वार्षिक प्रतिवेदन

ANNUAL REPORT

2017-18

भाकृअनु-कृषि तकनीकी अनुप्रयोग संस्थान (अटारी)

ICAR-Agricultural Technology Application Research Institute (ATARI)

Zone-X/ क्षेत्र 10, क्रीडा परिसर/CRIDA Campus,संतोषनगर/Santoshnagar, हैदराबाद/Hyderabad - 500 059

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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 four states viz. Tamil Nadu, Andhra Pradesh, Telangana and Puducherry. At present there are 72 KVKs in the Zone including 30 in Tamil Nadu, 24 in Andhra Pradesh, 16 in Telangana and 2 in Puducherry. The ATARI is also vested with the responsibility of strengthening of agricultural extension research and knowledge management.

During 2017-18, KVKs assessed 504 technologies and conducted 8407 frontline demonstrations in farmers' fields, undertook 5640 training programmes covering 194085 participants including farmers, farm women, rural youth and extension functionaries. KVKs conducted 6295 number of cluster frontline demonstrations on pulses covering an area of 2730.6 ha under the National Food Security Mission (NFSM). Similarly, 6180 number of CFLDs were conducted on oilseeds covering an area of 2472 ha under National Mission on Oilseeds and Oil palm (NMOOP).

Seed hubs for pulses started functioning at 12 KVK's in Zone-X in the states of Tamil Nadu (6), Andhra Pradesh (4) and Telangana (2). During 2017-18, seed hub KVK's produced 1810.86 q of seed for supply of quality seed of greengram, blackgram, redgram and bengalgram. Seventy eight enterprise units were established empowering 226 youth under Attracting Rural Youth in Agriculture (ARYA) Project. Fourteen skill training programmes were conducted covering 523 youth. Under the innovative programme of *Mera Gaon Mera Gaurav* (MGMG), 10 ICAR-research Institutes in the Zone implemented various activities in 339 adopted villages involving 82 teams comprising of 353 scientists. A total of 7224 activities were undertaken during the year.

Human Resource Development (HRD) activities were jointly organized by the Directorates of Extension (SAUs) and ATARI benefiting 2360 KVK staff in the Zone. About 2434 farmers were given direct access to institutional resources through three Agricultural Technology Information Centers in the Zone. A number of extension activities were taken up by the KVKs with the participation of 1075131 farmers, farm women and extension personnel. All the KVKs were equipped with mini soil testing laboratories to provide soil testing service to farmers. A total of 38,017 Soil Health Cards were distributed to farmers by KVKs in Tamil Nadu (11108), Andhra Pradesh (17949), Telangana (8752) and Puducherry (208).

We acknowledge the contributions of Vice-Chancellors and Directors of Extension of SAUs, Horticulture and Veterinary Universities and Directors of ICAR institutes in Zone-X 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 and Dr. A.K. Singh, DDG (AE). I complement all the Senior Scientists & Heads, and staff of KVKs in the Zone for their dedicated efforts towards implementation of the scheme and all my colleagues at ATARI for compiling the Annual Report.

Dr. Y. G. Prasad,
Director

कार्यकारी सारांश

कृषि प्रौद्योगिकी अनुप्रयोग संस्थान(अटारी), हैदराबाद को क्षेत्र X में स्थित 72 कृषि विज्ञान केंद्रों के समन्वयन कार्य का अधिदेश सौंपा गया है। वार्षिक रिपोर्ट 2017-18 में तमिलनाडु में स्थित 30, आंध्र प्रदेश के 24, तेलंगाना के 16 एवं पांडिचेरी के 2 कृषि विज्ञान केंद्रों की गतिविधियों के बारे में जानकारी दी जा रही है।

प्रौद्योगिकी मूल्यांकन

वर्ष के दौरान, कृषि विज्ञान केंद्रों ने 3233 फार्म पर जांचों द्वारा 504 प्रौद्योगिकियों का मूल्यांकन एवं परिष्करण किया। जांची गई प्रौद्योगिकियों में, 390 प्रौद्योगिकियां फसल से संबंधित, 46 पशु संबंधी एवं 68 महिलों से संबंधित हैं। फसलों के मामले में शामिल की गई प्रमुख विषय क्षेत्र हैं : किस्मों का मूल्यांकन, फसल प्रणालियां, समेकित रोग प्रबंधन, समेकित नाशीजीव प्रबंधन, समेकित पोषक प्रबंधन, समेकित खरपतवार प्रबंधन, समेकित फसल प्रबंधन, संसाधन संरक्षण प्रौद्योगिकियां, फार्म यांत्रिकीकरण एवं उपकरण। पशु के मामले में, विषय क्षेत्र जैसे कि नस्ल मूल्यांकन, रोग प्रबंधन, चारा एवं पोषक प्रबंधन एवं उत्पादन तथा प्रबंधन का मूल्यांकन एवं परिष्करण हैं। ग्रामीण महिलाओं के सशक्तिकरण के अंतर्गत विषय क्षेत्र जैसे कि श्रम में कमी, स्वास्थ्य एवं पोषण, मूल्य संवर्धन एवं उद्यमिता विकास में फार्म पर जांचों का आयोजन हैं।

तमिलनाडु के कृषि विज्ञान केंद्रों में, बागवानी प्रजातियां(698), पशु (121) एवं ग्रामीण महिलाओं का सशक्तिकरण (103) को शमिल कर 922 फार्म पर जांचों के द्वारा 107 प्रौद्योगिकियों की अनुकूलता का मूल्यांकन किया गया। आंध्र प्रदेश के कृषि विज्ञान केंद्रों में, बागवानी प्रजातियां(1063), पशु (221) एवं ग्रामीण महिलाओं का सशक्तिकरण (109) को शमिल कर 1393 फार्म पर जांचों के द्वारा 235 प्रौद्योगिकियों की अनुकूलता का मूल्यांकन किया गया। तेलंगाना के कृषि विज्ञान केंद्रों में, बागवानी प्रजातियां(630), पशु (58) एवं ग्रामीण महिलाओं का सशक्तिकरण (217) को शमिल कर 905 फार्म पर जांचों के द्वारा 158 प्रौद्योगिकियों की अनुकूलता का मूल्यांकन किया गया। पांडिचेरी के कृषि विज्ञान केंद्रों में, बागवानी प्रजातियां(4), पशु (1) एवं ग्रामीण महिलाओं का सशक्तिकरण (8) को शमिल कर 13 फार्म पर जांचों के द्वारा 4 प्रौद्योगिकियों की अनुकूलता का मूल्यांकन किया गया।

प्रौद्योगिकी का प्रदर्शन

3543 हेक्टेयर क्षेत्र में कुल 10440 अग्रिमपंक्ति प्रदर्शनों का कार्यान्वयन किया गया। इनमें से क्षेत्र-X के कृषि विज्ञान केंद्रों के द्वारा तिलहनों के अंतर्गत 655.8 हेक्टेयर क्षेत्र में 1433 अग्रिमपंक्ति प्रदर्शनों का आयोजन किया गया। प्रदर्शनों के अंतर्गत शामिल किए गए प्रमुख तिलहन फसल हैं : मूंगफली, तिल, सूरजमुखी, अरंड, कुसुंभ, सोयाबीन, एवं शमतिल। कृषि विज्ञान केंद्रों के द्वारा दलहनों के मामले में, खरीफ एवं रबी मौसमों के दौरान 1058.1 हेक्टेयर क्षेत्र में 2228 प्रदर्शनों का आयोजन किया गया। प्रदर्शनों के अंतर्गत शामिल किए गए प्रमुख फसल हैं : उड़द, चना, छोटी मटर, मूंग, अरहर, लोबिया, कुलथी एवं मोठ। इसी प्रकार, क्षेत्र x के कृषि विज्ञान केंद्रों में, धान्य, व्यावसायिक फसल, मोटे अनाज, चारा एवं बागवानी फसलों जेसे अन्य फसलों पर 1829.1 हेक्टेयर क्षेत्र में 6779 प्रदर्शनों का आयोजन किया गया।कृषि विज्ञान केंद्रों ने उन्न्त उपकरणों पर 332, पशुधन प्रजातियों पर 1167 एवं महिला सशक्तिकरण पर 525 प्रदर्शनों का भी आयोजन किया है।

प्रशिक्षण

प्रशिक्षण कृषि विज्ञान केंद्रों की मुख्य गतिविधि है, जो विभिन्न उन्न्त प्रौद्योगिकियों के बारे में ज्ञान एवं कौशल को बढ़ाने में प्रमुख भूमिका निभाता है। वर्ष के दौरान, क्षेत्र x के कृषि विज्ञान केंद्रों ने 194085 भागीदारियों जिसमें 156963 किसान,20779 ग्रामीण युवा एवं 16343 प्रसार अधिकारियों को शामिल कर 5640 प्रशिक्षण कार्यक्रमों का आयोजन किया।

तमिलनाडु के कृषि विज्ञान केंद्रों ने 89520 किसान जिनमें कृषि महिला, ग्रामीण युवा एवं प्रसार अधिकारयों की भागीदारी से 2644 प्रशिक्षण पाठ्यक्रमों का आयोजन किया, जबकि आंध्र प्रदेश के कृषि विज्ञान केंद्रों ने कृषि महिलाओं, ग्रामीण युवा एवं प्रसार अधिकारियों सहित 62081 किसानों की भागीदारी से 1765 प्रशिक्षण पाठ्यक्रमों का आयोजन किया। तेलंगाना के कृषि विज्ञान केंद्रों ने 39844 लाभार्थियों के लिए 1136 पाठ्यक्रमों का आयोजन किया। पांडिचेरी के कृषि विज्ञान केंद्रों ने 2640 लाभार्थियों के लिए 95 पाठ्यक्रमों का आयोजन किया। प्रशिक्षण के अंतर्गत फसल उत्पादन, बागवानी, मृदा स्वास्थ्य एवं उर्वरता प्रबंधन, पशुपालन उत्पादन एवं प्रबंधन, गृह विज्ञान/महिला सशक्तिकरण, कृषि यांत्रिकीकरण, पादप संरक्षण, मछली पालन, क्षमता निर्माण एवं समूह की गतिशीलता, कृषि-वानिकी आदि के मुख्य विषय क्षेत्रों को शामिल किया गया।

क्षेत्र x के कृषि विज्ञान केंद्रों ने 18639 किसानों, कृषि महिलाओं एवं ग्रामीण यूवाओं को शामिल कर 459 प्रायोजित प्रशिक्षण कार्यक्रमों का भी आयोजन किया। विशेष कर ग्रामीण युवाओं एवं स्कूल छोडने वालों में उद्यमिता विकास, आय निर्माण एवं स्व-रोज़गार प्रदान करने के लिए, 7353 लाभार्थियों के लिए कृषि विज्ञान केंद्रों ने 265 व्यावसायिक प्रशिक्षण कार्यक्रमों का आयोजन किया। इन प्रशिक्षण कार्यक्रमों का मुख्य विषय क्षेत्र फसल उत्पादन एवं प्रबंधन, फसल कटाई के बाद की प्रौद्योगिकी एवं मूल्य संवर्धन, पशु-पालन एवं मछली पालन, आय निर्माण की गतिविधियां आदि हैं।

राष्ट्रीय भांडागार (विकास एवं नियमन) अधिनियम के अंतर्गत भांडागार विकास एवं नियमन प्राधिकारी द्वारा प्रायोजित क्षेत्र के पांच कृषि विज्ञान केंद्रों द्वारा 250 किसानों, व्यापारियों एवं दाल मिल के मालिकों के लिए पांच जागरूकता प्रशिक्षण कार्यक्रमों का आयोजन किया गया।

भारतीय कृषि कौशल परिषद द्वारा क्षेत्र-x के 3 कृषि विज्ञान केंद्रों एवं एक भाकृअनुप के संस्थान को कौशल विकास प्रशिक्षण केंद्रों के रूप में पहचाना गया।

मछली उत्पादन को बढ़ावा देने के लिए, राज्य का मछली पालन विभाग एवं राष्ट्रीय मछली पालन विकास बोर्ड (एनएफडीबी) ने संयुक्त रूप से तेलंगाना राज्य के 3 कृषि विज्ञान केंद्रों की पहचान की एवं 7 जलाशय क्षेत्रों के 350 मछुआरों एवं मछुआरे महिलाओं को कौशल विकास प्रशिक्षण प्रदान किया गया।

प्रौद्योगिकी प्रसार

क्षेत्र-x में उन्नत प्रौद्योगिकियों पर जागरूकता लाने के लिए 11,18,017 किसानों, कृषि महिलाओं एवं प्रसार अधिकारियों की भागीदारी से 34837 प्रसार गतिविधियों का आयोजन किया गया। इन प्रसार गतिविधियों में सलाह सेवाएं, प्रदर्शन दौरे, पशु स्वास्थ्य शिविर, प्रौद्योगिकी सप्ताह, समूह चर्चा, मृदा स्वास्थ्य शिविर, किसान मेले, किसान गोष्ठियां, आदि शामिल हैं। उन्नत कृषि प्रौद्योगिकियों पर सूचना के प्रसार में तेजी लाने के लिए क्षेत्र -x कृषि विज्ञान केंद्रों ने 3526 प्रकाशन प्रकाशित किए।

संस्थागत संसाधनों के बारे में किसानों को सीधी जानकारी प्रदान करने के लिए, भाकृअनुप ने विभिन्न प्रौद्योगिकी के उत्पादों की सूचना को एकल गवाक्ष के द्वारा प्रदान करने के लक्ष्य से क्षेत्र-x में तीन कृषि प्रौद्योगिकी सूचना केंद्रों की स्थापना की गई। इस वर्ष के दौरान अत्याधुनिक प्रौद्योगिकी सूचना एवं क्रांतिक प्रौद्योगिकी उत्पादों जैसे कि बीज एवं रोपण सामर्गी

के बारे में जानकारी प्राप्त करने के लिए कुल 5434 किसानों ने तीन कृषि प्रौद्योगिकी सूचना केंद्रों का दौरा किया।

जांच सेवाएं एवं क्रांतिक निवेशों की आपूर्ति

मृदा पोषक स्तर एवं जिले में स्थित सूक्ष्म कृषि परिस्थितियों में किसानों को पोषक सिफारिशों पर आधारित मृदा जांच के बारे में भी जानकरी प्रदान करने के लिए कृषि विज्ञान केंद्रों ने मृदा एवं जल जांच का कार्य आरंभ किया। कृषि विज्ञान केंद्रों द्वारा 30052 मृदा नमूनों, 3563 जल नमूनों, 259 पादप नमूनाओं एवं 19 उर्वरक/खाद सहित कुल 33893 नमूनों का विश्लेषण किया, जिससे तमिलनाडु, आंध्र प्रदेश, तेलंगाना एवं पुदुचेर्री में स्थित 4428 गांवों के 32866 किसानों को लाभ हुआ।

कृषि विज्ञान केंद्रों द्वारा तमिलनाडु (11108), आंध्र प्रदेश(17949), तेलंगाना(8752) एवं पुदुचेर्री (208) में किसानों को कुल 38017 मृदा स्वास्थ्य कार्ड वितरित किए गए। किसानों को अपनाने के लिए कार्ड में दिए गए मृदा जांच विश्लेषणों के आधार पर पोषकों/उर्वरकों की फसल वार सिफारिश प्रदान की गई है, ताकि किसान अपने खेतों में उर्वरकों की मात्रा को नियमित कर सके जिससे खेत की लागत में कमी एवं टिकाऊ फसल उत्पादन एवं मृदा स्वास्थ्य के लिए उर्वरक उपयोग क्षमता में वृद्धि कर सके।

कृषि विज्ञान केंद्रों ने 8380 क्विंटल का बीज उत्पादन कर आपूर्ति की एवं खेती/बागवानी फसलों/पशुओं/पौल्टरी पक्षियों/मछलियों के सर्वोत्कृष्ट 21.79 लाख पौधे/आंगुलिक की आपूर्ति की। किसानों को दलहन के गुणता युक्त बीजों की आपूर्ति के लिए कृषि विज्ञान केंद्रों ने बारह बीज हब (तमिलनाडु में 6, आंध्र प्रदेश में 4 एवं तेलंगाना में 2, जहां मूंग,उड़द, अहर एवं चना के 1810 क्विंटल बीज

उत्पादन किया)स्थापित किए। कृषि विज्ञान केंद्रों ने 5087 क्विंटल का जैव-उर्वरक एवं 1590 क्विंटल का जैव-कीटनाशकों का उत्पादन कर आपूर्ति भी की।

कृषि विज्ञान केंद्र के अधिकारियोंका मानव संसाधन विकास

प्रशिक्षणों, संगोष्टियों, कार्यशालाओं आदि द्वारा कृषि विज्ञान केंद्र के वैज्ञानिकों को राज्य कृषि विश्वविद्यालयों के प्रसार शिक्षा निदेशालय एवं अटारी द्वारा प्रौद्योगिकी सहायता एवं मानव संसाधन विकास का प्रशिक्षण दिया जा रहा है। तीन प्रसार निदेशालयों एवं कृषि प्रौद्योगिकी

अनुप्रयोग संस्थान द्वारा संयुक्त रूप से क्षेत्र में 2360 कृषि विज्ञान केंद्र के कर्मचारियों के लाभ के लिए कुल 45 मानव संसाधन विकास गतिविधियों का आयोजन किया गया।

राष्ट्रीय जलवायु समुत्थान कृषि में नवप्रवर्तन (निक्रा)

11 कृषि विज्ञान केंद्रों द्वारा क्षेत्र-x में निक्रा परियोजना का प्रौद्योगिकी प्रदर्शन अवयव का कार्यान्वयन किया गया, जिसमें तीन राज्यों में जलवायु समुत्थान कृषि प्रौद्योगिकी एवं प्रक्रिया का प्रदर्शन किया गया। परियोजना के अंतर्गत, कृषि विज्ञान केंद्रों ने चार मापदंडों जैसे कि प्राकृतिक संसाधन प्रबंधन (581), फसल उत्पादन (1488), पशु पालन एवं मछली पालन (2150) में 4219 प्रदर्शनों का आयोजन किया। संस्थागत हस्तक्षेपों के अंतर्गत 4509 किसानों को कस्टम हायरिंग, बीज एवं चारा बैंक गतिविधियों के अंतर्गत लाया गया। निक्रा कृषि विज्ञान केंद्रों ने 2971 किसानों को क्षमता निर्माण का प्रशिक्षण दिया गया एवं 8013 किसानों को जलवायु समुत्थान की प्रक्रियाओं एवं प्रौद्योगिकियों पर जागरूक किया गया।

युवाओं को कृषि कि ओर आकर्षित करना एवं उसमें बनाए रखना (आर्या)

वर्ष 2017-18 के दौरान इस क्षेत्र के तीन कृषि विज्ञान केंद्रों(नेल्लूर, नलगोंडा-कंपसागर एवं कन्याकुमारी) द्वारा आर्या (युवाओं को कृषि कि ओर आकर्षित करना एवं उसमें बनाए रखना) परियोजना का कार्यान्वयन किया गया। 226 युवाओं को सशक्त बनाने के लिए अठहत्तर उद्यम इकाइयों की स्थापना की गई। 523 युवाओं को शामिल कर चौदह कौशल प्रशिक्षण कार्यक्रमों का आयोजन किया गया।

दलहन एवं तिलहनों पर केंद्रों का अग्रिम प्रदर्शन

वर्ष 2017-18 के तीन मौसमों के दौरान क्षेत्र-x में तमिलनाडु, आंध्र प्रदेश, तेलंगाना एवं पुदुचेर्री के 58 कृषि विज्ञान केंद्रों द्वारा एनएफएसएम के अंतर्गत दलहनों पर केंद्र अग्रिम प्रदर्शन का आयोजन किया गया। दलहनों के अंतर्गत 2730 हेक्टेयर क्षेत्र में कुल 6295 अग्रिम प्रदर्शनों का आयोजन किया गया। इसी प्रकार, वर्ष 2017-18 के खरीफ एवं रबी के दौरान 48 कृषि विज्ञान केंद्रों द्वारा तिलहन फसलों में एनएमओओपी के अंतर्गत 2472 हेक्टेयर क्षेत्र में 6180 केंद्र मेंअग्रिम प्रदर्शनों का आयोजन किया गया। अग्रिम प्रदर्शनों में हुए दलहनों एवं तिलहनों की उत्पादकता जिल/राज्य की औसत उत्पादकता से अधिक था, जो उत्पादन अंतराल को पूरा करने की क्षमता को सूचित करता है।

पहले किसान परियोजना(एफएफपी)

चार भाकृअनुप के संस्थान (आईआईएमआर, आईआईओपीआर, आईआईओआर एवं क्रीडा) एवं एक विश्वविद्यालय (टीएनयूवीएएस) ने पहले किसान परियोजना का कार्यान्वयन किया। पहले किसान परियोजना के केंद्रों ने 2458 हेक्टेयर क्षेत्र में और परियोजना अमल हो रहे गांवों के 2548 परिवारों के लिए 25 फसल हस्तक्षेपों को आरंभ किया गया। बागवानी हस्तक्षेप को 641 परिवार वाले गांव के 272 हेक्टेयर क्षेत्र में कार्यान्वित किया गया। 2242 हेक्टेयर क्षेत्र में ग्यारह प्राकृतिक संसाधन प्रबंधन हस्तक्षेपों को कार्यान्वित किया गया, जिससे 3882 परिवारों को लाभ मिला। श्रेष्ठ चारा किस्मों की प्रस्तुती, अहाता पौल्टी नस्लों का प्रदर्शन, खनिज एवं पोषक मिश्रणों की प्रस्तुती, ओएट्रस सिंक्रोनाइजेशन प्रोटोकॉल, पशु स्वस्थ्य शिविरों का आयोजन, भेड़ एवं बारियों में नस्ल सुधार आदि से संबंधित कुल 22 हस्तक्षेपों को शुरू किया गया जिससे 690 परिवारों को लाभ हुआ। पहले किसान परियोजना के केंद्रों ने कृषि यंत्रों को कस्टम हायरिंग, श्रम को कम करने के उपकरणों, मोटे अनाजों का प्राथमिक प्रसंस्करण, चुने गए परिवारों में सामुदायिक मछली पालन इकाइयों को प्रोत्साहित किया गया। 49 हेक्टेयर क्षेत्र में 199 परिवारों को शामिल करते हुए समेकित किसान मानदंडों को कार्यान्वित किया गया।

जनजाति उप-योजना (टीएसपी)

इस क्षेत्र के (आंध्र प्रदेश में 6 एवं तेलंगाना में 4) 10 कृषि विज्ञान केंद्रों द्वारा जनजाति समुदायों के सामाजिक-आर्थिक परिस्थितियों को सुधारने के लिए जनजाति उप योजना को लाया गया एवं 2362 की संपत्ति/सूक्ष्म उद्यमों को प्रदान कर 11315 जनजातियों को आय बढ़ाने के अवसर प्रदान किया। 831 लाभार्थियों को कौशल विकास प्रशिक्षण(30) प्रदान किया गया।

जागरूकता प्रदानकरना

छप्पन कृषि विज्ञान केंद्रों ने 29609 किसानों, प्रसार अधिकारियों एवं वैज्ञानिकों को शामिल कर पादप किस्मों का संरक्षण एवं किसानों के अधिकारों का अधिनियम(पीपीवी एवं एफआरए) पर जागरूकता कार्यक्रमों का आयोजन किया।

दिनांक 15-9-2017 से 2-10-2017 तक की अवधि के दौरान 60 कृषि विज्ञान केंद्रों द्वारा स्वच्छता ही सेवा कार्यक्रम का आयोजन किया गया, जिसमें कृषि विज्ञान केंद्रों ने 143 गांवों में श्रम दान किया तथा अपनाए गए गांवों/सार्वजनिक स्थानों में स्वच्छता का योगदान किया।

दिनांक 16 से 31 मई 2017 के दौरान 68 कृषि विज्ञान केंद्रों द्वारा स्वच्छता पखवाडा मनाया गया।

संकल्प से सिद्धी कार्यक्रम, देश का सुधार एवं किसानों की आय को दुगुना करने के लिए नया भारत आंदोलन 2017 के भाग के रूप में एक समेकित योजना कोदिनांक 19 अगस्त से 10 सितंबर तक 3 केंद्रीय मंत्रियों, पुदुचेर्री के मुख्य मंत्री, 24 सांसदों,10 राज्य मंत्री एवं 21 विधान सभा के सदस्यों सहित 34166 भागिदारों के सहयोग से आयोजित किया गया।

दिनांक 5 दिसंबर, 2017 को विश्व मृदा दिवस के भाग के रूप में, माननीय सांसदों एवं विधान सभा के सदस्यों एवं सरकारी अधिकारियों द्वारा किसानों को 9278 मृदा स्वास्थ्य कार्डों का वितरण किया गया।

मेरा गावं मेरा गौरव कार्यक्रम के अंतर्गत, 10 भाकृअनुप अनुसंधान संस्थानों के 82 दलों के कुल 353 वैज्ञानिकों द्वारा 339 गांवों को अपनाया गया एवं विभिन्न गतिविधियों को कार्यन्वित किया गया। वैज्ञानिकों ने 10294 किसानों एवं कृषि महिलाओं को शामिल कर 829 इंटरफेस बैठकों का आयोजन किया। कृषि, पशु पालन, पौल्ट्री एवं उन्नत उपकरणों पर कुल 967 जागरूकता एवं प्रदर्शन कार्यक्रमों एवं 152 प्रशिक्षण कार्यक्रमों का आयोजन किया गया।

EXECUTIVE SUMMARY

ATARI, Hyderabad is vested with the mandate of coordination of 72 KVKs established in Zone-X. The annual report 2017-18 documents the activities of 30 KVKs in Tamil Nadu, 24 in Andhra Pradesh, 16 in Telangana and 2 in Puducherry.

Technology Assessment

During the year, KVKs assessed and refined 504 technologies by laying out 3233 On-Farm Trials. Of these technologies tested, 390 technologies are related to crops, 46 are related to animals and 68 are related to women empowerment. The important thematic areas covered in case of crops 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. In case of animals, thematic areas such as breed evaluation, disease management, feed and nutrition management and shelter management are assessed and refined. 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 Tamil Nadu assessed the suitability of 107 technologies by conducting 922 OFTs covering crops including horticultural species (698), animals (121) and empowerment of rural women (103). KVKs in Andhra Pradesh, assessed the suitability of 235 technologies by conducting 1393 OFTs covering crops including horticultural species (1063), animals (221) and empowerment of rural women (109). KVKs in Telangana, assessed the suitability of 158 technologies by conducting 905 OFTs covering crops including horticultural species (630), animals (58) and empowerment of rural women (217). KVKs in Puducherry, assessed four technologies by organizing 13 OFTs that include crops including horticultural species (4), animals (1) and women empowerment (8).

Technology demonstrations

A total of 8407 frontline demonstrations were implemented covering an area of 3540 ha. Among them 1433 front line demonstrations covering 655.8 ha under oilseeds were organized by KVKs in Zone-X. The major oilseed crops that were covered under demonstrations include groundnut, sesamum, sunflower, castor, safflower, soybean and niger. In case of pulses, KVKs organized 2228 demonstrations covering 1058.1 ha during *kharif* and *rabi* seasons. The major crops covered under pulses demonstrations are blackgram, chickpea, fieldpea, greengram, pigeonpea, cowpea, horsegram and moth bean. Similarly, KVKs in Zone-X organized 4746 demonstrations covering 1826.1 ha on other crops *i.e.* cereals, commercial crops, millets, fodder and horticultural crops. KVKs also organized 332 demonstrations on improved tools and implements, 1177 demonstrations on livestock species and 525 demonstrations on women empowerment.

Trainings

Training is an important activity of KVK, which plays a pivotal role in enhancing the knowledge and skill about various improved technologies. During the year, KVKs in Zone-X organized 5640 training programmes covering 194085 participants that include 156963 farmers, 20779 rural youth and 16343 extension functionaries.

KVKs in Tamil Nadu, organized 2644 training courses with a participation of 89520 farmers including farm women, rural youth and extension functionaries, while KVKs in Andhra Pradesh organized 1765 training courses with a participation of 62081 farmers including farm women, rural youth and extension functionaries, KVKs in Telangana conducted 1136 courses for 39844 beneficiaries. KVKs in Puducherry,

conducted 95 courses for 2640 beneficiaries. The main thematic areas covered under training include crop production, horticulture, soil health and fertility management, livestock production and management, home science/women empowerment, agricultural engineering, plant protection, fisheries, capacity building and group dynamics, agro-forestry *etc*.

KVKs in Zone-X also organized 459 sponsored training programmes covering 18639 farmers and 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 265 vocational training programmes for 7353 beneficiaries. The important thematic areas include crop production and management, post harvest technology and value addition, livestock and fisheries, income generation activities *etc*.

Five awareness training programmes were conducted by five KVKs in the Zone sponsored by Warehousing Development and Regulatory Authority under National Warehousing (Development and Regulatory) Act for 250 farmers, traders and dall mill owners.

Four skill development training programmes sponsored by ASCI were conducted by three KVKs (Visakhapatnam (BCT), Nalgonda (Gaddipalli) and Salem) and one ICAR Institute (ICAR-IIOR) benefitting 80 farmers.

To enhance the fish production, State Department of Fisheries and National Fisheries Development Board (NFDB) collaboratively have identified three KVKs in the state of Telangana and imparted skill development training to 350 fishermen and fisherwomen in 7 reservoir area.

Technology dissemination

To create awareness on improved technologies the KVKs in Zone-X organized 37056 extension activities with the participation of 1161528 farmers, farmwomen and extension personnel. The extension activities included advisory services, exposure visits, animal health camps, technology week, group discussions, method demonstrations, soil health camps, *kisan melas*, *kisan ghostis*, *etc*. In order to accelerate rapid dissemination of information on improved farm technologies, KVKs in Zone-X brought out 3526 publications.

To facilitate direct access of farmers to institutional resources, ICAR established three Agricultural Technology Information Centres in Zone-X with the objective of single window delivery of various technology products. During the year a total of 5437 farmers visited the three ATICs to know the latest technology information and to obtain critical technology products *viz*., seed and planting material.

Testing services and supply of critical inputs

KVKs undertook soil and water testing to ascertain the soil nutrient status and also to make soil test based nutrient recommendations to farmers in the prevailing micro-farming situations in the district. A total of 33893 samples including 30052 soil samples, 3563 water samples, 259 plant samples and 19 fertilizers/manures were analyzed by the KVKs that benefited 32866 farmers belonging to 4428 villages in Tamil Nadu, Andhra Pradesh, Telangana and Puducherry.

A total of 38017 Soil Health Cards were distributed to farmers by KVKs in Tamil Nadu (11108), Andhra Pradesh (17949), Telangana (8752) and Puducherry (208). Crop-wise recommendations of nutrients/ fertilizers as per soil test analysis were provided in the cards for adoption by farmers to rationalize fertilizer use in their farms, thereby reducing cost of cultivation, enhancing fertilizer use efficiency for sustainable crop production and soil health.

KVKs produced and supplied 8380 q of seed and 21.79 lakh saplings of elite material of field/horticultural crops. Twelve seed hub KVKs for pulses (6 in Tamil Nadu, 4 in Andhra Pradesh and 2 in Telangana produced 1810 q of seed (greengram, blackgram, redgram and bengalgram) for supply of

quality seed to farmers. KVKs also produced and supplied 508 q of bio-fertilizers and 159 q of bio-pesticides.

HRD of KVK personnel

Directorates of Extension Education of SAUs and ATARI facilitated technology backstopping and Human Resources Development to KVK scientists through trainings, seminars, workshops *etc*. A total of 45 HRD activities benefitting 2360 KVK staff in the Zone were jointly organized by the three directorates of extension and the Agricultural Technology Application Research Institute.

Cluster Frontline Demonstrations on Pulses and Oilseeds

Cluster Frontline Demonstrations on Pulses under NFSM were organized by 58 KVKs comprising of Tamil Nadu, Andhra Pradesh, Telangana and Puducherry in Zone-X during 2017-18 across three seasons. A total of 6295 FLDs were conducted covering an area of 2730 ha under pulses. Similarly, 6180 cluster frontline demonstrations covering 2472 ha were conducted under NMOOP in oilseed crops by 48 KVKs during *kharif* and *rabi* 2017-18. Productivity of pulses and oilseeds realized in FLDs was higher than the district/ state averages indicating potential for bridging the yield gap.

