer forum meeting	42	105	92	197	0	0	0	105	92	<b>197</b>
Innovative Farmers Meet	45	3361	89	3450	28	3	31	3389	92	<b>3481</b>
Kisan Ghosthi	262	12461	1923	14384	298	97	395	12759	2020	<b>14779</b>
Kisan Mela	163	24049	4906	28955	1175	144	1319	25224	5050	<b>30274</b>
KVK at Village	30	16	1	17	6	0	6	22	1	<b>23</b>
Lectures delivered as resource persons	831	28355	6723	35078	2575	643	3218	30930	7366	<b>38296</b>
Mahila Mandals Conveners meetings	35	50	182	232	4	2	6	54	184	<b>238</b>
Method Demonstrations	503	7899	2547	10446	830	197	1027	8729	2744	<b>11473</b>

Activity	No. of activities	Farmers (Others + SC/ST)			Extension Officers			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
News paper coverage	958	1626	349	1975	29	13	42	1655	362	2017
Nutrition week	32	0	219	219	2	9	11	2	228	230
Phone in programme	44	0	0	0	0	0	0	0	0	0
Plant Clinic	106	81	0	81	7	3	10	88	3	91
PRA Survey / Village Survey	40	496	25	521	11	3	14	507	28	535
Radio Talk	279	215	10	225	0	0	0	215	10	225
Scientific visit to farmers field	2334	9507	1343	10850	362	64	426	9869	1407	11276
Self Help Group Conveners meetings	101	296	2381	2677	36	105	141	332	2486	2818
Soil health Camp	108	2784	254	3038	93	7	100	2877	261	3138
TV talks	118	396	264	660	26	12	38	422	276	698
Video conference	39	0	0	0	2	2	4	2	2	4
Workshops & Meeting	184	3565	246	3811	1419	260	1679	4984	506	5490
Others	34	1097	76	1173	39	17	56	1136	93	1229
<b>Total</b>	<b>24116</b>	<b>1366071</b>	<b>124112</b>	<b>1490183</b>	<b>17103</b>	<b>3224</b>	<b>20327</b>	<b>1383174</b>	<b>127336</b>	<b>1510510</b>

### Technology Week and Kisan Mobile Advisories

Four KVKs in Andhra Pradesh, 3 KVK in Telangana and 25 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 3.4.5. Similarly, KVKs also provided Kisan Mobile Advisory on weather information, market prices of various commodities, weather and crop based technology advisory etc. (Table 3.4.6)

**Table 3.4.5 : Details of Technology Week celebrations in KVKs in Zone V**

Activity		Andhra Pradesh		Telangana		Maharashtra		Zone (Total)	
		Q/No.	NF	Q/No.	NF	Q/No.	NF	Q/No.	NF
1.	Diagnostic Practical	2	522			93	4424	95	4946
2.	Exhibition	13	1394	10	1371	478	331579	501	334344
3.	Farm Visit	11	1449	9	459	168	309281	188	311189
4.	Film show	5	949	2	71	139	8608	146	9628
5.	Gosthies	2	543			48	8072	50	8615
6.	Lectures organized	34	1855			188	17816	222	19671
8.	Distribution of material								
	a) Bio Fertilizers (q)					38.2	225	38.2	225
	b) Bio Pesticides (					2584	907	2584	907
	c) Planting materials (No.)					10247	324	10247	324
	d) Livestock material					641	251	641	251

Activity	Andhra Pradesh		Telangana		Maharashtra		Zone (Total)	
	Q/No.	NF	Q/No.	NF	Q/No.	NF	Q/No.	NF
e) Seed (q)					45.78	71	45.78	71
f) Literature (No.)	13	2185	5	391	113	53959	131	59535
g) Seminar (No.)	1	500	18	4604	1	90	20	5194
Total number of farmers visited the technology week		2185		774		338224		341183
No. of other agencies involved	39		16		411		466	

Q: Quantity; NF: Number of farmers

**Table 3.4.6 Details of Kisan Mobile Advisories in Zone-v**

Category	Group	Andhra Pradesh		Telangana		Maharashtra		Zone	
		NM	NF	NM	NF	NM	NF	NM	NF
Animals	Diary	44	2789			101	78913	146	81706
	Fisheries	33	4276	9	1673	15	495	57	6444
	Poultry	31	1598	67	2170	47	57170	145	60938
	Sheep & Goat	29	3661	17	229	56	46042	102	49932
<b>Animals Total</b>		<b>137</b>	<b>12324</b>	<b>94</b>	<b>4076</b>	<b>219</b>	<b>182620</b>	<b>450</b>	<b>199020</b>
Crops	Cereals	160	23885	95	19326	140	120357	395	163568
	Commercial Crops	43	3432	28	10408	194	105403	265	119243
	Fodder	27	1067	21	1775	38	49648	86	52490
	Fruits	46	10130	27	7042	241	60765	314	77937
	Oilseed	86	9702	29	4443	87	76569	202	90714
	ornamental	22	1260	3	3	2	4558	27	5821
	Pulses	95	10715	44	6997	122	74186	261	91898
	Spices	37	2913	12	2811	10	11090	59	16814
Vegetables	70	12069	29	11904	263	74820	362	98793	
<b>Crops Total</b>		<b>586</b>	<b>75173</b>	<b>288</b>	<b>64709</b>	<b>1097</b>	<b>577396</b>	<b>1971</b>	<b>717278</b>
Others	Agro Advisories	25	5241	9	2000	109	60201	143	67442
	Critical Technology Products	16	2601	11	1793	75	57664	102	62058
	Farm Implements	36	6426	1	23	47	42835	84	49284
	KVK programmes	49	16917	7	1365	195	80695	251	98977
	Market information	27	4300	18	1919	88	21115	133	27334
	Weather Information	81	13274	52	5563	130	87781	263	106618
	Women & Children	37	823	8	4552	10	10762	55	16137
<b>Others Total</b>		<b>271</b>	<b>49582</b>	<b>106</b>	<b>17215</b>	<b>654</b>	<b>361053</b>	<b>1031</b>	<b>427850</b>

NM: Number of messages; NF: Number of farmers

### 3.5 Publications

To disseminate the information on improved agricultural technologies through print media, KVKs of Zone-V brought out 1677 publications which include 611 popular articles, 378 Leaflets/folders/

Pamphlets, 178 technical reports, 37 Research Papers, 88 Books/Booklets / Brochures, 167 News Letter and 28 electronic publications viz. CD/VCD/DVDs etc. The details of publications brought out by the KVKs are given in Table 3.5.1.

**Table: 3.5.1 Details of Publications by KVKs**

Type of Publication	Andhra Pradesh		Telangana		Maharashtra		Total	
	No	No.of Copies	No	No.Of Copies	No	No.of Copies	No	No.of Copies
Books	1	1000	2	50	12	7350	15	8400
Booklets	13	6500	6	1860	19	12360	38	20720
Brochures	9	3000	16	21000	10	12187	35	36187
Leaflets	1	500	13	14020	125	112430	139	126950
Folders	19	18000	13	21030	99	156600	131	195630
Pamphlets	44	32240	45	37500	19	57700	108	127440
Popular Articles	199		66		346	2000	611	2000
News Letters	34	150	7	500	126	500500	167	501150
Research Papers	13		3		21		37	0
Technical Reports	49	42	61		68	2885	178	2927
Poster Presentation	11	1501	1		24	1026	36	2527
Success Stories	16	1	2		41	50107	59	50108
CD/DVD Produced			2		26	1581	28	1581
Any other	1	50	14	14	80	1031	95	1095
<b>TOTAL</b>	<b>410</b>	<b>62984</b>	<b>251</b>	<b>95974</b>	<b>1016</b>	<b>917757</b>	<b>1677</b>	<b>1076715</b>

### 3.6 Critical Technology Products

KVKs produce seed of improved varieties/hybrids of crops, planting materials of selected material of plant species, bio products, improved live stock breeds and species to provide them to the farmers thereby facilitating rapid technology transfer.

#### 3.6.1 Seed and planting material

KVKs have produced 4764.60 quintals seed of cereals and millets, 730.73 quintals of oil seeds, about 694.39 quintals of pulses among others and supplied to over 14151 farmers. (Table 3.6.1).

##### Planting material

1497891 slips of fodder crops, 2083375 vegetable seedlings of tomato, brinjal, chillies etc, 531030 saplings of commercial crops including turmeric,

sugarcane etc, 315281 seedlings of fruit crops including mango, guava, pomegranate papaya etc and have supplied to 13890 farmers in the zone. (Table 3.6.2).

##### Bio products and bio agents

201878 Kgs of bio fertilizers, 35174 Kgs of bio pesticides and 11564 Kgs of bio fungicides and supplied to farmers details of which are as in (Table 3.6.3)

#### 3.6.2 Live stock species

462982 live stock species comprising of Fish spawn/seed of 312500 numbers, and 149837 backyard poultry chicks, cattle, sheep and goat have been produced for distribution. (Table 3.6.4).