National Innovations in Climate Resilience Agriculture (NICRA)

Technology demonstration component of NICRA project in Zone-X implemented by 11 KVKs demonstrated climate resilient agricultural technologies and practices across the three states. Under the project, KVKs conducted 4219 demonstrations in four modules *viz*., NRM (581), crop production (1488), livestock and fisheries (2150). Under institutional interventions 4509 farmers were covered under custom hiring, seed and fodder bank activities. NICRA KVKs undertook capacity building training of 2971 farmers and created awareness among 8013 farmers on climate resilient practices and technologies.

Attracting and Retaining Youth in Agriculture (ARYA)

ARYA project was implemented by three KVKs of the zone (Nellore, Nalgonda-Kampasagar and Kanyakumari) during the year 2017-18. Seventy eight enterprise units were established empowering 226 youth. Fourteen skill training programmes were conducted covering 523 youth.

Farmer FIRST Project (FFP)

Four ICAR Institutes (IIMR, IIOPR, IIOR and CRIDA) and one University (TANUVAS) implemented Farmer FIRST project. FFP Centres undertook 25 crop interventions covering 2458 ha area and 2548 households in operational villages. Horticultural interventions were implemented in 272 ha covering 641 households. Eleven natural resource management (NRM) interventions were implemented in 2242 ha area benefiting 3882 households. A total of 22 interventions related to introduction of superior fodder varieties, demonstration of backyard poultry breeds, introduction of mineral and nutrient mixtures, oestrous synchronization protocols, animal health camps, breed improvement in sheep and goats *etc*., were taken up under livestock covering 690 households. The FFP centres promoted custom hiring of farm machinery, implements for drudgery reduction, primary processing of millets, community hatchery units among target households. Integrated Farmers Module (IFS) was implemented covering 199 households in 49 ha area.

Tribal Sub Plan (TSP)

The Tribal Sub Plan (TSP) aimed at ameliorating the socio-economic conditions of tribal communities was implemented by 10 KVKs in the zone (6 in Andhra Pradesh and 4 in Telangana) and facilitated creation of 2362 assets/ micro-enterprises and provided income generating opportunities to 11315 tribals. Skill development trainings (30) were imparted to 831 beneficiaries.

Creation of awareness

Fifty five KVKs organized awareness programmes on Protection of Plant Varieties and Farmers Rights Act (PPV&FRA) to cover 29609 farmers, extension personnel and scientists.

Swachhta Hi Sewa program was implemented by 60 KVKs during the period (15-9-2017 to 2-10-2017) in which KVKs performed *shramdhan* in 143 villages and contributed towards cleanliness and hygiene in adopted villages/ public places. *Swachhata Pakhwada* was observed by 68 KVKs from 16th to 31st May 2017.

Sankalp Se Siddhi programme, an integrated *yojana* as a part of New India Movement 2017, for betterment of the nation and doubling farmers income was organized during 19th August to 10th September with the participation of three Union Ministers, the Chief Minister of Puducherry (UT), 24 Members of Parliament, 10 State Ministers and 21 Members of Legislative Assembly covering 34166 participants.

As part of World Soil Day celebrations on 5th December, 2017, 9278 soil health cards were distributed to farmers by Hon'ble Members of Parliament (MPs) and Members of Legislative Assembly (MLAs) and Government officials.

Under *Mera Gaon Mera Gaurav* (MGMG) programme, a total of 353 scientists through 82 teams from 10 ICAR research Institutes adopted 339 villages and implemented various activities. Scientists under took 829 interface meetings covering 10294 farmers and farm women. A total of 967 awareness cum demonstration programmes and 152 training programmes on agriculture, animal husbandry, poultry and improved implements were conducted.

CONTENTS

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. The objective of the programme was to adopt 50000 small and marginal farmers and landless labourers throughout the country to transfer available farm technologies of crop production, livestock farming, farm tools and implements, pisciculture, sericulture, apiculture *etc*. including crop-livestock integration and the programme was implemented from September, 1979. 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 was 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 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 has upgraded all the eight Zonal Coordination Units to the status of Directorates and thus Zonal Project Directorate (ZPD), Zone-V came into existence during the year 2009. The status of the ZPDs was changed 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 was re-designated as "Agricultural Technology Application Research Institute (ATARI). Further, ICAR reorganized the 8 ATARIs into 11 with revised jurisdiction of states. ATARI, Hyderabad is re-designated as

Zone-X for coordination of KVKs in Andhra Pradesh, Telangana, Tamil Nadu and Puducherry. In XII plan, 11 additional KVKs were sanctioned out of which six were established in Andhra Pradesh and Telangana.

Mandates of ATARI

- 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 (Farm 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.

Mandates of KVKs

- 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 farmers' 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.

2. KRISHI VIGYAN KENDRAS

2.1 Status

The sanctioned strength of KVKs in Zone-X is 73 out of which 72 are established and 60 are in operation during 2017-18. The state-wise KVKs includes 30 in Tamil Nadu, 24 in Andhra Pradesh, 16 in Telangana and two in Puducherry. Out of 30 KVKs in Tamil Nadu, 17 are with SAUs (14 with TNAU and 3 with TANUVAS), two with DU and 11 with NGOs. Of the 24 KVKs in Andhra Pradesh, 18 are with SAUs (13 with ANGRAU, 4 with Dr YSRHU and 1 with SVVU), two with ICAR (ICAR-CTRI) and four are with Non-Governmental Organizations (NGOs). Of the 16 KVKs In Telangana,10 KVKs are with SAUs (8 with PJTSAU, 1 each with SKLBTSHU and PVNRTSVU) one with ICAR (ICAR-CRIDA) and 5 with NGOs. In Puducherry, both the KVKs are administered by State Department of Agriculture.

Table 2.1.1. Status of KVKs

State	No. of rural districts	No. of KVKs					
		SAU	ICAR	NGO	DU	SDA	Total
Tamil Nadu	30	17	-	11	2	-	30
Andhra Pradesh	13	18	2	4	-	-	24
Telangana	9	10	1	5	-	-	16
Puducherry	2	-	-	-	-	2	2
Total	**54**	**45**	**3**	**20**	**2**	**2**	**72**

2.2 Staff

The details of staff position of KVKs in different states is given in Table 2.2.1. The total sanctioned staff strength of KVKs in Zone-X stands at 1168, out of which 793 positions are filled (67.9%). Scientific staff strength stands at 311 out of 438 sanctioned strength (71.0% filled). During the year, 47 staff positions were filled across KVKs in different states.

Table 2.2.1 Consolidated staff position

Category	Tamil Nadu			Andhra Pradesh			Telangana			Puducherry			Total		
	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V
Programme Coordinator	30	21	8	24	21	3	16	12	4	3	1	2	73	55	17
Subject Matter Specialist	180	132	47	144	103	40	96	70	26	18	6	12	438	311	125
Farm Manager	30	23	7	23	13	10	16	5	11	3	2	1	72	43	29
PA (Computer)	30	20	10	24	10	14	16	7	9	3	2	1	73	39	34
PA (Lab Tech)	30	25	5	23	9	14	16	8	8	3	2	1	72	44	28
Assistant	30	26	4	24	20	4	16	15	1	3	0	3	73	61	12
Stenographer (Grade-III)	30	24	6	24	11	13	16	9	7	3	1	2	73	45	28
Driver	59	42	17	48	25	23	32	16	15	6	2	4	145	85	59
SSS	61	48	13	50	28	22	32	31	1	**6**	**3**	**3**	149	110	39
Total	**480**	**361**	**117**	**384**	**240**	**143**	**256**	**173**	**82**	**48**	**19**	**29**	**1168**	**793**	**371**

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 Tables 2.3.1 to 2.3.4. The other infrastructure such as rainwater harvesting structure and Integrated Farming System models are provided to some selected KVKs, while the buildings and vehicles are provided to all the KVKs by ICAR.

Table 2.3.1. Details of infrastructure available with KVKs in Tamil Nadu

S.No	KVK/ District	Land with KVK (ha)	Admin Building	Farmers Hostel	Staff Quar-ters	Soil & Water Testing Lab	Mini Soil Testing Lab	Demon-stration Units	Vehicles
1	Cuddalore	20.00	Yes	Yes		Yes	Yes		Yes
2	Dharmapuri	16.16	Yes	Yes	Yes		Yes	1	Yes
3	Kanyakumari	18.67	Yes			Yes	Yes	4	Yes
4	Madurai	19.35	Yes	Yes	Yes	Yes	Yes	6	Yes
5	Nagapattinam	22.67	Yes	Yes	Yes	Yes	Yes	12	Yes
6	Pudukottai	23.20	Yes	Yes		Yes	Yes	6	Yes
7	Ramanathapuram	16.00	Yes	Yes		Yes	Yes	2	Yes
8	Salem	9.95	Yes	Yes	Yes	Yes	Yes	2	Yes
9	Tiruvarur	18.66	Yes	Yes	Yes	Yes	Yes	6	Yes
10	Tiruvallur	16.00	Yes	Yes	Yes	Yes	Yes	2	Yes
11	Trichy	20.00	Yes	Yes	Yes	Yes	Yes	8	Yes
12	Vellore	23.46	Yes	Yes	Yes	Yes	Yes	8	Yes
13	Villupuram	14.40	Yes	Yes	Yes	Yes	Yes	6	Yes
14	Virudhanagar	16.00	Yes	Yes		Yes	Yes	2	Yes
15	Kancheepuram	20.00	Yes	Yes	Yes	Yes	Yes	19	Yes
16	Namakkal	20.00	Yes	Yes	Yes	Yes	Yes	6	Yes
17	Shivagangai	20.00	Yes	Yes		Yes	Yes	3	Yes
18	Coimbatore	20.50	Yes	Yes	Yes	Yes	Yes	3	Yes
19	Dindigul	20.00	Yes	Yes	Yes	Yes	Yes	10	Yes
20	Erode	22.00	Yes	Yes	Yes	Yes	Yes	9	Yes
21	Karur	21.51	Yes	Yes	Yes	Yes	Yes	6	Yes
22	Krishnagiri	11.94	Yes	Yes		Yes	Yes	5	Yes
23	Perambalur	21.96	Yes	Yes	Yes	Yes	Yes	3	Yes
24	Theni	20.00	Yes	Yes	Yes	Yes	Yes	2	Yes
25	Tiruvannamalai	20.47	Yes	Yes	Yes	Yes	Yes	4	Yes
26	Tuticorin	20.00	Yes	Yes	Yes	Yes	Yes	2	Yes
27	Ariyalur	20.00	Yes	Yes	Yes	Yes	Yes	2	Yes
28	Nilgiris	0.00							
29	Tirunelveli	20.85	Yes	Yes	Yes	Yes	Yes	1	Yes
30	Thanjavur	0.00							

Table 2.3.2. Details of infrastructure available with KVKs in Andhra Pradesh

S.No	KVK/ District	Land with KVK (ha)	Admin Building	Farmers Hostel	Staff Quar-ters	Soil and Water Testing Lab	Mini Soil Testing Lab	Demons-tration units	Vehicles
1	Anantapur (R)	22.25	Yes	Yes	Yes	Yes	Yes	9	Yes
2	Anantapur (K)	20.00	Yes	Yes		Yes	Yes	1	Yes
3	Chittoor (K)	20.20	Work in progress	Work in progress			Yes	1	Yes
4	Chittoor	16.00	Yes	Yes	Yes	Yes	Yes	4	Yes
5	East Godavari	14.37	Yes	Yes		Yes	Yes	7	Yes
6	East Godavari (P)	19.40	Yes	Yes		Yes	Yes	2	Yes
7	Guntur(Lam)	23.68	Yes			2	Yes		Yes
8	Kadapa	10.00	Yes	Yes	Yes		Yes		Yes

S.No	KVK/ District	Land with KVK (ha)	Admin Building	Farmers Hostel	Staff Quar-ters	Soil and Water Testing Lab	Mini Soil Testing Lab	Demons-tration units	Vehicles
9	Kadapa-2	16.94					Yes		Yes
10	Krishna	20.00	Yes	Yes	Yes	Yes	Yes	5	Yes
11	Krishna (G)	15.24	Work in progress	Work in progress			Yes	2	Yes
12	Kurnool (B)	20.00	Yes	Yes		Yes	Yes	4	Yes
13	Kurnool (Y)	20.00	Yes	Yes	Yes	Yes	Yes	1	Yes
14	Nellore	24.00	Yes	Yes	Yes	Yes	Yes		Yes
15	Nellore (P)	22.75					Yes		Yes
16	Prakasam	20.00		Yes		Yes	Yes	6	Yes
17	Prakasam (K)	20.00						1	
18	Srikakulam	19.15	Yes	Yes	Yes	Yes	Yes	2	Yes
19	Vishakapatnam	16.00	Yes	Yes	Yes		Yes	2	Yes
20	Vishakapatnam (K)	20.00					Yes		Yes
21	Vizayanagaram	20.30	Yes	Yes		Yes	Yes	6	Yes
22	West Godavari (V)	20.00	Yes	Yes			Yes	1	Yes
23	West Godavari (U)	20.00	Yes	Yes	Yes	Yes	Yes	5	Yes

Table 2.3.3. Details of infrastructure available with KVKs in Telangana

S.No	KVK/ District	Land with KVK (ha)	Admin Building	Farmers Hostel	Staff Quar-ters	Soil and Water Testing Lab	Mini Soil Testing Lab	Demons-tration units	Vehicles
1	Adilabad	5.60		Yes		Yes	Yes		Yes
2	Adilabad(M)	20.00					Yes		
3	Karimnagar(J)	25.40	Yes	Yes	Yes	Yes	Yes	3	Yes
4	Karimnagar (R)	25.60	Yes	Yes			Yes	3	Yes
5	Khammam	12.80	Yes	Yes			Yes	7	Yes
6	Khammam-2	20.00					Yes		
7	Mahaboobnagar	20.00	Yes	Yes	Yes	Yes	Yes		Yes
8	Mahaboobnagar(P)	20.00	Yes	Yes		Yes	Yes	2	Yes
9	Medak	20.00	Yes	Yes	Yes	Yes	Yes	2	Yes
10	Medak-2	12.14					Yes	1	
11	Nalgonda (G)	20.00	Yes	Yes	Yes	Yes	Yes	5	Yes
1	Nalgonda (K)	20.00	Yes	Yes			Yes	2	Yes
13	Nizamabad	19.40	Yes	Yes	Yes		Yes		Yes
14	Ranga Reddy	25.00	Yes	Yes		Yes	Yes	6	Yes
15	Warangal	18.40	Yes	Yes	Yes	Yes	Yes	3	Yes
16	Warangal (M)	16.00	Yes	Yes		Yes	Yes	3	Yes

Table 2.3.4. Details of infrastructure available with KVKs in Puducherry

S.No	KVK/ District	Land with KVK (ha)	Admin Building	Farmers Hostel	Staff Quar-ters	Soil and Water Testing Lab	Mini Soil Testing Lab	Demons-tration units	Vehicles
1	Karaikal	24.38	Yes						Yes
2	Puducherry	58.00	Yes	Yes		Yes			Yes

2.4. Revolving Fund

The total revolving fund generated by KVKs in the Zone-X is Rs.826.61 lakhs of which Rs.174.19 lakhs is generated by KVKs in Tamil Nadu, Rs.362.62 lakhs by KVKs in Andhra Pradesh, Rs.275.21 lakhs by KVKs in Telangana and Rs.14.59 lakhs by KVKs in Puducherry (Table 2.4.1.). KVK wise status is given in Tables 2.4.2 to 2.4.5.

Table 2.4.1. Status of revolving fund (Rs. in lakhs)

State	Balance on 31.3.2018
Tamil Nadu	174.19
Andhra Pradesh	362.62
Telangana	275.21
Puducherry	14.59
Total	**826.61**

Table 2.4.2. Status of revolving fund in KVKs of Tamil Nadu (Rs. In lakhs)

KVK	Balance on 31.3.2018	KVK	Balance on 31.3.2018
Cuddalore	4.16	Namakkal	6.49
Dharmapuri	11.20	Shivagangai	8.26
Kanyakumari	6.98	Coimbatore	10.61
Madurai	3.63	Dindigul	14.11
Nagapattinam	1.74	Erode	10.94
Pudukottai	3.44	Karur	19.12
Ramanathapuram	1.09	Krishnagiri	
Salem	3.27	Perambalur	11.45
Tiruvarur	2.35	Theni	3.87
Tiruvallur	2.03	Tiruvannamalai	7.61
Trichy	5.17	Tuticorin	7.64
Vellore	13.92	Ariyalur	5.26
Villupuram	1.47	Tirunalveli	
Virudhanagar	2.80		
Kancheepuram	5.58	**Total**	**174.19**

Table 2.4.3. Status of revolving fund in KVKs of Andhra Pradesh (Rs. In lakhs)

KVK	Balance on 31.3.2018	KVK	Balance on 31.3.2018
Anantapur (Reddipalli)	14.38	Kurnool (Yagantipalli)	67.38
Anantapur (Kalyandurg)	1.75	Nellore	4.92
Chittoor (Kalikiri)	2.90	Nellore (Periyavaram)	2.19
Chittoor (Rass)	58.43	Prakasam (Darsi)	2.02
East Godavari (Kalavacherla)	11.05	Prakasam (Kandukur)	1.11
East Godavari (Pandirimamidi)	33.47	Srikakulam	18.18
Guntur (Lam)	9.77	Vishakapatnam	43.51
Kadapa	17.22	Vishakapatnam (Buchayapet)	1.27
Kadapa (Vonipenta)	3.00	Vizayanagaram	12.28
Krishna (Garikapadu)	1.07	West Godavari (Undi)	2.73
Krishna (Ghantasala)	11.60	West Godavari (Vrgudem)	38.64
Kurnool (Banavasi)	3.75	**Total**	**362.62**

Table 2.4.4. Status of revolving fund in KVKs of Telangana (Rs. In lakhs)

KVK	Balance on 31.3.2018	KVK	Balance on 31.3.2018
Adilabad	15.55	Medak-2	0.39
Mancherial	3.00	Nalgonda (Gaddipalli)	66.24
Karimnagar(Jammikunta)	27.35	Nalgonda (Kampasagar)	22.79
Karimnagar (Ramgirikilla)	0.38	Nizamabad	14.79
Khammam	48.53	Ranga Reddy	3.53
Khammam-2	3.00	Warangal (Malyal)	41.46
Mahabubnagar (YFA)	11.71	Warangal (Mamnoor)	3.45
Mahabubnagar (Palem)	8.04		
Medak	5.77	**Total**	**275.21**

Table 2.4.5. Status of revolving fund in KVKs of Puducherry (Rs. In lakhs)

KVK	Balance on 31.3.2018
Karaikal	1.91
Puducherry	12.68
Total	**14.59**

2.5 Scientific Advisory Committee (SAC) Meetings

A total of 61 SAC meetings were conducted by KVKs (Table 2.5.1).

2.5.1. Details of SAC meetings conducted in Zone-X

State	No. of operational KVKs	SAC Meetings conducted by KVKs
Tamil Nadu	28	24
Andhra Pradesh	23	23
Telangana	16	14
Puducherry	2	-
Total	**69**	**61**

3. ACHIEVEMENTS

3.1 Technology Assessment

During the year, KVKs in Zone-X assessed 504 technologies in 3233 trials conducted at different locations on farmers fields (Table 3.1.1). The technologies included 390 on crops, 46 on animals and 68 on women empowerment.

The major crop technologies were in the thematic areas of varietal evaluation (133), integrated pest management (59), integrated nutrient management (47), integrated crop management (41) and integrated disease management (29) (Table 3.1.2). In the animals category, major technologies assessed were in the thematic areas of evaluation of breeds (11), disease management (9), feed and fodder management (9) and nutrition management (9). Drudgery reduction (45) and health and nutrition (11) were the major thematic areas assessed under women empowerment.

In Tamil Nadu, 95 crop based technologies were assessed for their suitability in 698 locations 7 technologies on animals in 121 locations and 5 technologies on empowerment of women in 103 locations. The KVKs of Andhra Pradesh assessed the suitability of 180 crop based technologies in 1063 locations, 25 animal based technologies in 221 locations and 30 technologies for women empowerment in 109 locations. In Telangana, 114 crop based technologies were assessed for their suitability in 630 locations, 13 animal based technologies in 58 locations and 31 technologies for the empowerment of women in 217 locations. In Puducherry, four technologies were assessed for their suitability in crop, animals and women empowerment.

Table 3.1.1. Details of technologies assessed by KVKs in Zone-X

Category	No. of Technologies	No. of trials	No. of KVKs
Tamil Nadu			
Crops	95	698	28
Animals	7	121	10
Women empowerment	5	103	9
Sub Total	**107**	**922**	
Andhra Pradesh			
Crops	180	1063	21
Animals	25	221	12
Women empowerment	30	109	12
Sub Total	**235**	**1393**	
Telangana			
Crops	114	630	13
Animals	13	58	5
Women empowerment	31	217	10
Sub Total	**158**	**905**	
Puducherry			
Crops	1	4	2
Animals	1	1	1
Women empowerment	2	8	2
Sub Total	**4**	**13**	

Category	No. of Technologies	No. of trials	No. of KVKs
Zone-X			
Crops	390	2395	64
Animals	46	401	28
Women empowerment	68	437	33
Total	**504**	**3233**	

Table 3.1.2. Details of thematic area wise technologies assessed by KVKs in Zone-X

Thematic Areas	No. of Technologies	No. of trials	No. of KVKs
Crops			
Varietal Evaluation	133	822	50
Integrated Nutrient Management	47	217	32
Integrated Pest Management	59	367	35
Integrated Crop Management	41	240	25
Integrated Disease Management	29	182	22
Small Scale Income Generation Enterprise	3	21	3
Weed Management	10	64	7
Resource Conservation Technology	23	111	11
Farm Management	4	16	3
Integrated Farming System	4	16	4
Post Harvest Technology/Value addition	6	69	12
Drudgery Reduction	12	135	12
Storage Technique	5	50	9
Cropping Systems	10	75	7
Farm Mechanization	2	2	1
Others	2	8	1
Sub Total	**390**	**2395**	
Animals			
Disease Management	9	120	14
Evaluation of Breeds	11	89	9
Feed and Fodder management	9	58	9
Nutrition Management	9	69	7
Production and Management	6	31	5
Others	2	34	2
Sub Total	**46**	**401**	
Women empowerment			
Drudgery Reduction	45	239	22
Entrepreneurship Development	5	37	4
Health and Nutrition	11	152	14
Value Addition	7	9	4
Sub Total	**68**	**437**	

Table 3.1.3. Details of thematic area wise assessment of technologies in Tamil Nadu and Puducherry

Thematic Areas	No. of Technologies	No. of trials	No. of KVKs
Tamil Nadu			
Crops			
Integrated Nutrient Management	9	48	8
Varietal Evaluation	55	356	25
Integrated Pest Management	8	39	7
Integrated Crop Management	6	40	5
Integrated Disease Management	10	62	9
Small Scale Income Generation Enterprise	2	9	2
Weed Management	1	5	1
Resource Conservation Technology	1	4	1
Farm Management	1	3	1
Post Harvest Technology/Value addition	2	41	8
Drudgery Reduction	1	95	7
Sub Total	**96**	**702**	
Animals			
Disease Management	4	100	9
Evaluation of Breeds	3	21	2
Nutrition Management	1	1	1
Sub Total	**8**	**122**	
Women Empowerment			
Drudgery Reduction	2	45	3
Entrepreneurship Development	2	2	1
Health and Nutrition	3	64	8
Sub Total	**7**	**111**	
Puducherry			
Crops			
Integrated Pest Management	1	4	1
Sub Total	**1**	**4**	
Animals			
Nutrition Management	1	1	1
Sub Total	**1**	**1**	
Women Empowerment			
Health and Nutrition	2	8	2
Sub Total	**2**	**8**	

Table 3.1.4. Details of thematic area wise assessment of technologies in Andhra Pradesh

Thematic Areas	No. of Technologies	No. of trials	No. of KVKs
Crops			
Integrated Nutrient Management	26	129	16
Varietal Evaluation	56	329	16
Integrated Pest Management	30	191	16
Integrated Crop Management	19	125	13
Integrated Disease Management	12	83	8
Weed Management	6	36	4
Resource Conservation Technology	10	59	5

Thematic Areas	No. of Technologies	No. of trials	No. of KVKs
Integrated Farming System	2	9	2
Post Harvest Technology/Value addition	3	18	3
Drudgery Reduction	11	40	5
Storage Technique	3	34	7
Cropping System	2	10	2
Sub Total	**180**	**1063**	
Animals			
Disease Management	2	11	3
Evaluation of Breeds	5	64	4
Feed and Fodder management	7	54	7
Nutrition Management	5	33	4
Production and Management	4	25	3
Others	2	34	2
Sub Total	**25**	**221**	
Women Empowerment			
Drudgery Reduction	27	106	12
Value Addition	3	3	1
Sub Total	**30**	**109**	

Table 3.1.5. Details of thematic area wise assessment of technologies in Telangana

Thematic Areas	No. of Technologies	No. of trials	No. of KVKs
Crops			
Integrated Nutrient Management	12	40	8
Varietal Evaluation	22	137	9
Integrated Pest Management	21	137	12
Integrated Crop Management	16	75	7
Integrated Disease Management	7	37	5
Small Scale Income Generation Enterprise	1	12	1
Weed Management	3	23	2
Resource Conservation Technology	12	48	5
Farm Management	3	13	2
Integrated Farming System	2	7	2
Post Harvest Technology/Value addition	1	10	1
Storage Technique	2	16	2
Cropping Systems	8	65	5
Farm Mechanization	2	2	1
Others	2	8	1
Sub Total	**114**	**630**	
Animals			
Disease Management	3	9	2
Evaluation of Breeds	3	4	3
Feed and Fodder management	2	4	2
Nutrition Management	3	35	2
Production and Management	2	6	2
Sub Total	**13**	**58**	
Women Empowerment			
Drudgery Reduction	16	88	7
Entrepreneurship Development	3	35	3
Health and Nutrition	8	88	6
Value Addition	4	6	3
Sub Total	**31**	**217**	

PERFORMANCE OF TECHNOLOGIES

3.1.1 Varietal evaluation

Field crops

Rice

The saline tolerance capability of rice varieties TRY3, Gangavati Sona and CSR 36 were assessed by KVKs at Cuddalore, Trichy, Vellore and Villupuram in Tamil Nadu (Table 3.1.7). Among the varieties Gangavati Sona recorded the highest yield of 81 q/ha in Trichy. TRY 3 recorded highest yield of 63.7q/ha in Cuddalore district and in Vellore, Dhan 39 recorded 64 q/ha yield. The yield potential of TKM 13, NDLR 7 and Improved Samba Mashuri were assessed at Karur and Theni districts of Tamil Nadu. Five rice varieties *viz*., Improved Samba Mashuri and NR-15048 against the check BPT-5204 in Chittoor, NDLR-7 in Kurnool, NLR-3042 in Nellore and DRR-DHAN-45 in Srikakulam districts of Andhra Pradesh were assessed (Table 3.1.8). Among all these varieties, NDLR-7 gave higher yield (80.0 q/ha) followed by RNR-15048 (62.69 q/ha). RNR-15048 was evaluated in ten locations and gave 13.8% higher yield compared to the check BPT-5204. NDLR-7 was tested in ten locations in Kurnool district which recorded 21% higher yield (80 q/ha) when compared to BPT-5204 (66 q/ha). The variety had more productive tillers (19/hill) and grains (173/panicle) and was found tolerant to blast and BPH.

The high yielding variety NLR-3042 released by RARS Tirupati which is blast resistant and suitable for early *kharif* and *rabi* was tested in 6 locations in Nellore against Nellore Mahsuri. An average of 25% increase in yield was observed (50 q/ha) when compared to the check (40 q/ha). Zinc fortified variety Dhan-45 was tested in 11 locations in tribal areas of Srikakulam against MTU-1001 to assess its performance with reference to yield and accumulation of Zn. The yield of Dhan-45 was lower by 13.3% than MTU-1001, but the variety is known for Zn fortification which will help to overcome nutritional deficiency in women and children in tribal areas.

OFT of rice variety NDLR 7 at Kurnool

OFT of salinity and disease tolerant rice variety RNR 11718 at Mahabubnagar district (Madanapuram) of Telangana

Table 3.1.7. Assessment of saline tolerance in rice varieties at different locations in Tamil Nadu

District	Yield (q/ha)										
	Farmers Practice				Demonstration						
	BPT 5204	TRY 3	ADT 37	Goraknath 509	Dhan 39	TRY 3	TKM 13	Gangavati Sona	CSR 36	NDLR 7	Improved Samba Mahsuri
Cuddalore	53.8	-	-	-	-	63.7	-	55.7	-	-	-
Karur	37.2	-	-	-	-	-	35.7	-	-	-	30.6
Theni	-	-	-	66.0	-	-	77.8	-	-	70.1	-
Tirchy	-	69.0	-	-	-	-	-	81.0	-	-	-
Vellore	-	49.0	-	-	64.0	-	-	52.0	-	-	-
Villupuram	-	-	31.6	-	-	39.4	-	-	39.5	-	-

Table 3.1.8. Performance of rice varieties in Andhra Pradesh

District/KVK	Thematic area	Varieties		Yield (q/ha)	
		Test variety	Check	Test variety	Check
Chittoor	Yield and BLB tolerance	Improved Samba Mashuri	BPT-5204	45.25	49.25
		RNR-15048	BPT-5204	62.59	55.06
Kurnool	Yield	NDLR-7	BPT-5204	80.00	66.00
Nellore	Yield	NLR-3042	Nellore Mashuri	50.00	40.00
Srikakulam	Yield and Zn fortification	DHAN-45	MTU-1001	45.30	51.00

The saline, blast and stem rot tolerant rice variety RNR 11718 was assessed at one location in Mahabubnagar district (Madanapuram) of Telangana. The variety gave 60.30 q/ha grain yield, which was 14.4% higher over BPT-5204.

Finger millet

In Tamil Nadu, the disease tolerance potential of the finger millet variety ML 365 was assessed in Theni and Tiruvallur districts in comparison with Co 15 and PPR 2700. The ML 365 performed well in both the districts with the yield of 17.9 q/ha and 21.9 q/ha in Theni and Tiruvallur districts respectively while the grain yield in Co 15 and PPR 2700 were 21.2 and 15.4 q/ha, respectively. Finger millet varieties Hima and Sri Chaitanya were tested in East Godavari district of Andhra Pradesh to test the performance of yield potential in six locations. Hima variety recorded highest yield 22.5 q/ha followed by Sri Chaitanya 20 q/ha and Lakshmi, local verity 12.5 q/ha.

OFT of ragi variety VR 936 (Hima) in East Godavari district of Andhra Pradesh

OFT of ragi variety VR 847 (Srichaitanya) in East Godavari district of Andhra Pradesh

Pigeonpea

Pigeonpea variety TRG-59 was tested in ten locations in Andhra Pradesh and gave 52.2% higher yield than LRG-41 in Chittoor district (Table 3.1.9).

OFT of pigeonpea variety TRG 59 in Chittoor district of Andhra Pradesh

Table 3.1.9. Performance of pigeonpea varieties TRG 59, LRG 52 and PRG 176 in Andhra Pradesh

District/KVK	Thematic area	Yield (q/ha)				
		Farmers variety		Tested varieties		
		LRG-41	Asha	TRG-59	LRG-52	PRG-176
Chittoor	Yield, wilt and sterility mosaic tolerance	7.52	-	11.45	-	-
Kurnool	Yield	-	20.25	-	21.25	19.75
Prakasam	Yield and wilt tolerance	11.50	-	-	13.60	11.20

Blackgram

The blackgram varieties VBN8, TU942 and TBG 104 were assessed for their yield potential and mosaic tolerance with farmers varieties in Tamil Nadu (Table 3.1.10). VBN8 recorded 7.78, 8.33 and 7.90 q/ha yield in Dharmapuri, Thiruvannamalai and Sivagangai districts, respectively as against 6.90, 6.12 and 6.74 q/ha in the existing varieties. The variety TBG 104 recorded 8.22 q/ha and 7.77 q/ha yield in Dharmapuri, Thiruvannamalai districts respectively and the variety TU 942 yielded 7.60 q/ha in Sivagangai district.

Table 3.1.10. Performance of blackgram varieties at different locations in Tamil Nadu

District	Yield (q/ha)					
	Farmers Practice			Demonstration		
	Local	T9	VBN 5	VBN 8	TU 942	TBG 104
Dharmapuri			6.90	7.78		8.22
Tiruvannamalai	6.12			8.33		7.77
Sivagangai		6.74		7.90	7.60	

Blackgram varieties TBG-104 and GBG-1 were tested at 24 locations in three districts *viz*., Guntur, Kurnool and East Godavari districts of Andhra Pradesh for yield improvement and tolerance to Yellow Mosaic Virus (YMV) (Table 3.1.11). Among these TBG-104 performed well when compared to other varieties including check varieties. TBG-104 gave higher yield 18.08 q/ha in Kurnool, whereas GBG-1 gave higher yield 17.80 q/ha in Guntur district.

Table 3.1.11. Performance of blackgram varieties in Andhra Pradesh

District/KVK	Thematic area	Yield (q/ha)			
		Farmers variety		Tested varieties	
		LBG-752	PU-31	TBG-104	GBG-1
Guntur	Yield and tolerance to YMV	15.20	-	17.20	17.80
Kurnool	Yield and tolerance to YMV	-	15.44	18.08	-
East Godavari	Yield and tolerance to YMV	-	10.50	13.75	-

Cowpea

The cow pea variety TPTC-29 was tested at ten locations in Chittoor and Kadapa districts of Andhra Pradesh for its yield performance. In Kadapa TPTC-29 cowpea variety gave high yield (62 q/ha) when compared to farmers variety, Meghana (20 q/ha).

Groundnut

Groundnut varieties Co 7, Dharani, GJG9, VRI 8, K9 and KCG 6 were assessed for drought tolerance by six KVKs of Tamil Nadu. VRI 8 and Co 7 performed well in drought conditions with 26.2 q/ha and 25.7 q/ha pod yields, respectively (Table 3.1.12). Dharani performed next to VRI 8 and Co7 with 22.8q/ha pod yield in Ariyalur district. In Thiruvallur district Co 7 and GJG 9 gave 31.6 q/ha and 36.7 q/ha yield.

Table 3.1.12. Performance of groundnut varieties at different locations in Tamil Nadu

District	Yield (q/ha)									
	Farmers Practice				Demonstration					
	Local	JL 24	TMV 7	VRI 2	Co 7	Dharani	GJG 9	VRI 8	K 9	KCG 6
Ariyalur	18.83	-	-	-	-	22.3	-	23.2	-	
Dindigul	-	-	11.1	-	19.1	-	-	-	15.0	18.8
Pudukottai	-	-	-	19.0	25.7	-	21.2	24.8	-	-
Sivagangai	-	-	13.5	-	-	21.0	-	18.0	-	-
Tirchy	15.2	-	-	-	20.7	-	-	26.2	22.5	-
Tiruvallur	-	25.3	-	-	31.6	-	36.7	-	-	-

OFT of groundnut varieties in Andhra Pradesh

OFT on Groundnut variety Dharani at East Godavari district of Andhra Pradesh

Different high yielding groundnut varieties were tested in Chittoor, East Godavari, Visakhapatnam and Kadapa districts of Andhra Pradesh in 55 locations to assess their performance (Table 3.1.13). TCGS-1073 was tested to assess its performance against drought and yield in nine locations in Chittoor during kharif and it recorded 21.3% higher yield when compared to Kadiri-6 and during *rabi* the variety recorded 37.8% increase in yield. In Kadapa the variety recorded an average of 14% yield increase in five locations. Dharani groundnut variety was tested in East Godavari district during rabi in four locations against Tirupati-1 variety. Dharani recorded an average yield of 3950 kg per ha whereas Tirupati-1 recorded an average yield of 3150 kg per ha. Against Kadiri-6 in ten locations of Kurnool the variety Dharani gave an average of 6% yield increase than Kadiri-6in kharif season. In Visakhapatnam district Kadiri-9 variety gave an average of 19% higher yield in kharif season under rainfed situation. In kharif season, among the varieties tested, the highest yield was recorded by TCGS-1073 (19.13 q/ha) followed by Kadiri-9 and Dharani (14.30 q/ha) and in rabi season, Dharani recorded the highest yield of 39.50 q/ha followed by TCGS-1073 (31.50 q/ha).

Table 3.1.13. Performance of groundnut varieties in Andhra Pradesh

District/KVK	Thematic area	Yield (q/ha)				
		Farmers variety		Tested varieties		
		Kadiri-6	Tirupati-1	TCGS-1073	Kadiri-9	Dharani
Chittoor	Yield, drought and PSND (*kharif*)	16.83	-	19.13	-	-
	Yield and PSND (*rabi*)	23.84	-	31.70	-	-
Kadapa	Yield, drought and PSND (*kharif*)	13.00	-	15.00	-	-
East Godavari	Yield (*rabi*)	-	31.50	-	-	39.50
Kurnool	Yield, drought and PSND (*kharif*)	13.50	-	-	-	14.30
Visakhapatnam	Yield and drought (*kharif*)	12.00	-	-	14.30	-

High yielding and disease tolerant groundnut variety ICGV 3043 assessed at two locations in Nalgonda district of Telangana recoded highest yield of 29.43 q/ha in Gaddipalli centre as against local variety K-6 (28.05 q/ha) followed by Kampasagar centre (21.78 q/ha). At both locations there was no incidence of Tikka leaf spot in ICGV 3043 while K-6 recorded high incidence.

Sugarcane

Performance of the new sugarcane variety Co 0212 was compared with Co 86032 at Erode and Theni districts in Tamil Nadu. Co 0212 recorded 127.50 t/ha and 138 t/ha at Erode and Theni districts, respectively while the yield of Co 86032 was 108.75 t/ha. The high yielding and non-flowering sugarcane variety 2006 T 3 gave 16.7% and 56% higher yield when compared to 86 V 96 and 83 V 42 varieties, respectively at 15 locations in Chittoor district, Andhra Pradesh.

OFT of sugarcane variety 2006 T 3 in Andhra Pradesh

Fodder sorghum

The potential of Co 27 and PC 23 fodder sorghum varieties were compared with Co 4 and K 10 in Erode and Namakkal districts of Tamil Nadu. Co 27 gave 278 q/ha and 345 q/ha yield in Erode and Namakkal districts, respectively, whereas PC 23 variety gave 316 q/ha and 322 q/ha yield.

Horticultural crops

Tomato: The potential of multiple diseases resistant hybrid tomato Arka Rakshak was assessed in Ariyalur and Tiruvallur districts of Tamil Nadu. Along with this the performance of CoTH3 and Swarna deepti was assessed at Ariyalur and Tiruvallur districts, respectively. The yield of Arka Rakshak was 503 q/ha in Ariyalur and 504 q/ha at Tiruvallur. CoTH3 gave 542 q/ha yield and Swarna deepti gave 477 q/ha yield in Ariyalur and Tiruvallur conditions respectively.

OFT on Chilly hybrids Co 1 and Arka Harita at Ramanathapuram, Tamil Nadu

Chilli: The performance of TNAU Chilli hybrid Co1 and Arka Harita were assessed at Karur, Ramanathapuram, Salem and Tirunelveli districts of Tamil Nadu. The yield ranged from 154.6 to 383.5q/ha for Co 1 and 167.6 to 318.6 q/ha for Arka Harita. Both the hybrids recorded highest yield in Karur district and lowest yield in Ramanathapuram district.

Table 3.1.14. Performance of chilli varieties at different locations in Tamil Nadu

District	Yield (q/ha)				
	Farmers Practice			Demonstration	
	Local	Sierra	K2	TNAU Chilli hybrid Co 1	Arka Harita
Karur	-	-	233.3	383.5	318.6
Ramanathapuram	131.2	-	-	154.6	167.6
Salem	-	245.0	-	260.0	282.0
Tirunelveli	188.4	-	-	262.6	290.4

Lablab: The potential of Co (GB)14 and Arka Sambharam hybrids were assessed in Dharmapuri, Dindigul, Krishnagiri and Perambalur districts of Tamil Nadu. The Arka Sambharam recorded highest yield of 128.6 q/ha in Dindigul and lowest yield of 53.0 q/ha in Dharmapuri district. The Co (GB)14 yield range in four district was 68.0 to 94.8 q/ha. Arka Sambharam variety performed well in Dindigul and Perambalur districts.

Table 3.1.15. Performance of lablab varieties at different locations in Tamil Nadu

District	Yield (q/ha)		
	Farmers Practice	Demonstration	
	Local	Co(GB)14	Arka Sambharam
Dharmapuri	38.0	68.0	53.0
Dindigul	89.6	94.8	128.6
Krishnagiri	73.8	94.0	83.2
Perambalur	78.2	93.6	111.5

Turmeric: The performance of short duration turmeric variety IISR Pragati was compared with Sugana in Erode district and with Co2 in Salem, Villupuram and Coimbatore districts of Tamil Nadu. In all the locations IISR Pragati performed well with a yield range of 157.9 to 344.4 q/ha. The Co 2 recorded highest yield of 301.4 q/ha in Villupuram district. The short duration IISR Pragati will serve as a better variety wherever water is a critical input.

OFT on Turmeric Variety IISR Pragati at Erode District of Tamil Nadu

OFT on Lablab variety Arka Sambhram at Dindigul district of Tamil Nadu

Table 3.1.16. Performance of turmeric varieties at different locations in Tamil Nadu

District	Yield (q/ha)				
	Farmers Practice		Demonstration		
	Local	Suvarna	Co 2	Suguna	IISR Pragati
Erode	-	201.7	-	259.9	344.4
Salem	234	-	261.0	-	301.0
Villupuram	240	-	301.4	-	349.4
Cuddalore	175.6	-	192.5	-	157.9

3.1.2. Crop production technologies

Organic farming in rice

The technology package comprising of organic farming in rice *viz*., "cultivation of new HYV RNR 15048 + organic inputs (FYM@ 4 t/ac, neem oil spray at 25 DAT and 50 DAT, *Pseudomonas fluorescence* spray@ 10 gm/l or soil application with vermicompost, pheromone traps installation @ 8/ac" was assessed against the farmers practice of "cultivating MTU 1010 + fertilizers / pesticide application" in two districts at two locations of Telangana. The results showed that at Mahabubnagar the yields were reduced in organic block (39.60 q/ha) compared to farmers practice (52.80 q/ha) and at Karimnagar higher yields were obtained (52.5 q/ha) compared to farmers practice (42.5 q/ha).

OFT on paddy variety RNR 15048 under organic farming at Mahaboobnagar (Madanapuram), Telangana

Post emergence herbicide for weed management in maize

Post emergence application of tembotrion @ 115 ml + atrazine @ 400 g/ac at 2-3 leaf weed stage for maize was assessed at two locations in Karimnagar district of Telangana. The results indicated better performance of post emergence application of herbicides in maize with yield enhancement (86.7 q/ha) at Karimnagar followed by Ramgirikilla (64.0 q/ha) by registering 9.2% increase in yield over farmers practice. Timely application of post emergence herbicide at right stage of weeds (2-3 leaf stage) effectively controlled the weeds in maize.

Assessment of post emergence herbicide in maize at Karimnagar (Ramgirikilla)

Integrated nutrient management through fertigation in maize

Application of 150 kg urea in splits @ 10 kg at 10 DAS, 10 kg at 20 DAS, 20 kg at 30 DAS, 30 kg at 40 DAS, 40 kg at 50 DAS and 65 DAS through fertigation was assessed against the farmers practice of application of 200 kg urea in 3 splits at 20, 45 and 65 DAS by normal fertilizer application through band placement in Warangal district of Telangana and results indicated yield enhancement in fertigation block (112.5 q/ha) as against farmers practice (95 q/ac) by registering 18.4 % increase in yield over farmers practice.

Micronutrient spray formulations for pulses

The performance of TNAU nutrigold and pulse wonder was assessed for blackgram in Tamil Nadu. TNAU nutrigold recorded 8.18 q/ha yield whereas pulse wonder spary recorded 7.58 q/ha yield.

Microbial consortia for tomato and French bean

Soil application of Arka microbial consortia was compared with *Azospirillum* and *Phosphobacteria* application for tomato in Namakkal district of Tamil Nadu. The Arka microbial consortia application gave 636.0 q/ha yield, whereas *Azospirillum* and *Phosphobactor* application gave 581.2 q/ha yield. In French bean application of azophos and Arka microbial consortia recorded 115q/ha and 117.5q/ha yield in Erode district of Tamil Nadu.

Management of micronutrient deficiency in chillies and onion

The IIHR vegetable special was compared with IISR power mix for the management of micronutrient deficiency in chillies. The applications of IISR power mix in chillies recorded 124 q/ha yield in Vellore district of Tamil Nadu. The efficacy of IIHR vegetable special @ 3 g/l application on 20, 40 and 60 DAT and foliar application of micronutrient on 45 and 60 DAT was studied in Bellary onion in Madurai district of Tamil Nadu. The IIHR vegetable special application performed better recording an yield of 121.5 q/ha.

Table 3.1.17. Integrated Nutrient Management modules assessed at different locations in Tamil Nadu

District	Crop	Farmers Practice		Technology option 1		Technology option 2	
		Variety	Yield (q/ha)	Variety	Yield (q/ha)	Variety	Yield (q/ha)
Villupuram	Pulses	2% DAP spray	6.78	TNAU pulse wonder	7.58	TNAU Nutrigold	8.18
Namakkal	Tomato	Application FYM @ 12.5 t/ha as basal and fertilizer application	503.9	Soil application with *Azospirillum* & phosphobacteria	581.2	Soil application with Arka Microbial Consortia	636.0
Vellore	Chillies	No micronutrient application	99.0	IIHR Vegetable special	111.0	IISR Power mix	124.0
Erode	French bean	FYM	105	Azophos 5kg/ha	115.0	Soil application with Arka Microbial Consortia	117.5
Madurai	Onion (Bellary)	Farm Yard Manure @ 2 t/ac	98.0	Foliar application of micro nutrient (5 ml/l) on 45 and 60 days after transplanting	115.5	IIHR, Vegetable special @ 3 g/l @ 20, 40 and 60 DAT	121.5

3.1.3. Integrated Pest and Disease Management

Pest and disease management in rice

IPM technology for the management of brown plant hopper in rice was assessed at Nellore and recorded a yield of 9.1 t/ha compared to 9.04 t/ha in farmer's practices (Table 3.1.18). Organic technology package for the management of BPH in rice yielded 8.94 t/ha over 6.45 t/ha in farmer practices. At Prakasam, IDM technology was assessed for the management of stem rot which recorded 6.20 t/ha compared to 5.65 t/ha in farmers practice and evaluation of azoxystrobin 25SC for the

Seed treatment with *Pseudomonas* in paddy

management of sheath blight recorded an average yield of 6.55 t/ha compared to 6.01 t/ha in farmers practice at Prakasam and Krishna. At Krishna, for rodent management, IPM technology was assessed and recorded an yield of 6.94 t/ha compared to 6.56 t/ha in farmer's practice (Table 3.1.18).

Table 3.1.18. Performance of technologies for the management of pest and diseases in rice in Andhra Pradesh

District/KVK	Theme/Focus	Yield (t/ha)	
		Farmers practice	Recommended practice
Nellore	IPM	9.04	9.10
Nellore	Organic package	6.45	8.94
Prakasam	IDM	5.65	6.20
Prakasam	IDM	5.55	6.21
Krishna	IDM	6.47	6.90
Krishna	IPM	6.56	6.94
Average		**6.62**	**7.38**

Panicle mite and grain discoloration management in rice

In Mahabubnagar and Nalgonda district of Telangana, to manage panicle mite and grain discoloration, spraying of spiromecifin 1 ml/l at panicle initiation followed by dicofol 5 ml/l along with propiconozole 1 ml/l of water was assessed against the farmer's practice of spraying acephate 1.5g/l or profenophos 2 ml/l of water. Higher yields were recorded in the technologies assessed with an average increase of 16.18% over farmers practice.

Table 3.1.19. Assessment of management of grain discoloration and panicle mite infestation in paddy

District	Theme/Focus	Yield (q/ha)	
		Farmers Practice	Technology Assessed
Mahaboobnagar (Madanapuram)	Integrated Pest Management	48.82	55.81
Mahaboobnagar (Palem)		40.50	49.50
Nalgonda (Gaddipalli)		59.00	67.00

Panicle mite infestation in paddy

Management of stem rot and bacterial crown rot in rice

At Karimnagar (Jammikunta and Ramgirikilla) district of Telangana, seed treatment with carbendazim 1g/kg and spraying of carbendazim + mancozeb 500 g/ac twice at 20 days interval from 20 DAT for the management of stem rot in rice was assessed against the farmers practice of spraying of hexaconozole 2 ml/l of water. In Nalogonda (Kampasagar) district of Telangana, the IDM technology *viz*., green manure in-situ incorporation, applying bleaching powder @ 50 kg/ha

Management of stem rot in paddy

after final puddling and complete impounding in field itself, management of yellow stem borer, applying mancozeb 50% + carbendazim 25% WS @ 2 g/kg of urea at top dressing and providing adequate drainage was assessed for the management of bacterial crown rot in rice as against spraying hexaconozole 2 ml/l of water. The results indicated that in stem rot infested locations highest yields were obtained at Karimnagar (Ramgirikilla) with 62.5 q/ha followed by Karimnagar (Jammikunta) with 56.2 q/ha by registering 17.5% increase in yield over farmers practice. In case of bacterial crown rot assessed at one location (Nalgonda-Kampasagar), higher yields were obtained (60.2 q/ha). In both cases, disease management practices resulted in reducing the damage to paddy and better returns (Table 3.1.20).

Table 3.1.20. Management of stem rot and bacterial crown rot in paddy in Telangana

District	Theme/Focus	Yield (q/ha)	
		Farmers Practice	Technology Assessed
Karimnagar (Jammikunta)	1.Integrated disease management of Stem rot	47.8	56.2
Karimnagar (Ramgirikilla)	2.Integrated disease management of bacterial crown rot	57.5	62.5
Nalgonda (Kampasagar)		54.95	60.20

Management of pod borer in pigeonpea

IPM technology was assessed for the management of pod borer in pigeonpea at Yagantipalli of Andhra Pradesh which recorded 19.79 t/ha yield compared to 17.40 t/ha in farmer's practice.

Assessment of IPM in pigeonpea

Performance of yellow mosaic resistant cultivar of blackgram (TBG 104)

KVKs of Guntur, (Lam), Krishna (Garikapadu), Prakasam and Undi in Andhra Pradesh evaluated the performance of YMV resistant blackgram variety TBG 104 at different locations. The variety gave higher yield (11.25 q/ha) when compared to farmers' practice (8.9 q/ha).

Performance of YMV resistant blackgram variety TBG 104

Pest and disease management in groundnut

Red hairy caterpillar: Pheromone trap technology was assessed for the management of red hairy caterpillar in groundnut at Kalikiri of Andhra Pradesh which recorded an yield of 1.03 t/ha while in farmers' practice it was 0.98 t/ha. At Utukur of Andhra Pradesh, recommended practice recorded an yield of 2.9 t/ha as against 2.87 t/ha in farmers' practice.

Root grub: IPM (seed treatment) technology for management of root grub in groundnut recorded an yield of 3.3 t/ha as against 3 t/ha in farmers' practice.

***Spodoptera litura*:** *Bt* technology for the management of *Spodoptera litura* yielded 3.35 t/ha against 3.12 t/ha in farmers' practice.

Foliar diseases: At Guntur, Lam and Srikakulum, IDM technology for the management of foliar diseases recorded average yield of 2.21 t/ha compared to 1.96 t/ha in farmer's practice.

IDM in groundnut in Andhra Pradesh

Management of Botrytis disease in Castor

The IDM technology for the management of Botrytis disease in castor *viz*., "adopting a spacing of 90 x 90 cm, spraying propiconozle @ 1 ml/l before and soon after rains, applying 20 kg urea and 10 kg potash/ac and cultivating high yielding variety Pragathi (PCS 262) was assessed against the farmers practice of "cultivating traditional varieties without any Botrytis management /spraying in Mahaboobnagar and Ranga Reddy districts of Telangana. The results showed that cultivation high yielding variety in combination with prophylactic measures during the rainy season could prevent the damage levels to a greater extent with an yield improvement of 37.58% over farmers practice. The incidence of Botrytis was higher in farmers plots (25%) compared to demonstration plots (8%).

Botrytis management in castor high yielding variety PCS 262 (Pragathi)

Management of stem fly in soybean

In Nizamabad district of Telangana, IPM for stem fly management in soybean was assessed by the Rudrur KVK. The IPM technologies included "seed treatment with imidacloprid , soil application of carbofuran 3G @ 10 kg/ac at 15-20 DAS, spraying of neem oil at 45 DAS (azadirachtin 1500 ppm @ 5 ml/l) + sandovit (1 ml)/detergent powder (1g)/l or acephate @ 1.5 g/l of water, spraying of chlorantraniliprole @ 0.3 ml/l of water at 50-55 DAS as against the farmers practice of spraying chlorpyriphos @ 2.5 ml/l or quinalphos @ 2.0 ml/l. IPM practices registered higher yields (17.62 q/ha) compared to farmers practice (16.08 q/ha)


Stem fly management in soybean crop in Nizamabad district

Management of para wilt in cotton

Spraying of 1 % KNO_3 + soil drenching with 0.5 % urea + 0.5 % phosphorous within 12 hours of water logging and foliar spray of cobalt chloride @ 1 g/100 l of water at initial stage of wilting within 48 hours of water logging was assessed in Perambalur district of Tamil Nadu to manage para wilt disorder in cotton. The cobalt chloride @ 1 g/100 l of water recorded highest yield of 16.8q/ha.

Management of pink bollworm in cotton: In Garikapadu district of Andhra Pradesh, mass trapping with pheromone trap for the management of pink bollworm in cotton recorded 1.53 t/ha yield compared to 1.24 t/ha in farmer practice.

Mass trapping of pink bollworm with pheromone traps

Pink bollworm management in cotton was taken up in large scale in seven districts at different locations of Telangana (Table 3.1.22). The IPM technology included pheromone traps (8/ac), azadirachtin 1500 ppm (neem oil) 5ml/l, profenophos 2 ml/l or thiodicarb 1.5 g/l or spinosad 0.35ml/l or lambda cyhalothrin 1ml/l of water and destruction of rosette flowers as against the farmers practice of chemical control alone. Highest cotton yields were obtained in Nalgonda (Kampasagar) with 29.20 q/ha followed by Nalgonda (Gaddipalli) (25.00 q/ha) and Warangal (22.70 q/ha) by recording 26.83 % increase over farmers practice.

Table 3.1.22. Assessment of IPM for the management of pink bollworm in cotton at different locations in Telangana

District	Yield (q/ha)	
	Farmers Practice	Technology Assessed
Khammam	16.55	20.25
Karimnagar (Jammikunta)	17.00	20.00
Karimnagar (Ramgirikilla)	17.00	21.00
Nalgonda (Gaddipalli)	20.00	25.00
Nalgonda (Kampasagar)	25.00	29.20
Warangal (Malyal)	17.00	22.70

Monitoring of pink bollworm infestation using pheromone traps in Khammam

Pink bollworm management in Karimnagar(Jammikunta)

Alternaria leaf spot and stem blight management in cotton

In Telangana, the IDM technology *viz*., seed treated with *Pseudomonas fluorescence* @10 g/kg seed, prophylactic spray of propiconazole @ 1ml or carbendazim + mancozeb @2.5 g/l or trifloxystrobin + tebuconazole @ 0.8 g/l or pyraclostrobin + metiram 3 g/l at 45, 60 and 75 DAS in endemic areas of *Alternaria* occurrence as against the farmers practice of spraying of carbendazim 1g/l or mancozeb 2 g/l of water. The results indicated better disease management in IDM (39.91% increase in yield) than the farmers practice.

Table 3.1.23. Assessment of *Alternaria* leaf spot and stem blight management in cotton

District	Yield (q/ha)	
	Farmers Practice	Technology Assessed
Mahaboobnagar (Palem)	22.0	27.50
Karimnagar (Jammikunta)	15.0	22.50
Khammam(Wyra)	14.32	16.82
Adilabad	18.25	20.50

***Alternaria* leaf spot and stem blight management at Karimnagar (Jammikunta) and Khammam (Wyra)**

Early shoot borer management in sugarcane

The IPM technology assessed for the management of early shoot borer in sugarcane at Srikakulam in Andhra Pradesh recorded 82 t/ha compared to 74.5 t/ha in farmer practice.

IPM for management of early shoot borer in sugarcane

Management of tobacco caterpillar: The efficacy of Shakthi formulation technology was assessed at Kandukur KVK of Prakasam district in Andhra Pradesh which showed 1.71 % seedling damage compared to 42% in farmer's practice.

Management of thrips in Onion: IPM for thrips management was assessed at KVK, Banvasi which recorded an yield of 25245 kg/ha over farmer practice 23580 kg/ha

IPM for the management of leaf miner in tomato

Management of leaf miner in tomato: The IPM technology for the management of leaf miner in tomato was assessed at Kalikiri and Srikakulam of Andhra Pradesh. An average yield of 23.66 t/ha was recorded in the IPM technology compared to 19.53 t/ha in farmer practices.

Biological control of brinjal pests

The *Cryptolaemus montrouzieri* beetles along with *Verticillium lacanii*, *Metarhizium anisopliae* and *Beauveria bassiana* were assessed against brinjal pests in Salem district of Tamil Nadu. *Cryptolaemus montrouzieri* along with *Verticillium lacanii* performed better with yield of 1140 q/ha.

Disease management in banana

The disease management modules in banana were assessed in Madurai and Salem districts of Tamil Nadu. Among the combinations assessed soil solarization of beds along with rhizome treatment with *Pseudomonas fluorescens* @ 10 kg/ha gave the highest yield of 439 q/ha than other combinations studied.

Management of rhizome rot disease in turmeric: Rhizome treatment with *Trichoderma viride* and *Pseudomonas. fluorescens* @ 10 g/l of water and soil application of *Trichoderma viride* and *Pseudomonas. fluorescens* each @ 2.5 kg/ha along with decomposed farm yard manure and repeated application on 150 DAP were assessed for the management of turmeric rhizome rot in Dharmapuri district of Tamil Nadu. The technology gave the highest yield of 82 q/ha. For the management of rhizome rot disease, IDM technology was assessed at Kadapa, Vonipenta in Andhra Pradesh which recorded a yield of 36.8 t/ha when compared to 31.5 t/ha in farmer practices

Biological control of soil borne diseases of pepper

To manage soil borne diseases in pepper three combinations were assessed in Salem district of Tamil Nadu. Among these, application of *Trichoderma harzianum* @ 50 g/vine followed by foliar spray of potassium phosphonate @ 0.3% gave 18.2 q/ha yield in pepper.

Table 3.1.24. Integrated pest management modules assessed in different locations of Tamil Nadu

District	Crop	Farmers Practice		Technology option 1		Technology option 2		Technology option 3	
		Technology	Yield (q/ha)	Technology	Yield (q/ha)	Technology	Yield (q/ha)	Technology	Yield (q/ha)
Perambalur	Paddy	Insecticide spray	41.0	IPM module	46.4	Ecological Engineering method	32.8	-	-
Perambalur	Cotton	Soil drenching with COC @ 3g/lit of water	12.45	Spraying of 1 % KNO_3 + soil drenching with 0.5 % urea + 0.5 % phosphorous within 12 hours	14.55	Foliar spray of Cobalt chloride @ 1 g/ 100 lit of initial stage of wilting within 48 hours and avoid water logging in fields.	16.8	-	-
Erode	Cotton	Insecticide	15.53	Spraying of NSKE	17.08	Spraying of Plant extract	17.26	-	-
Salem	Brinjal	Profenophos	720	*Verticillium lecanii*+ *Cryptolaemus montrouzieri* beetles	1140	*Metarhizium anisopliae* + *Cryptolaemus montrouzieri* beetles	970	*Beauveria bassiana*+ *Cryptolaemus montrouzieri* beetles	840
Vriudhunagar	Chillies	Insecticide	17.2	*Sesbania* as border crop, seed treatment with imidacloprid	18.5	Cultivation of sucking pest tolerant hybrid Arka Meghana, seed treatment @ 10g/kg of	21.4	-	-

District	Crop	Farmers Practice		Technology option 1		Technology option 2		Technology option 3	
		Technology	Yield (q/ha)	Technology	Yield (q/ha)	Technology	Yield (q/ha)	Technology	Yield (q/ha)
				70% WS @ 12 g/ha, installation yellow sticky traps @ 12/ha		seed treatment + application of *P. fluorescens*			
Madurai	Banana	Therapeutic application of Carbendazim (0.1%)	380	Soil solarization of nursery bed + Seed treatment of *P. fluorescens* @ 10g/kg &PoP	439	Soil solarization of nursery bed + seed treatment of *T. viride* @4g/kg & PoP	416	-	-
Salem	Banana	Sucker treatment with carbendazim 2.5 g along with carbofuran 3G at 40 g/sucker	250	*P. fluorescens* 2.5 kg/ha + FYM + neem cake	300	Soil application of Bio-nematicide + Bio-fungicide @ 1 l/ac	312	-	-
Dharmapuri	Turmeric	Fungicides	68	Rhizome treatment with *T. viride* and *P. fluorescens* each@10g /kg followed by soil application of *T. viride& P. fluorescens* each @ 2.5 kg/ha on basal &150 DAP	82	Rhizome treatment with *T. harzianum* @ 10 g/kg followed by soil application of *T. harzianum & P. chlamydosporia* each 1kg/t of FYM on basal & on 150 DAP	78.0	-	-
Salem	Pepper	Drenching with copper oxy chloride	13.1	Soil application of neem cake and *T. viride or P. fluorescens*	13.6	*T. harzianum*@ 50 g/vine. foliar spray with potassium phosphonate (0.3%)	18.2	20 kg FYM, 1 kg neem cake + 50gm *T. harzianum* @ each vine + plastic film, 2prophylactic sprays of 1% Bordeaux mixture	15.4

3.1.4 Livestock species

Location specificity of livestock technologies

In Tamil Nadu, six technologies were assessed through 116 OFTs. (Table 3.1.25). In Andhra Pradesh on farm trails on 42 aspects were conducted in 319 locations to find out solutions against recurring problems faced by the farmers in veterinary and fisheries sector (Table 3.1.26).

Table 3.1.25. On farm trails conducted on livestock in Tamil Nadu

Thematic Areas	Technology (No.)	Trials (No.)	Locations (No.)
Livestock disease management	1	85	8
Evaluation of breeds	3	21	3
Feed management	1	5	1
Production and management	1	5	1
TOTAL	**6**	**116**	**13**

Table 3.1.26. On farm trails conducted on livestock in Andhra Pradesh

Enterprise	Thematic Area	KVKs (No.)	No. of OFTs	No. of locations
Dairy	Reproductive management	1	1	10
	Nutrition management	7	7	32
	Feed and fodder management	13	13	103
	Integrated Farming System (IFS)	2	2	4
Sheep & Goat	Production and management	3	3	12
	Nutrition and disease management	2	2	6
Poultry	Poor management practices	3	3	86
	Disease management	1	1	5
Fisheries	Production and management	3	6	41
	Disease management	1	4	20
	Total		**42**	**319**

Assessment of suitable dairy breed

Selective breeding with Sahiwal –milch breed and Tharparker – dual purpose breed with non-descript cattle to improve native germplasm and increase the production potential in Tamil Nadu indicated that breeding of non-descript cattle with defined breeds produced calves with good birth weight, height and body length.