**Table 3.6.1 Production and supply of seed**

Category	Telangana			Andhra Pradesh			Maharashtra			Total		
	Quantity (Q)	Value (Rs)	No. of farmers	Quantity (Q)	Value (Rs)	No. of farmers	Quantity (Q)	Value (Rs)	No. of farmers	Quantity (Q)	Value (Rs)	No. of farmers
Cereals and millets	1324.56	4893060	5301	1501.605	3852718	2798	1938.44	3699876	2771	4764.60	12445654	10870
Commercial crop				1.41			1.285	12850	28	2.695	12850	28
Flower crops	0.5	540	20	0.5	1000	16	0.01	2750	2	1.01	4290	38
Oil seeds				54.49	258725		676.245	3722838	737	730.73	3981563	737
Fodder crops	0.35	14886	35				0.76	4060	13	1.11	18946	48
Spices							6.543	779325	264	6.543	779325	264
Pulses	15.5	22000	325	35.17	95630	290	643.72	2625303	1194	694.39	2742933	1809
Vegetables	0.097			2.7281	4811		2.57	4406	357	5.3951	9217	357
<b>Total</b>	<b>1341.01</b>	<b>4930486</b>	<b>5681</b>	<b>1595.90</b>	<b>4212884</b>	<b>3104</b>	<b>3269.57</b>	<b>10851408</b>	<b>5366</b>	<b>6206.48</b>	<b>19994778</b>	<b>14151</b>

**Table 3.6.2 Production and supply of planting material**

Enterprise	Andhra Pradesh			Telangana			Maharashtra			Zone		
	Number	Values (Rs)	No. of Farmers	Number	Values (Rs)	No. of Farmers	Number	Values (Rs)	No. of Farmers	Number	Values (Rs)	No. of Farmers
Flower Crops	3823	40160	495	90215	59061	24	13009	62680	29	107047	161901	548
Fodder slips	912	4360	6	304550	90765	317	1192429	1106600	2003	1497891	1201725	2326
Forest Species	52599	162932	128	0	0	0	15166	117480	137	67765	280412	265
Fruits	21258	393472	633	11168	360505	233	282855	8435481	6233	315281	9189458	7099
Medicinal & Aromatic crops	17603	515	1034	0	0	0	0	0	0	17603	515	1034
Ornamental Species	1612	1310	19	1200	8000	6	5333	50990	152	8145	60300	177
Plantation Crops	45738	1142409	737	0	0	0	5834	233360	135	51572	1375768.5	872
Spices	61706	85065	19	0	0	0	0	0	0	61706	85065	19
Tuber crops	0	0	0	0	0	0	5355	21420	1	5355	21420	1
Vegetables	944298	530640	367	200000	4000	20	939077	1068248	2287	2083375	1602888	2674
Mulberry seedlings	0	0	0	0	0	0	23500	23500	19	23500	23500	19
Commercial crops	0	0	0	0	0	0	531030	1254784	113	531030	1254784	113
<b>TOTAL</b>	<b>1149549</b>	<b>2360863</b>	<b>3438</b>	<b>607133</b>	<b>522331</b>	<b>600</b>	<b>3013588</b>	<b>12374543</b>	<b>11109</b>	<b>4770270</b>	<b>15257737</b>	<b>15147</b>



**Table 3.6.3 Production and supply of bio-products and bio-agents**

Product	Andhra Pradesh			Telangana			Maharashtra			Total (Zone)		
	Number	Quantity (Kg)	Value (Rs)	Number	Quantity (Kg)	Value (Rs)	Number	Quantity (Kg)	Value (Rs)	Number	Quantity (Kg)	Value (Rs)
Bio-agents	0	0	0	0	0	0	0	50	0	0	50	0
Bio-fertilizers	0	47293	63207	0	85614	1291045	0	68970	6429314	0	201878	7783566
Bio-foods & herbal medicines	0	0	0	0	0	0	0	3210	382956	0	3210	382956
Bio-pesticides	0	18843	356770	0	25	2000	0	16306	1734126	0	35174	2092896
Bio fungicide	0	973	95050	0	2100	268000	130	8491	1353200	130	11564	1716250
Mineral mixture	0	0	0	0	0	0	0	0	0	0	0	0
Silage Culture	0	0	0	0	0	0	0	0	0	0	0	0
Pest monitoring devices	0	0	0	0	0	0	1825	0	54171	1825	0	54171

**Table 3.6.4 Details of production of live stock, sheep and goat, poultry breed and fisheries**

Category	Andhra Pradesh		Telangana		Maharashtra		Zone	
	Number	Value	Number	Value	Number	Value	Number	Value
Dairy	6	98000	0	0	51	716000	57	814000
Poultry	6980	48385	5084	21683	137773	388485	149837	458553
Sheep and goat	170	540490	57	335040	361	1558510	588	2434040
Fisheries (Spawn and fry)	0	0	303500	328250	9000	36060	312500	364310
<b>Total</b>	<b>7156</b>	<b>686875</b>	<b>308641</b>	<b>684973</b>	<b>147185</b>	<b>2699055</b>	<b>462982</b>	<b>4070903</b>

### 3.6.3 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 236985 samples including soil (218533), water (17907), plant (160) and compost (385). were analyzed by the KVKs benefitting 203840 farmers of 19805 villages (Table 3.6.7).

**Table 3.6.7 Total soil and water testing by KVKs of Zone-V**

Sample	Zone Total			
	NS	NF	NV	Amount (RS.)
Soil samples	218533	186871	16566	19054648
Water samples	17907	16444	3120	1581610
Compost samples	385	321	70	92400
Plant samples	160	204	49	35150
<b>Total</b>	<b>236985</b>	<b>203840</b>	<b>19805</b>	<b>20763808</b>

NS: No. of samples    NF : No. of Formers    NV: No. of Villages

**Table 3.6.8 Details of soil and water testing by KVKs of Zone-V**

Sample	Andhra Pradesh				Telangana				Maharashtra			
	NS	NF	NV	Amount (Rs)	NS	NF	NV	Amount (Rs)	NS	NF	NV	Amount (Rs)
Soil samples	14363	12318	1279	397050	11067	15552	424	208125	193103	159001	14863	18449473
Water samples	1319	1046	209	36925	63	63	44	950	16525	15335	2867	1543735
Compost samples	-	-	-	-	-	-	-	-	160	204	49	35150
Plant samples	26	12	5	0	-	-	-	-	359	309	65	92400
<b>Total</b>	<b>15708</b>	<b>13376</b>	<b>1493</b>	<b>433975</b>	<b>11130</b>	<b>15615</b>	<b>468</b>	<b>209075</b>	<b>210147</b>	<b>174849</b>	<b>17844</b>	<b>20120758</b>

NS: No. of samples    NF : No. of Formers    NV: No. of Villages

### 3.7 Rainwater Harvesting

The details of training programmes on rainwater harvesting conducted by KVKs are given in Table .

A total of 49 courses were conducted for 2193 farmers and farmwomen and extension personnel.

**Table 3.7.1 Details of training programmes conducted by KVK on rainwater harvesting**

KVK	No. of courses	Beneficiaries		
		Male	Female	Total
<b>Andhra Pradesh</b>				
Krishna (Garikapadu)	1	67	34	101
<b>Telangana</b>				
Nizamabad	1	16	52	68
<b>Maharashtra</b>				
Akola	2	35	0	35
Amravati (D)	6	133	18	151
Aurangabad(VNMKV)	5	506	0	506
Beed(A)	3	21	1	22
Beed(K)	1	10	0	10
Buldhana(JJ)	2	62	10	72
Chandrapur	1	44	0	44
Hingoli	1	22	23	45
Jalna	8	260	8	268
Nandurbar	2	55	8	63
Nashik(M)	1	43	0	43
Parbhani	5	518	8	526
Solapur(M)	2	61	0	61
Thane	8	144	34	178
Total (MS)	47	1914	110	2024
<b>Grand Total</b>	<b>49</b>	<b>1997</b>	<b>196</b>	<b>2193</b>

### 3.8 Technological Backstopping

The Directorates of Extension of State Agricultural Universities (SAU) and Zonal Project Directorates facilitate technological backstopping and Human Resource Development (HRD) to the KVKs through extension training and capacity building programmes, seminars, workshop etc. They make frequent monitoring trips to the KVKs during the crop season to review the activities. There are ten Directorates of Extension of SAUs in Zone-V. These include,

Acharya N.G. Ranga Agricultural University, Lam, Sri Venkateswara Veterinary University, Tirupati, Dr. Y.S.Rajasekhara Reddy Horticulture University, Venkataramannagudem in Andhra Pradesh , Professor Jayashankar Telangana State Agricultural University, Hyderabad, Konda Laxman Telangana State Horticulture University, P.V. Narasimha Rao University of Veterinary, Animal and Fishery Sciences in Telangana, Dr. Balasaheb Sawant Konkan Krishi

Vidyapeeth, Dapoli, Vasant Rao Naik Marathwada Krishi Vidyapeeth, Parbhani, Mahatma Phule Krishi Vidyapeeth, Rahuri and Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Akola in Maharashtra. A total of 61 programmes benefitting 2336 KVK staff in Zone-V were jointly organized by the directorates of extension

and the Zonal Project Directorate (Table 3.8.1). Various officials of Directorates of Extension of SAUs and other university officials made 180 visits covering 61 KVKs under their operational jurisdiction during the crop season to monitor and review the activities of KVKs (Table 3.8.2).

**Table 3.8.1 Details of training programs and meetings conducted by ZPD and SAUs of Andhra Pradesh, Telangana and Maharashtra**

SAU/ZPD	No. of meetings	No. of participants
ANGRAU, Hyderabad	17	310
Dr.YSRHU, Venkataramannagudem	7	129
SVVU	0	0
PJTSAU	7	129
BSKV, Dapoli	4	113
VNMKV, Parbhani	2	135
MPKV, Rahuri	4	279
PDKV, Akola	11	277
ZPD, Hyderabad	14	1005
<b>Total</b>	<b>61</b>	<b>2336</b>

**Table 3.8.2 Details of visits by the officials of Directorate of Extension of SAU to KVKs**

SAU	No. of visits	No. of KVKs
ANGRAU, Lam, Guntur	75	18
Dr.YSRHU, Venkataramannagudem	6	2
SVVU, Tirupathi	4	1
PJTSAU, Hyderabad	14	8
BSKV, Dapoli	13	3
VNMKV, Parbhani	17	10
MPKV, Rahuri	48	15
PDKV, Akola	13	4
<b>Total</b>	<b>180</b>	<b>61</b>

### 3.9 Agricultural Technology Information Centre (ATIC)

For facilitating enhanced access of farmers to sources of information, critical inputs and providers of advisory services, 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 ATICs have been functional, one each at five

State Agricultural Universities viz. Acharya N. G. Ranga Agricultural University (Andhra Pradesh), Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Vasant Rao Naik Marathwada Krishi Vidyapeeth, Mahatma Phule Krishi Vidyapeeth and Dr. Punjabrao Deshmukh Krishi Vidyapeeth in Maharashtra and one at Central Institute for Cotton Research, Nagpur,

Maharashtra. During the year 2015-16, a total of 156032 farmers visited the ATICs to access the latest technological information and critical technology products viz. Seed and planting material (Table 3.9.1). ATICs published latest technical information in the form of books, bulletins and electronic print format viz.

compact discs 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 172709 copies of 144 various publications were sold by ATICs with revenue of Rs. 18.46 lakh benefitting 28938 farmers.