Parameters	Non-descript cattle	Sahiwal	Tharparker
Conception rate (%)	80	70	80
Birth weight (kg)	19±1.45	21±1.38	23±2.20
No. of calves	6	7	8

Mineral mixture and fodder for dairy

On Farm Trials were conducted on regional specific mineral mixture to address the productive and reproductive disorders in dairy animals, supplementation of concentrates to dairy animals and high yielding super napier variety in Andhra Pradesh. The technologies assessed resulted in higher income than the traditional practices.

Table 3.1.27. Supplementation of regional specific mineral mixture at Banvasi, Andhra Pradesh

Parameters Assessed	Average milk yield (l/90 days)	No. of animals exhibited heat	Fat (%)	Additional cost incurred (Rs.)	Additional returns (Rs.)	Net returns (Rs. for 90 days/animal)	C:B ratio
Feeding of RSMM 80g/day	730.4	8	6.3	560	2520	1960	1:4.5
Farmers Practice	648	4	4.9	--	--	--	--
% increase	19.2	50	1.4	--	--	--	--

Supplementation of regional specific mineral mixture

Distribution mineral mixture Banvasi, Andhra Pradesh

Supplementation of concentrates to dairy animals

Table 3.1.28. Supplementation of concentrates to dairy animals at Yagantipalli KVK, Andhra Pradesh

Parameters Assessed	Milk yield (30 days)	% increase	B:C ratio	Additional income
30 % BGH+70% concentrates	228.6	16.9	1:6.8	1542.00
30%GNH +70% concentrates	202.2	3.14	1:5.2	738.00
Farmers practices(RB)	197.4	-	1:4.3	-

KVK, Lam, Guntur

KVK, Periyavaram

KVK, Yagantipalli

KVK, Chittoor (RASS)

KVK, Garikapadu

Fodder production units at different KVKs

Suitable preventive measures for mastitis in dairy cattle

In Tamil Nadu, OFTs were taken up for assessing the performance of various mastitis preventive measures in eight KVKs viz. Ariyalur, Dharmapuri, Kancheepuram, Namakkal, Salem, Sivagangai, Vellore and Villupuram Districts. The technology included Mastiguard (TANUVAS), Herbal Teat dip (GADVASU) and Teat dip with KMNO4.Among the preventive control measures, Mastiguard-TANUVAS was tested in eight districts whereas Herbal Teat dip-GADVASU and Teat dip withKMNO4were tested in six and two locations respectively. Results indicated that Mastiguard-TANUVAS was best suitable method to prevent mastitis in dairy cattle. It reduces the percent of occurrence of mastitis and Somatic Cell Count (SCC). Occurrence of mastitis was recorded nil at Ariyalur and Namakkal whereas SCC was recorded lowest in Ariyalur (0.45). The milk production also improved in Mastiguard used groups with higher milk yield (10.5 l/animal) recorded at Namakkal. When economics was compared, the highest Benefit Cost Ratio of 2.68 was recorded for Mastiguard-TANUVAS at Dharmapuri.

Table 3.1.29. Performance of various preventive measures for mastitis in dairy cattle in Tamil Nadu

District/ KVK	Technology option															
	Farmers Practice				Mastiguard-TANUVAS				Herbal Teat dip - GADVASU				Teat dip withKMNo4			
	Mastitis occurrence (%)	Milk yield (l/animal)	SCC (lakh No.)	BCR	Mastitis occurrence (%)	Milk yield (l/animal)	SCC (lakh No.)	BCR	Mastitis occurrence (%)	Milk yield (l/animal)	SCC (lakh No.)	BCR	Mastitis occurrence (%)	Milk yield (l/animal)	SCC (lakh No.)	BCR
Ariyalur	3	6.8	2.4	1.85	NIL	7.3	0.45	2.2	-	-	-	-	NIL	7.1	0.8	2.1
Dharmapuri	-	7.15	2.75	2.18	-	8.05	1.6	2.68	-	7.35	1.72	2.36	-	-	-	-
Kancheepuram	70	5.6	7.4	1.37	15	8.16	2.4	1.84	49	7.04	4.0	1.65	-	-	-	-
Namakkal	3	8.0	< 4-5	1.01	NIL	10.50	< 0.5	1.5	-	-	-	-	NIL	10.25	< 0.5-1	1.4
Salem	-	7.31	2.6	2.13	-	8.06	1.45	2.35	-	7.62	1.7	2.52	-	-	-	-
Sivagangai	12.8	6.96	3.9	1.52	3.2	9.18	1.5	1.76	3.7	8.98	1.8	1.66	-	-	-	-
Vellore	-	-	-	1.5	-	-	-	1.9	-	-	-	1.7	-	-	-	-
Villupuram	9.9	-	4.3	1.32	1.2	-	0.58	2.58	6.8	-	1.39	1.66	-	-	-	-

Creep feed for lambs

For sheep and goats, supplementation of creep feed to lambs was assessed in Andhra Pradesh to address the problems of low birth weights and lamb/kid and the results revealed higher net returns.

Table 3.1.30:Supplementation of creep feed to lambs to address early mortality at Banvasi KVK.

Treatment	Mortality rate (%)	Body weight (kg) at the time of weaning	Additional costs incurred (Rs.)	Additional returns	Net returns for 45 days/animal	C:B ratio
Creep feed 3.375 kg/lamb	4	12	84.375	450	376.63	1:4.48
Farmers practice (Sole feeding from dam)	26	9	--	--	--	--

Supplementation of creep feed to lambs

Salt lick and specific mineral mixture was assessed for goat by KVK, Dharmapuri, Tamil Nadu. The results indicated that the effect of mineral supplementation on kids had increased survival rate than non supplemented group. Kids with supplementation had attained early sexual maturity. Higher daily weight gain was observed during the period between 90-270 days in salt lick followed by mineral mixture.

Table 3.1.31. Performance of salt lick and mineral mixture for goats in Tamil Nadu.

Indicators	Control	Mineral Mixture	Salt lick
Monthly weight gain (kg)	1.8	2.6	3.3
Body weight at Market age (kg)	18	23	27
Attainment of sexual maturity (months)	9	8	7
Appetite	Partial	Satisfactory	Satisfactory
Mortality (%)	10	-	-

Poultry

In poultry, the performance of Rajasri birds was assessed under backyard conditions in 5 locations at Garikapadu in Krishna district of Andhra Pradesh to address the problem of low body weight, poor egg production and low hatchability of local Desi birds. The Rajasri birds gave more eggs at early age than the desi birds.

Table 3.1.32. Performance of Rajasri birds under backyard conditions in Krishna district of Andhra Pradesh

Parameters of assessment	Rajasri	Desi
Mortality per cent	10	5
Age on Egg production (Days)	189	245
Egg yield (Nos)	143	62
Body weight (Kg) M/F	3.0/2.5	2.0/1.5

Rajasri breed under backyard

Rural poultry farming is maintained with low producing desi chicken varieties which resulted in low egg and meat production. This lead to low income of the family and poor consumption of eggs in rural areas which is far below the national average egg consumption. To assess and analyze the best breed suitable for short term entrepreneurship activities, on farm trials are undertaken in KVK, Villupuram, Tamil Nadu. The results indicated that overall 49.16% increase in body weight was observed in the newly introduced varieties. Both varieties were good for meat purpose and the colored plumage of the birds gives native chicken appearance and status. It is concluded that the performances of both Nandanam-2 and Krishi Bro are on par and same was recommended for further spread.

Table 3.1.33. Performance of poultry species in Tamil Nadu

Technology Option	No. of trials	Body wt at 8th week (g/bird)	Net Returns (Rs.)	B:C
Desi chicks	10	701.83	1600/30 birds	1.84
Nandaanam-2		1263.28	4200/30 birds	2.68
Krishi Bro		1379.60	4920/30 birds	2.98

Fisheries

In fisheries sector of Andhra Pradesh, three technologies *viz*., introducing murrels along with composite fish culture in farmers ponds to encourage polyculture in fish rearing in West Godavari district, application of common salt @ 30-50 kg/ac + formalin @ 1 l/ac for every month during culture period in Venkataramannagudem for the management of diseases in fish culture and optimum stocking density in GP tanks along with IMC culture were assessed against the local practices. The results showed that the technologies assessed gave higher yield and net returns than the local practice.

Table 3.1.34. Introduction of Murrels along with composite fish culture at KVK, Venkataramannagudem in West Godavari of Andhra Pradesh

Technology assessed	No. of trails	Cost of production (Rs. In lakhs)	Yield (t/acre)	Net returns (Rs. In lakhs)	B:C Ratio
Introductin of Murrels along with composite fish	17	1.3	Carp – 2.5 t Murrel – 0.2 t Total – 2.7 t	1.80	2.38:1
Composite fish culture without Murrels (farmers practices)		1.3	2.5 tons	1.20	1.92:1



Introduction of murrels in composite fish culture at KVK, Venkataramannagudem

Table 3.1.35. Disease management at KVK, Venkataramannagudem

Technology assessed	No. of trails	Cost of Production (Rs. In Lakhs)	Yield (t/acre)	Net returns (Rs. In lakhs)	B:C Ratio
Application of common salt @ 30-50 kg/acre + Formalin @ 1 lit/acre for every month during culture period	05	1.45	2.6	1.15	1.79:1
Farmers practice: Using chemicals after the incidence of disease		1.35	1.9	0.55	1.40:1

Disease management in fish ponds at Amudalavalasa and Venkataramannagudem

Table 3.1.36. Assessment of optimum of stocking density in GP tanks along with IMC culture.

Treatments	Growth rate in 6 months culture	Yield (t/ha)	Net returns (Rs/ha)	B:C Ratio
Stocking of grass carp @ 300-400 no per acre along with IMC	IMC: 492 g. (82 g/month) Grasscarp: 582 g (97 g/month)	1.905	51,504	1.42
Stocking of less no of grass carp along with IMC	IMC: 456 gr. (76 gr/month)	1.732	35,952	1.29

Performance of saline tolerant fish variety in inland saline water

Indian major carps are predominantly cultured in farm ponds. Ilayankudi, Kalayarkoil and Devakottai blocks of Sivagangai district are affected by inland salinity. Due to inland salinity the growth of carps is reduced and farmers face economic loss. To address this problem, an OFT was taken up at KVK, Sivagangai, Tamil Nadu on assessing the performance of saline tolerant fish variety viz., Seabass and GIFT Tilapia.

Table 3.1.37. Performance of fish species in Tamil Nadu

Technology option	Yield (t/ha)	Net Returns (Rs. in lakh/ha)	B:C ratio
Carps	2.1	20300	1.24
Seabass	1.1	81413	1.65
GIFT Tilapia	3.3	208500	2.12

The trial indicated that GIFT Tilapia was best suitable in inland saline ponds. Farmers could get higher growth of fish with increased yield (3.3 t/ha) by farming GIFT Tilapia. The net profit per hectare and BCR was also better in GIFT Tilapia culture.

3.1.5. Gender Specific Technologies

Assessment for drudgery reduction of different weeders in paddy

Modified cono-weeder was tested by 7 KVKs in Tamil Nadu *viz*., Krishnagiri, Dharmapuri, Tirur, Coimbatore, Trichy, Tuticorin and Theni. Using modified cono-weeder, labour man days and weeder cost were reduced to 65.34 % and 60.62 % respectively over manual weeding.

Table 3.1.38. Performance of improved weeders in Tamil Nadu

Parameters observed	Manual weeding	Using star type rotary weeder	Using modified cono-weeder	Remarks
Man hours/ha	225	96	78	An amount Rs. 4815/ha was saved by using modified cono-weeder apart from saving time. Also increase in pulse rate of women labour reduced from 13.40 to 8.30% which infers reduced stress in weeding operation by modified cono-weeder.
Increase in pulse rate (%)	13.40	10.20	8.30	
Weeding efficiency (%)	85.23	78.94	84.15	
Weeding cost (Rs/ha)	7943	3466	3128	

Six technologies *viz*., i) use of triple layered hermetic bags for storage of cereal and pulse grains for both seed and household consumption purpose, ii) Using easy transplanter as drudgery reducing implement to transfer the seedlings to main field, iii) Fertilizer dispenser for easy application of recommended fertilizer at the root zone of the plant with the much drudgery, iv) Assessment of nutritional packages for control of anemia in farm families, v) Performance of sugar cane stripper for de foliation in sugarcane and vi) Assessment of vegetable nuggets developed using jackfruit seed were assessed through OFTs conducted in 219 locations in Andhra Pradesh.

Assessment of triple layered hermetic bags for grain storage

Post harvest losses due to pests (insects and rodents) and myco toxins are endemic problems faced by farm women who are mostly involved in storing, cleaning and drying of the grains at household level. The triple layered hermetic storage bags are designed in such a way to prevent moisture entry and make it air tight and prevent attack of pests and moulds. Hence these bags were assessed by 10 KVKs for their

efficacy to store cereals and pulse grains for 2 months to one year. With the use of these hermetic storage bags, pest incidence was minimum to the extent of 2.73% in pigeon pea, 1.5% in paddy, 2% in peanut and less than 10% in other pulses and cereals. Drudgery was reduced in frequent cleaning and storing of grains.

Table 3.1.39. On Farm trial of triple layered hermetic bag for grain storage in different locations in Andhra Pradesh

Location	Crop	Storage period (months)	Damage observed (%)		Germination (%)	
			Trial	Control	Trial	Control
Reddipalli (Anantapuramu)	Peanut	10	4	34	63	49
	Pigeonpea	10	13	30	52	46
	Paddy	10	7	21	84.6	35
Kalyandurg (Anantapur)	Peanut	6	6	22	82	61
	Pigeonpea	6	12	28	58	46
Kalikiri (Chittoor)	Pigeonpea	3	4	8	94	82
	Paddy	3	2	6	96	94
	Foxtail millet	3	-	-	90	84
Karakambadi (Chittoor)	Peanut	6	2	10	86	74
	Pigeonpea	6	18	31	62	49
	Paddy	6	9	16	80	72
Utukur (YSR Kadapa)	Pigeonpea	2	6	10	75	69
	Bengalgram	2	10	12	74	63
	Sesame	2	10	18	74	65
Lam (Guntur)	Pigeonpea	6	-	11	82	78
Vonipanta (YSR Kadapa)	Pigeonpea	3	2	3.2	97	76
	Paddy	3	9.5	14	96	70
	Foxtail millet	3	1.8	2.7	89	70
Yagantipalli *(Kurnool)	Pigeonpea	6	2.73	5.4	-	-
	Paddy	6	1.5	6.3	-	-
	Sorghum	6	2.46	8.9	-	-
Nellore (SPSR *Nellore)	Paddy	6	2.8	10.6	-	-
Yalamanchali *(Visakhapatnam)	Blackgram	12	18	35	-	-
	Pigeonpea	12	26	65	-	-
	Greengram	12	25	86	-	-

* Tested at household level for consumption purpose

Assessment of easy planter in transplantation of vegetable crops

Easy transplanter designed by ICRISAT was assessed by 10 KVKs for transplanting of chilli, tomato, marigold and chrysanthemum for its efficacy and reduction of drudgery. Time taken for transplanting was considerably reduced by using the instrument and the average drudgery index (DI) recorded was 52.5 while using easy transplanter and 78.4 while using traditional method. There was about 50% reduction in cost of transplanting through the use of the implement than in manual transplanting.

Table 3.1.40. Assessment of performance of easy planter in transplantation of vegetable seedlings

Location	Crop	No of seedlings/ ac		Cost of transplantation (Rs/ac)		Time taken for Transplantation (h/ac)	
		Trial	Control	Trial	Control	Trial	Control
Reddipalli (Anantapuramu)	Tomato	4000	6000	300	750	16	40
Kalyandurg (Anantapur)	Chilli Tomato	10000 4000	20000 8000	600 400	900 800	32 16	48 32
Kalikiri (Chittoor)	Tomato	4000	8000	300	600	16	32
Karakambadi (Chittoor)	Tomato	4000	6000	600	1200	20	32
Utukur (YSR Kadapa)	Chrysanthemum	20000	32000	1800	3600	36	120
Yagantipalli (Kurnool)	Chilli	8000	16000	450	900	24	48
Darsi (Prakasam)	Chilli	10000	20000	1500	2800	80	152
Nellore (SPSR Nellore)	Chilli	8000	16000	300	600	16	32
Periyavaram (SPSR Nellore)	Chilli	8000	12000	600	1500	32	80
Amadalavalasa (Srikakulam)	Marigold	12000	15000	1800	3200	84	168

Performance of fertilizer dispenser in vegetable crops

Fertilizer application in vegetable crops is usually done in split doses, with frequent intervals and needs more work forces. The method of placement is also at the root zone causes more drudgery due to more number of plants in unit space. Mostly farm women place fertilizers by hand, slightly bending to place at the root zone. A simple fertilizer dispenser made of plastic was assessed by six KVKs in Andhra Pradesh for drudgery reduction and effective placement of fertilizer in the root zone in crops like vegetables and maize which require more frequent fertilizer application. By the use of the implement, the man power required for fertilizer application was reduced to half, fertilizer usage was reduced in a range of 25-40% and the cost of fertilizer application was also reduced to an extent of Rs.600-1200 across all locations tested.

Table 3.1.41. Performance of Fertilizer Dispenser (SPOT SHOT) in vegetable crops

Location	No. of workers required		% reduction in fertilizer usage over control	Cost Reduction on wages for fertilizer application (Rs. /ac.)
	Trial	Control		
Reddipalli (Anantapur)	1	3	40	1200
Kalikiri(Chittoor)	1	2	30	1000
LAM (Guntur)	1	3	20	800
Yagantipalli (Kurnool)	2	4	25	2000
Nellore (SPSR Nellore)	1	2	30	600
Amadalavalasa (Srikakulam)	1	2	25	1200

KVKs in Telangana assessed 25 gender specific technologies through 208 OFTs under various thematic areas viz., processing and value addition (13 technologies at 21 locations) drudgery reduction (10 technologies at 16 locations) and storage techniques (2 technologies at 3 locations).

Table 3.1.42. Gender specific technologies assessed in Telangana

Thematic area	Technology (No.)	Trial (No.)	Location (No.)
Drudgery reduction	10	72	16
Processing and value addition	13	124	21
Storage techniques	02	12	03
Total	25	208	40

3.2 Frontline Demonstrations (FLDs)

Frontline Demonstrations were organized by the KVKs to demonstrate the production potential of crop varieties, crop and animal husbandry technologies and agricultural implements at several location-specific farming/agro-ecological situations. Training programmes and field days were organized for extension workers and farmers for rapid dissemination of improved technologies.

3.2.1 Field crops

A total of 8407 demonstrations covering 3540 ha were organized by KVKs in Zone-X covering cereals, millets, pulses, oilseeds, commercial crops, fodder crops, vegetables, fruits, flowers, spices, plantation crops and medicinal plants (Table 3.2.1). Among the crops, maximum demonstrations were conducted in rice (1034). In pulses, out of 2228 demonstrations, 752 were in redgram. Out of 1433 demonstrations in oilseeds, 673 were in groundnut. Among the commercial crops, out of 491 demonstrations, 341 were in cotton. In Tamil Nadu, out of 2469 demonstrations, 637 were in vegetables and 505 in cereals. In Andhra Pradesh, out of 3308 demonstrations, 986 were in oil seeds, 822 in pulses, 387 in fruits and 340 in vegetables. Out of the 2494 demonstrations in Telangana, 1216 were in pulses, 390 in cereals and 282 in vegetables. In Puducherry, out of 175 demonstrations, 70 were in pulses, 35 in rice, 30 in vegetables and 25 in fruits.

Table 3.2.1. Details of category wise number of FLDs on crops and area in Zone-X

Category and crop	Tamil Nadu		Andhra Pradesh		Telangana		Puducherry		Total	
	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)
Cereals										
Rice	400	149.4	249	104.0	350	154.0	35	14.0	1034	421.4
Maize	105	33.0	42	17.0	40	16.0			187	66.0
Total	**505**	**182.4**	**291**	**121.0**	**390**	**170.0**	**35**	**14.0**	**1221**	**487.4**
Millets										
Finger millet	85	34.0	25	10.0					110	44.0
Pearl millet	70	38.0	3	1.0					73	39.0
Barnyard millet	50	20.0							50	20.0
Foxtail millet	30	12.0							30	12.0
Sorghum	20	4.4							20	4.4
Kodomillet	10	4.0							10	4.0
Total	**265**	**112.4**	**28**	**11.0**					**293**	**123.4**
Pulses										
Redgram	10	2.0	290	130.0	452	193.0			752	325.0
Greengram	20	8.0	201	105.0	374	172.0	25	10.0	620	295.0
Blackgram	40	16.0	261	191.0	123	54.0	30	12.0	454	273.0
Chickpea			70	33.0	267	111.2			337	144.2
Cowpea	5	2.0					5	0.5	10	2.5
Horsegram	45	14.4							45	14.4
Moth bean							10	4.0	10	4.0
Total	**120**	**42.4**	**822**	**459.0**	**1216**	**530.2**	**70**	**26.5**	**2228**	**1058.1**
Oil seeds										
Groundnut	105	35.0	443	203.0	120	48.0	5	2.0	673	288.0
Sesamum	30	12.0	263	126.0	47	20.0			340	158.0
Sunflower			200	100.0					200	100.0
Castor	10	5.0	25	20.0	41	24.0			76	49.0
Safflower			5	5.0	12	5.0			17	10.0
Soybean					77	30.8			77	30.8
Niger			50	20.0					50	20.0
Total	**145**	**52.0**	**986**	**474.0**	**297**	**127.8**	**5**	**2.0**	**1433**	**655.8**
Commercial crops										
Cotton	80	32.0	101	40.0	150	70.0	10	4.0	341	146.0
Sugarcane	65	26.0	25	10.0	5	2.0			95	38.0
Tobacco			15	6.0					15	6.0
Sweet corn			10	4.0					10	4.0
Tapioca	30	9.0							30	9.0
Total	**175**	**67.0**	**151**	**60.0**	**155**	**72.0**	**10**	**4.0**	**491**	**203.0**
Fodder										
Sorghum (fodder)	30	9.6	10	4.0	25	15.4			65	29.0
Fodder crops	35	3.5							35	3.5
Mixed fodder	25	2.8							25	2.8
Total	**90**	**15.9**	**10**	**4.0**	**25**	**15.4**			**125**	**35.3**
Vegetables										
Total	**637**	**185.3**	**340**	**160.4**	**282**	**97.7**	**30**	**4.5**	**1289**	**447.9**
Fruits										
Mango	40	7.0	195	142.5	40	16.0	10	4.0	285	169.5
Banana	130	45.0	32	15.0			15	6.0	177	66.0
Water melon	18	7.2	25	13.0	40	16.0			83	36.2

Category and crop	Tamil Nadu		Andhra Pradesh		Telangana		Puducherry		Total	
	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)
Citrus	40	13.5	46	10.0					86	23.5
Sweet Orange			30	12.0	15	4.0			45	16.0
Acid lime			23	9.2					23	9.2
Pomegranate			11	10.0					11	10.0
Papaya	10	4.0	10	4.0					20	8.0
Guava			5	1.0	10	4.0			15	5.0
Musk melon			10	4.0					10	4.0
Total	**238**	**76.7**	**387**	**220.7**	**105**	**40.0**	**25**	**10.0**	**755**	**347.4**
Flowers										
Jasmine	50	20.0							50	20.0
Marigold	15	4.4	10	1.0	10	4.0			35	9.4
Chrysanthemum	10	4.0							10	4.0
Crossandra	5	1.0							5	1.0
Ixora	10	1.0							10	1.0
Tuberose			5	1.0					5	1.0
Total	**90**	**30.4**	**15**	**2.0**	**10**	**4.0**			**115**	**36.4**
Spices										
Total	**30**	**8.0**	**61**	**17.2**	**14**	**5.6**			**105**	**30.8**
Medicinal plants										
Total			**10**	**4.0**					**10**	**4.0**
Plantation crops										
Total	119	**29.5**	**207**	**76.0**	**16**	**5.0**			**342**	**110.5**
Grand Total	**2414**	**802**	**3308**	**1609.3**	**2510**	**1067.7**	**175**	**61**	**8407**	**3540.0**

Cereals

A total number of 1221 FLDs on varieties, IPM and IDM technologies were conducted in cereal crops in Zone-X. In rice, the average yield increase in the technologies demonstrated ranged from 9.1% in Andhra Pradesh to 36.1% in Puducherry while in maize it ranged from 4.4% in Andhra Pradesh to 14.9% in Tamil Nadu over the checks (Table 3.2.2).

Table 3.2.2. Performance of cereal crops in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Rice	400	149.4	59.4	49.8	19.2
	Maize	105	33.0	57.2	49.8	14.9
	Total	**505**	**182.4**			
Andhra Pradesh	Rice	249	104.0	85.9	78.7	9.1
	Maize	42	17.0	70.6	67.6	4.4
	Total	**291**	**121.0**			
Telangana	Rice	350	154.0	61.6	55.8	10.5
	Maize	40	16.0	71.1	63.0	12.8
	Total	**390**	**170.0**			
Puducherry	Rice	35	14.0	51.3	37.7	36.1
Grand total		**1221**	**487.4**			

In Tamil Nadu, the performance of three rice varieties *viz*., TKM 13, CO 51 and CO 52 were demonstrated (Table 3.2.3). The medium duration varieties TKM 13 and CO 52 were demonstrated by six KVKs in each case. The short duration variety CO 51 was demonstrated by five KVKs. Apart from varietal demonstrations, FLDs on ICM practices for new varieties were carried out by eleven KVKs, ecological engineering concept in the management of pest and diseases by six KVKs and IPM and IDM technologies by three KVKs. The results indicated that the average yield and BCR of TKM 13 across the demonstrations ranged between 46.43 and 67.50 q/ha and 1.66 and 2.35, respectively while in CO 52 it was 47.18 and 79.50 q/ha and 1.66 and 2.49.The average yield and BCR in the short duration variety CO 51 ranged between 48.00 and 71.81 q/ha and 1.76 and 2.87, respectively. The ICM practices for dry seeded rice and organic cultivation practices were demonstrated by the Kanyakumari KVK. The Sivagangai KVK popularized the saline tolerant variety CSR 43 in the problematic areas.

Table 3.2.3. Performance of rice varieties with ICM technologies in the FLDs of Tamil Nadu

District	Variety	Yield (q/ha)		Increase in yield(%)	BCR	
		Demo	Check		Demo	Check
Kancheepuram	TKM 13	67.50	56.00	17.00	1.80	1.50
Krishnagiri		56.32	50.64	11.19	2.08	1.77
Ariyalur		52.40	51.30	2.14	1.66	1.66
Nagapattinam		47.66	42.33	11.27	1.94	1.89
Tirur		46.43	42.88	8.35	2.35	1.96
Trichy		65.74	59.67	10.10	1.97	1.61
Average		**56.01**	**50.47**	**8.58**	**1.97**	**1.73**

Coimbatore	CO 51	49.10	36.20	35.60	2.87	2.08
Dindigul		56.70	48.20	17.60	1.99	1.67
Dharmapuri		48.00	42.00	14.27	1.76	1.54
Tuticorin		71.81	60.61	18.47	1.97	1.85
Perambalur		54.89	40.13	36.78	2.58	1.85
Average		**56.10**	**45.43**	**24.54**	**2.23**	**1.80**
Kancheepuram	CO 52	79.50	68.00	14.50	2.40	1.70
Tindivanam		60.40	47.40	22.00	2.33	1.89
Ariyalur		53.40	51.00	1.30	1.66	1.66
Pudukottai		62.10	54.80	13.32	2.49	2.33
Nagapattinam		47.18	42.330	10.83	1.89	1.86
Tiruvannamalai		69.06	54.60	20.93	2.02	1.48
Average		**61.94**	**53.02**	**13.81**	**2.13**	**1.82**

The demonstrations on maize varieties and other agro-technologies conducted in Tamil Nadu revealed an average yield increase of 1.15% in mechanization to 64.67% in IPM technologies (Table 3.2.4). Mechanization in maize resulted in a BCR of 2.21 against 2.03 in the check. The maize variety Co(HM)6 gave an average of 19.7% higher yield than the check variety. An average BCR of 2.28 was obtained in ICM technologies for the maize variety Co(HM)8 against 2.03 in the check.

Table 3.2.4. Performance of maize varieties and agro-technologies in the FLDs of Tamil Nadu

Thematic area	Variety	No. of KVKs and FLDs	Area (ha)	Yield(q/ha)		Increase in yield (%)	Economics of demo plots		Economics of check	
				Demo	Check		Net returns (Rs.)	BCR	Net returns (Rs.)	BCR
ICM	Co(HM)8	2(20)	6	71.01	59.51	18.93	53255.5	2.28	41213.5	2.03
Variety	Co(HM)6	1(10)	4	87.51	70.29	19.70	65778.0	2.00	44447.0	1.73
INM	Co(HM)6	2(25)	5	59.92	56.44	7.92	41097.5	2.10	39040.0	1.94
IPM	NK 6240	1(10)	2	54.34	33.00	64.67	33755.5	2.07	8406.4	1.27
Mechanization	NK 6240	1(10)	4	52.50	51.90	1.15	37373.0	2.21	34182.0	2.03
Total		7(75)	21							

In the FLDs on rice in Andhra Pradesh, IPM technology in the variety BPT 5204 gave an average yield increase of 21.62% over check (Table 3.2.5). The variety JGL 3844 gave an average yield of 66.25 q/ha against 62.5 q/ha in check. The IDM technology in the rice variety MTU 1061 recorded an average yield of 67.50 q/ha while in check it was 60.95 q/ha. In BPT 5204 the average yield was 56.71 q/ha against 51.4 q/ha in local check.

Demonstration of IPM in rice by Utukur KVK, Andhra Pradesh

Table 3.2.5. Performance of rice varieties with IPM and IDM technologies in the FLDs of Andhra Pradesh

Thematic area	Variety	No. of FLDs	Area (ha)	Yield(q/ha)		Increase in yield (%)	Economics of demo plots		Economics of check	
				Demo	Check		Net returns (Rs.)	BCR	Net returns (Rs.)	BCR
IPM	BPT5204	5	2	66.14	54.38	21.62	49,488	1:1.91	19,656	1:1.34
IPM	JGL 3844	10	4	66.25	62.50	6.00	83,110	1:4.50	74,125	1:2.70
IDM	MTU1061	10	4	67.50	60.95	10.77	39,150	1:1.71	21,238	1:1.30
IDM	BPT5204	25	9	56.71	51.41	10.95	41,296	1:1.77	36,699	1:1.60

Millets

In Tamil Nadu, 265 FLDs were conducted on six millets and the average yield increase in demonstration plots ranged from 19.64% in sorghum to 40.80% in foxtail millet (Table 3.2.6). The finger millet variety ML 365 was demonstrated in 45 locations with ICM technologies and recorded an average of 18.38% higher grain yield than the check (Table 3.2.7). The TNAU pearl millet variety CO(Cu) 10 with ICM technologies was demonstrated at 50 locations and it recorded and average yield of 23.71 q/ha which was 22.8% higher than the check. The foxtail millet variety CO 7, barnyard millet variety MDU1 and kodo millet variety CO 3 were demonstrated in 30, 50 and 10 locations respectively along with ICM technologies. The foxtail millet CO 7 recorded an average yield of 15.25q/ha which was 37.37% more than the check. In Andhra Pradesh three FLDs on sorghum revealed an average yield increase of 56.62% over check while in 25 FLDs on finger millet, the average yield increase was 6.90%.

Table 3.2.6. Performance of millet varieties and agro-technologies in FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Finger millet	85	34	24.00	19.00	26.50
	Peral millet	70	38.0	25.84	21.56	19.85
	Barnyard millet	50	20.0	18.60	15.09	23.27
	Foxtail millet	30	12.0	15.25	10.83	40.80
	Sorghum	20	4.4	26.80	22.40	19.64
	Kodo millet	10	4.0	17.38	13.04	33.28
	Total	**265**	**112.4**			
Andhra Pradesh	Finger millet	25	10.0	7.75	7.25	6.90
	Sorghum	3	1.0	46.00	29.37	56.62
	Total	**28**	**11**			

Table 3.2.7. Performance of millet varieties and agro-technologies in the FLDs of Tamil Nadu

Crop	Thematic area	Variety	No. of KVKs and FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)	Economics of demo		Economics of check	
					Demo plot	Check		Net returns (Rs.)	BCR	Net returns (Rs.)	BCR
Finger millet	ICM	ML365	3(45)	14	19.54	16.71	18.38	21408	2.49	11641.50	1.78
	ICM	CO 15	1(10)	4	25.10	18.16	38.22	33630	2.25	17740.00	1.68
	Disease resistance	ML365	1(10)	4	31.70	23.40	35.40	45315	2.34	21410.00	1.58
	Subtotal		**5(65)**	**22**							

Crop	Thematic area	Variety	No. of KVKs and FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)	Economics of demo		Economics of check	
					Demo plot	Check		Net returns (Rs.)	BCR	Net returns (Rs.)	BCR
Peral millet	ICM	CO 10	4(50)	20	23.71	19.84	22.80	25739	2.23	18967	1.92
	Variety	CO 10	2(20)	8	25.60	21.49	19.26	29688	2.20	18873	1.84
	Subtotal		**6(70)**	**28**							
Barnyard Millet	ICM	MDU 1	4(50)	20	17.76	24.76	21.84	19353	2.26	12123	1.92
Foxtail Millet	ICM	CO 7	3(30)	12	15.25	10.83	37.37	25489	3.09	14533	2.21
Sorghum	Variety	K 12	1(10)	4	26.80	22.40	20.40	35525	2.10	26450	1.70
	ICM	K12	1(10)	4	14.40	17.40	27.00	34175	2.61	15603	1.85
	Subtotal		**2(20)**	**8**							
Kodo millet	ICM	CO 3	1(10)	4	17.38	13.04	24.97	16339	2.49	9257	2.01
	Total		**21(245)**	**115**							

Pulses

In Tamil Nadu, the average yield increase in the demonstration plots ranged from 22.74% in Blackgram to 30.93% in horsegram over the check (Table 3.2.8). In Andhra Pradesh, 822 demonstrations were conducted in 459 hectares and the results revealed an average increase in yield of 21.61% in redgram to 50% in greengram over the check. In Telangana, the average yield increase registered in the demonstration plots ranged from 17.98% in blackgram to 28.02% in greengram over the check. In Puducherry, the average yield advantage in demonstration plots ranged from 13.04% in greengram to 28.32% in moth bean over check.

Table 3.2.8. Performance of pulses in the FLDs of Zone-X

State	Crop	No. of FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Redgram	10	2.0	7.60	6.15	23.58
	Greengram	20	8.0	10.03	8.09	23.98
	Blackgram	40	16.0	6.10	4.97	22.74
	Horsegram	45	14.4	7.07	5.40	30.93
	Cowpea	5	2.0			
	Total	**120**	**42.4**			
Andhra Pradesh	Redgram	290	130.0	10.30	8.47	21.61
	Greengram	201	105.0	7.44	4.96	50.00
	Blackgram	261	191.0	8.65	6.98	23.93
	Chickpea	70	33.0	12.07	9.66	24.95
	Total	**822**	**459.0**			
Telangana	Redgram	452	193.0	14.21	11.95	18.91
	Greengram	374	172.0	34.68	27.09	28.02
	Blackgram	123	54.0	11.09	9.40	17.98
	Chickpea	267	111.2	19.39	15.83	22.49
	Total	**1216**	**530.2**			
Puducherry	Greengram	25	10.0	2.88	2.00	13.04
	Blackgram	30	12.0	6.93	5.44	27.30
	Cowpea	5	0.5			
	Moth bean	10	4.0	9.56	7.45	28.32

	Total	**70**	**26.5**			
	Grand Total	**2228**	**1058.1**			

In Tamil Nadu, demonstrations on new varieties, IPM and ICM technologies on pulses were conducted by nine KVKs in 38ha and 95 FLDs (Table 3.2.9). Varieties VBN2 for IPM in redgram, CO 8 for IPM in greengram, VBN 8 and ADT6 for varietal demonstrations in blackgram, and CRIDA18R and Paiyur 2 for ICM in horsegram were demonstrated. The IPM demonstration in redgram, greengram and blackgram increased the average yield by 23.58%, 26.10% and 17.73%, respectively. The ICM technology demonstration in horsegram recorded an average yield increase of 33.07% for the varieties CRIDA18R and Paiyur 2.

Table 3.2.9. Performance of pulse varieties, IPM and ICM technologies in the FLDs of Tamil Nadu

Crop	Thematic area	Varieties	No. of KVKs and FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)	Economics of demo		Economics of check	
					Demo	Check		Net returns (Rs.)	BCR	Net returns (Rs.)	BCR
Redgram	IPM	VBN 2	1(10)	4.0	7.60	6.15	23.58	11212	1.84	15820	2.13
Greengram	IPM	CO 8	1(10)	4.0	1.14	9.08	26.10	59175	4.30	36770	2.12
Blackgram	Variety	VBN 8, ADT 6	2(20)	8.0	6.76	5.37	21.88	16564	2.06	10103	1.61
	IPM	VBN 8	1(10)	4.0	4.25	3.61	17.73	7552	1.38	3942	1.22
Horsegram	ICM	CRIDA18R, Paiyur 2	4(45)	18.0	7.07	3.91	33.07	14480	2.16	7288	1.60
Total			**95**	**38.0**							

The results of 70 FLDs conducted in Andhra Pradesh on IPM and IDM technologies to pulse varieties revealed an average yield increase of 10.8% in redgram variety LRG 41 over check (Table 3.2.10). The IDM in blackgram with variety TBG 104 gave an average yield of 9.4 q/ha while in local check it was 7.2 q/ha. In greengram, IDM technology gave an average yield increase of 12.0% over check. In chickpea, IPM technologies gave an average increase of 17.8% in yield over check.

Demonstration on pod borer management in redgram variety LRG 41

Table 3.2.10. Performance of pulses varieties with IPM and IDM technologies in select FLDs of Andhra Pradesh

Crop	Thematic area	Variety	No. of KVKs and FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)	Economics of demo		Economics of check	
					Demo	Check		Net Returns (Rs.)	BCR	Net Returns (Rs.)	BCR
Redgram	IPM	LRG 41	2(20)	9	10.20	9.20	10.8	32136	1:2.10	21502	1:1.35
Greengram	IDM	IPM 2-14	3(20)	8	8.40	7.50	12.0	14050	1:1.50	9250	1:1.30
		LGG-460	1(10)	4	2.80	2.57	8.9	3838	1: 1.30	275	1:1.02
Blackgram	IDM	TBG 104	1(10)	5	9.40	7.20	30.5	33216	1:2.04	26063	1:1.78
Chickpea	IPM	NBeG 47	1(10)	5	9.50	7.80	17.8	13790	1:1.70	7640	1:1.30

Oilseeds

In Tamil Nadu the average yield increase in the 105 demonstrations conducted in 35 ha area on groundnut was 172.72% (Table 3.2.11). In Andhra Pradesh, an average yield increase of 12.03% was recorded in groundnut through 443 FLDs in 203 ha area. The average yield increase in sesamum was 71.61% in the demonstrations over checks. The average yield in niger was more than double (138.46%) over the check in 50 demonstrations

conducted in a total area of 20 ha. In Telangana, an average yield increase of 12.95% was recorded in 120 demonstrations on groundnut while in sesamum it was 15.33% in 47 demonstrations. In Puducherry, five demonstrations were conducted on groundnut with an average yield increase of 41.97%. The IPM and IDM technologies for groundnut were demonstrated at 40 locations in Andhra Pradesh. The IPM technology gave an average yield increase of 20.6% over check and IDM technology gave an average yield of 14.58 q/ha which was 17.1% higher than the check (12.45 q/ha) (Table 3.2.12).

Demonstration of IPM and IDM technologies for groundnut variety K6 in Andhra Pradesh

Table 3.2.11. Performance of oil seeds in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Groundnut	105	35.0	60.98	22.36	172.72
	Sesamum	30	12.0	9.14	8.41	8.68
	Castor	10	5.0	27.13	19.84	36.74
	Total	**145**	**52.0**			
Andhra Pradesh	Groundnut	443	203.0	21.65	19.32	12.03
	Sesamum	263	126.0	6.83	3.98	71.61
	Sunflower	200	100.0	17.90	15.00	19.33
	Castor	25	20.0	13.10	10.90	20.18
	Safflower	5	5.0	3.80		
	Niger	50	20.0	3.10	1.30	138.46
	Total	**986**	**474.0**			
Telangana	Groundnut	120	48.0	21.63	19.15	12.95
	Sesamum	47	20.0	8.65	7.50	15.33
	Castor	41	24.0	13.20	12.30	7.32
	Safflower	12	5.0	3.50	2.50	40.00
	Soybean	77	30.8	19.23	19.08	0.79
	Total	**279**	**127.8**			
Puducherry	Groundnut	5	2.0	43.53	30.73	41.97
Grand Total		**1433**	**655.8**			

Table 3.2.12. Performance of groundnut variety K6 with IPM and IDM technologies in the FLDs of Andhra Pradesh

Thematic area	No. of KVKs and	Area (ha)	Yield(q/ha)	Increase in yield (%)	Economics of demo	Economics of check

	FLDs		Demo	Check		Net returns (Rs.)	BCR	Net Returns (Rs.)	BCR
IPM	5(35)	19	19.60	16.25	20.6	40,884	1:2.0	26,380	1:1.88
IDM	1(5)	2	14.58	12.45	17.1	30,570	1:1.1	20,675	1:0.70
Total	**40**	**21**							

Commercial crops

A total of 491 demonstrations were conducted on cotton, sugarcane, tobacco, sweet corn and tapioca (Table 3.2.13). In cotton, 341 demonstrations were conducted in 146 ha area with an average yield advantage of 21.62%, 11.17% and 18.29% in Tamil Nadu, Andhra Pradesh and Telangana, respectively in the demonstration plots over checks. Sugarcane gave an average yield increase of 25.19% in the demonstration plots over the checks in Tamil Nadu. Thirty demonstrations were held on tapioca in Tamil Nadu with an average yield increase of 12.45% over the check. In the IPM technology in transgenic cotton (BGII) conducted at 70 locations in Telangana an average yield increase of 16.9 % was recorded over check.

Demonstration of IPM in transgenic cotton (BGII)

Table 3.2.13. Performance of commercial crops in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Cotton	80	32	19.52	16.05	21.62
	Sugarcane	65	26	787.30	628.90	25.19
	Tapioca	30	9	543.00	483.00	12.45
	Total	**175**	**67**			
Andhra Pradesh	Cotton	101	40	21.73	19.55	11.17
	Sugarcane	25	10	997.00	932.00	6.97
	Tobacco	15	6	13.83	12.17	13.64
	Sweet corn	10	4	90.46	86.93	4.06
	Total	**151**	**60**			
Telangana	Cotton	150	70	28.37	23.98	18.29
	Sugarcane	5	2			
	Total	**155**	**72**			
Puducherry	Cotton	10	4			
	Grand Total	**491**	**203**			

Fodder crops

A total of 125 FLDs were conducted in 35.3 ha area to demonstrate the varieties and agro-technologies in fodder crops including fodder sorghum in the region (Table 3.2.14). The average yield increase in the demonstrations ranged from 2.94% in fodder sorghum in Andhra Pradesh to 157.14% in the fodder sorghum in Telangana. In Tamil Nadu, apart from fodder sorghum, pure fodder crops and mixed fodder crops were also demonstrated in 60 locations with an average yield increase of 42.87% and 27.20%, respectively.

Table 3.2.14. Performance of fodder crops in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Fodder crops	35	3.5	14.43	10.10	42.87
	Mixed fodder	25	2.8	21.70	17.06	27.20
	Fodder sorghum	30	9.6			
	Total	**90**	**15.9**			
Andhra Pradesh	Fodder sorghum	10	4.0	17.50	17.00	2.94
Telangana	Fodder sorghum	25	15.4	28.80	11.20	157.14
Grand Total		**125**	**35.3**			

Sericulture

A total 25 FLDs were conducted to demonstrate the IPM technology for the cultivation of mulberry variety G4 by KVKs of Andhra Pradesh covering an area of 25 ha (Table 3.2.15). In mulberry IPM technology gave an average increase of 24.0 % in yield over check.

Table 3.2.15. Performance of IPM technology in mulberry variety G4 in the FLDs of Andhra Pradesh

No. of KVKs and FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)	Economics of demo		Economics of check	
					Net returns (Rs.)	BCR	Net returns (Rs.)	BCR
		Demo	Check					
1(25)	25	76	68	24.0	26,712	1:3.1	23,000	1:3.0

3.2.2 Horticultural crops

A total of 2615 FLDs were conducted by KVKs in Zone-X covering vegetables, fruits, flowers, spices and condiments and plantation crops (Table 3.2.16). Out of the 1279 demonstrations held in 26 vegetable crops 637 were in Tamil Nadu, 330 in Andhra Pradesh and 282 in Telangana. Among the vegetables, maximum FLDs (339) were conducted in chilli in which 149 were in Andhra Pradesh and 115 in Telangana. The other major vegetables were brinjal (210) and tomato (190). In fruits, out of the 730 FLDs in 10 crops, maximum (275) were in mango in which 195 FLDs were by the KVKs of Andhra Pradesh. In Tamil Nadu, 130 FLDs were conducted in banana where in the total FLDs on banana in the zone was 162. Among the 115 FLDs conducted in 6 flower crops, jasmine was demonstrated in 50 FLDs followed by marigold in 35 FLDs. A total of 150 FLDs were conducted in spices and condiments in which 105 were in turmeric. There were 30 demonstrations on coriander in Tamil Nadu. Out of the 316 demonstrations on 5 plantation crops in Zone-X, 195 were on cashew and among them, 170 FLDs were conducted by KVKs of Andhra Pradesh. There were 71 FLDs in coconut among which 50 were conducted by the KVKs in Tamil Nadu. Fifteen demonstrations were conducted by the KVKs of Tamil Nadu on *Melia dubia*, which is used by the plywood industries.

Table 3.2.16. Details of category wise number of FLDs and area of horticultural crops in Zone-X

Crop/Category	Tamil Nadu		Andhra Pradesh		Telangana		Puducherry		Total	
	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)
Vegetables										
Amaranthus	45	5.0							45	5.0
Bhendi	50	17.0							50	17.0
Bitter gourd	20	8.0			10	4.0			30	12.0
Bottle gourd	45	7.0							45	7.0
Brinjal	125	34.0	65	32.5	20	8.0			210	74.5
Cabbage	10	2.0							10	2.0
Carrot					5	0.2			5	0.2
Chilli	70	21.0	149	73.3	115	46.0	5	2.0	339	142.3
Cluster bean	20	8.0					25	2.5	45	10.5
Cucurbits					10	2.0			10	2.0
Curry leaf	10	4.0	5	0.8					15	4.8
Drumstick					16	5.0			16	5.0
Elephant Foot Yam			5	1.0					5	1.0
Field pea			33	20.0					33	20.0
French bean	22	8.8							22	8.8
Grafted brinjal	5	0.5							5	0.5
Lab lab	10	4.0							10	4.0
Methi					10				10	0.0
Okra			15	6.0	10	4.0			25	10.0
Aggregatum Onion	10	2.0							10	2.0
Bellary onion	20	1.0							20	1.0
Onion	55	17.0			20	5.5			75	22.5
Ridge gourd	10	4.0							10	4.0
Snake gourd	40	14.0							40	14.0
Tomato	70	28.0	54	22.0	66	23.0			190	73.0
Other vegetables			4	0.8					4	0.8
Total	**637**	**185.3**	**330**	**156.4**	**282**	**97.7**	**30**	**4.5**	**1279**	**443.9**
Fruits										
Acid lime			23	9.2					23	9.2
Banana	130	45.0	32	15.0			15	6.0	162	60.0
Citrus			46	10.0					46	10.0
Guava	40	13.5	5	1.0	10	4.0			55	18.5
Mango	40	7.0	195	142.5	40	16.0	10	4.0	275	165.5
Musk melon			10	4.0					10	4.0
Papaya	10	4.0	10	4.0					20	8.0
Pomegranate			11	10.0					11	10.0
Sweet Orange			30	12.0	15	4.0			45	16.0
Water melon	18	7.2	25	13.0	40	16.0			83	36.2
Total	**238**	**76.7**	**387**	**220.7**	**105**	**40.0**			**730**	**337.4**
Flowers										
Chrysanthemum	10	4.0							10	4.0
Crossandra	5	1.0							5	1.0
Ixora	10	1.0							10	1.0
Jasmine	50	20.0							50	20.0
Marigold	15	4.4	10	1.0	10	4.0			35	9.4

Crop/Category	Tamil Nadu		Andhra Pradesh		Telangana		Puducherry		Total	
	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)	No. of Demos	Area (ha)
Tuberose			5	1.0					5	1.0
Total	**90**	**30.4**	**15**	**2.0**	**10**	**4.0**			**115**	**36.4**
Spices & condiments										
Ajwain			10	4.0					10	4.0
Turmeric	40	13	51	13.2	14	5.6			105	31.8
Coriander	30	8.0							30	8.0
Pepper	5	1.0							5	1.0
Total	**75**	**22.0**	**61**	**17.2**	**14**	**5.6**			**150**	**44.8**
Plantation crops										
Betelvine	9	2.0	10	4.0					19	6.0
Cacao			16	5.0					16	5.0
Cashew	25	10.0	170	66.0					195	76.0
Coconut	50	10.0	21	5.0					71	15.0
Melia dubia	15	1.5							15	1.5
Total	**99**	**23.5**	**217**	**80.0**	**0**	**0.0**			**316**	**113.5**
Grand Total	**1094**	**323.9**	**1010**	**476.3**	**411**	**147.3**	**55**	**14.5**	**2615**	**976.0**

Vegetables

The average yield increase in chilli demonstrations ranged from 4.15% in Tamil Nadu to 9.47% in Andhra Pradesh (Table 3.2.17). In Tamil Nadu, out of 637 FLDs, brinjal was demonstrated at 125 locations with 22.22% yield increase over the checks. In Andhra Pradesh, the highest average yield increase of 25% was in bhendi over the check. In Telangana, tomato showed an average yield increase of 40.43% in 66 demonstration plots over their respective checks.

Table 3.2.17. Performance of vegetable varieties and agro-technologies in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Amaranthus	45	5.0	64.96	49.29	31.79
	Bhendi	50	17.0	214.41	169.93	26.18
	Bitter gourd	20	8.0	342.80	309.03	10.93
	Bottle gourd	45	7.0	206.43	173.48	18.99
	Brinjal	125	34.0	233.96	191.42	22.22
	Cabbage	10	2.0	711.20	637.90	11.49
	Chilli	70	21.0	205.60	197.41	4.15
	Cluster bean	20	8.0	107.18	75.00	42.91
	Curry leaf	10	4.0	199.42	182.78	9.10
	French Bean	22	8.8	82.17	56.60	45.18
	Grafted brinjal	5	0.5			
	Lablab	10	4.0	92.39	61.58	50.03
	Ridge gourd	10	4.0	221.00	189.00	16.93
	Snake gourd	40	14.0	252.24	187.57	34.48
	Tomato	70	28.0	520.41	448.53	16.03
	Onion	85	20.0			

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
	Total	**637**	**185.3**			
Andhra Pradesh	Brinjal	65	32.5	179.34	160.77	11.55
	Chilli	149	73.3	520.52	475.48	9.47
	Curry leaf	5	0.8	22.25	22.03	1.00
	Elephant Foot Yam	5	1.0	21.50	18.20	18.13
	Fieldpea	33	20.0	14.34	12.88	11.34
	Bhendi	15	6.0	32.00	25.60	25.00
	Tomato	54	22.0	298.90	270.94	10.32
	Other vegetables	4	0.8	92.50	78.00	18.59
	Total	**330**	**156.4**			
Telangana	Bittergourd	10	4.0	38.75	34.84	11.22
	Brinjal	20	8.0	145.04	124.68	16.33
	Carrot	5	0.2	22.50	20.00	12.50
	Chilli	115	46.0	728.21	691.91	5.25
	Cucurbits	10	2.0	238.00	212.50	12.00
	Drumstick	16	5.0			
	Methi	10		41.20	32.50	26.77
	Okra	10	4.0	22.90	19.50	17.44
	Onion	20	5.5			
	Tomato	66	23.0	510.36	363.43	40.43
	Total	**282**	**97.7**			
Puducherry	Chilli	5	2.0			
	Cluster bean	25	2.5	51.56	50.10	2.9
	Total	**30**	**4.5**			
	Grand Total	**1289**	**447.9**			

New varieties, technologies on ICM, IPM, water conservation and intercropping in vegetables were demonstrated by the KVKs of Tamil Nadu (Table 3.2.18). In tomato IPM and ICM practices increased the average yield to 15.21% and 16.64% respectively with appreciable enhancement in the BCR. In brinjal seven KVKs have conducted demonstrations related to IPM. The average yield recorded in the IPM demonstration across KVKs was 249.69 q/ha which was 20.68% higher that the non IPM plots. The net return in IPM and non IPM plots were Rs.2,59,533/ha and Rs.1,57,910/ha respectively. In brinjal 45 ICM demonstrations were conducted by 11 KVKs in an area of 32 ha. The ICM &IPM demonstrations recorded 13.75% and 20.68% increase in yield over checks. The ICM and IPM demonstrations recorded BC ratio of 1:2.86 and 1:3.06, respectively.

The TNAU bhendi hybrid CoBH4 and variety PLR1 were popularized by two KVKs through 20 demonstrations. The mean yield in the varietal demonstration fields was 215.28 q/ha which was 25% higher than the check varieties with a BCR of 3.46. In gourds 30 varietal popularization, 35 integrated crop management and 20 integrated pest management demonstrations were carried out in 19 ha area. The PLR1 bottle gourd, MDU1 ridged gourd and CoSgH1 snake gourd recorded 194, 221 and 359 q/ha as average yield in the demonstration plots which were 23.3%, 16.9% and 57.51% higher than the farmers

practice. In chillies TNAU hybrid Co(CH)1 and variety K2 were demonstrated at ten locations. The average BCR were 2.42 and 2.68, respectively as against 1.71 and 2.07 in their respective checks. IPM demonstrations were conducted at 30 locations. Use of bio control agents and sticky traps for sucking pest management were demonstrated for chilli. The IPM demonstrations recorded 17.24% to 30.20% higher yield and higher net returns than the checks.

The Bellary onion varieties Arka Ujjwal, Bhema super and small onion CO2 and CO5 were popularized by KVKs of Tamil Nadu. The ICM practices recorded 21.4 to 36% higher yield than the farmers' practice. The ICM technologies on Bellary onion varieties Arka Ujjwal, Agrifound dark red and Bhemasuper gave net income of Rs.1,53,652/ha to the farmers with an average yield increase of 14.17%. The cluster bean MDU1 and vegetable cowpea Co(GB)14 were demonstrated in 10 and 15 locations, respectively.

The yield and net income for cluster bean was 97 q/ha and Rs.52,220/ha and for vegetable cowpea, it was 144 q/ha and Rs.53,892/ha. The water conservation technologies were demonstrated in French bean variety Arka komal which increased the yield to 55.18%. The amaranthus variety PLR1 was demonstrated in 35 locations in an area of five ha which recorded 78 to 88 q/ha yield and 2.24 to 2.71 BCR across the KVKs.

Table 3.2.18. Performance of vegetable varieties and technologies in the FLDs of Tamil Nadu

Crop	Thematic area	Varieties	No. of KVKs and FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)	Economics of Demo		Economics of Check	
					Demo	Check		NR (Rs.)	BCR	NR (Rs.)	BCR
Tomato	ICM	Sivam	1(20)	8	524	457	14.60	228900	8.60	186400	8.10
	ICM	Private hybrid	1(10)	4	362	312	16.00	113280	2.09	85850	1.85
	IPM	Private hybrid	1(10)	4	555	459	21.10	190890	2.34	1300002	1.90
	IPM	ArkaRakshak	1(10)	4	640	566	13.07	227630	3.45	186630	2.93
	Sub total		**4(50)**	**20**							
Brinjal	ICM	Arka Anand	1(15)	3	43	40	7.50	147500	3.80	95125	2.73
	ICM	Local	1(10)	2	192	153	24.00	118700	3.22	80100	2.38
	ICM	Aalavayal	1(10)	2	384	350	10.00	295940	3.80	260595	3.40
	ICM	Parool	1(10)	4	182	161	11.50	99854	3.19	84859	294
	IPM	TNAU grafted brinjal	1(10)	4	49	24	106.32	349426	9.36	164782	7.64
	IPM	Ujala	1(10)	1	232	296	12.16	299490	3.20	221348	2.20
	IPM	Local	1(10)	2	153	141	8.02	217285	3.44	188611	2.98
	IPM	Parool	1(10)	4	307	226	35.60	196197	3.43	124577	2.56
	IPM	Poiyur local	1(10)	4	132	77	20.48	340450	3.54	159338	2.19
	IPM	Simron hybrid	1(10)	4	513	414	23.91	242900	3.09	150600	2.05
	IPM	PLR 2	1(10)	2	362	270	34.04	170988.7	2.45	96115	1.80
	Sub total		**11(115)**	**32**							
Bhendi	ICM	Sakthi hybrid	1(10)	5	260	234	11.20	170546	5.51	150612	5.10
	ICM	CoBH 4	1(10)	2	191	159	20.00	104710	3.10	78800	2.6
	ICM	CoBH 4	1(10)	4	210	145	47.88	140200	2.47	68942	1.76
	Variety	CoBH 4	1(10)	4	237	187	26.25	149060	2.70	1021103	2.19
	Variety	PLR 1	1(10)	1	194	157	23.30	133168	4.22	97057	3.20
	Sub total		**5(50)**	**16**							
Chillies	ICM	Gunudu	1(10)	2	204	174	17.00	156191	2.7	121548	2.40
	Variety	Co(CH)1	1(10)	4	31	23	24.39	142425	2.42	96100	1.71
	Variety	K2	1(10)	2	228	181	26.00	171761	2.68	112518	2.07
	IPM	Co 1	1(10)	1	52	40	30.20	264665	2.80	159755	2.00
	IPM	Siarra/local	1(10)	4	442	377	17.24	498700	4.04	388750	3.19

Crop	Thematic area	Varieties	No. of KVKs and FLDs	Area (ha)	Yield (q/ha)		Increase in yield (%)	Economics of Demo		Economics of Check	
					Demo	Check		NR (Rs.)	BCR	NR (Rs.)	BCR
	IPM	Private hybrid	1(10)	4	301	252	19.40	212800	2.34	142468	1.89
	Sub total		**6(60)**	**17**							
Bottle gourd	ICM	PLR 1	1(15)	3	205	180	12.00	75000	3.17	51000	2.30
	ICM		1(10)	2	296	255	16.00	108132	3.40	90230	3.10
	ICM		1(10)	1	315	264	19.00	84120	3.00	56000	2.75
	Variety	PLR1	1(10)	1	194	156	23.30	133168	4.22	97057	3.20
Ridge gourd	Variety	MDU 1	1(10)	4	221	189	16.90	88505	2.70	62150	2.21
Bitter gourd	IPM	Sungro hybrid	1(10)	2	343	309	10.90	233102	3.12	179223	2.38
Snake gourd	IPM	Papampatti	1(10)	4	156	136	14.95	28234	1.37	9808	1.12
	Variety	CoSgH1	1(10)	2	359	228	57.51	164864	2.35	75820	1.71
	IPM	MHSN 1	1(10)	4	242	199	27.50	224738	3.50	159385	2.60
	Sub total		**9(95)**	**23**							
Onion	ICM	CO 5	1(5)	1	115	85	36.00	174872	2.55	118965	2.28
	ICM	CO 2	1(10)	2	154	127	21.40	212467	3.23	154092	2.55
	Variety	Arka Ujjwal	1(10)	2	162	141	16.00	129476	2.50	97156	2.20
	Variety	Bhima super	1(10)	4	135	123	9.50	138920	3.17	90244	2.56
	IPM	CO 5	1(10)	4	132	122	8.70	69872	2.33	41195	1.70
	IPM		1(10)	4	113	100	13.60	334000	3.80	275800	3.29
	Sub total		**6(55)**	**17**							
Bellary onion	ICM	Agrifound dark red	1(20)	1	286	235	17.00	192560	3.06	142740	2.54
Cluster bean	ICM	MDU1	1(10)	4	97	75	28.66	52220	2.29	32664	1.83
Veg. cowpea	Variety	Co(GB)14	1(5)	2	144	128	17.07	53892	2.65	43540	2.44
	Variety		1(10)	4	92	62	50.03	183249	7.27	85613	4.39
	Sub total		**2(15)**	**6**							
French bean	Variety	Arka Sharath	1(10)	4	118	108	9.26	145569	2.62	108089	2.23
	Variety		1(10)	4	109	91	19.78	261600	3.60	130675	2.90
	Variety		1(10)	4	163	162	8.42	201947	3.75	152963	2.95
	Water conservation	Arka Komal	1(2)	0.8	118	53	55.18	118080	2.26	54000	1.06
	Sub total		**4(32)**	**12.8**							
Amaranthus	Variety	PLR 1	1(5)	2	88	71	22.10	51000	2.42	39000	1.90
	Variety		1(20)	1	82	50	15.00	31753	2.71	20856	2.14
	Variety		1(10)	2	78	63	23.90	28178	2.24	17833	1.86
	Intercrop in banana		1(10)	1	12.5	12.5	0.58	35825	3.20	107560	7.16
	Sub total		**4(45)**	**6**							

In Andhra Pradesh, IPM technology in chilli gave an average increase in yield of 13.70% over check (Table 3.2.19). The IDM technology in chilli variety Super 10 recorded an average yield of 40.25 q/ha while in check, it was 36.70 q/ha with better economic returns. Similarly the variety Delux gave an average yield of 56.35 q/ha and in local check it was 51.39 q/ha with better economic returns. The Teja variety gave an average yield of 80 q/ha which was 5 q/ha higher than the check.

Demonstration of yellow sticky traps in chilli variety Super 10 in Andhra Pradesh

Table 3.2.19. Performance of chilli varieties with IPM and IDM technologies in the FLDs of Andhra Pradesh

Thematic area	Variety	No. of KVKs and FLDs	Area (ha)	Yield(q/ha)		Increase in yield (%)	Economics of demo		Economics of Check	
				Demo	Check		Net returns (Rs.)	BCR	Net returns (Rs.)	BCR
IPM	Super 10	1(10)	4	51.20	45.08	13.70	94,352	1:1.29	56,608	1:1.18
IDM	Super 10	1(10)	4	40.25	36.70	9.67	48,925	1:1.70	35,340	1:1.17
IDM	Delux	1(10)	5	56.35	51.39	9.65	1,94,027	1:1.70	1,42,488	1:1.50
IDM	Teja	1(5)	2	80.00	75.00	6.70	70,500	1:1.49	60,700	1:1.17

Fruits

In Tamil Nadu, among the fruits, maximum of 130 FLDs were conducted on banana with an average yield increase of 13.16% over the checks (Table 3.2.20). In Andhra Pradesh, 195 demonstrations were held in mango with an average yield increase of 5.88% over the checks. Muskmelon was demonstrated at 10 locations with the highest mean yield increase of 63.67% over the checks. In Telangana, the technologies on mango at 40 locations yielded 14.08% higher fruits than the checks.