**Table 3.9.1 Details of visits of farmers to ATICs**

Nature of visit	Number of farmers
Technology Information	118043
Technology Products	33896
Agro-advisory	2146
Diagnostic services	397
Exposure visits	0
Farmer-Scientists forum	1550
<b>Total</b>	<b>156032</b>

**Table 3.9.2 Details of publication by ATICs**

Publication	Number	No. of copies	Revenue (Rs.lakh)	No.of farmers
Books	76	33180	11.019	9500
Technical bulletins	5	16468	7.09	15037
Technology Inventory	2	500	0	0
CD, DVD & Video film	23	1561	0.357	1401
Leaflet	9	3000	0	2000
Booklet & Pamphlet	29	118000	0	1000
<b>Total</b>	<b>144</b>	<b>172709</b>	<b>18.466</b>	<b>28938</b>

### 3.10 National Innovations in Climate Resilient Agriculture (NICRA)

Under the Technology Demonstration component of NICRA in Zone V, 15 districts (5 in Andhra Pradesh, 2 in Telangana and 7 in Maharashtra) were selected for conducting such technology demonstrations. During the year under report KVKs conducted 1461 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 1305 crop production demonstrations were conducted

in 588 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 473 farmers on fodder production, Hydroponic method of fodder production, Silage making, breed up gradation, mitigation of mineral deficiency, improved birds for backyard poultry, management of fishponds etc., were covered. KVKs under institutional interventions covered 1098 farmers under custom hiring of farm implements

covering 1059 ha area. KVKs also organized 248 training programmes for 7458 participants (5944 farmers and 1514 farmwomen) on soil health management, contingency cropping, vegetable production, farm mechanization, pest and disease management, live stock management, etc. 14577 Extension activities were conducted with participation of 11767 farmers and 2763 farm women.

### De-silting of existing percolation tank at KVK Kurnool

De-silting of the existing percolation tank was taken up during 2012. The overall impact of the existing percolation tank increased the additional water storage capacity (12.60 lakh litres) and 114 defunct borewells were recharged upto 145.4 feet of water available during summer period.

### In-situ moisture conservation practices

Different in-situ moisture conservation practices in soybean were taken up by KVK Amravati viz., broad bed furrow, ridges and furrows and compared with sowing across the slope and no conservation measures as farmers practice to assess the performance of soybean under rainfed conditions. Among different conservation measures adopted, sowing on broad bed furrow recorded highest yield of 17.5 q/ha followed by ridges and furrows (15.50 q/ha) and sowing across the slope (14.75 q/ha).

In case of broad bed furrow in soybean the farmer's practice of no conservation measures recorded lowest yield (10.75 q/ha). The broad bed furrow system not only reported higher yields but also highest net returns of Rs. 34950/ha over other methods with higher benefit cost ratio of 2.32.

**Table 3.9.3 Impact of in-situ moisture conservation practices, KVK Amravati**

Treatments	Seed yield (q/ha)	Fodder Yield (q/ha)	Cost of cultivation (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C ratio
Farmers practice (land preparation but no conservation measures)	10.75	21.50	24375	37625	13250	1.54
Ridges & Furrows	15.50	31.00	25600	54250	28650	2.11
Sowing on Broad bed furrow	17.50	35.00	26300	61250	34950	2.32
Sowing across the slope	14.75	29.50	24375	51625	27250	2.11

The crop diversification intervention with foxtail millet in place of desi cotton gave sustainable yield and higher income under brought in Kurnool district of A.P. Foxtail millet realized net returns of Rs. 36879/ha with a benefit cost ratio of 3.4. The adoption of setaria crop by the farmers was due to its suitability to delayed monsoon, short duration, higher market price and additional benefit of fodder. In view of its superior performance the crop area increased from 40 to 1200 acres in the villages during *kharif* 2015. Area expansion under this crop is expected during ensuing season also.



**Foxtail millet as alternate crop**

Submergence tolerant varieties of rice were assessed up by KVK Srikakulam. The performance of flood tolerant varieties was not good during the year compared to local check varieties (MTU-1001, MTU-7029 and BPT-5204). Irrespective of height of the plant, the crop has not got exposed to full inundation for not more than 3-4 days during tillering stage and 2-3 days during panicle initiation stage due to less rain fall during the crop season. Crop experienced dry spells for 12 days in the month of June, 16 days

in the month of July and from 22<sup>nd</sup> September to till the date of harvest (December 2015). Higher yields were observed in local check varieties viz., MTU-1001 (66.87q/ha) and BPT-5204 (61.5 q/ha), followed by flood tolerant varieties viz., MTU-1064 (58.14 q/ha), PLA-1100 (52.7 q/ha), RGL-2537 (48.62 q/ha) and MTU-1061 (48.43 q/ha). The variety MTU-7029 (51.25 q/ha) recoded 13.4% and 2.83% lesser yield over flood tolerant paddy varieties i.e., MTU-1064 (58.14 q/ha) and PLA-1100 (52.7 q/ha), respectively.



**MTU-1061 & PLA-1100**



**MTU-1061**



**RGL-2537**

Low cost hydroponic fodder production technology with limited water available was demonstrated in NICRA villages of Kurnool to overcome the scarcity of green fodder. Eight kg of fodder can be grown from 1kg maize seed within seven days. Cost of the unit is Rs.13000. Each animal was offered with 12 kg hydroponically grown maize fodder along with 7 kg

jowar straw every day. The results indicated that there was an increase of 8.11% milk yield with the additional net income of Rs.32.00 per day. It was also observed that, through feeding of hydroponic fodder the use of concentrates can be reduced in the feed.



**Low Cost Hydroponics fodder production unit**

Silage making is taken up by KVK Ahmednagar for availability of green fodder during summer. The farmers are purchasing green fodder from market

which costs about Rs.10303 for a period of 2 months. The silage making reduced the cost of fodder by Rs.687 for 2 months.



**Silage Filling**



**Silage Bags**

The KVK Srikakulam undertook the interventions on captive rearing of fish seed i.e., rearing of fish fry up to fingerling stage in nursery pond followed by stocking in the main tank. This practice reduced mortality during acclimatization. Captive rearing not only increases the percentage of survival but also reduces the cost of seed when purchased directly from the market an amount of Rs.10800 was saved in captive rearing of fish in 20 days period.

is tolerant to diseases in rainy season, resulted in reduced mortality rate compared to local birds and also increased the herd size.

Intensive goat rearing was demonstrated by KVK Ratnagiri on raised platform in heavy rainfall areas prone to incidence of pneumonia and mortality. Demonstrations of intensive goat rearing on raised platform with improved breed konkan kanyal which



**Intensive goat rearing, KVK Ratnagiri**

### **3.11 Attracting and Retaining Youth in Agriculture (ARYA)**

ICAR has launched the Scheme ARYA ( Attracting and Retaining Youth in Agriculture) in 2015-16 as one of the three components of National Agricultural Innovation Fund with an objective of creating interest and confidence among rural youth in agriculture and to develop a comprehensive model for the development of rural youth in general and agricultural youth in

particular. Three KVKs viz., Nellore (A.P) , Nalgonda ( Telangana) and Nagpur ( Maharashtra) have been chosen for the implementation of the scheme in Zone V. The various enterprises that have been allotted to each KVK under ARYA and the budget outlay for the financial year 2015-16 have been presented in Table 3.11.1



**Table 3.11.1 Enterprises allotted to KVKs under ARYA and budget outlay (2015-16)**

Sl. No	Name of the KVK District	State	Enterprises allotted	Budget outlay (Lakh Rs)
1	Nellore	Andhra Pradesh	a. Mushroom production b. Raising nurseries of fruits and vegetables c. Vermicomposting.	8.00
2	Nalgonda	Telangana	a. Promotion of Integrated Farming System b. Entrepreneurship development through bakery products c. Creating self employment through nursery raising of vegetables d. Entrepreneurship development through Vermicomposting	8.00
3	Nagpur	Maharashtra	a. Fruit and Vegetable processing b. Production of disease free planting material of pomegranate and citrus c. On the spot soil testing d. Solar insect traps	9.00

The ARYA project of KVK Nellore was launched formally on 31-03-2016 in the presence of Director of Extension, ANGRAU, Dr. K.Raja Reddy and Dr.J.V.Prasad, Principal Scientist and Nodal Officer of ARYA from ICAR-ATARI, Hyderabad . A total of

200 youth have been selected by KVK , Nellore , Andhra Pradesh as beneficiaries under ARYA project during the year 2015-16. The details of the villages, mandals and the number of beneficiaries are given in Table 3.11.2.



**Launching of ARYA project at KVK, Nellore on 31-03-2016**

**Table 3.11.2 Details of mandals, cluster of villages and number of beneficiaries selected by KVK, Nellore (A.P) under ARYA for the year 2015-16.**

S.No	Mandal	Cluster of villages	Enterprise unit	No. of units
1	Venkatachalam	Chavatapalem	Vermicompost	2
			Mushroom	2
		Sri Rampuram	Vermicompost	2
			Mushroom	2
		Thikkavarappadu	Vermicompost	1
		Mangalampadu	Mushroom	1
2	Nellore Rural	Kothakaluva	Mushroom	1
3	Buchi	Purandharapuram	Vermicompost	2
			Mushroom	1
		Ramachandrapuram	Mushroom	2
4	Indukurpet	Kotturu, Devispeta, Pamulavaripalem	Fruit and Vegetable nursery unit	2
5	Saidapuram	Nayanapalli	Fruit and Vegetable nursery unit	1
6	Rapur	Gilakapadu	Fruit and Vegetable nursery unit	1
Total	Mandals-6	Villages-12	Mushroom units-8 Vermicompost units-8 Fruit and Vegetable nursery units-4	20

Efforts have been initiated by KVK, Nellore for the establishment of mushroom spawn production laboratory in the KVK premises by purchasing and installing the requisite equipment like laminar air flow, vertical autoclave, thermo-hygrometer, electronic weighing balance etc. Similarly, material required for establishing a vegetable and fruit nursery unit in the KVK has also been procured and efforts are underway

for initiating the production process. These two units have been established on the KVK premises so as to serve as demonstration units for imparting hands on training during on campus skill development training programmes to the rural youth. Material which would be supplied to the select beneficiaries (rural youth) in the form of critical inputs for starting either mushroom or vermicompost or vegetable/



**Launching of ARYA project at KVK, Nalgonda (Kampasagar) on 02-04-2016**



**Action plan meeting of ARYA at NASC, New Delhi on 28-01-2016**

fruit nursery units has also been procured. The KVK would facilitate establishment of enterprise units in the ensuing financial year in accordance with the budget provision after imparting the required skills to the rural youth through a series of skill development training programmes. The recruitment of project consultant / Project Assistant/ Field Assistant will be taken up shortly following the codal formalities.

The ARYA project of KVK , Nalgonda was launched on 02-04-2016 in the presence of Dr.Y.G.Prasad, Director, ICAR-ATARI, Hyderabad, Scientists from PJTSAU , officials of department of agriculture and Sri Gutha Sukhender Reddy, Honble M.P. Nalgonda. During the year 2015-16, KVK, Nalgonda conducted base line survey of the selected villages and two shade

net units and five mobile vermicompost beds have been procured to establish enterprise units involving rural youth . Similarly with the funds provided under the grants in aid capital, two demonstration units at KVK have been planned for Vermicompost and Bakery Units.

The Heads of the three KVKs implementing ARYA project in zone V attended the national youth convention and ARYA action plan meeting from 27 to 28 ,January, 2016 at NASC , Delhi along with 10 rural youth and presented their future activities under ARYA which were discussed and modified by an expert panel that included Prof. K. Narayana Gowda, Vice chancellor (Rtd.), U.A.S. Bangalore.

### 3.12 Tribal Sub Plan (TSP)

The Tribal Sub Plan was implemented in 13 KVKs of the zone ( 5 in AP, 3 in Telangana and 5 in Maharashtra) with a total outlay of Rs. 175 lakhs (Rs. 150 Lakhs General and Rs.25 Lakhs Capital) .The KVK districts were selected based on the tribal population of the District/Mandals in which the KVKs are operating. An action plan meeting of these KVKs was held on 06-02-2016 to apprise the Heads of KVKs implementing TSP

of the guidelines to be followed while implementing TSP , review the progress of work that has already been initiated and to discuss the action plan for the future. The KVKs were suggested to ensure that the benefits of the interventions/activities taken up under TSP reach exclusively tribal individuals/families/colonies/villages. It was emphasized that more focus be given to imparting skills and to establish enterprises for enhancing livelihood security of the



Capacity building programme under TSP on Integrated Management of Cashew Orchards by KVK, V.R.Gudem, West Godavari, A.P.

tribal beneficiaries. As per the guidelines of ministry of tribal welfare, Government of India, the activities of the KVKs implementing TSP have been covered under four major thematic areas viz., Agri-service center,

Micro-enterprises, Skill development training and Agro-eco tourism. The activities taken up by these 13 KVKs during 2015-16 are presented in Table 3.12.1.

**Table 3.12.1 Achievements of activities undertaken by KVKs under TSP during 2015-16.**

S.No	Activity	Units	Achievement
1	On- farm trials conducted	Number	50
2	Frontline demonstrations conducted	Number	827
3	Farmers training	Number	230
		Participants	7235
4	Training of Rural Youth	Number	49
		Participants	1467
5	Training of Extension Personnel	Number	31
		Participants	548
6	Extension activities	Number	44
		Participants	5078
7	Production of seed	Quintals	121.25
8	Planting material produced	Number	45000
9	Live-stock strains and finger lings produced	Number	18720
10	Soil, water, plant, manures samples tested	Number	3184
11	Mobile agro- advisory provided to farmers	Number	1634
12	Micro-enterprises established	Number	404
		Beneficiaries	887
13	Skill development training programmes	Number	30
		Participants	1065



Vermi compost unit , Nandurbar



Bakery unit, VR Gudem

The KVKs facilitated establishment of 404 micro-enterprises by supplying critical inputs needed and by

imparting necessary skills to 887 tribal beneficiaries in 9 districts (Table 3.12.2).

**Table 3.12.2 Details of micro-enterprises established by KVKs under TSP (2015-16)**

S. No	Name of KVK	Nature of enterprise	No. of units	No. of beneficiaries
1	Adilabad, Telangana	PVC Vermi-units	15	15
2	Kampasagar, Nalgonda, Telangana	Backyard poultry (Rajasri)	60	100
		Commercial vegetable nursery	2	12
		Azolla Units	5	10
		Fiber butties	9	52
3	Vizianagaram, A.P	Millet processing units	2	15
		Vermicompost units	15	30
		Backyard poultry (Vanaraja)	20	100
		Sheep units	4	100
4	Visakhapatnam, A.P	Custom hiring center	1	20
		Bakery products with millets	3	90
		Mush room production	7	16
		Azolla units	25	25
		Hydroponic fodder	2	2
5	V.R.Gudem, West Godavari, A.P	Apiary units	100	20
		Millet based bakery units	2	20
6	Pandirimamidi, East Godavari, A.P	Black Bengal goat units	30	30
		Apiary units	3	30
		Millet processing units	2	20
		Leaf plate making units	2	20
		Rubber processing units	2	20
7	Nandurbar, Maharashtra	Rice mill	7	7
		Dal mill	2	2
		Vermicompost units	12	12
		Light traps	5	15
		Nursery units	2	20
		Poultry units	15	15
8	Thane, Maharashtra	Apiary units	20	20
		Custom hiring center	1	11
		Mibile rice mill	1	10
		Vermicompost units	3	3
9	Amaravathi (Ghatkhed), Maharashtra	Vermicompost units	25	25
Total			404	887

### 3.13 Soil Health Cards

Soil Health Card Scheme was launched by the central government in February 2015. The scheme is planned to issue ‘Soil Health Card’ to farmers based on which they will carryout crop-wise recommendations of nutrients and fertilizers required for their individual farms. This scheme is aimed to help farmers to improve crop productivity through judicious use of inputs.

An allocation budget of Rs 62.5 lakhs to 50 KVKs to provide soil testing kits to prepare soil health cards. A total of 1803358 Soil Health Cards distributed to farmers by KVKs (Andhra Pradesh (16786), Telangana (12595) and Maharashtra (153977). The card will carry crop-wise recommendations of nutrients/fertilizers required for farms, making it possible for farmers to

improve productivity by wisely using inputs.

To create awareness and distribution of soil health cards to farmers by KVKs was organized a meeting on 5<sup>th</sup> December, 2015 as World Soil Day and involving public representatives like Honorable Union Ministers, MPs, MLAs and local state level representatives etc., were participated. Among the dignitaries, Honorable Shri. Mohanbhai K. Kundariya, Union Minister of State for Agriculture, Hon. Shri. Hansarajji Ahir, Union Minister of State for Chemicals & Fertilizers, Hon’ble Shri. Pravin Pote, State Minister of Maharashtra for Industries and Mining, Public Works, Environment. Hon.Dadaji Bhuse, State Minister of Maharashtra for Cooperative were present in respective constituencies.

### WORLD SOIL DAY CELEBRATIONS



**Shri. Mohanbhai K. Kundariya, Minister of State (Agriculture), GOI, at KVK Pune (Narayangoan)**



**Shri. Hansarajji Ahir, Minister of State (Chemicals and Fertilizers), GOI, at KVK Yavatmal**



**KVK Chittoor (Kalikiri) District (A.P)**



**KVK Amravati (Durgapur) District (M.S)**

### 3.14 Awareness on PPV and FR Act 2001

With an objective of creation of awareness among farmers and other stakeholders about the provisions of Protection of Plant Varieties and Farmers Right Act 2001, Apart from ATARI-zone 5, 40 Krishi vigyan kendras (KVKs) under ATARI Zone 5 were identified for the conduct of PPV and FR act awareness cum training programme during the year 2015-16.

Awareness cum Training programme on provisions of PPV and FR act 2001 programme for KVKs officials and other stake holders was conducted by ATARI-zone

5 on 28<sup>th</sup> March 2016 in which 75 officials of KVKs, ICAR institutes and other stake holders participated. Directors from sister ICAR institutes Oil seeds and millets guided the participants on the provisions of the PPV and FR act 2001.

A total of 54 programmes were organized involving 5740 farmers, extension personnel and other stake holders involved in the transfer of technology to farmers and other end users during the year. (table 3.14.1).

**Table 3.14.1 Number of programmes and number organized**

State	No of KVKs involved	No of programmes organized	No of participants
<b>Telangana (ATARI-Zone 5)</b>		1	75
Telangana	8	15	944
Andhra Pradesh	12	16	1170
Maharashtra	20	24	3551
<b>Total</b>	<b>40</b>	<b>54</b>	<b>5740</b>

#### Awards

Atari Zone 5 (Zonal project directorate zone 5) received an award for organizing exhibition on agro bio diversity and plant genetic resources during the “National seminar on take it to farmers the farmers’ rights through awareness” on July 6<sup>th</sup> 2016 at New Delhi



Participants at 3<sup>rd</sup> awareness programme at ATARI Hyderabad March 28<sup>th</sup> 2016

### 3.15 Rabi Cluster Front Line Demonstrations on Pulses under NFSM

The cluster FLD Programme on Pulses was allotted to ICAR-ATARI, Zone-V by Ministry of Agriculture & farmers Welfare, Govt. of India to an extent of 1092 hectares area with a budget layout of Rs. 87.399 lakhs. Accordingly, a total of 2586 FLD's covering an area of 1069.2 hectares were organized by 73 KVKs in Andhra Pradesh, Telangana and Maharashtra states. The crops covered are chickpea, pigeonpea, blackgram and greengram..

**Action plan:** The action plan of the *Rabi* Cluster Front Line Demonstrations was formulated on 26<sup>th</sup> September 2016 with the participation of ATARI scientists, University scientists and KVK scientists. The action plan consists of KVK wise, crop wise programme including the latest improved varieties and technologies on select pulse crops. The details of state wise, crop wise number of demonstrations and area covered are presented in Table 3.15.1.

**Table 3.15.1 Cluster FLD programme on Rabi Pulses during 2015-16 under NFSM implemented in Zone-V (Maharashtra, Andhra Pradesh & Telangana)**

Crop	MS		AP		TS		Zone	
	Demo (No)	Area (ha)	Demo (No)	Area (ha)	Demo (No)	Area (ha)	Demo (No)	Area (ha)
Bengalgram	1683	685	175	82	238	105	2096	872
Blackgram	0	0	249	105	13	7.2	262	112.2
Greengram	0	0	127	45	73	30	200	75
Redgram	0	0	0	0	28	10	28	10
<b>TOTAL</b>	<b>1683</b>	<b>685</b>	<b>551</b>	<b>232</b>	<b>352</b>	<b>152.2</b>	<b>2586</b>	<b>1069.2</b>

A total of 2586 cluster front line demonstrations on chickpea, pigeonpea, black gram and green gram were organized by KVKs covering an area of 1069 ha in Telangana, Andhra Pradesh and Maharashtra states. In Maharashtra, demonstrations were conducted only on chickpea and in A.P. demonstrations on chickpea, black gram and green gram and in Telangana demonstrations on all the four pulse crops were organized by KVKs.

*Rabi* Cluster Frontline Demonstration program was implemented in 13 districts in Andhra Pradesh by 18 KVKs, in 9 districts in Telangana by 13 KVKs and in 30 districts in Maharashtra by 41 KVKs.