Table 3.2.20. Performance of fruit varieties and agro-technologies in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Banana	130	45.0	467.14	412.81	13.16
	Guava	40	13.5	154.53	128.90	19.88
	Mango	40	7.0	5.00	4.50	11.11
	Papaya	10	4.0	721.20	603.90	19.42
	Watermelon	18	7.2	342.39	275.62	24.23
	Total	**238**	**76.7**			
Andhra Pradesh	Acid lime	23	9.2	46.70	33.85	37.96
	Banana	32	15.0	112.30	92.75	21.08
	Citrus	46	10.0	249.70	202.67	23.21
	Guava	5	1.0	152.50	121.50	25.51
	Mango	195	142.5	315.60	298.08	5.88
	Muskmelon	10	4.0	203.60	124.40	63.67
	Papaya	10	4.0	950.00	670.00	41.79
	Pomegranate	11	10.0			
	Sweet orange	30	12.0	20.45	17.55	16.52
	Watermelon	25	13.0	190.00	94.75	100.53
	Total	**387**	**220.7**			
Telangana	Guava	10	4.0	142.00	121.00	17.36
	Mango	40	16.0	102.08	89.48	14.08
	Sweet orange	15	4.0	25.00	21.00	19.05
	Watermelon	40	16.0	457.20	362.63	26.08
	Total	**105**	**40.0**			
Grand total		**730**	**337.4**			

Flowers

The technologies demonstrated on tuberose resulted in a maximum average yield increase of 63.79% over the checks in Andhra Pradesh while that of marigold in Telangana was 61.18% (Table 3.2.21). In Tamil Nadu, technologies on jasmine was demonstrated at 50 locations with an average yield increase of 19.02% over the checks. Crossandra gave an average yield increase of 54.3% in Tamil Nadu over the checks.

Table 3.2.21. Performance of flower varieties and agro-technologies in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Chrysanthemum	10	4.0	125.00	104.00	20.19
	Crossandra	5	1.0	49.87	32.32	54.30
	Ixora	10	1.0	46.80	43.30	8.08
	Jasmine	50	20.0	60.76	51.05	19.02
	Marigold	15	4.4	174.00	150.90	15.31
	Total	**90**	**30.4**			
Andhra Pradesh	Marigold	10	1.0	6.89	5.82	18.38
	Tuberose	5	1.0	9.50	5.80	63.79
	Total	**15**	**2.0**			
Telangana	Marigold	10	4.0	61.25	38.00	61.18
Grand total		**115**	**36.4**			

Spices and condiments

Out of the 105 FLDs conducted on the varieties and technologies for turmeric in the region, the average yield increase were 16.8%, 10.2% and 78.8% in Tamil Nadu, Andhra Pradesh andTelangana, respectively (Table 3.2.22). Ajwain gave an average yield increase of 52.1% in the demonstration plots over their checks in Andhra Pradesh while coriander gave 33.1% higher average yield over the checks in the 30 demonstrations conducted in Tamil Nadu.

Table 3.2.22. Performance of spices varieties and technologies in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield (q/ha)		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Coriander	30	8.0	77.9	58.6	33.1
	Pepper	5	1.0			
	Turmeric	40	13.0	237.8	203.7	16.8
	Total	**75**	**22.0**			
Andhra Pradesh	Ajwain	10	4	10.8	7.1	52.1
	Turmeric	51	13.2	82.2	74.6	10.2
	Total	**61**	**17.2**			
Telangana	Turmeric	14	5.6	110.9	62.0	78.8
	Total	**14**	**5.6**			
Grand total		**150**	**44.8**			

Plantation crops

In Andhra Pradesh, technologies demonstrated at 170 locations on cashew gave on an average of 50% higher yield than the checks while in cacao, the average increase in yield was 60.71% (Table 3.2.23). In Tamil Nadu, the technologies demonstrated at 50 locations on coconut gave 51.45% higher average nut yield than the check.

Table 3.2.23. Performance of plantation crop varieties and technologies in the FLDs of Zone-X

State	Crop	No. of Demos	Area (ha)	Yield		Increase in yield (%)
				Demo	Check	
Tamil Nadu	Betelvine	9	2.0	45 lakhs	40 lakhs	12.50
	Cashew	25	10.0	6.53 q/ha	5.45 q/ha	19.93
	Coconut	50	10.0	5553 nuts	3667 nuts	51.45
	Melia dubia	15	1.5			
	Total	**99**	**23.5**			
Andhra Pradesh	Cacao	16	5.0	11.25 q/ha	7.00 q/ha	60.71
	Cashew	170	66.0	6.00 q/ha	4.00 q/ha	50.00
	Coconut	21	5.0	12110 nuts	11650 nuts	3.95
	Betelvine	10	4.0	132 q/ha	120 q/ha	10.00
	Total	**217**	**80.0**			
Grand total		**316**	**103.5**			

3.2.3 Tools and implements

In Zone-X, 33 technologies on the use of tools and implements in various crops were demonstrated through 332 FLDs among which 152 were in Tamil Nadu, 94 in Andhra Pradesh and 86 in Telangana (Table 3.2.24). The demonstrations included land preparation, weeding, intercultural operations, plant protection equipment, harvesting, threshing and post-harvest technologies (Table 3.2.25). Operation wise tools, implements and equipment demonstrated are furnished in Table 3.2.26. Demonstrations on protective clothing (knitted gloves) was done at 65 locations by four KVKs covering 16.0 ha in Telangana to promote comfort while performing the agricultural activities such as cotton picking, vegetable harvest, weeding *etc.* (Table 3.2.27). It was observed that the gloves were easy to wear, time saving, non-sticky to fingers, no itching problem, no drudgery and improved work efficiency.

Table 3.2.24. Crop wise technologies on tools and implements demonstrated in Zone-X

Crop	Tamil Nadu		Andhra Pradesh		Telangana		Total	
	Technologies	Demos	Technologies	Demos	Technologies	Demos	Technologies	Demos
Arecanut	1	10					1	10
Bengalgram	1	10					1	10
Blackgram		10					0	10
Chillies			1	4			1	4
Cotton			1	5	1	5	2	10
Drumstick	1	1					1	1
Groundnut	5	50			1	10	6	60
Maize					3	40	3	40
Marigold			1	5			1	5
Moringa	2	10					2	10

Crop	Tamil Nadu		Andhra Pradesh		Telangana		Total	
	Technologies	Demos	Technologies	Demos	Technologies	Demos	Technologies	Demos
Other	2	20					2	20
Pulses	3	11					3	11
Redgram					1	25	1	25
Rice					1	6	1	6
Tamarind	2	20					2	20
Tapioca	1	10					1	10
Vegetable crops			1	55			1	55
Vegetables			2	10			2	10
Wheat			1	10			1	10
Others			1	5				
Total	**18**	**152**	**8**	**94**	**7**	**86**	**33**	**332**

Table 3.2.25. Field operation wise technologies on tools and implements demonstrated in Zone-X

Name of operation	Tamil Nadu	Andhra Pradesh	Telangana	Total
Land and seed bed preparation	20	15	66	101
Weeding and intercultural operations	20	64		84
Plant protection equipment	20	5	5	30
Harvesting	21	10		31
Threshing	20			20
Postharvest technology	51		15	66
Total	**152**	**94**	**86**	**332**

Table 3.2.26. List of tools and implements demonstrated in the FLDs of Zone-X

Tool/Implement demonstrated	No. of Demos	Area (ha)
I. Land and seed bed preparation		
1. Six row planter	50	20.0
2. Zero tillage / TD seed drill	10	4.0
3. Decorticator / TD seed drill	10	4.0
4. Chisel plough (sub soiler)	5	5.0
5. Seed placement tube	10	0.2
6. Zero tillage maize in rice fallows	10	5.0
7. Rotavator for field and seedbed preparation	6	7.0
Total	**101**	45.2
II. Weeding and intercultural operations		
1. Improved yoke	10	
2. Pruner	5	0.40
3. Two, three and five pronged wheel hoes to reduce drudgery	4	0.25
4. Wheel hoe for weeding	60	1.60
5. Motorized weeder	5	0.40
Total	**84**	**2.65**
III. Plant protection equipment		

Tool/Implement demonstrated	No. of Demos	Area (ha)
1. Rolling stem applicator in cotton	5	
2. Protective clothing	5	0.4
Total	10	0.4
IV. Harvesting		
1. Cotton picking bags	5	0.4
2. Knitted hand gloves	5	0.4
3. Drum stick harvester	1	
4. Combine harvester	10	4.0
5. Tractor drawn tapioca harvester	10	4.0
Total	**31**	**8.8**
V. Threshing		
1. Thresher	20	4.0
VI. Postharvest technology		
1. Dehuller	10	
2. Dehusker	10	
3. Pulse separator	11	1.0
4. Spiral separator	10	
5. Maize Sheller / Tamarind De huller	10	
6. Groundnut stripper	30	5.2
7. Maize sheller	5	18.0
Total	**86**	**24.2**
Grand total	**332**	**85.25**

Table 3.2.27. FLDs on farm implements conducted by KVKs of Telangana.

Name of the implement	Crop	Technology demonstrated	No. of Farmer	Area (ha)	Majorparameters
Knitted gloves	Cotton	Drudgery reduction	25	08	Drudgery and Time saving
Knitted gloves	Vegetables	Drudgery reduction	40	08	Drudgery and Time saving

KVKs in Tamil Nadu organized 120 crop specific demonstrations on nine improved tools and implements to reduce the drudgery of farm women and facilitate timely field operations *viz*., land and seed bed preparation, weeding and intercultural operations, harvesting, threshing and postharvest technology (Table 3.2.28). Out of 120 demonstrations, 40 demonstrations were organized to improve the farm operations in groundnut followed by pulses (40), tamarind (20), tapioca (10), and millet (10).

Table 3.2.28. Performance of FLDs on crop specific tools and implements in Tamil Nadu

Crop/others	Name of the implements	No. of demos	Parameter	Demo	Check
Groundnut	Tractor drawn mechanical seed drill	10	Operational cost (Rs/ha)	1968	3690
Groundnut	Mechanical harvester	10	Operational cost (Rs/ha)	3448	6880
Groundnut	Mechanical thrasher	10	Operational cost (Rs/ha)	2464	6880
Bengalgram	Tractor drawn mechanical seed drill	10	Operational cost (Rs/ha)	1476	2586
Tamarind	Motorized tamarind dehuller	10	Capacity (q/hr)	2.0	0.44
Groundnut	Groundnut pod stripper	10	Stripping efficiency (kg/hr)	20	5
Greengram	Twin wheel hoe weeder	10	Output (m^2/hr)	80	40
Pulses	Spiral separator	10	Percentage of purity	80	50
Tapioca	Tractor drawn tapioca harvester	10	Output (man hr)	3	21
Greengram	Tractor drawn seed drill	10	Labour cost (Rs.)	1600	3250
Millet	Rotary sieve cleaner cum grader	10	Capacity (kg/hr)	190	20
Tamarind	Tamarind de-seeder	10	Capacity (kg/hr)	55	2.5

3.2.4 Livestock and other enterprises

A total of 1177 demonstrations were organized by KVKs in Zone-X to popularize the technologies funder different aspects of livestock and other enterprises (Table 3.2.29). The enterprise wise technologies demonstrated in Tamil Nadu, Andhra Pradesh, Telangana, and Puducherry are presented in Table 3.2.30.

Table 3.2.29. Details of number of technologies and FLDs conducted on livestock and other enterprises in Zone-X

Category/ activity	Tamil Nadu		Andhra Pradesh		Telangana		Puducherry		Total	
	Technologies	Demo	Technologies	Demo	Technologies	Demo	Technologies	Demo	Technologies	Demo
Fishery	5	40	3	25	6	23	2	8	16	96
Livestock	22	223	13	205	3	32	1	15	39	475
Goatary	4	35	3	24	1	18			8	77
poultry	9	115	7	290	1	10			17	415
Sheep	1	10	3	30					4	40
Others			2	6					2	6
Vaccination				50					0	50
Japanese Quail	1	5							1	5
Piggery	1	3							1	3
Others	1	10							1	10
Total	**44**	**441**	**31**	**630**	**11**	**83**	**3**	**23**	**89**	**1177**

Table 3.2.30. Details of state wise livestock enterprise and technologies demonstrated in Zone-X

Enterprise	Technology	No. of farmers
Tamil Nadu		
Cow	Disease management	20
	Feed management	10
	Feed management	25
	Infertility	35
	Milk production	45

Enterprise	Technology	No. of farmers
	Production management	40
	Reproduction management	30
Buffalo	Infertility	10
	Nutrition management	8
Goat	Disease management	20
	Integrated Feed management	10
	Production Management	5
Sheep	Disease management	10
Poultry	Any other	5
	Backyard poultry	10
	Disease management	60
	Introduction to new variety	5
	Production management	35
Japanese Quail	Varietal introduction	5
Fishery	Housing management	20
	Production management	13
	Resource management	5
Shrimp	Production management	2
Pig cum GIFT Tilapia	IFS	3
Others		10
	Total	**441**
Andhra Pradesh		
Cow	Breed improvement	20
	Concentrate feed	10
	Dairy economics	4
	Feed management	18
	Production management	99
Buffalo	Feed management	4
	Infertility	30
	Production management	10
Goat	Breed demo	7
	Breed improvement	10
	Disease management	7
Sheep	Disease management	10
	Feed management	10
	Infertility	10
Poultry	Any other (breed)	10
	Backyard poultry	20
	Feed management	10
	Production management	250
Fishery	Feed management	11
Fishery	Production management	14
Vaccination		50
Others	Production management	6
	Total	**630**
Telangana		
Cow	Disease management	21

Enterprise	Technology	No. of farmers
Cow	Fodder conservation	3
Buffalo	Disease management	8
Fishery	Disease management	11
Goat	Feed management	18
Poultry	Production management	10
Fishery	Feed management	6
Fishery	Production management	6
	Total	
Puducherry		
Cow	Infertility	**15**
Fishery	Production management	**8**
	Total	**23**
Grant Total		**1177**

In Tamil Nadu, demonstrations on mineral mixture, TANUVAS GRAND supplement, crop residue based feeds, EVM, Mastiguard, feed supplement with yeast culture, estrous induction and synchronization and usage of progesterone, deworming, vaccination, feed management, improved desi birds, *Azolla*, fish species (Jayanthi Rohu, GIFT Tilapia, Pangassius, Vannamei shrimp and composite carp) and Massi dry fish gave higher milk and meat yield over respective local check (Table 3.2.31).

Table 3.2.31: FLDs on livestock and fisheries conducted by KVKs of Tamil Nadu

Enterprise	Thematic area	No. of KVKs and Demos	livestock/ unit (No.)	Unit of yield	Demo	Check	Increase (%)
Dairy	Nutritional Management	6(88)	205	Body weight (kg/animal)	75.05	54.95	36.57
	Disease Management	3(40)	60	Disease incidence (%)	13	54	-75.93
	Clean Milk Production	1(20)	20	Milk yield (l/day/ animal)	4.55	4.02	13.18
	Reproduction Management	8(85)	95	Conception (%)	62.37	24.37	155.89
	Sub Total	**18(233)**	**380**				
Poultry	Disease Management	3(60)	570	Disease incidence (%)	8.19	21.94	-62.67
	Housing Management	2(20)	2600	Body weight (g/bird)	235	192	22.4
	Varietal Introduction	3(25)	430	Egg production (nos.)	205	100	105.0
	Nutrition Management	2(15)	110	Body weight (kg/bird)	1.52	1.07	41.1
	Sub Total	**10(120)**	**3710**				
Sheep and goat	Disease Management	2(20)	70	Body weight (kg/animal)	17	11	54.5

Enterprise	Thematic area	No. of KVKs and Demos	livestock/ unit (No.)	Unit of yield	Demo	Check	Increase (%)
	Livestock Management	1(10)	1000	Weaning (%)	92.5	56.5	36.0
	Integrated Management Practices of goat	1(5)	100	Body weight gain (kg)	27.8	23.1	20.3
	Integrated Feed Management	1(10)	10	Body weight gain (kg)	17.7	14.3	23.7
	Sub Total	**5(45)**	**1180**				
Fisheries	Production and Management	4(23)	23	Total production (t/ha)	3.77	2.71	39.27
	Value addition	1(20)	20	Dry weight (%)	20	16.5	17.5
	Sub Total	**5(43)**	**43**				
	Grand Total	**38(441)**	**5313**				

In Andhra Pradesh 630 demonstrations were conducted in livestock and fisheries covering 1851 livestock/units to show its potential in farmers' fields.

Supplementation of urea molasses mineral blocks to milch animals at KVK, Banvasi, Andhra pradesh

Management of sub clinical masititis in dairy animals at KVK, Darsi, Andhra Pradesh

Supplementation of hydroponic fodder to milch animals at KVK, Yagantipalli, Andhra Pradesh

Promotion of Osmanabad goat breed in agency area of Pandirimamidi KVK, Andhra Pradesh

Demonstration of Rajasri breed in backyard system of poultry rearing by KVK, Guntur and KVK, Pandirimamidi of Andhra Pradesh

Improvement of water quality by application of water sanitizers and lime in brackish water shrimp culture in farmers ponds of Amudalavalasa, Srikakulam district

Introduction of cage aquaculture in Bhupatipalem and Musurumilli Reservoirs at KVK, Pandirimamidi in East Godavari district

Table 3.2.31. FLDs on livestock and fisheries conducted in Andhra Pradesh

Enterprise	Thematic Area	Technology	No. of KVKs and FLDs	Livestock/ unit (No.)	Unit of yield	Demo	Check	Increase (%)
Dairy	Production and Management	Feeding of concentrate	1(10)	10	Milk yield (l/animal/day)	8.43	5.61	50.26
		Regional specific mineral mixture	5(35)	48	Milk yield (l/animal/day)	10.3	6.1	17.3
		Urea molasses block	2(13)	26	Milk yield (l/animal/day)	10.6	7.0	15.2
	Feed and fodder management	Super Napier fodder	14(03)	-	Yield (t/ha)	198	80	24.7
		Silage making	1(2)	4	Milk yield (l/animal/day)	10.07	6.5	15.5
		Feeding of Hydroponics	1(5)	10	Milk yield (l/animal/day)	5.4	4.9	11.93
	Disease management	Management of mastitis	1(10)	10	Milk yield (l/animal/day)	No reduction	1.5 L reduction	1.5
		Sub Total:	**178**	**108**				
Sheep & Goat	Nutrition management	Creep feed supple.	1(10)	50	Body weight (kg)	6.54	5.84	35.12
		Concentrate Feed to adults	4(37)	87	Body weight (kg)	6.98	5.64	23.75
	Disease management	Control of insect parasites	2(20)	810	Morbidity rate	5 %	35 %	82
		Sub Total:	**67**	**947**				
Poultry	Production and management	Rajasri birds as backyard poultry	7(26)5	650	Body weight (kg)	2.07	0.91	125
	Feed management	Feeding of Azolla	1(9)	90	Body weight (kg)	-	-	-
		Sub Total:	**274**	**740**				
Fisheries	Production and management	Micro nutrients	2(13)	13	t/ha	4.53	3.52	28.5%
		Improvement of water quality	2(13)	13	t/ha	5.38	3.99	31.7%
	Integrated Farming System (IFS)	Integrated Fish and Horticulture	1(25)	25	t/ha	1.93	1.89	2.1%
	Disease management	Management of Mixobolus in carp culture	1(5)	5	Mortality (%)	1%	5%	5%
		Sub Total:	**56**	**56**				
	Others		55					
		Grand Total:	**630**	**1851**				

3.2.5 Other enterprises

In Telangana, a total of 176 FLDs units were organized on enterprises such as value addition in millets, value addition to redgram, nutritional kitchen garden, Rajasri birds as backyard poultry, vermicompost units, *Azolla* units etc. Demonstrations were also conducted on interventions of cereals, pulses and millet based snack items. A total of 28 demonstration units were established under various small scale income generating enterprises such as value addition to millets, kitchen garden and mushroom production. In millets, 3 small scale enterprises on 'value added products' were established under 3 KVKs of Telangana. Mushroom production as enterprise was promoted by Gaddipally KVK in Suryapet district. A total of 58 kitchen garden demonstration units were developed, which improved the per capita availability and consumption of vegetables per week, created awareness on importance of various vegetables in regular diet and expenditure on vegetable procurement per week has come down.

3.3 Trainings

Training is one of the important mandates of Krishi Vigyan Kendras which play a pivotal role in capacity development of farmers and extension personnel to update their knowledge and skills on improved agricultural technologies. Accordingly, KVKs assess the training needs, prioritize and conduct various training programmes for farmers and farm women primarily focused on knowledge and skills, while it is entrepreneurship development for rural youth and knowledge on frontier areas of science and technology for extension personnel.

During 2017-18, KVKs in Zone-X conducted 5640 training programmes on agricultural and allied technologies to increase the production and productivity of crops, dairy and others for 194085 participants including 156963 farmers and farm women, 20779 rural youth and 16343 extension functionaries (Table 3.3.1).

Table 3.3.1. Details of client wise training programmes organized by KVKs in Zone-X

Clientele	No. of Courses	Other Beneficiaries			SC/ST Beneficiaries			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Tamil Nadu										
EF	166	4563	1972	6535	388	260	648	4951	2232	7183
FFW	2157	39655	20086	59741	6567	6636	13203	46222	26722	72944
RY	321	4522	3222	7744	901	748	1649	5423	3970	9393
Total	**2644**	**48740**	**25280**	**74020**	**7856**	**7644**	**15500**	**56596**	**32924**	**89520**
Andhra Pradesh										
EF	160	2592	2047	4639	1004	908	1912	3596	2955	6551
FFW	1440	21536	10811	32202	10599	6429	17039	32135	17240	49375
RY	165	1591	1947	3538	1329	1288	2617	2920	3235	6155
Total	**1765**	**25719**	**14805**	**40379**	**12932**	**8625**	**21568**	**38651**	**23430**	**62081**
Telangana										
EF	75	1302	722	2024	235	150	385	1537	872	2409
FFW	927	12816	7312	20128	6420	5837	12257	19236	13149	32385
RY	134	1254	1225	2479	514	2057	2571	1768	3282	5050
Total	**1136**	**15372**	**9259**	**24631**	**7169**	**8044**	**15213**	**22541**	**17303**	**39844**
Puducherry										
EF	9	77	107	184	1	15	16	78	122	200
FFW	78	1127	657	1784	260	215	475	1387	872	2259
RY	8	104	34	138	39	4	43	143	38	181
Total	**95**	**1308**	**798**	**2106**	**300**	**234**	**534**	**1608**	**1032**	**2640**
Zone -X										

EF	410	8534	4848	13382	1628	1333	2961	10162	6181	16343
FFW	4602	75134	38866	114000	23846	19117	42963	98980	57983	156963
RY	628	7471	6428	13899	2783	4097	6880	10254	10525	20779
Total	**5640**	**91139**	**50142**	**141281**	**28257**	**24547**	**52804**	**119396**	**74689**	**194085**

EF=Extension Functionaries, FFW=Farmers and Farm Women, RY=Rural Youth

The subject area wise details of trainings offered by the KVKs of Zone-X is furnished in Table 3.3.2. A total of 3878 training courses were organized by 69 KVKs for farmers and farm women in which 130913 were participated in Tamil Nadu, Andhra Pradesh, Telangana and Puducherry. Among the various thematic areas, 748 courses on crop production, 652 on women empowerment, 591 on horticulture, 528 on plant protection and 381 courses on live stock production and management were conducted to the farmers and farm women.

Training on blackgram cultivation techniques at Cuddalore, Tamil Nadu

Table 3.3.2. Details of subject area wise training programmes conducted for farmers in Zone-X

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
I Crop production										
Weed management	45	1034	358	1392	275	111	386	1309	469	1778
Resource conservation technologies	33	738	291	1029	224	106	330	962	397	1359
Cropping systems	45	1004	492	1496	282	170	452	1286	662	1948
Crop diversification	37	724	225	949	170	107	277	894	332	1226
Integrated farming	51	1087	312	1399	289	54	343	1376	366	1742
Micro irrigation/irrigation	27	628	156	784	130	56	186	758	212	970
Seed production	62	1360	334	1694	395	158	553	1755	492	2247
Nursery management	22	262	97	359	78	49	127	340	146	486
Integrated crop management	240	4848	1627	6475	1171	373	1544	6019	2000	8019
Soil and water conservation	53	1011	296	1307	433	160	593	1444	456	1900
Integrated nutrient management	54	1009	401	1410	299	85	384	1308	486	1794
Production of organic inputs	28	502	186	688	195	67	262	697	253	950
Others	51	1336	471	1807	413	177	590	1749	648	2397
Total	**748**	**15543**	**5246**	**20789**	**4354**	**1673**	**6027**	**19897**	**6919**	**26816**
II Horticulture										
A) Vegetable crops										
Production of low value and high volume crops	89	1654	490	2144	456	153	609	2110	643	2753
Off-season vegetables	34	615	280	895	247	165	412	862	445	1307
Nursery raising	46	672	459	1131	158	172	330	830	631	1461

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Exotic vegetables	7	83	84	167	35	41	76	118	125	243
Export potential in vegetables	3	68	25	93	9	5	14	77	30	107
Grading and standardization	7	64	9	73	5	3	8	69	12	81
Protective cultivation	30	576	242	818	171	51	222	747	293	1040
Others	63	1280	285	1565	268	50	318	1548	335	1883
Sub total	**279**	**5012**	**1874**	**6886**	**1349**	**640**	**1989**	**6361**	**2514**	**8875**
B) Fruits										
Training and pruning	24	493	109	602	214	63	277	707	172	879
Layout and management of orchards	8	146	11	157	42	4	46	188	15	203
Cultivation of fruits	69	1542	205	1747	713	336	1049	2255	541	2796
Management of young plants/orchards	10	459	67	526	57	17	74	516	84	600
Rejuvenation of old orchards	7	111	10	121	68	29	97	179	39	218
Export potential fruits	2	79	22	101	27	16	43	106	38	144
Micro irrigation systems of orchards	18	328	38	366	153	51	204	481	89	575
Plant propagation techniques	7	109	11	120	22	10	32	131	21	149
Others	20	503	124	627	173	50	223	676	174	843
Sub total	**165**	**3770**	**597**	**4367**	**1469**	**576**	**2045**	**5239**	**1173**	**6412**
C) Ornamental plants										
Nursery management	5	90	50	140	8	3	11	98	53	151
Management of potted plants	1	20	10	30	10	5	15	30	15	45
Export potential of ornamental plants	2	32	6	38	6	4	10	38	10	48
Propagation techniques of ornamental plants	5	89	53	142	30	4	34	119	57	176
Others	12	302	60	362	38	11	49	340	71	411
Sub total	**25**	**533**	**179**	**712**	**92**	**27**	**119**	**625**	**206**	**831**
D) Plantation crops										
Production and management technology	38	787	144	931	195	115	310	982	259	1241
Processing and value addition	10	235	145	380	50	32	82	285	177	462
Others	7	46	16	62	180	35	215	226	51	277
Sub total	**55**	**1068**	**305**	**1373**	**425**	**182**	**607**	**1493**	**487**	**1980**
E) Tuber crops										
Production and management technology	16	315	27	342	68	6	74	383	33	416
Processing and value addition	4	46	52	98	17	23	40	63	75	138
Sub total	**20**	**361**	**79**	**440**	**85**	**29**	**114**	**446**	**108**	**554**
F) Spices										
Production and management technology	33	843	227	1070	318	96	414	1161	323	1484
Processing and value addition	1	12	0	12	3	0	3	15	0	15
Others	1	17	2	19	8	3	11	25	5	30
Sub total	**35**	**872**	**229**	**1101**	**329**	**99**	**428**	**1201**	**328**	**1529**
G) Medicinal and aromatic plants										
Production and management technology	8	183	48	231	10	4	14	193	52	245
Post harvest technology and value addition	2	69	15	84	25	13	38	94	28	122
Others	2	56	16	72	17	6	23	73	22	95
Sub total	12	308	79	387	52	23	75	360	102	462
Total	**591**	**11924**	**3342**	**15266**	**3801**	**1576**	**5377**	**15725**	**4918**	**20643**

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
III Soil health and fertility management										
Soil fertility management	72	1814	674	2488	424	238	662	2238	912	3150
Integrated water management	14	258	82	340	88	59	147	346	141	487
Integrated nutrient management	64	782	312	1094	226	79	305	1008	391	1399
Production and use of organic inputs	59	679	394	1073	286	274	560	965	668	1633
Management of problematic soils	43	756	259	1015	132	69	201	888	328	1216
Micro nutrient deficiency in crops	24	245	166	411	113	55	168	358	221	579
Nutrient use efficiency	16	257	119	376	51	46	97	308	165	473
Balanced use of fertilizers	31	429	158	587	142	73	215	571	231	802
Soil and water Testing	49	811	240	1051	334	145	479	1145	385	1530
Others	7	683	130	813	6	4	10	689	134	823
Total	**379**	**6714**	**2534**	**9248**	**1802**	**1042**	**2844**	**8516**	**3576**	**12092**
IV Livestock production and management										
Dairy management	83	1606	616	2222	327	204	531	1933	820	2753
Poultry management	75	1488	487	1975	432	303	735	1920	790	2710
Piggery management	9	128	20	148	25	11	36	153	31	184
Animal nutrition management	28	443	188	631	127	76	203	570	264	834
Disease management	37	565	260	825	106	83	189	671	343	1014
Feed and fodder technology	59	1067	403	1470	355	158	513	1422	561	1983
Production of quality animal products	9	148	27	175	38	19	57	186	46	232
Others	81	1118	992	2110	203	1045	1248	1321	2037	3358
Total	**381**	**6563**	**2993**	**9556**	**1613**	**1899**	**3512**	**8176**	**4892**	**13068**
V Home science/women empowerment										
Household food security by kitchen garden/ nutrition garden	71	242	978	1220	177	607	784	419	1585	2004
Design and development of low/minimum cost diet	62	122	1134	1256	69	504	573	191	1638	1829
Designing and development of high nutrient efficient diet	33	175	495	670	67	353	420	242	848	1090
Minimization of nutrient loss in processing	26	19	288	307	4	249	253	23	537	560
Processing and cooking	64	166	816	982	31	390	421	197	1206	1403
Gender mainstreaming through SHGS	6	15	108	123	5	11	16	20	119	139
Storage loss minimization techniques	24	136	524	660	28	199	227	164	723	887
Value addition	192	888	3440	4328	216	1242	1458	1104	4682	5786
Women empowerment	45	117	846	963	74	390	464	191	1236	1427
Location specific drudgery reduction technologies	39	348	540	888	74	170	244	422	710	1132
Rural crafts	13	20	209	229	27	190	217	47	399	446
Women and child care	49	179	1186	1365	57	366	423	236	1552	1788
Others	28	466	430	896	102	164	266	568	594	1162
Total	**652**	**2893**	**10994**	**13887**	**931**	**4835**	**5766**	**3824**	**15829**	**19653**
VI Agricultural engineering										
Farm machinery and its maintenance	15	305	101	406	73	25	98	378	126	504
Installation and maintenance of micro irrigation systems	16	176	32	208	130	37	167	306	69	375

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Use of plastics in farm practices	1	6	10	16	13	3	16	19	13	32
Repair and maintenance of farm machinery and implements	10	99	32	131	43	17	60	142	49	191
Small scale processing and value addition	9	145	154	299	9	43	52	154	197	351
Post harvest technology	16	241	60	301	44	37	81	285	97	382
Others	16	288	41	329	88	42	130	376	83	459
Total	**83**	**1260**	**430**	**1690**	**400**	**204**	**604**	**1660**	**634**	**2294**
VII Plant protection										
Integrated pest management	266	5415	1392	6807	1557	499	2056	6972	1891	8863
Integrated disease management	115	2185	449	2634	722	403	1125	2907	852	3759
Bio-control of pests and diseases	59	1051	362	1413	404	212	616	1455	574	2029
Production of bio-control agents and bio-pesticides	32	647	228	875	197	76	273	844	304	1148
Others	56	1484	314	1798	427	147	574	1911	461	2372
Total	**528**	**10782**	**2745**	**13527**	**3307**	**1337**	**4644**	**14089**	**4082**	**18171**
VIII Fisheries										
Integrated fish farming	16	263	58	321	57	28	85	320	86	406
Carp breeding and hatchery management	7	166	16	182	26	1	27	192	17	209
Carp fry and fingerling rearing	7	270	28	298	36	11	47	306	39	345
Composite fish culture	33	490	286	776	228	112	340	718	398	1116
Hatchery management and culture of fresh water prawn	5	77	15	92	45	12	57	122	27	149
Breeding and culture of ornamental fish	13	96	46	142	55	56	111	151	102	253
Pen culture of fish and prawn	6	7	15	22	204	11	215	211	26	237
Shrimp farming	10	137	17	154	54	1	55	191	18	209
Fish processing and value addition	10	90	85	175	20	69	89	110	154	264
Others	32	704	83	787	144	26	170	848	109	957
Total	**139**	**2300**	**649**	**2949**	**869**	**327**	**1196**	**3169**	**976**	**4145**
IX Production of inputs at site										
Seed	12	354	78	432	96	64	160	450	142	592
Bio-agents	10	208	71	279	30	18	48	238	89	327
Bio-pesticides	5	180	26	206	10	0	10	190	26	216
Bio-fertilizers	13	215	75	290	46	23	69	261	98	359
Vermicompost	52	571	348	919	675	685	1360	1246	1033	2279
Organic manures	41	469	264	733	298	422	720	767	686	1453
Carp fry and fingerlings	5	97	14	111	29	6	35	126	20	146
Bee colonies and wax sheets	3	84	15	99	0	0	0	84	15	99
Small tools and implements	1	12	3	15	6	11	17	18	14	32
Fish feed	2	29	8	37	10	9	19	39	17	56
Mushroom	38	611	349	960	72	104	176	683	453	1136
Apiculture	39	841	333	1174	370	183	553	1211	516	1727
Others	2	31	30	61	3	0	3	34	30	64
Total	**223**	**3702**	**1614**	**5316**	**1645**	**1525**	**3170**	**5347**	**3139**	**8486**
X Capacity building and group dynamics										
Leadership development	13	282	47	329	74	25	99	356	72	428

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Group dynamics	13	310	62	372	29	13	42	339	75	414
Formation and management of SHGS	22	389	183	572	69	50	119	458	233	691
Mobilization of social capital	2	25	0	25	7	1	8	32	1	33
Entrepreneurship development of farmers/youth	18	434	159	593	152	34	186	586	193	779
WTO and IPR issues	14	706	242	948	107	26	133	813	268	1081
Others	37	749	231	980	176	129	305	925	360	1285
Total	**119**	**2895**	**924**	**3819**	**614**	**278**	**892**	**3509**	**1202**	**4711**
XI Agro-forestry										
Production technologies	8	120	34	154	41	16	57	161	50	211
Integrated farming systems	12	162	57	219	29	35	64	191	92	283
Others	15	193	98	291	33	16	49	226	114	340
Total	**35**	**475**	**189**	**664**	**103**	**67**	**170**	**578**	**256**	**834**
Grand total	**3878**	**65051**	**31660**	**96711**	**19439**	**14763**	**34202**	**84490**	**46423**	**130913**

The KVKs of Tamil Nadu organized 1849 training courses on crop production, horticulture, soil health and fertility management, livestock production and management, women empowerment, agricultural engineering, plant protection, fisheries, production of inputs, agro-forestry, group dynamics, *etc*., during 2017-18, in which 39567 farmers and 20610 farm women were participated (Table 3.3.3).