**Training:** A two day Zonal workshop cum Training program was organized on Cluster Frontline

Demonstrations on Pulses, 2015-16 for KVK scientists by ICAR-ATARI, Zone-V, Hyderabad during 22-23 December, 2015. The scientists from ICAR –Indian Institute of Pulses Research, Kanpur, from Universities i.e. ANGRAU, MPKV Rahuri, VNMKV Parbhani imparted the training. Director, ICAR-CRIDA, inaugurated the workshop in the presence of Director-ATARI Zone-V, Hyderabad and Bangalore and Dr. D. P. Mallick, Additional Commissioner Crops, Dr. S. M. Kolhatkar, Director, Directorate of Oilseed Development, Ministry of Agriculture, Govt. of India, Hyderabad. During the training, all the relevant and latest technologies on pulses which includes improved varieties INM, IPM, IWM practices etc., were covered.





Zonal workshop cum Training program, 22-23 December 2016 at ICAR-ATARI, Hyderabad

**Extension activities:** Before organizing the demonstrations, the KVKs organized training programmes on technology and methodology of Cluster FLDs on Pulses. A total of 130 training programmes were organized for 4449 farmers in three states. The regular field visits were taken up by the Subject Matter Specialists of KVKs during the season. Field days were also organized during flowering and pod formation stage of the crops ensuring the participation of local leaders and department officers. A total of 82 Field days were organized involving 4149 participants.

### **Pigeonpea:**

To promote pulse production, *rabi* pigeonpea was introduced in Nalgonda district through conducting cluster FLDs in place of *rabi* maize, paddy and vegetables which require more irrigation. Improved and high yielding and pod borer tolerant variety LRG-41 was demonstrated along with recommended package i.e. 20:50:0 NPK and plant protection measures. Chloropyriphos, neem oil for control of pod borer. The

crop was sown in October II week in red soils. The results showed that an average yield of 12.75 q/ha was obtained in the demonstration with an highest yield of 17.5 q/ha. The improved technology gave additional net returns of Rs.10,125/ha. Due to low rainfall in *kharif* season and less requirement of irrigation, the farmers were satisfied with the performance of the *rabi* red gram demonstrations and expressed their interest to cultivate the crop in ensuing *rabi* season.



Field visit Cluster FLD on Redgram (LRG-41) at Kampasagar, Nalgonda dist.

### Green gram:

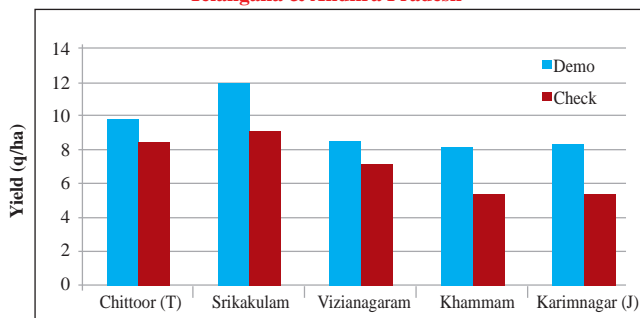
In Telangana, on green gram, the demonstrations were conducted in Khammam district in November month in red sandy loams and medium black soils after paddy and sugarcane crops. Variety MGG-295 along with recommended dose of fertilizer, weedicide and need based plant protection measures were demonstrated. In Chittoor (Tirupathi), Srikakulam and Vizianagaram also the green gram demonstrations were organized during November and December months in rice fallows with variety LGG-460, application of micronutrients, weed management and plant protection against YMV and leaf spot. In case of Karimnagar and Chittoor (Kalikiri) area, the demonstrations were sown during February II nd fortnight with variety WGG-42 and TM 96-2, seed treatment with *Azospirillum*, PSB and chemical weed management. In Khammam because of the early withdrawal of rainfall, in September III rd week and sudden increase in temperatures during crop growth period, insect pest and disease incidence was more. In demonstrations, at different locations, the average seed yield recorded ranged from 8.14 to 12.0 q/ha with an average of 9.36 q/ha against 7.09 q/ha in the check plots. The highest yield recorded in the demonstration is 15.0 q/ha in Khammam district followed by 13.25 q/ha in Srikakulam. In Vishakapatnam and Chittoor (Kalkiri) districts low yields were obtained due to moisture stress. across the locations, improved package of practices gave an additional net returns of Rs.10032/ha over existing practice.

### Blackgram:

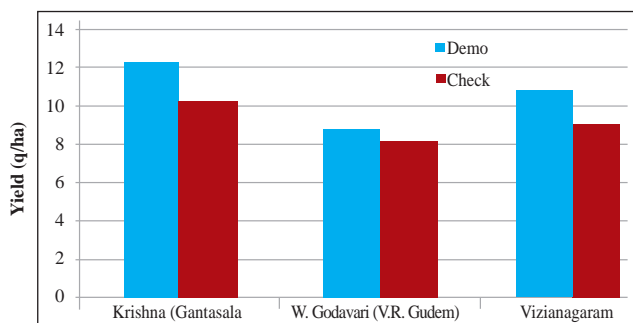
Cluster demonstrations on blackgram during *rabi* 2015-16 were conducted at 11 locations by KVKs in Telangana and Andhra Pradesh states with improved varieties and package of practices. Latest high yielding and YMV tolerant varieties viz., LBG-752 and PU-31 and other package of practices viz., rhizobium, PSB, *Tricoderma viridae*, weed control through pre & post emergence weedicides, foliar application of micro nutrients, Zn, K<sub>2</sub>O and application of need based plant protection measures against YMV, sucking pests etc. were demonstrated. The demonstrations were sown under residual moisture conditions in rice fallows and other *kharif* crops. The soil type varied from medium black, sandy loams & red soils. A perusal of yield data recorded revealed that, the average yields, of the demonstration ranged from 8.8-12.3q/ha under rainfed residual moisture situation. Under irrigated condition, the average yield of 17.12q/ha was obtained in Guntur district with variety PU-31 which is tolerant to yellow mosaic virus. In Krishna (Ghantasala) area, an average yield of 12.3 q/ha was recorded with highest yield of 15.0 q/ha. At other locations the average yields are low as the demonstrations were conducted under rainfed situation and rains were scanty during crop season.

The demonstration on black gram organized under rainfed situation in Andhra Pradesh state gave an average additional net returns of Rs.12,993/ha. In case of irrigated black gram the additional net returns obtained was Rs.33,739/ha.

Performance of Cluste FLDs on Greengram in Telangana & Andhra Pradesh



Performance of Cluste FLDs on Blackgram in Andhra Pradesh



## Chickpea:

Cluster demonstrations on Chickpea crop were conducted during *rabi* 2015-16 by KVKs covering three states i.e. Andhra Pradesh, Telangana and Maharashtra states. A total of 2096 demonstrations were organized in 872.0 hectares area. In Telangana the demonstrations were conducted by 9 KVKs in eight districts under rainfed and irrigated situation. Improved varieties viz., NBeG-3, JAKI-9218 and JG-11 were demonstrated along with bio-fertilizers and pesticides viz., *Rhizobium*, *Tricoderma viridae* and pheromone traps. Farmers applied recommended doses of fertilizer on their own. The average yields obtained in the demonstrations under rainfed situation in different districts ranged from 13.63-15.0 q/ha. The highest average yield recorded was of 15q/ha in Adilabad and Mahaboobnagar. Under rainfed condition, with the use of improved technology the average yields were increased up to 44.3 percent over farmers practice.

In Adilabad, demonstration organized in black soils with sprinkler irrigation gave an average yield of 23.75 q/ha with highest yield of 3.0 t/ha. In Kurnool district of Andhra Pradesh the average yields recorded under irrigated condition is 18.17q/ha.

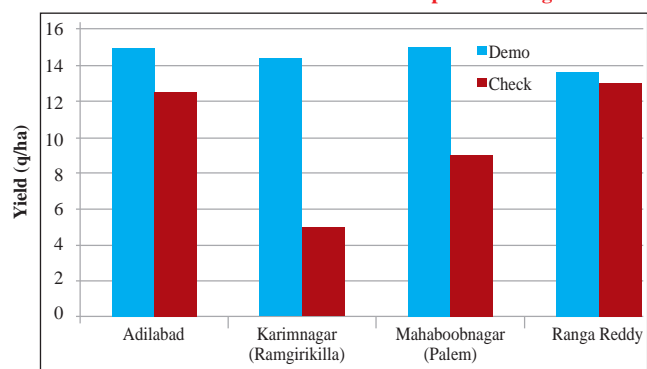
In Telangana the improved technology demonstrated in chickpea crop gave an average additional net returns of Rs.17225/ha over farmers existing practice.

During *rabi* 2015-16, in Andhra Pradesh State, chickpea demonstrations were conducted by five



Performance of Bengal gram NBeG-3 in Kurnool district

Performance of Cluste FLDs on Chickpea in Telangana

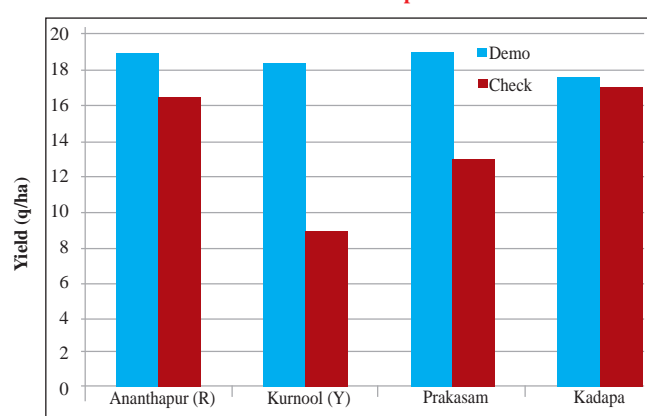


KVKs in Ananthapur, Kurnool, Kadapa and Prakasam districts under both rainfed and irrigated conditions in medium to heavy black soils. Latest improved and high yielding cultivars viz., NBeG-3(Nandyala Sanaga-1), bio-fertilizers, bio-pesticides, weedicide, micro-nutrients were demonstrated. The average chickpea yields recorded in different districts ranged from 12.5 -19.35 q/ha with an overall average of 14.79 q/ha against check yields of 12.06 q/ha. The demonstrations organized by KVK Reddipalli in Atmakur, Tadimarri and Yellanur blocks of Ananthapur area received good rainfall during November month and recorded an average yield of 19.35 q/ha with highest yield of 22.5 q/ha.