In crop production 382 training courses were conducted by the KVKs of Tamil Nadu in which maximum number were on integrated crop management (139). Under horticulture 270 training courses were conducted and maximum trainings were on vegetable crops (152) followed by fruits (40) and plantation crops. In total 254 training courses were organized under plant protection in the areas of integrated pest and disease management, bio-control of pests and diseases, production of bio-control agents and bio-pesticides and others.

Table 3.3.3. Details of training programmes for farmers in Tamil Nadu

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
I Crop production										
Weed management	22	446	128	574	102	35	137	548	163	711
Resource conservation technologies	14	367	148	515	48	12	60	415	160	575
Cropping systems	33	726	375	1101	111	92	203	837	467	1304
Crop diversification	17	372	153	525	41	27	68	413	180	593
Integrated farming	31	692	219	911	101	8	109	793	227	1020
Micro irrigation/ irrigation	16	416	94	510	49	13	62	465	107	572
Seed production	38	928	182	1110	165	68	233	1093	250	1343
Nursery management	9	189	42	231	36	3	39	225	45	270
Integrated crop management	139	2534	1225	3759	380	169	549	2914	1394	4308
Soil and water conservation	8	395	110	505	62	28	90	457	138	595
Integrated nutrient management	24	273	271	544	24	9	33	297	280	577
Production of organic inputs	17	318	138	456	24	32	56	342	170	512

Others	14	643	178	821	74	31	105	717	209	926
Total	**382**	**8299**	**3263**	**11562**	**1217**	**527**	**1744**	**9516**	**3790**	**13306**
II Horticulture										
a) Vegetable crops										
Production of low value and high volume crops	59	1162	394	1556	234	91	325	1396	485	1881
Off season vegetables	12	235	130	365	24	25	49	259	155	414
Nursery raising	17	222	78	300	33	13	46	255	91	346
Exotic vegetables	3	58	27	85	30	9	39	88	36	124
Export potential vegetables	1	21	17	38	6	3	9	27	20	47
Grading and standardization	3	38	1	39	5	3	8	43	4	47
Protective cultivation	20	294	164	458	69	14	83	363	178	541
Others	37	706	184	890	74	9	83	780	193	973
Sub total	**152**	**2736**	**995**	**3731**	**475**	**167**	**642**	**3211**	**1162**	**4373**
b) Fruits										
Training and pruning	2	44	15	59	3	0	3	47	15	62
Cultivation of Fruits	20	295	40	335	97	83	180	392	123	515
Micro irrigation systems of orchards	7	78	10	88	82	27	109	160	37	197
Plant propagation techniques	3	69	3	72	2	0	2	71	3	74
Others	8	230	67	297	90	29	119	320	96	416
Sub total	**40**	**716**	**135**	**851**	**274**	**139**	**413**	**990**	**274**	**1264**
c) Ornamental plants										
Nursery management	4	76	50	126	5	3	8	81	53	134
Export potential of ornamental plants	1	14	2	16	1	0	1	15	2	17
Others	2	44	3	47	2	0	2	46	3	49
Sub total	**7**	**134**	**55**	**189**	**8**	**3**	**11**	**142**	**58**	**200**
d) Plantation crops										
Production and management technology	20	461	82	543	39	38	77	500	120	620
Processing and value addition	7	185	130	315	30	27	57	215	157	372
Others	1	31	10	41	6	2	8	37	12	49
Sub total	**28**	**677**	**222**	**899**	**75**	**67**	**142**	**752**	**289**	**1041**
e) Tuber crops										
Production and management technology	14	290	27	317	53	6	59	343	33	376
Processing and value addition	2	21	42	63	2	3	5	23	45	68
Sub total	**16**	**311**	**69**	**380**	**55**	**9**	**64**	**366**	**78**	**444**
f) Spices										
Production and management technology	17	479	156	635	89	33	122	568	189	757
Sub total	17	479	156	635	89	33	122	568	189	757
g) Medicinal and aromatic plants										
Production and management technology	8	183	48	231	10	4	14	193	52	245
Post harvest technology and value addition	1	16	2	18	4	0	4	20	2	22
Others	1	14	8	22	3	2	5	17	10	27
Sub total	**10**	**213**	**58**	**271**	**17**	**6**	**23**	**230**	**64**	**294**
Total	**270**	**5266**	**1690**	**6956**	**993**	**424**	**1417**	**6259**	**2114**	**8373**
III Soil health and fertility management										
Soil fertility management	33	974	493	1467	116	83	199	1090	576	1666
Integrated water management	4	77	25	102	29	5	34	106	30	136
Integrated nutrient management	40	502	225	727	93	24	117	595	249	844

Production and use of organic inputs	14	300	163	463	35	24	59	335	187	522
Management of problematic soils	14	448	117	565	25	3	28	473	120	593
Micro nutrient deficiency in crops	12	88	81	169	32	6	38	120	87	207
Nutrient use efficiency	11	186	69	255	27	22	49	213	91	304
Balanced use of fertilizers	10	187	35	222	27	3	30	214	38	252
Soil and water testing	16	289	91	380	57	35	92	346	126	472
Others	6	665	130	795	2	4	6	667	134	801
Total	**160**	**3716**	**1429**	**5145**	**443**	**209**	**652**	**4159**	**1638**	**5797**
IV Livestock production and management										
Dairy management	50	1071	521	1592	115	127	242	1186	648	1834
Poultry management	53	1341	320	1661	274	119	393	1615	439	2054
Piggery management	9	128	20	148	25	11	36	153	31	184
Animal nutrition management	13	211	140	351	19	39	58	230	179	409
Disease management	18	204	122	326	19	21	40	223	143	366
Feed & fodder technology	22	394	179	573	50	52	102	444	231	675
Production of quality animal products	4	49	16	65	5	10	15	54	26	80
Others	68	945	895	1840	154	1026	1180	1099	1921	3020
Total	**237**	**4343**	**2213**	**6556**	**661**	**1405**	**2066**	**5004**	**3618**	**8622**
V Home science/women empowerment										
Household food security by kitchen garden/ nutrition garden	26	98	236	334	74	223	297	172	459	631
Design and development of low/minimum cost diet	12	35	175	210	1	27	28	36	202	238
Designing and development of high nutrient efficient diet	7	33	76	109	15	16	31	48	92	140
Minimization of nutrient loss in processing	6	19	121	140	4	20	24	23	141	164
Processing and cooking	23	166	312	478	31	65	96	197	377	574
Gender mainstreaming through SHGs	4	15	70	85	5	5	10	20	75	95
Storage loss minimization techniques	6	85	101	186	11	13	24	96	114	210
Value addition	97	820	1615	2435	172	287	459	992	1902	2894
Women empowerment	17	77	304	381	47	99	146	124	403	527
Location specific drudgery reduction technologies	9	103	171	274	28	14	42	131	185	316
Rural crafts	1	0	10	10	0	0	0	0	10	10
Women and child care	4	0	88	88	0	19	19	0	107	107
Others	9	32	89	121	1	22	23	33	111	144
Total	**221**	**1483**	**3368**	**4851**	**389**	**810**	**1199**	**1872**	**4178**	**6050**
VI Agricultural engineering										
Farm Machinery and its maintenance	12	222	99	321	54	25	79	276	124	400
Installation and maintenance of micro irrigation systems	8	71	21	92	60	23	83	131	44	175
Repair and maintenance of farm machinery and implements	8	65	24	89	28	14	42	93	38	131
Small scale processing and value addition	5	97	44	141	4	2	6	101	46	147
Post harvest technology	12	136	55	191	28	35	63	164	90	254
Others	6	129	12	141	10	2	12	139	14	153
Total	**51**	**720**	**255**	**975**	**184**	**101**	**285**	**904**	**356**	**1260**
VII Plant protection										

Integrated pest management	125	2493	945	3438	285	96	381	2778	1041	3819
Integrated disease management	55	885	198	1083	147	68	215	1032	266	1298
Bio-control of pests and diseases	31	497	188	685	93	59	152	590	247	837
Production of bio-control agents and bio-pesticides	18	282	154	436	98	40	138	380	194	574
Others	25	475	80	555	15	11	26	490	91	581
Total	**254**	**4632**	**1565**	**6197**	**638**	**274**	**912**	**5270**	**1839**	**7109**
VIII Fisheries										
Integrated fish farming	12	174	44	218	22	18	40	196	62	258
Carp breeding and hatchery management	4	66	8	74	21	1	22	87	9	96
Carp fry and fingerling rearing	2	21	7	28	16	1	17	37	8	45
Composite fish culture	18	246	229	475	35	65	100	281	294	575
Hatchery management and culture of freshwater prawn	3	65	9	74	13	2	15	78	11	89
Breeding and culture of ornamental fish	10	76	31	107	26	8	34	102	39	141
Pen culture of fish and prawn	2	7	15	22	0	1	1	7	16	23
Shrimp farming	5	60	17	77	9	1	10	69	18	87
Fish processing and value addition	6	57	81	138	1	5	6	58	86	144
Others	16	237	65	302	62	26	88	299	91	390
Total	**78**	**1009**	**506**	**1515**	**205**	**128**	**333**	**1214**	**634**	**1848**
IX Production of inputs at site										
Seed	7	324	58	382	46	14	60	370	72	442
Bio-agents	9	190	71	261	26	18	44	216	89	305
Bio-pesticides	5	180	26	206	10	0	10	190	26	216
Bio-fertilizer	9	149	55	204	26	9	35	175	64	239
Vermicompost	18	250	127	377	399	272	671	649	399	1048
Organic manures	10	101	59	160	36	17	53	137	76	213
Carp fry and fingerlings	5	97	14	111	29	6	35	126	20	146
Bee colonies and wax sheets	1	74	15	89	0	0	0	74	15	89
Fish feed	2	29	8	37	10	9	19	39	17	56
Mushroom	28	433	273	706	34	61	95	467	334	801
Apiculture	20	656	239	895	127	54	181	783	293	1076
Others	2	31	30	61	3	0	3	34	30	64
Total	**116**	**2514**	**975**	**3489**	**746**	**460**	**1206**	**3260**	**1435**	**4695**
X Capacity building and group dynamics										
Leadership development	4	80	16	96	13	1	14	93	17	110
Group dynamics	10	192	48	240	17	9	26	209	57	266
Formation and management of SHGs	15	242	162	404	24	37	61	266	199	465
Mobilization of social capital	1	14	0	14	0	0	0	14	0	14
Entrepreneurship development of farmers/youth	8	216	117	333	33	19	52	249	136	385
WTO and IPR issues	12	604	236	840	71	21	92	675	257	932
Others	8	219	137	356	21	63	84	240	200	440
Total	**58**	**1567**	**716**	**2283**	**179**	**150**	**329**	**1746**	**866**	**2612**
XI Agro-forestry										
Production technologies	8	120	34	154	41	16	57	161	50	211
Integrated farming systems	11	162	42	204	29	20	49	191	62	253

Others	3	7	16	23	4	14	18	11	30	41
Total	**22**	**289**	**92**	**381**	**74**	**50**	**124**	**363**	**142**	**505**
Grand total	**1849**	**33838**	**16072**	**49910**	**5729**	**4538**	**10267**	**39567**	**20610**	**60177**

In Andhra Pradesh 1133 trainings were conducted to 39817 farmers and farm women. Under crop production, maximum number of trainings was organized on integrated crop management practices (79) followed by seed production (21) and soil and water conservation techniques (20) (Table 3.3.4).

In horticulture 202 trainings were conducted including vegetables (73), fruits (87), ornamental plants (13), plantation crops (17) *etc*. In fruits, the highest number of trainings was on cultivation of fruits (41) for 1922 farmers followed by training and pruning (14). Under soil health management 130 trainings were conducted for 4172 farmers and farm women, in which the highest was on soil and water testing (25) followed by soil fertility management (23) and integrated nutrient management (20). In livestock production and management, 24 trainings were conducted on dairy management for 562 farmers, followed by poultry management (17) in which 474 farmers were participated.

Under home science 175 training programmes were conducted for 6052 farmers and rural women. The highest number of trainings was on value addition to agricultural, dairy and other products in which 1487 women were participated. On plant protection 171 trainings were conducted to 6643 farmers. In fisheries, the trainings included composite fish culture (9) for 213 farmers followed by shrimp farming (5). Under capacity building and group dynamics, 8 training programmes on the development of entrepreneurial skills in farmers and rural youth were conducted for 316 farmers and women.

Table 3.3.4. Details of training programmes for farmers in Andhra Pradesh

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
I Crop production										
Weed management	18	507	174	681	145	55	200	652	229	881
Resource conservation technologies	14	284	110	394	140	75	215	424	185	609
Cropping systems	6	146	89	235	128	62	190	274	151	425
Crop diversification	15	273	57	330	103	70	173	376	127	503
Integrated farming	10	210	80	290	83	31	114	293	111	404
Micro irrigation/ irrigation	8	136	62	198	79	43	122	215	105	320
Seed production	21	390	143	533	182	84	266	572	227	799
Nursery management	6	60	45	105	30	25	55	90	70	160
Integrated crop management	79	1934	289	2223	624	171	795	2558	460	3018
Soil and water conservation	20	400	128	528	242	101	343	642	229	871
Integrated nutrient management	19	357	75	432	159	55	214	516	130	646
Production of organic inputs	7	59	24	83	100	19	119	159	43	202
Others	21	287	47	334	151	70	221	438	117	555
Total	**244**	**5043**	**1323**	**6366**	**2166**	**861**	**3027**	**7209**	**2184**	**9393**
II Horticulture										
a) Vegetable crops										
Production of low value and high volume crops	22	342	72	414	161	46	207	503	118	621

Off season vegetables	11	136	47	183	85	68	153	221	115	336
Nursery raising	16	299	114	413	79	42	121	378	156	534
Export potential vegetables	1	21	8	29	3	2	5	24	10	34
Protective cultivation	3	59	30	89	34	18	52	93	48	141
Others	20	420	50	470	138	19	157	558	69	627
Sub total	**73**	**1277**	**321**	**1598**	**500**	**195**	**695**	**1777**	**516**	**2293**
b) Fruits										
Training and pruning	14	253	50	303	129	41	170	382	91	473
Layout and management of orchards	2	32	6	38	17	2	19	49	8	57
Cultivation of fruits	41	1013	135	1148	552	234	786	1565	369	1922
Management of young plants/orchards	5	154	33	187	31	12	43	185	45	230
Rejuvenation of old orchards	5	75	8	83	50	28	78	125	36	161
Export potential fruits	1	55	15	70	15	12	27	70	27	97
Micro irrigation systems of orchards	7	145	10	155	39	16	55	184	26	215
Plant propagation techniques	2	21	7	28	18	10	28	39	17	53
Others	10	236	53	289	61	15	76	297	68	358
Sub total	**87**	**1984**	**317**	**2301**	**912**	**370**	**1282**	**2896**	**687**	**3583**
c) Ornamental plants										
Nursery Management	1	14	0	14	3	0	3	17	0	17
Management of potted plants	1	20	10	30	10	5	15	30	15	45
Export potential of ornamental plants	1	18	4	22	5	4	9	23	8	31
Propagation techniques of ornamental plants	4	71	50	121	21	2	23	92	52	144
Others	6	125	24	149	26	9	35	151	33	184
Sub total	**13**	**248**	**88**	**336**	**65**	**20**	**85**	**313**	**108**	**421**
d) Plantation crops										
Production and management technology	8	142	32	174	132	61	193	274	93	367
Processing and value addition	3	50	15	65	20	5	25	70	20	90
Others	6	15	6	21	174	33	207	189	39	228
Sub total	**17**	**207**	**53**	**260**	**326**	**99**	**425**	**533**	**152**	**685**
e) Tuber crops										
Production and management technology	2	25	0	25	15	0	15	40	0	40
Processing and value addition	2	25	10	35	15	20	35	40	30	70
Sub total	**4**	**50**	**10**	**60**	**30**	**20**	**50**	**80**	**30**	**110**
f) Spices										
Production and management technology	5	158	26	184	43	10	53	201	36	237
Processing and value addition	1	12	0	12	3	0	3	15	0	15
Others	1	17	2	19	8	3	11	25	5	30
Sub total	**7**	**187**	**28**	**60**	**54**	**13**	**50**	**241**	**41**	**282**
g) Medicinal and aromatic plants										
Others	1	42	8	50	14	4	18	56	12	68
Sub total	**1**	**42**	**8**	**60**	**14**	**4**	**50**	**56**	**12**	**68**
Total	**202**	**3995**	**825**	**4675**	**1901**	**721**	**2637**	**5896**	**1546**	**7442**
III Soil health and fertility management										
Soil fertility management	23	561	100	661	212	122	334	773	222	995
Integrated water management	9	160	57	217	54	54	108	214	111	325
Integrated nutrient management	20	196	76	272	101	49	150	297	125	422
Production and use of organic inputs	11	190	104	294	59	56	115	249	160	409
Management of problematic soils	13	160	92	252	52	35	87	212	127	339
Micro nutrient deficiency in crops	11	143	80	223	74	46	120	217	126	343

Nutrient use efficiency	5	71	50	121	24	24	48	95	74	169
Balanced use of fertilizers	12	177	91	268	85	50	135	262	141	403
Soil and water testing	25	341	126	467	198	80	278	539	206	745
Others	1	18	0	18	4	0	4	22	0	22
Total	**130**	**2017**	**776**	**2793**	**863**	**516**	**1379**	**2880**	**1292**	**4172**
IV Livestock production and management										
Dairy management	24	349	52	401	124	37	161	473	89	562
Poultry management	17	138	88	226	127	121	248	265	209	474
Animal nutrition management	9	166	27	193	54	22	76	220	49	269
Disease management	7	108	10	118	20	8	28	128	18	146
Feed and fodder technology	13	190	17	207	77	16	93	267	33	300
Production of quality animal products	5	99	11	110	33	9	42	132	20	152
Others	8	113	35	148	44	12	56	157	47	204
Total	**83**	**1163**	**240**	**1403**	**479**	**225**	**700**	**1642**	**465**	**2107**
V Home science/women empowerment										
Household food security by kitchen garden/nutrition garden	33	99	592	691	85	258	343	184	850	1034
Design and development of low/minimum cost diet	19	3	556	559	0	205	205	3	761	764
Designing and development of high nutrient efficient diet	7	82	238	320	38	109	147	120	347	467
Minimization of nutrient loss in processing	3	0	58	58	0	7	7	0	65	65
Processing and cooking	1	0	26	26	0	9	9	0	35	35
Storage loss minimization techniques	5	23	49	72	7	14	21	30	63	93
Value addition	48	21	1158	1179	5	303	308	26	1461	1487
Women empowerment	10	9	283	292	0	129	129	9	412	421
Location specific drudgery reduction technologies	20	179	215	394	24	62	86	203	277	480
Rural crafts	2	0	35	35	0	17	17	0	52	52
Women and child care	23	101	509	610	2	176	178	103	685	788
Others	4	119	147	266	53	47	100	172	194	366
Total	**175**	**636**	**3866**	4502	**214**	**1336**	**1550**	**850**	**5202**	**6052**
VI Agricultural engineering										
Installation and maintenance of micro irrigation systems	4	45	9	54	62	14	76	107	23	130
Repair and maintenance of farm machinery and implements	2	34	8	42	15	3	18	49	11	60
Small scale processing and value addition	1	0	85	85	0	28	28	0	113	113
Post harvest technology	3	84	5	89	13	2	15	97	7	104
Others	8	146	18	164	68	14	82	214	32	246
Total	**18**	**309**	**125**	**434**	**158**	**61**	**219**	**467**	**186**	**653**
VII Plant protection										
Integrated pest management	95	1886	285	2171	744	233	977	2630	518	3148
Integrated disease management	36	645	134	779	376	148	524	1021	282	1303
Bio-control of pests and diseases	20	365	147	512	244	135	379	609	282	891
Production of bio-control agents and bio-pesticides	3	38	6	44	40	15	55	78	21	99
Others	17	738	121	859	257	86	343	995	207	1202
Total	**171**	**3672**	**693**	**4365**	**1661**	**617**	**2278**	**5333**	**1310**	**6643**

VIII Fisheries										
Integrated fish farming	1	0	0	0	23	3	26	23	3	26
Composite fish culture	9	30	0	30	162	21	183	192	21	213
Breeding and culture of ornamental fish	1	0	0	0	10	20	30	10	20	30
Pen culture of fish and prawn	4	0	0	0	204	10	214	204	10	214
Shrimp farming	5	77	0	77	45	0	45	122	0	122
Fish processing and value addition	1	0	0	0	19	4	23	19	4	23
Total	**21**	**107**	**0**	**107**	**463**	**58**	**521**	**570**	**58**	**628**
IX Production of inputs at site										
Bio-fertilizer	4	66	20	86	20	14	34	86	34	120
Vermicompost	1	26	0	26	0	0	0	26	0	26
Mushroom	10	178	76	254	38	43	81	216	119	335
Apiculture	16	150	66	216	197	115	312	347	181	528
Total	**31**	**420**	**162**	**582**	**255**	**172**	**427**	**675**	**334**	**1009**
X Capacity Building and Group Dynamics										
Leadership development	5	99	18	117	33	7	40	132	25	157
Group dynamics	1	23	9	32	2	4	6	25	13	38
Formation and management of SHGs	6	131	17	148	36	11	47	167	28	195
Mobilization of social capital	1	11	0	11	7	1	8	18	1	19
Entrepreneurship development of farmers/ youth	8	168	42	210	91	15	106	259	57	316
WTO and IPR issues	1	25	3	28	19	2	21	44	5	49
Others	23	400	58	458	114	43	157	514	101	615
Total	**45**	**857**	**147**	**1004**	**302**	**83**	**385**	**1159**	**230**	**1389**
XI Agro forestry										
Integrated farming systems	1	0	15	15	0	15	15	0	30	30
Others	12	186	82	268	29	2	31	215	84	299
Total	**13**	**186**	**97**	283	**29**	**17**	46	215	114	329
Grand total	**1133**	**18405**	**8254**	**26514**	**8491**	**4667**	**13169**	**26896**	**12921**	**39817**

In Telangana, 823 training courses were organized for 28739 farmers. The highest number of trainings was conducted on women empowerment including value addition (238), income generation, women and child care, *etc*., in which 6959 women were participated (Table 3.3.5).

Under horticulture 116 training programmes on vegetable crops, fruits, ornamental crops, spices, plantation crops and medicinal crops were organized for 4762 farmers. In crop production 108 trainings and under soil health and fertility management 83 courses were conducted. In plant protection training courses were organized on integrated pest and disease management (65) and bio-control of pests and diseases (8) and production of bio-control agents, bio-pesticides (11)and others (13).

Table 3.3.5. Details of training programmes for farmers in Telangana

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
I Crop production										
Weed management	5	81	56	137	28	21	49	109	77	186
Resource conservation technologies	5	87	33	120	36	19	55	123	52	175
Cropping systems	6	132	28	160	43	16	59	175	44	219
Crop diversification	5	79	15	94	26	10	36	105	25	130
Integrated farming	7	122	6	128	102	15	117	224	21	245
Micro irrigation/ irrigation	1	27	0	27	2	0	2	29	0	29

Seed production	3	42	9	51	48	6	54	90	15	105
Nursery management	7	13	10	23	12	21	33	25	31	56
Integrated crop management	22	380	113	493	167	33	200	547	146	693
Soil and water conservation	22	207	58	265	129	31	160	336	89	425
Integrated nutrient management	11	379	55	434	116	21	137	495	76	571
Production of organic inputs	4	125	24	149	71	16	87	196	40	236
Others	10	269	184	453	150	61	211	419	245	664
Total	**108**	**1943**	**591**	**2534**	**930**	**270**	**1200**	**2873**	**861**	**3734**
II Horticulture										
a) Vegetable crops										
Production of low value and high volume crops	7	128	23	151	60	15	75	188	38	226
Off season vegetables	11	244	103	347	138	72	210	382	175	557
Nursery raising	13	151	267	418	46	117	163	197	384	581
Exotic vegetables	4	25	57	82	5	32	37	30	89	119
Export potential vegetables	1	26	0	26	0	0	0	26	0	26
Grading and standardization	4	26	8	34	0	0	0	26	8	34
Protective cultivation	7	223	48	271	68	19	87	291	67	358
Others	6	154	51	205	56	22	78	210	73	283
Sub total	**53**	**977**	**557**	**1534**	**373**	**277**	**650**	**1350**	**834**	**2184**
b) Fruits										
Training and pruning	8	196	44	240	82	22	104	278	66	344
Layout and management of orchards	6	114	5	119	25	2	27	139	7	146
Cultivation of fruits	7	213	30	243	64	19	83	277	49	326
Management of young plants/orchards	5	305	34	339	26	5	31	331	39	370
Rejuvenation of old orchards	2	36	2	38	18	1	19	54	3	57
Export potential fruits	1	24	7	31	12	4	16	36	11	47
Micro irrigation systems of orchards	4	105	18	123	32	8	40	137	26	163
Plant propagation techniques	2	19	1	20	2	0	2	21	1	22
Others	1	22	4	26	17	6	23	39	10	49
Sub total	**36**	**1034**	**145**	**1179**	**278**	**67**	**345**	**1312**	**212**	**1524**
c) Ornamental plants										
Propagation techniques of ornamental plants	1	18	3	21	9	2	11	27	5	32
Others	4	133	33	166	10	2	12	143	35	178
Sub total	**5**	**151**	**36**	**187**	**19**	**4**	**23**	**170**	**40**	**210**
d) Plantation crops										
Production and management technology/ processing and value addition/others	10	184	30	214	24	16	40	208	46	254
Sub total	**10**	**184**	**30**	**214**	**24**	**16**	**40**	**208**	**46**	**254**
e) Spices										
Production and management technology	11	206	45	251	186	53	239	392	98	490
Sub total	**11**	**206**	**45**	**251**	**186**	**53**	**239**	**392**	**98**	**490**
f) Medicinal and aromatic plants										
Post harvest technology and value addition	1	53	13	66	21	13	34	74	26	100
Sub total	1	53	13	66	21	13	34	74	26	100
Total	**116**	**2605**	**826**	**3431**	**901**	**430**	**1331**	**3506**	**1256**	**4762**
III Soil health and fertility management										

Soil fertility management	15	182	65	247	82	33	115	264	98	362
Integrated water management	1	21	0	21	5	0	5	26	0	26
Integrated nutrient management	3	63	11	74	29	6	35	92	17	109
Production and use of organic inputs	34	189	127	316	192	194	386	381	321	702
Management of problematic soils	13	88	25	113	43	29	72	131	54	185
Micro nutrient deficiency in crops	1	14	5	19	7	3	10	21	8	29
Balanced use of fertilizers	9	65	32	97	30	20	50	95	52	147
Soil and water testing	7	148	18	166	73	30	103	221	48	269
Total	**83**	**770**	**283**	**1053**	**461**	**315**	**776**	**1231**	**598**	**1829**
IV Livestock production and management										
Dairy management	8	185	39	224	82	34	116	267	73	340
Poultry management	4	6	76	82	18	43	61	24	119	143
Animal nutrition management	6	66	21	87	54	15	69	120	36	156
Disease management	12	253	128	381	67	54	121	320	182	502
Feed and fodder technology	20	458	142	600	204	63	267	662	205	867
Total	**50**	**968**	**406**	**1374**	**425**	**209**	**634**	**1393**	**615**	**2008**
V Home science/women empowerment										
Household food security by kitchen garden/ nutrition garden	12	45	150	195	18	126	144	63	276	339
Design and development of low/minimum cost diet	31	84	403	487	68	272	340	152	675	827
Designing and development of high nutrient efficient diet	19	60	181	241	14	228	242	74	409	483
Minimization of nutrient loss in processing	17	0	109	109	0	222	222	0	331	331
Processing and cooking	40	0	478	478	0	316	316	0	794	794
Gender mainstreaming through SHGs	2	0	38	38	0	6	6	0	44	44
Storage loss minimization techniques	13	28	374	402	10	172	182	38	546	584
Value addition	43	7	594	601	38	647	685	45	1241	1286
Women empowerment	16	31	221	252	27	160	187	58	381	439
Location specific drudgery reduction technologies	10	66	154	220	22	94	116	88	248	336
Rural crafts	10	20	164	184	27	173	200	47	337	384
Women and child care	21	78	576	654	55	164	219	133	740	873
Others	4	176	25	201	11	27	38	187	52	239
Total	**238**	**595**	**3467**	**4062**	**290**	**2607**	**2897**	**885**	**6074**	**6959**
VI Agricultural engineering										
Farm machinery and its maintenance	3	83	2	85	19	0	19	102	2	104
Installation and maintenance of micro irrigation systems	1	25	0	25	8	0	8	33	0	33
Use of plastics in farming practices	1	6	10	16	13	3	16	19	13	32
Small scale processing and value addition	1	27	0	27	0	0	0	27	0	27
Post harvest technology	1	21	0	21	3	0	3	24	0	24
Others	2	13	11	24	10	26	36	23	37	60
Total	**9**	**175**	**23**	**198**	**53**	**29**	**82**	**228**	**52**	**280**
VII Plant protection										
Integrated pest management	42	978	153	1131	522	167	689	1500	320	1820
Integrated disease management	23	583	111	694	171	184	355	754	295	104

										9
Bio-control of pests and diseases	8	189	27	216	67	18	85	256	45	301
Production of bio-control agents and bio-pesticides	11	327	68	395	59	21	80	386	89	475
Others	13	259	107	366	148	47	195	407	154	561
Total	**97**	**2336**	**466**	**2802**	**967**	**437**	**1404**	**3303**	**903**	**4206**
VIII Fisheries										
Integrated fish farming	2	78	13	91	11	3	14	89	16	105
Carp breeding and hatchery management	3	100	8	108	5	0	5	105	8	113
Carp fry and fingerling rearing	4	249	21	270	10	0	10	259	21	280
Composite fish culture	5	205	50	255	30	20	50	235	70	305
Hatchery management and culture of freshwater prawn	2	12	6	18	32	10	42	44	16	60
Breeding and culture of ornamental fish	1	18	10	28	16	18	34	34	28	62
Fish processing and value addition	3	33	4	37	0	60	60	33	64	97
Others	10	380	3	383	64	0	64	444	3	447
Total	**30**	**1075**	**115**	**1190**	**168**	**111**	**279**	**1243**	**226**	**1469**
IX Production of inputs at site										
Seed	5	30	20	50	50	50	100	80	70	150
Bio-agents	1	18	0	18	4	0	4	22	0	22
Vermicompost	33	295	221	516	276	413	689	571	634	1205
Organic manures	31	368	205	573	262	405	667	630	610	1240
Bee colonies and wax sheets	2	10	0	10	0	0	0	10	0	10
Small tools and implements	1	12	3	15	6	11	17	18	14	32
Apiculture	3	35	28	63	46	14	60	81	42	123
Total	**76**	**768**	**477**	**1245**	**644**	**893**	**1537**	**1412**	**1370**	**2782**
X Capacity building and group dynamics										
Leadership development	4	103	13	116	28	17	45	131	30	161
Group dynamics	2	95	5	100	10	0	10	105	5	110
Formation and management of SHGs	1	16	4	20	9	2	11	25	6	31
Entrepreneurship development of farmers/youths	2	50	0	50	28	0	28	78	0	78
WTO and IPR issues	1	77	3	80	17	3	20	94	6	100
Others	6	130	36	166	41	23	64	171	59	230
Total	**16**	**471**	**61**	**532**	**133**	**45**	**178**	**604**	**106**	**710**
Grand total	**823**	**11706**	**6715**	**18421**	**4972**	**5346**	**10318**	**16678**	**12061**	**28739**

In Puducherry, a total of 73 trainings were organized for 2180 farmers (Table 3.3.6). The highest number of trainings (18) was conducted on women empowerment in which 592 farmers have participated followed by livestock production and management (11) and soil health and fertility management (6).