In Andhra Pradesh state the demonstrations on chickpea conducted under rainfed gave an average additional net returns of Rs.2935/ha.

In Maharashtra, during *rabi* 2015-16 chickpea demonstrations were conducted in 30 districts by

Performance of Cluste FLDs on Chickpea in Andhra Pradesh





**Performance of Bengal gram NBeG-3 in Kurnool district**



**View of Bengal Gram plot At Salwadgaon Village, Aurangabad (VNMKV)**

39 KVKs. A total of 1683 demonstrations were laid out covering an area of 685.0 hectares. Improved varieties Digvijay, BDNG-797, JAKI-9218 along with rhizobium, PSB, Tricoderma Viridae, micro nutrients, ZnSo<sub>4</sub>, IPM practices were demonstrated. The demonstrations were taken up in medium to heavy black soils under protective irrigation condition. In some locations irrigation was applied through drip. In most of the districts, the rainfall was received up to III rd week of September 2015 and sudden raise in temperature during crop growth period resulted in low yields.

The demonstrations on chickpea conducted in Central Vidarbha zone in medium to heavy black soil with variety JAKI-9218 and improved practices under irrigated situation gave an average yield of 17.18 q/ha against the existing farmers' yield of 12.16 q/ha showing an increase of 41.56%.

The demonstrations conducted under rainfed situation in Central Maharashtra Plateau zone, in the districts of Aurangabad, Beed, Jalna, Nanded and Parbhani with varieties Akash, Digvijay and JAKI-9218 along with recommended practices gave an average yield of 11.70 q/ha against the productivity of 8.67 q/ha under existing practice. Under farmers practice the varieties used are Vijay and Annegiri. This region received low rainfall during past three years.

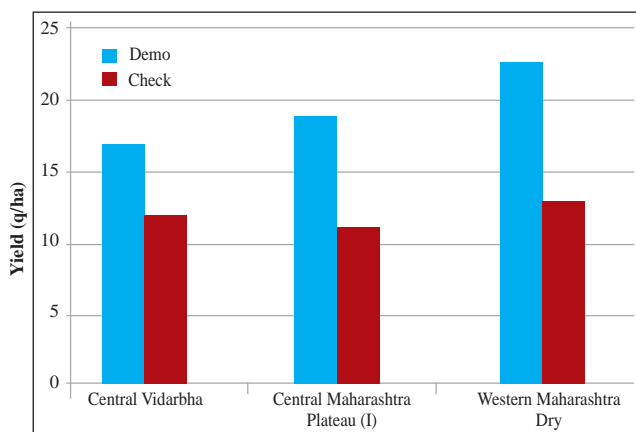
In Central Maharashtra Plateau zone, covering eight districts in Marathwada region, the improved technology gave an additional net returns of Rs.12,786/ha. The average net returns obtained under irrigated situation and the average net returns are Rs.15,821/ha.

The demonstrations conducted under irrigated situation in three districts viz., Nanded, Beed and Hingoli, an average of 19.28q/ha was realized and in farmers practice the average yield recorded was 11.7q/ha.

In Western Maharashtra Dry zone the demonstrations on gram were taken up with Digvijay and JAKI-9218 variety by 16 KVKs in 10 districts. In irrigated condition, across the locations, the average yields obtained under demonstrations was 22.49 q/ha and in check plots the average yields recorded are 14q/ha. The highest yield of 27.43 q/ha was realised in Solapur (Khed) with Variety Digvijay under drip irrigation.

The cluster Front Line Demonstration organized under irrigated situation in Western Maharashtra Dry Zone, gave an average additional net returns of Rs.17,426/

**Performance of Cluste FLDs on Chickpea in Maharashtra**





**Field Day on FLD Pulses at Kanneveedu,  
Garikapadu KVK, Krishna District**



**Visit of monitoring team ICAR, GOI to Cluster  
FLD on Bengalgram at Jalna district**

ha. Under rainfed situation the average additional net returns obtained are Rs.5948/ha.

Under rainfed situation, the average yields recorded in demonstration is 11.19 q/ha against local check average of 7.0 q/ha where very low rainfall was received in *kharif* and lack of rains in cropping season.

### **Monitoring**

Monitoring of the cluster Frontline Demonstrations

of Pulses programme was carried out by the scientists of ATARI along with Officers/ Scientists of the Directorate of Extension of SAUs, Directorate of Oilseed Development, GOI, Hyderabad and Directorate of Cotton Development, Nagpur (Ministry of Agriculture) and Officers from the State Department of Agriculture from Andhra Pradesh, Telangana and Maharashtra states participated during the visits and suggested necessary measures to the farmers.

## **3.16 Rabi Cluster Frontline Demonstration on Oilseeds under NMOOP**

Andhra Pradesh, Telangana and Maharashtra states are important in terms of area, production and productivity of oilseeds in the country. According to 2013-14 statistics, in Maharashtra oilseeds are grown in an area of 41.48 lakh hectares with a production of 52.94 lakh tonnes. The overall productivity of the oilseeds in the state is 1276 kg/ha. In Andhra Pradesh (Combined state of Andhra Pradesh and Telangana state) the total area under oilseeds is 20.31lakh hectares with a production of 18.86 lakh tonnes. The productivity of pulses in the state is 929 kg/ha. In Telangana, the total cropped area is 38.2lakh ha. Out of which, oilseed occupy 5.89 lakh ha i.e. 15.42% of total cropped area with production of 8.81 lakh tones (2013-14).

However the growth in the domestic production of oilseeds has not been able to keep pace with the growth

in the demand of the country. Low and unstable yields and uncertainty in returns to investment, which result from the continuing cultivation of oilseeds in rainfed, high risk production environments, are the factors



leading to this situation of wide demand-supply gap. To achieve the targeted production the Government of India has initiated Cluster Front Line Demonstrations on Oilseeds under National Mission on Oilseeds and Oil Palm (NMOOP). Accordingly the ICAR- Division of Agricultural Extension planned to organize Cluster FLDs on Oilseeds during *Rabi* 2015-16 through Krishi Vigyan Kendras in the country.

A total of 696 hectares of cluster FLDs were allotted to ICAR-ATARI, Zone-V with a budget layout of Rs. 54.96 lakhs. Accordingly a total of 1740 FLD's covering an area of 696 hectares was allotted to 31 KVKs in Andhra Pradesh, Telangana and Maharashtra states. Out of 696 ha allocated area, 512 ha area was sown by the end of March 2016 (table 3.16.1).

**Table 3.16.1 State wise details of progress of front line demonstrations conducted**

State Name	No. of KVKs	Name of Crops	Targeted Area (ha.)	Sown Area (ha.)	No of Demos
Andhra Pradesh	7	Groundnut	12	0	0
		Sesame	96	89	189
		Sunflower	120	108	232
		<b>Sub Total</b>	<b>228</b>	<b>197</b>	<b>421</b>
Maharashtra	20	Groundnut	180	144	383
		Linseed	120	57	153
		Sunflower	96	60	111
		<b>Sub Total</b>	<b>396</b>	<b>261</b>	<b>647</b>
Telangana	4	Sesame	24	54	137
		Groundnut	48	0	0
		<b>Sub Total</b>	<b>72</b>	<b>54</b>	<b>137</b>
<b>GRAND TOTAL</b>			<b>696</b>	<b>512</b>	<b>1205</b>

### Sunflower:

Cluster FLDs on sunflower were conducted by 8 KVKs in Andhra Pradesh and Maharashtra. The technology demonstrated include improved variety/ hybrid, seed treatment, soil test based nutrient management, Boron and Sulphur application, pests and disease management. The variety/ Hybrids used include Sunbred 275, SV274, Sunbred 207, Advanta309, Sarya, Chitra, SSH 48 and Modern.

The results revealed that the technology demonstrated increased the yield of sunflower by 4.55 to 45.16 percent when compared with the check (Table 3.16.2). Yield increase was highest in Prakasam followed by Kurnool (Yagantipalli) in Andhra Pradesh.



**Table 3.16.2 Results of Sunflower demonstrations**

Name of KVK	State	Area under demo (ha)	Number of demos	Yield in demo (q/ha)			Yield in check (q/ha)	% increase
				Max.	Min	Av.		
Kurnool (Yagantipalli)	Andhra Pradesh	24	30	11.87	9.75	10.38	8.46	22.70
Kurnool (Banavasi)	Andhra Pradesh	24	60	12.2	6	9.21	8.46	8.87
Prakasam	Andhra Pradesh	24	60	25	20	22.5	15.5	45.16
Kadapa	Andhra Pradesh	24	51	22.5	9.12	13.71	12.92	6.11
Osmanabad	Maharashtra	24	60	2.5	1.00	1.75	1.5	16.67
Latur	Maharashtra	12	21	7	4.5	5.75	5.5	4.55
Chittoor	Andhra Pradesh	22	54	30.25	21.88	25.57	22.10	15.70

### Groundnut

Cluster FLDs on Groundnut (Polymulch Technology) was conducted by 14 KVKs in Maharashtra. The technology demonstrated included Polymulch, improved variety, weed management under Polymulch and nutrient management. The varieties used include TAG-24 Pragati, Phuleunnati, JL-24. The results revealed that the technology demonstrated increased the yield of sunflower by 36 percent in Nandurbar and 45 percent in Pune (Baramati). No increase in the yield was observed in Parbhani.

**Table 3.16.3 Results of groundnut demonstrations**

Name of KVK	State	Area under demo ha	Number of demos	Yield in demo (q/ha)			Yield in check (q/ha)	% increase
				Max.	Min	Avg.		
Nandurbar	Maharashtra	12	23	24.76	21.95	23.12	17.00	36
Baramati	Maharashtra	10	25	35.8	22.5	29.5	20.04	45
Parbhani	Maharashtra	10	14	23	13	17	17.00	0

### Sesame

Cluster FLDs on Groundnut (Polymulch Technology) was conducted by 6 KVKs in Andhra Pradesh and Telangana. The technology demonstrated include improved variety, integrated nutrient management, and integrated pest management. Bio-fertilizer and pesticides were also used as part of integrated pest management. The results revealed that the yield increase in the demonstrations ranged from 16.09 percent to 20.69 percent.



**Table 3.16.4 Results of sesame demonstrations**

Name of KVK	State	Area under demo (ha)	Number of demos	Yield in demo (q/ha)			Yield in check (q/ha)	% increase
				Max.	Min	Avg.		
Kadapa	Andhra Pradesh	24	40	12	5.25	8.4	6.98	20.34
Srikakulam	Andhra Pradesh	43	60	8.25	4.13	5.34	4.6	16.09
Karimnagar	Andhra Pradesh	50	105	7.38	6.38	7.00	5.8	20.69

### Linseed:

Demonstrations on linseed were allocated to 6 KVKs in Maharashtra. Area demonstrated was 70 ha against the allocated area of 120 ha. This crop is grown in rice fallows on residual moisture. KVK Chandrapur and

KVK Gondia were unable to take up demonstrations due to non availability of residual moisture as well as seed. The technology demonstrated includes improved variety, Zero tillage, Line sowing and nutrient





management. The variety used for the demonstrations was PKV NL-260.

The yield of linseed was not upto the mark due to the shortage of moisture in the rice fallows. In Bhandara district demos showed significant yield improvement

over the check (Table 3.16.5). There was an increase of 66 percent in yield over the check. Highest yield was also obtained in Bhandara. In other districts the yield difference between demo and check was not significant.

**Table 3.16.5 Results of Linseed demonstrations**

NAME OF KVK	State	Area under demo (ha)	Number of demos	Yield in demo (q/ha)			Yield in check (q/ha)	% increase
				Max.	Min	Av.		
Bhandara	Maharashtra	11	28	6.79	3.05	4.63	2.78	66.55
Latur	Maharashtra	12	15	3.12	1.87	2.19	2.1	4.29
Gadchiroli	Maharashtra	10	50	1.5	1	1.5	1.5	0.00
Osmanabad	Maharashtra	24	60	1.25	0.125	0.621	0.625	-0.64

### 3.17 Pradhan Mantri Fasal Bima Yojana (PM FBY)

Pradhan Mantri Fasal Bima Yojana scheme is aimed to provide insurance coverage and financial support to the farmers in the event of failure of any of the notified crop as a result of natural calamities, pests & diseases and to stabilize the income of farmers to ensure their continuance in farming and multiple localized risks and post harvest losses taken into account to ensure that no farmer is alone in times of distress. It is also to encourage farmers to adopt innovative and modern agricultural practices to ensure flow of credit to the agriculture sector.

The Scheme shall be implemented through a multi-agency framework by selected insurance companies under the overall guidance and control of the Department of Agriculture, Cooperation and Farmers Welfare (DAC&FW), Ministry of Agriculture and Farmers Welfare (MoA&FW), Government of India (GOI) and the concerned State in co-ordination with various other agencies; viz Financial Institutions like Commercial Banks, Co-operative Banks, Regional Rural Banks and their regulatory bodies, Government Departments viz. Agriculture, Co-operation,



Shri Ashok Gajapati Raju (Hon'ble Union Minister of Civil Aviation, Government of India.) at KVK, Vizianagaram on 18-4-2016

Horticulture, Statistics, Revenue, Information/Science and Technology, Panchayati Raj etc.

56 KVKs organized one day awareness programme related to Pradhan Mantri Fasal Bima Yojana (PMFBY) between 30<sup>th</sup> March to 13<sup>th</sup> May, 2016 for creating awareness on the scheme and new agricultural technologies and information generated by research and developmental departments. The details of the farmers fair and PMFBY are given in table 3.17.1.

During the PMFBY programme, the Honorable Union Ministers Shri. Ashok Gajapati Raju, Union Minister of Civil Aviation, Shri. Bandaru Dattatreya, Union Minister of Labour and Employment, Shri. Nitin Gadkari, Union Minister of Road transport & Highways and Shri. Anant Geete, Union Minister of Heavy Industries and Public Enterprises participated in the PMFBY programme.

**Table 3.17.1 Participation of KVKs and Public representatives during Farmers' Fair on PMFBY**

State	No. of KVKs	No. of farmers	No. of Hon'ble Union Ministers	No. of Hon'ble State Govt Ministers	No. of Hon'ble MPs Loksabha	No. of MLAs
Andhra Pradesh	14	8486	1	2	10	8
Telangana	9	7747	1	1	8	4
Maharashtra	33	18134	2	-	19	6
<b>Total</b>	<b>56</b>	<b>34367</b>	<b>4</b>	<b>3</b>	<b>37</b>	<b>18</b>



Shri Nitin Jayaram Gadkari (Hon'ble Union Minister of Road transport and Highways, Government of India) at KVK Nagpur on 16-4-2016



Shri Anant Geete (Union Minister for Heavy Industries and Public Enterprises, Govt. of India) at KVK Raighad on 7-5-2016.



Shri Bandaru Dattatreya (Hon'ble Union Minister of State for Labour and Employment, Govt. of India) at KVK, Ranga Reddy on 7-4-2016.



### 3.18 Kisan Sammelans

Sixty two KVKs of the zone were sanctioned Rs.80000/- each during 2015-16 for organizing Kisan Sammelans, Krishi Melas, Kisan Ghosties, Group Meetings and Displaying Exhibition and Demonstrations of Technologies with an objective of creating awareness amongst the farmers on the latest agricultural technologies and for giving wider publicity before the crop season. Due to prolonged drought situation in many parts of the three states under the zone, only 19 KVKs could conduct kisan sammelans during *Kharif*. These KVKs were sanctioned additional amount of Rs.80,000/- each for organizing pre-*rabi* kisan sammelans. The KVKs which did not conduct

kisan sammelan during *kharif* have been advised to conduct the sammelan during the *Rabi* season. Out of 81 KVKs sanctioned either *kharif* or *rabi* campaign or both, 79 KVKs conducted them (19 in *kharif* and 60 in *rabi*). The Heads of KVKs were suggested to ensure participation of public representatives during the sammelans. A total of 1,27,156 farmers participated in the Sammelans both in *Kharif* and *Rabi* and 33 public representatives too took part in them. The details of the kisan sammelans conducted by the KVKs of the zone during the *kharif* and *rabi* and the number of public representatives who attended the sammelans are summarized in table 3.18.1.

**Table 3.18.1: Details of Kisan Sammelans conducted in Zone-Vn during 2015-16**

S.No	State	No. of Kisan Sammelans organized			No. of Farmers attended			No. of public representatives attended		
		<i>Kharif</i>	<i>Rabi</i>	Total	<i>Kharif</i>	<i>Rabi</i>	Total	MPs	:	
1	Andhra Pradesh	2	15	17	520	5679	6199	MLAs	:	6
								MLCs	:	3
2	Telangana	2	9	11	1327	3130	4457	MPs	:	1
								MLAs	:	1
								MLCs	:	0
3	Maharashtra	15	36	51	34956	81544	116500	MPs	:	11
								MLAs	:	6
								MLCs	:	0
<b>Total</b>		<b>19</b>	<b>60</b>	<b>79</b>	<b>36803</b>	<b>90353</b>	<b>127156</b>			<b>33</b>



**Mr. Sadashiv Lokhande, M.P., Shirdi, addressing Kisan Sammelan organized by KVK, Ahmadnagar (Babhleshwar), Maharashtra**

## 4. STAFF POSITION IN ICAR-ATARI, HYDERABAD

S. No.	Name	Designation
1.	Dr.Y.G.Prasad	Director
2.	Dr.K.Dattatri	Principal Scientist (Agril. Extn.)
3.	Dr.Chari Appaji	Principal Scientist (Agril. Extn.)
4.	Dr.J.V.Prasad	Principal Scientist (Agril. Entomology.)
5.	Dr.G.Rajender Reddy	Senior Scientist (Soil Science)
6.	Dr.A.R.Reddy	Principal Scientist (Agril. Economics)
7.	Smt.B.Malathi	Scientist (Agril. Economics)
8.	Shri.B.Amarnath	Asst. Admin. Officer
9.	Shri.S.Balakamesh	Asst. Finance & Accounts Officer
10.	Vacant	Jr. Accounts Officer
11.	Vacant	Private Secretary
12.	Shri.V.V.Ramana	Assistant
13.	Smt.N.Archana	Lower Division Clerk
14.	Smt.G.Navneetha	Lower Division Clerk
15.	Shri.N.Vijay Kumar	Lower Division Clerk
16.	Shri. M.Sadanand	Driver
17.	Smt. K.Subbalakshmi	Skilled Supporting Staff

As on 31-03-2016

## 5. LIST OF KVKs IN ZONE V

S.No.	KVK/District	Name and address of KVKs
<b>Andhra Pradesh</b>		
1	Anantapur (Reddipalli)	KrishiVigyan Kendra,B.K.Samudram (M),Reddipalli-515701,Anantapur
2	Anantapur (Kalyandurg)	KrishiVigyan Kendra, 8-881, Jainagar Colony Kalyandurg-515795 Anantapur District
3	Chittoor(RASS)	Krishi Vigyan Kendra, Rashterya Seva Samiti, Annamayya Marg, AIR By Pass Road,Chittoor district, Andhra Pradesh
4	Chittoor (Kalikiri)	Krishi Vigyan Kendra,Kalkiri – 517 234,Chittoor
5	East Godavari (Kalvacherla)	Krishi Vigyan Kendra, Kalavacharla, Rajanagaram Mandal Dist. East Godavari - 533 294
6	East Godavari (Pandirimamidi)	KrishiVigyan Kendra,Pandirimamidi, Rampachodavaram, East Godavari – 533288
7	Guntur (Vinayashram)	Prof. NG Ranga KrishiVigyan Kendra,PO: Vinayashram Cherukkupalli Mandal,Dist. Guntur - 522 309
8	Guntur (Lam)	KrishiVigyan Kendra,Lam, Guntur – 522 034,
9	Kadapa	KrishiVigyanKendra,PO: Utukur, Near RTO Office Dist. Kadapa - 516003
10	Krishna (Garikapadu)	Dr. K.L.RaoKrishiVigyan Kendra, Agril. Research Station PO:Garikapadu,Dist. Krishna – 521175
11	Krishna (Ghantasala)	C/o. Agril. Research Station, Ghantasala – 521 133,Krishna
12	Kurnool(Yagantipalli)	KrishiVigyan Kendra, PO:Yagantipalli, Via:Banaganapalli , Dist. Kurnool – 518124
13	Kurnool (Banavasi)	Krishi Vigyan Kendra, Banavasi (V), Yemmiganur (M), Kurnool District -518360
14	Nellore	KrishiVigyan Kendra,Mini Bipass Road, Opp. Royal Enfield Show Room, A.K.Nagar Post ,Padarupalli, Nellore-524004
15	Prakasam(Darsi)	KrishiVigyan Kendra ,Agril. Research Station PO: Darsi, Prakasam – 523247
16	Prakasam (Kandukur)	Central Tobacco Research Institute,Research Station Premises Kandukur – 523 105, Prakasam
17	Srikakulam	KrishiVigyan Kendra ,Agril. Research Station,Amdalavalsa Srikakulam-532185
18	Visakhapatnam	KrishiVigyan Kendra ,Farm Complex Haripuram Rambilli Mandal , Visakhapatnam – 531061

S.No.	KVK/District	Name and address of KVKs
19	Vizianagaram	Krishi Vigyan Kendra, PO: Rastakuntabai Distt. Vizianagaram – 535523
20	West Godavari(Undi)	Krishi Vigyan Kendra ,Opp:Civil Supply Godowns,Post: Undi Dist. West Godavari – 534199
21	West Godavari (Venkataramannagudem)	Krishi Vigyan Kendra,APHU, Venkataramannagudem, Tadepalligudem Mandal, West Godavari – 534101
<b>Telangana State</b>		
22	Adilabad	Krishi Vigyan Kendra,Ramnagar, ARS Premises, Dist.Adilabad -504001
23	Karimnagar (Jammikunta)	Krishi Vigyan Kendra,Post: Jayaprakashnagar, Jammikunta- 505122Distt. Karimnagar
24	Karimnagar (Ramgirikilla )	Krishi Vigyan Kendra,Opp: Ramgiri Guest House Centenary Colony, Ramgiri Khilla, Kamanpur (Mandal)Karimnagar – 517501
25	Khammam	Krishi Vigyan Kendra,ARS Wyra,Dist. Khammam –507165
26	Mahaboobnagar (Palem)	Krishi Vigyan Kendra,Palem,Mahaboobnagar district– 509215
27	Mahaboobnagar (Madanapuram)	Krishi vigyan Kendra (Field office),Madanapuram (post) Kothakota (Mandal),Mahabubnagar (Dist)- 509110
28	Medak	Krishi Vigyan Kendra,Post Box: 24, Post: ZaheerabadDist. Medak - 502220
29	Nalgonda (Gaddipalli)	Krishi Vigyan Kendra,PO:Gaddipalli,GaredapalliMandalDist. Nalgonda -508201
30	Nalgonda (Kampasagar)	Krishi Vigyan Kendra, Kampasagar, (Post): Babusaipet, (Mandal): Tripuraram,(Dist.): Nalgonda – 508207
31	Nizamabad	Krishi Vigyan Kendra,PO: Rudrur, VarmiMandal Dist. Nizamabad – 503188
32	Ranga Reddy	Krishi Vigyan Kendra,Near Deer Park, Bhagyalatha Bus Stop Hayathnagar Research Farm,Hayatnagar, Hyderabad Dist. Ranga Reddy - 500059
33	Warangal (Malyal)	Krishi Vigyan Kendra,PO:Malyal,Mahabubabad, Dist. Warangal – 506101
34	Warangal (Mamnoor)	Krishi Vigyan Kendra,LRS Mamnoor, Warangal – 506166
<b>Maharashtra</b>		
35	Ahmednagar(Babhaleshwar)	Krishi Vigyan Kendra,PO: Babhaleshwar,Tal: Rahata Dist: Ahmednagar-413 737
36	Ahmednagar (Dahigaon)	Krishi Vigyan Kendra,At. Dnyaneshwarnagar,PO: Bhende S. K, Tal: Newasa Dist: Ahmednagar-414 605
37	Akola (Udegaon)	Krishi Vigyan Kendra,At. Sisa(Udegaon),Post: Dangargaon Tal.& Dist. Akola – 444 104

S.No.	KVK/District	Name and address of KVKs
38	Amravati (Durgapur)	Krishi Vigyan Kendra, PO: Badnere (Durgapur), Dist. Amravati – 444 701
39	Amravati (Ghatked)	Krishi Vigyan Kendra, Ghatked, Amravati, Chirantan Madhuban Colony, Camp Amravati- 444602
40	Aurangabad(Aurangabad)	Krishi Vigyan Kendra, Paithan Road, Dist: Aurangabad – 431517
41	Aurangabad (MGM Gandheli)	Krishi Vigyan Kendra, Mahatma Gandhi Mission, MGM Campus, N-6, Cidco Dist: Aurangabad – 431 003
42	Beed(Ambejogai)	Krishi Vigyan Kendra, Deendayal Research Institute, Post Box No. 28, (Digholamba), Tq. Ambajogai, Dist. Beed – 431517
43	Beed (Khamgaon)	Krishi Vigyan Kendra, Khamgaon, Tal. Georai, Dist. Beed – 444 303
44	Bhandara	Krishi Vigyan Kendra, PO: Sakoli, Dist: Bhandara – 441 802
45	Buldhana (Jalgaon Jamod)	Krishi Vigyan Kendra, PO: Jalgaon, Jamod, Buldhana – 443 402
46	Buldhana (PDKV)	Krishi Vigyan Kendra, Ajintha Road, Buldhana – 443 001
47	Chandrapur	Krishi Vigyan Kendra, Pathri Road, Sindewahi, Dist- Chandrapur-441222, Maharashtra
48	Dhule	Krishi Vigyan Kendra, Dhule, Agriculture College, Parola Chauphuli, Mumbai-Agra Highway (No. NH3) Dist.: Dhule- 424004
49	Gadchiroli	Krishi Vigyan Kendra, PO: Sonapur, Dist: Gadchiroli – 442 605
50	Gondia	Krishi Vigyan Kendra, Hiwara, Post-Ratnara, Tah&Dist –Gondia – 441 614
51	Hingoli	Krishi Vigyan Kendra, Tondapur, PO: Warabgaq, Tal: Kalamnuri, Dist: Hingoli – 431 701
52	Jalgaon (Pal)	Krishi Vigyan Kendra, Pal, At & Post- Pal, Tal- Raver, District- Jalgaon – 425 508
53	Jalgaon ((Mamurabad))	Krishi Vigyan Kendra, Mamurabad Farm, Mamurabad, Jalgaon (M.S.) – 425 001
54	Jalna	Krishi Vigyan Kendra, Marathwada Sheti Sahayya Mandal, Post Box No. 45, Kharpudi, Jalna-431 203, Maharashtra
55	Kolhapur	Krishi Vigyan Kendra, D. Y. Patil Education Society's Krishi Vigyan Kendra (KVK), A/P. –Talsande, Tal.- Hatkananagale, Dist.-Kolhapur-416 112
56	Latur	Krishi Vigyan Kendra, Plot No.P-160, ilasnagar Barshi Road, Harangul(B), Latur, Dist-Latur-413531
57	Nagpur	Krishi Vigyan Kendra, Post Box No. 2, Shankarnagar Post Dist. Nagpur – 440 010

S.No.	KVK/District	Name and address of KVKs
58	Nanded(Pokharni)	KrishiVigyan Kendra,At. Pokharini,Post – Limbgaon, Nanded – 431 735
59	Nanded (Sagroli)	KrishiVigyan Kendra,Shardanagar, Sagroli, Dist :Nanded- 431731
60	Nandurbar	KrishiVigyan Kendra,Post : Kolde, Via : Dhule, Dist. Nandurbar – 425 412
61	Nashik(YCMOU)	KrishiVigyan Kendra ,Yashwantrao Chavan Maharashtra Open University, Gyangangotri, Near Gangapur Dam, Nashik – 422 222
62	Nashik (Malegaon)	KrishiVigyan Kendra,1 <sup>st</sup> Floor, Nadkarni Chamber (Annexe) Vakilwadi, Nashik – 422 0 01
63	Osmanabad	KrishiVigyan Kendra, Tuljapur,Latur Road, Tuljapur,Dist. Osmanabad (MS) – 413601
64	Parbhani	KrishiVigyan Kendra ,Jintur road, Parbhani-431 401
65	Pune (Baramati)	KrishiVigyan Kendra Sharadanagar, Baramati, Dist,Pune-413115, Maharashtra
66	Pune(Narayangaon)	KrishiVigyan Kendra,GramonnatiMandalsKrishiVigyan Kendra, Pune-Nasik Highway,Narayangaon, Tal- Junnar,Dist- Pune-410504
67	Raigad	KrishiVigyan Kendra, Roha, Tal. Roha Dist. Raigad–410 201
68	Ratnagiri	KrishiVigyan Kendra ,At Post- Deodhe,Tal. LanjaDist. Ratnagiri- 416712
69	Sangli	Vasant Prakash Vikas Pratishthan's, KrishiVigyan Kendra A/p. Kanchanpur, Taluka-Miraj,Dist-Sangli.-416 306
70	Satara(Karad)	KrishiVigyan Kendra, KalyaniGorakshan Trust, A/P : Kalwade, Tal : Karad Dist : Satara-415 110,Maharashtra
71	Satara (Borgaon)	KrishiVigyan Kendra, Borgaon,Tal. Dist: Satara – 415 519
72	Sindhudurg	KrishiVigyan Kendra, At and Post - Kirlos, Tal. Malvan, TalukaKudal,Dist -Sindhudurg- 416 616
73	Solapur(Khed)	KrishiVigyan Kendra,Gate No. 52/1/B, At: Khed ,PO: Kegaon Barshi Road,Dist- Solapur-413001
74	Solapur (Mohol)	KrishiVigyan Kendra,Agricultural Research Station,Mohol, Dist. Solapur – 413 213
75	Thane	KrishiVigyan Kendra, Gokhale Education Society's, Kosbad Hill, Tal. Dahanu, Dist. Thane (MS) 401 70
76	Wardha	Krishi Vigyan Kendra, Selsura, Dist. Wardha – 422 001
77	Washim	Suvide Foundations, Krishi Vigyan,Kendra, Karda,Tq.Risod, Dist:Washim-444506 (M.S.)
78	Yavatmal	KrishiVigyan Kendra ,Waghapur Road, Yavatmal-445 001 Maharashtra











Pearl millet hybrid, a promising option under drought



**भाकृअनुप – कृषतिकनीकी अनुप्रयोग संस्थान (अटारी)**  
(पहले क्षेत्रीय परियोजना नदिशालय, क्षेत्र - V)

**ICAR-Agricultural Technology Application Research Institute (ATARI)**

(Formerly Zonal Project Directorate, Zone-V)

क्रीडा परिसर/CRIDA Campus, संतोषनगर/Santoshnagar,  
हैदराबाद/Hyderabad – 500 059

Tel: 040-24006500, 24530300, 245361175, Telefax: 24533543  
E-mail : zcu5hyd@gmail.com; zcu5hyd@yahoo.com