Table 3.3.6. Details of training programmes for Farmers in Puducherry

Area of training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
I Crop production										
Integrated farming	3	63	7	70	3	0	3	66	7	73
Micro irrigation/irrigation	2	49	0	49	0	0	0	49	0	49

Soil and water conservation	3	9	0	9	0	0	0	9	0	9
Others	6	137	62	199	38	15	53	175	77	252
Total	**14**	**258**	**69**	**327**	**41**	**15**	**56**	**299**	**84**	**383**
II Horticulture										
a) Vegetable Crops										
Production of low value and high volume crops /nursery raising/others	1	22	1	23	1	1	2	23	2	25
Sub total	**1**	**22**	**1**	**23**	**1**	**1**	**2**	**23**	**2**	**25**
b) Fruits										
Cultivation of fruit	1	21	0	21	0	0	0	21	0	21
Others	1	15	0	15	5	0	5	20	0	20
Sub total	**2**	**36**	**0**	**36**	**5**	**0**	**5**	**41**	**0**	**41**
Total	**3**	**58**	**1**	**59**	**6**	**1**	**7**	**64**	**2**	**66**
III Soil health and fertility management										
Soil fertility management	1	97	16	113	14	0	14	111	16	127
Integrated nutrient management	1	21	0	21	3	0	3	24	0	24
Management of problematic soils	3	60	25	85	12	2	14	72	27	99
Soil and water testing	1	33	5	38	6	0	6	39	5	44
Total	**6**	**211**	**46**	**257**	**35**	**2**	**37**	**246**	**48**	**294**
IV Livestock production and management										
Dairy management	1	1	4	5	6	6	12	7	10	17
Poultry management	1	3	3	6	13	20	33	16	23	39
Feed and fodder technology	4	25	65	90	24	27	51	49	92	141
Others	5	60	62	122	5	7	12	65	69	134
Total	**11**	**89**	**134**	**223**	**48**	**60**	**108**	**137**	**194**	**331**
V Home science/women empowerment										
Value addition	4	40	73	113	1	5	6	41	78	119
Women empowerment	2	0	38	38	0	2	2	0	40	40
Women and child care	1	0	13	13	0	7	7	0	20	20
Others	11	139	169	308	37	68	105	176	237	413
Total	**18**	**179**	**293**	**472**	**38**	**82**	**120**	**217**	**375**	**592**
VI Agricultural engineering										
Installation and maintenance of micro irrigation systems	3	35	2	37	0	0	0	35	2	37
Small scale processing and value addition	2	21	25	46	5	13	18	26	38	64
Total	**5**	**56**	**27**	**83**	**5**	**13**	**18**	**61**	**40**	**101**
VII Plant protection										
Integrated pest management	4	58	9	67	6	3	9	64	12	76
Integrated disease management	1	72	6	78	28	3	31	100	9	109
Others	1	12	6	18	7	3	10	19	9	28
Total	**6**	**142**	**21**	**163**	**41**	**9**	**50**	**183**	**30**	**213**
VIII Fisheries										
Integrated fish farming	1	11	1	12	1	4	5	12	5	17
Carp fry and fingerling rearing	1	0	0	0	10	10	20	10	10	20
Composite fish culture	1	9	7	16	1	6	7	10	13	23
Breeding and culture of ornamental fish	1	2	5	7	3	10	13	5	15	20
Others	6	87	15	102	18	0	18	105	15	120
Total	**10**	**109**	**28**	**137**	**33**	**30**	**63**	**142**	**58**	**200**
Grand Total	**73**	**1102**	**619**	**1721**	**247**	**212**	**459**	**1349**	**831**	**2180**

For entrepreneurship development, employment creation and income generation in agriculture and allied areas among rural youth, various training courses were conducted by the KVKs in Zone-X. A total of 628 courses were organized for 20779 rural youth in Tamil Nadu, Andhra Pradesh, Telangana and Puducherry. The training areas included value addition of agriculture, dairy, fisheries, animal husbandry products (97), mushroom production (59),bee keeping (33), Nursery management (31), dairying (30),integrated farming (28), poultry production (27), *etc* (Table 3.3.7).

Training programme on farm mechanization for rural youth

Table 3.3.7. Details of training programmes for rural youth in Zone-X

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Nursery Management of Horticulture crops	31	448	150	598	221	201	422	669	351	1020
Training and pruning of orchards	13	155	75	230	74	91	165	229	166	395
Protected cultivation of vegetable crops	18	361	125	486	131	95	226	492	220	712
Commercial fruit production	4	74	39	113	36	14	50	110	53	163
Integrated Farming	28	420	163	583	239	131	370	659	294	953
Seed production	18	259	76	335	104	46	150	363	122	485
Production of organic inputs	29	339	190	529	193	215	408	532	405	937
Planting material production	2	5	0	5	5	10	15	10	10	20
Vermiculture	19	244	223	467	87	30	117	331	253	584
Mushroom Production	59	803	523	1326	157	117	274	960	640	1600
Bee keeping	33	454	255	709	191	129	320	645	384	1029
Sericulture	6	72	4	76	29	3	32	101	7	108
Repair and maintenance of farm machinery and implements	16	154	18	172	81	17	98	235	35	270
Value addition	97	370	1202	1572	109	1201	1310	479	2403	2882
Small scale processing	12	36	265	301	6	27	33	42	292	334
Post Harvest Technology	22	163	297	460	56	116	172	219	413	632
Tailoring and Stitching	16	0	379	379	0	62	62	0	441	441
Rural Crafts	10	10	116	126	10	106	116	20	222	242
Production of quality animal products	1	12	0	12	3	0	3	15	0	15
Dairying	30	400	304	704	111	73	184	511	377	888
Sheep and goat rearing	12	302	142	444	81	27	108	383	169	552
Quail farming	2	15	12	27	0	3	3	15	15	30
Piggery	3	40	4	44	5	1	6	45	5	50
Rabbit farming	2	23	1	24	14	2	16	37	3	40
Poultry production	17	378	108	486	99	60	159	477	168	645
Ornamental fisheries	9	112	62	174	23	12	35	135	74	209

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Composite fish culture	12	341	70	411	52	21	73	393	91	484
Freshwater prawn culture	4	86	17	103	31	15	46	117	32	149
Shrimp farming	5	73	32	105	33	12	45	106	44	150
Fish harvest and processing technology	12	97	113	210	34	38	72	131	151	282
Fry and fingerling rearing	4	67	33	100	27	14	41	94	47	141
Others	82	1158	1430	2588	541	1208	1749	1699	2638	4337
Grand Total	**628**	**7471**	**6428**	**13899**	**2783**	**4097**	**6880**	**10254**	**10525**	**20779**

The details of state wise training programmes organized for rural youth are presented in Tables 3.3.8 to 3.3.11.

Table 3.3.8. Details of training programmes for rural youth in Tamil Nadu

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Nursery Management of Horticulture crops	8	125	37	162	11	3	14	136	40	176
Training and pruning of orchards	3	60	10	70	4	0	4	64	10	74
Protected cultivation of vegetable crops	8	204	73	277	14	11	25	218	84	302
Commercial fruit production	2	36	24	60	12	4	16	48	28	76
Integrated Farming	12	271	124	395	31	41	72	302	165	467
Seed production	10	181	55	236	56	19	75	237	74	311
Production of organic inputs	12	103	106	209	31	47	78	134	153	287
Vermiculture	13	169	208	377	20	18	38	189	226	415
Mushroom Production	38	523	316	839	90	59	149	613	375	988
Bee keeping	19	356	221	577	59	59	118	415	280	695
Repair and maintenance of farm machinery and implements	10	64	14	78	20	16	36	84	30	114
Value addition	41	335	447	782	67	133	200	402	580	982
Small scale processing	11	36	213	249	6	10	16	42	223	265
Post Harvest Technology	19	143	260	403	28	62	90	171	322	493
Rural Crafts	1	0	14	14	0	0	0	0	14	14
Dairying	22	297	266	563	65	59	124	362	325	687
Sheep and goat rearing	11	293	142	435	69	27	96	362	169	531
Quail farming	2	15	12	27	0	3	3	15	15	30
Piggery	3	40	4	44	5	1	6	45	5	50
Poultry farming	16	372	106	478	93	56	149	465	162	627
Ornamental fisheries	8	105	56	161	16	12	28	121	68	189
Composite fish culture	8	118	60	178	26	10	36	144	70	214
Freshwater prawn culture	4	86	17	103	31	15	46	117	32	149
Shrimp farming	5	73	32	105	33	12	45	106	44	150
Fish harvest and processing technology	6	61	80	141	17	19	36	78	99	177
Fry and fingerling rearing	4	67	33	100	27	14	41	94	47	141
Others	25	389	292	681	70	38	108	459	330	789
Grand Total	**321**	**4522**	**3222**	**7744**	**901**	**748**	**1649**	**5423**	**3970**	**9393**

Table 3.3.9. Details of training programmes for rural youth in Andhra Pradesh

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Nursery Management of Horticulture crops	11	231	78	309	174	91	265	405	169	574
Training and pruning of orchards	5	43	39	82	62	59	121	105	98	203
Protected cultivation of vegetable crops	7	107	48	155	100	80	180	207	128	335
Commercial fruit production	1	23	10	33	12	7	19	35	17	52
Integrated Farming	4	33	8	41	164	75	239	197	83	280
Seed production	4	57	11	68	34	0	34	91	11	102
Production of organic inputs	4	52	10	62	22	0	22	74	10	84
Vermiculture	1	6	0	6	7	2	9	13	2	15
Mushroom Production	17	234	184	418	59	51	110	293	235	528
Beekeeping	11	78	34	112	132	55	187	210	89	299
Sericulture	3	24	3	27	18	3	21	42	6	48
Repair and maintenance of farm machinery and implements	5	73	4	77	46	1	47	119	5	124
Value addition	36	34	538	572	40	367	407	74	905	979
Small scale processing	1	0	52	52	0	17	17	0	69	69
Post Harvest Technology	1	0	24	24	24	43	67	24	67	91
Tailoring and Stitching	3	0	26	26	0	37	37	0	63	63
Rural Crafts	8	10	92	102	10	76	86	20	168	188
Production of quality animal products	1	12	0	12	3	0	3	15	0	15
Dairying	7	100	23	123	45	12	57	145	35	180
Sheep and goat rearing	1	9	0	9	12	0	12	21	0	21
Composite fish culture	1	23	10	33	24	9	33	47	19	66
Fish harvest and processing technology	5	26	32	58	14	18	32	40	50	90
Others	28	416	721	1137	327	285	612	743	1006	1749
Grand Total	**165**	**1591**	**1947**	**3538**	**1329**	**1288**	**2617**	**2920**	**3235**	**6155**

Table 3.3.10. Details of training programmes for rural youth in Telangana

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Nursery Management of Horticulture crops	12	92	35	127	36	107	143	128	142	270
Training and pruning of orchards	5	52	26	78	8	32	40	60	58	118
Protected cultivation of vegetable crops	3	50	4	54	17	4	21	67	8	75
Commercial fruit production	1	15	5	20	12	3	15	27	8	35
Integrated Farming	12	116	31	147	44	15	59	160	46	206
Seed production	4	21	10	31	14	27	41	35	37	72
Production of organic inputs	13	184	74	258	140	168	308	324	242	566
Planting material production	2	5	0	5	5	10	15	10	10	20
Vermiculture	5	69	15	84	60	10	70	129	25	154
Mushroom Production	1	0	2	2	1	5	6	1	7	8
Bee keeping	3	20	0	20	0	15	15	20	15	35
Sericulture	3	48	1	49	11	0	11	59	1	60
Repair and maintenance of farm machinery and implements	1	17	0	17	15	0	15	32	0	32
Value addition	20	1	217	218	2	701	703	3	918	921
Post Harvest Technology	2	20	13	33	4	11	15	24	24	48
Tailoring and Stitching	13	0	353	353	0	25	25	0	378	378
Rural Crafts	1	0	10	10	0	30	30	0	40	40
Dairying	1	3	15	18	1	2	3	4	17	21
Poultry production	1	6	2	8	6	4	10	12	6	18
Composite fish culture	3	200	0	200	2	2	4	202	2	204
Fish harvest and processing technology	1	10	1	11	3	1	4	13	2	15
Others	27	325	411	736	133	885	1018	458	1296	1754
Grand Total	**134**	**1254**	**1225**	**2479**	**514**	**2057**	**2571**	**1768**	**3282**	**5050**

Table 3.3.11. Details of training programmes for rural youth in Puducherry

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Mushroom Production	3	46	21	67	7	2	9	53	23	76
Rabbit farming	2	23	1	24	14	2	16	37	3	40
Ornamental fisheries	1	7	6	13	7	0	7	14	6	20
Others	2	28	6	34	11	0	11	39	6	45
Grand Total	**8**	**104**	**34**	**138**	**39**	**4**	**43**	**143**	**38**	**181**

As per the mandate of Krishi Vigyan Kendras, Capacity Development Programmes for district level extension functionaries were organized by KVKs in Tamil Nadu, Andhra Pradesh, Telangana states and Puducherry. A total of 410 trainings were conducted in which 16343 extension functionaries were

participated. In Integrated pest and disease management 82 courses were taken up with the participation of 2663 personnel (Table 3.3.12). On productivity enhancement in field crops 68 courses were conducted followed by integrated nutrient management(35), protected cultivation technology (25), livestock feed and fodder management(25), capacity building for ICT application (22), low cost and nutrient effective diet designing (21), etc. Out of 16343 participants, 6181 were women extension functionaries.

Training on safe and judicious use of pesticides for the Extension Functionaries

Training on IPM for the Extension functionaries

Table 3.3.12. Details of trainings for extension functionaries in Zone-X

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Productivity enhancement in field crops	68	1706	734	2440	336	174	510	2042	908	2950
Integrated Pest Management	82	1641	600	2241	263	159	422	1904	759	2663
Integrated nutrient management	35	891	218	1109	206	67	273	1097	285	1382
Rejuvenation of old orchards	3	84	27	111	10	7	17	94	34	128
Protected cultivation technology	25	648	128	776	87	35	122	735	163	898
Production and use of organic inputs	6	155	68	223	34	15	49	189	83	272
Care & maintenance of farm machinery & implements	5	186	32	218	42	15	57	228	47	275
Formation and Management of SHGs	3	86	16	102	8	4	12	94	20	114
Women and Child care	14	44	729	773	9	100	109	53	829	882
Low cost and nutrient efficient diet designing	21	6	582	588	4	275	279	10	857	867
Group Dynamics and farmers organization	11	160	127	287	35	34	69	195	161	356
Information networking among farmers	6	229	48	277	24	5	29	253	53	306
Capacity building for ICT application	22	924	395	1319	162	57	219	1086	452	1538
Management of farm animals	5	95	54	149	72	61	133	167	115	282
Livestock feed and fodder production	25	459	105	564	128	54	182	587	159	746
Household food security	10	33	303	336	6	100	106	39	403	442
Others	69	1187	682	1869	202	171	373	1389	853	2242
Grand Total	**410**	**8534**	**4848**	**13382**	**1628**	**1333**	**2961**	**10162**	**6181**	**16343**

The state wise particulars of training programmes conducted for extension functionaries are present in tables 3.3.13 to 3.3.16.

Table 3.3.13. Details of trainings for extension functionaries in Tamil Nadu

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Productivity enhancement of field crops	45	1217	551	1768	146	92	238	1363	643	2006
Integrated Pest Management	29	591	277	868	25	21	46	616	298	914
Integrated nutrient management	11	361	106	467	24	9	33	385	115	500
Rejuvenation of old orchards	1	25	10	35	5	3	8	30	13	43
Protected cultivation technology	13	383	73	456	12	2	14	395	75	470
Production and use of organic inputs	2	56	26	82	9	11	20	65	37	102
Low cost and nutrient efficient diet designing	2	0	48	48	0	4	4	0	52	52
Group Dynamics and farmers organization	6	108	72	180	15	11	26	123	83	206
Information networking among farmers	2	146	24	170	0	0	0	146	24	170
Capacity building for ICT application	8	600	272	872	50	13	63	650	285	935
Management of farm animals	1	15	5	20	0	0	0	15	5	20
Livestock feed and fodder production	6	230	45	275	22	9	31	252	54	306
Household food security	4	27	85	112	6	41	47	33	126	159
Others	36	804	378	1182	74	44	118	878	422	1300
Grand Total	**166**	**4563**	**1972**	**6535**	**388**	**260**	**648**	**4951**	**2232**	**7183**

Table 3.3.14. Details of trainings for extension functionaries in Andhra Pradesh

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Productivity enhancement of field crops	19	352	178	530	176	79	255	528	257	785
Integrated Pest Management	35	647	263	910	223	133	356	870	396	1266
Integrated nutrient management	16	320	92	412	155	47	202	475	139	614
Rejuvenation of old orchards	1	22	16	38	4	4	8	26	20	46
Protected cultivation technology	5	105	45	150	39	28	67	144	73	217
Production and use of organic inputs	3	65	31	96	25	4	29	90	35	125
Care & maintenance of farm machinery & implements	3	113	30	143	40	15	55	153	45	198

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Formation and Management of SHGs	3	86	16	102	8	4	12	94	20	114
Women and Child care	9	44	343	387	9	79	88	53	422	475
Low cost and nutrient efficient diet designing	14	6	449	455	0	246	246	6	695	701
Group Dynamics and farmers organization	5	52	55	107	20	23	43	72	78	150
Information networking among farmers	4	83	24	107	24	5	29	107	29	136
Capacity building for ICT application	12	267	116	383	109	42	151	376	158	534
Management of farm animals	4	80	49	129	72	61	133	152	110	262
Livestock feed and fodder production	11	166	44	210	74	33	107	240	77	317
Household food security	2	0	125	125	0	33	33	0	158	158
Others	14	184	171	355	26	72	98	210	243	453
Grand Total	**160**	**2592**	**2047**	**4639**	**1004**	**908**	**1912**	**3596**	**2955**	**6551**

Table 3.3.15. Details of trainings for extension functionaries in Telangana

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Productivity enhancement of field crops	4	137	5	142	14	3	17	151	8	159
Integrated Pest Management	17	387	59	446	15	5	20	402	64	466
Integrated nutrient management	8	210	20	230	27	11	38	237	31	268
Rejuvenation of old orchards	1	37	1	38	1	0	1	38	1	39
Protective cultivation technology	7	160	10	170	36	5	41	196	15	211
Production and use of organic inputs	1	34	11	45	0	0	0	34	11	45
Care & maintenance of farm machinery & implements	2	73	2	75	2	0	2	75	2	77
Women and Child care	5	0	386	386	0	21	21	0	407	407
Low cost and nutrient efficient diet designing	4	0	65	65	4	19	23	4	84	88
Capacity building for ICT application	2	57	7	64	3	2	5	60	9	69
Livestock feed and fodder production	8	63	16	79	32	12	44	95	28	12

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
										3
Household food security	3	6	72	78	0	26	26	6	98	104
Others	13	138	68	206	101	46	147	239	114	353
Grand Total	**75**	**1302**	**722**	**2024**	**235**	**150**	**385**	**1537**	**872**	**2409**

Table 3.3.16. Details of trainings for extension functionaries in Puducherry

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Integrated Pest Management	1	16	1	17	0	0	0	16	1	17
Low cost and nutrient efficient diet designing	1	0	20	20	0	6	6	0	26	26
Household food security	1	0	21	21	0	0	0	0	21	21
Others	6	61	65	126	1	9	10	62	74	136
Grand Total	**9**	**77**	**107**	**184**	**1**	**15**	**16**	**78**	**122**	**200**

3.3.1 Sponsored trainings

In addition to regular training programmes organized, KVKs conducted sponsored training programmes from ATMA, MANAGE and other agencies. On the whole, 459 sponsored training programmes were conducted for 18639 youth in Zone-X. The maximum number of courses were conducted on production and value addition (103), followed by crop production and management (74), livestock and fisheries (75), home science (51), agricultural extension (49), *etc*. (Table 3.3.17).

Training on Ragi thresher at Pukkulam village (Ramanathapuram)

Table 3.3.17. Details of sponsored training programmes in Zone-X

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Increasing production and productivity of crops	44	1579	374	1953	406	92	498	1985	466	2451
Commercial production of vegetables	21	358	172	530	77	82	159	435	254	689
Others	9	0	0	0	263	45	308	263	45	308
Total	**74**	**1937**	**546**	**2483**	**746**	**219**	**965**	**2683**	**765**	**3448**
Production and Value addition										
Fruit crops	11	231	71	302	111	63	174	342	134	476
Spices	2	19	0	19	14	1	15	33	1	34
Soil health and fertility management	18	429	69	498	116	22	138	545	91	636

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Production of Inputs at site	6	55	15	70	29	10	39	84	25	109
Methods of protective cultivation	21	600	158	758	27	157	184	627	315	942
Others	45	1186	348	1534	198	211	409	1384	559	1943
Total	**103**	**2520**	**661**	**3181**	**495**	**464**	**959**	**3015**	**1125**	**4140**
Post harvest technology and Value addition										
Processing and value addition	55	344	919	1263	114	269	383	458	1188	1646
Others	15	160	135	295	147	209	356	307	344	651
Total	**70**	**504**	**1054**	**1558**	**261**	**478**	**739**	**765**	**1532**	**2297**
Farm Machinery										
Farm machinery, tools and implements	13	179	64	243	85	13	98	264	77	341
Others	24	295	22	317	566	7	573	861	29	890
Total	**37**	**474**	**86**	**560**	**651**	**20**	**671**	**1125**	**106**	**1231**
Livestock and Fisheries										
Animal Disease Management	2	20	5	25	21	10	31	41	15	56
Animal Nutrition Management	3	36	51	87	9	14	23	45	65	110
Fisheries Management	13	204	33	237	439	16	455	643	49	692
Fisheries Nutrition	1	17	3	20	8	4	12	25	7	32
Livestock production and management	45	653	1329	1982	55	987	1042	708	2316	3024
Others	11	180	62	242	75	104	179	255	166	421
Total	**75**	**1110**	**1483**	**2593**	**607**	**1135**	**1742**	**1717**	**2618**	**4335**
Home Science										
Drudgery reduction in women	0	0	0	0	0	20	20	0	20	20
Economic empowerment of women	30	125	490	615	73	342	415	198	832	972
Household nutritional security	14	14	108	122	77	244	321	91	352	443
Others	7	34	27	61	79	25	104	113	52	165
	51	**173**	**625**	**798**	**229**	**631**	**860**	**402**	**1256**	**1600**
Agricultural Extension										
Capacity Building and Group Dynamics	37	555	268	823	245	56	301	800	324	1124
Others	12	247	103	350	90	24	114	337	127	464
Total	**49**	**802**	**371**	**1173**	**335**	**80**	**415**	**1137**	**451**	**1588**
Grand Total	**459**	**7520**	**4826**	**12346**	**3324**	**3027**	**6351**	**10844**	**7853**	**18639**

The details of state wise sponsored training courses conducted are presented in tables 3.3.18 to 3.3.21.

Table 3.3.18. Details of sponsored training programmes in Tamil Nadu

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Increasing production and productivity of crops	36	1407	358	1765	126	28	154	1533	386	1919
Commercial production of vegetables	6	106	64	170	10	18	28	144	54	198
Total	**42**	**1513**	**422**	**1935**	**136**	**46**	**182**	**1677**	**440**	**2117**
Production and Value addition										
Fruit crops	3	30	40	70	13	47	60	43	87	130
Spices	1	15	0	15	0	0	0	15	0	15
Soil health and fertility management	10	233	38	271	21	3	24	254	41	295
Production of Inputs at site	4	34	15	49	20	10	30	54	25	79
Methods of protective cultivation	15	399	103	502	14	138	152	413	241	654
Others	16	607	263	870	28	170	198	635	433	1068
Total	**49**	**1318**	**459**	**1777**	**96**	**368**	**464**	**1414**	**827**	**2241**
Post harvest technology and Value addition										
Processing and value addition	32	308	436	744	104	113	217	412	549	961
Others	2	103	16	119	0	5	5	103	21	124
Total	**34**	**411**	**452**	**863**	**104**	**118**	**222**	**515**	**570**	**1085**
Farm Machinery										
Farm machinery, tools and implements	4	103	45	148	20	8	28	123	53	176
Others	1	7	5	12	0	0	0	7	5	12
Total	**5**	**110**	**50**	**160**	**20**	**8**	**28**	**130**	**58**	**188**
Livestock and Fisheries										
Animal Nutrition Management	1	9	51	60	6	14	20	15	65	80
Fisheries Management	5	149	32	181	30	11	41	179	43	222
Fisheries Nutrition	1	17	3	20	8	4	12	25	7	32
Livestock production and management	42	622	1315	1937	45	983	1028	667	2298	2965
Others	9	148	62	220	54	104	158	203	165	368
Total	**58**	**945**	**1463**	**2418**	**143**	**1116**	**1259**	**1089**	**2578**	**3667**
Home Science										
Economic empowerment of women	8	0	158	158	4	21	25	4	179	183
Household nutritional security	12	12	70	82	64	191	255	76	261	337
Others	7	34	27	61	79	25	104	113	52	165
Total	**27**	**46**	**255**	**301**	**147**	**237**	**384**	**193**	**492**	**685**
Agricultural Extension										
Capacity Building and Group Dynamics	11	323	83	406	52	24	76	375	107	482
Others	8	218	96	314	13	5	18	231	101	332
Total	19	541	179	720	65	29	94	606	208	814

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Grand Total	**234**	**4884**	**3280**	**8174**	**711**	**1922**	**2633**	**5596**	**5201**	**10797**

Table 3.3.19. Details of sponsored training programmes in Andhra Pradesh

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Commercial production of vegetables	14	247	108	355	52	64	116	299	172	471
Increasing production and productivity of crops	6	116	12	128	167	42	209	283	54	337
Others	9	0	0	0	263	45	308	263	45	308
Total	**29**	**363**	**120**	**483**	**482**	**151**	**633**	**845**	**271**	**1116**
Production and Value addition										
Fruit crops	7	191	31	222	83	16	99	274	47	321
Soil health and fertility management	7	191	31	222	83	16	99	274	47	321
Methods of protective cultivation	5	194	52	246	11	16	27	205	68	273
Others	25	521	82	603	162	41	203	683	123	806
Total	**44**	**1097**	**196**	**1293**	**339**	**89**	**428**	**1436**	**285**	**1721**
Post harvest technology and value addition										
Processing and value addition	23	36	483	519	10	156	166	46	639	685
Others	13	57	119	176	147	204	351	204	323	527
Total	**36**	**93**	**602**	**695**	**157**	**360**	**517**	**250**	**962**	**1212**
Farm Machinery										
Farm machinery, tools and implements	8	73	19	92	50	5	55	123	24	147
Others	4	88	15	103	36	2	38	124	17	141
Total	**12**	**161**	**34**	**195**	**86**	**7**	**93**	**247**	**41**	**288**
Livestock and Fisheries										
Livestock production and management	3	31	14	45	10	4	14	41	18	59
Animal Nutrition Management	2	27	0	27	3	0	3	30	0	30
Animal Disease Management	2	20	5	25	21	10	31	41	15	56
Others	2	32	0	32	21	0	21	53	0	53
Total	**9**	**110**	**19**	**129**	**55**	**14**	**69**	**165**	**33**	**198**
Home Science										
Household nutritional security	1	2	17	19	13	53	66	15	70	85
Economic empowerment of women	12	116	312	428	56	115	171	172	427	599
Drudgery reduction in women	0	0	0	0	0	20	20	0	20	20
Total	**13**	**118**	**329**	**447**	**69**	**188**	**257**	**187**	**517**	**704**

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Agricultural Extension										
Capacity Building and Group Dynamics	23	198	177	375	50	10	60	248	187	435
Others	0	0	0	0	20	1	21	20	1	21
Total	**23**	**198**	**177**	**375**	**70**	**11**	**81**	**268**	**188**	**456**
Grand Total	**166**	**2140**	**1477**	**3617**	**1258**	**820**	**2078**	**3398**	**2297**	**5695**

Table 3.3.20. Details of sponsored training programmes in Telangana

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Commercial production of vegetables	1	5	0	5	15	0	15	20	0	20
Increasing production and productivity of crops	2	56	4	60	113	22	135	169	26	195
Total	**3**	**61**	**4**	**65**	**128**	**22**	**150**	**189**	**26**	**215**
Production and Value addition										
Fruit crops	1	10	0	10	15	0	15	25	0	25
Spices	1	4	0	4	14	1	15	18	1	19
Soil health and fertility management	1	5	0	5	12	3	15	17	3	20
Production of Inputs at site	2	21	0	21	9	0	9	30	0	30
Methods of protective cultivation	1	7	3	10	2	3	5	9	6	15
Others	4	58	3	61	8	0	8	66	3	69
Total	**10**	**105**	**6**	**111**	**60**	**7**	**67**	**165**	**13**	**178**
Farm Machinery										
Farm machinery, tools and implements	1	3	0	3	15	0	15	18	0	18
Others	19	200	2	202	530	5	535	730	7	737
Total	**20**	**203**	**2**	**205**	**545**	**5**	**550**	**748**	**7**	**755**
Livestock and Fisheries										
Fisheries Management	7	47	0	47	400	3	403	447	3	450
Total	**7**	**47**	**0**	**47**	**400**	**3**	**403**	**447**	**3**	**450**
Home Science										
Economic empowerment of women	10	9	20	29	13	206	219	22	226	190
Total	**10**	**9**	**20**	**29**	**13**	**206**	**219**	**22**	**226**	**190**
Agricultural Extension										
Capacity Building and Group Dynamics	3	34	8	42	143	22	165	177	30	207
Others	3	12	3	15	57	18	75	69	21	90
Total	**6**	**46**	**11**	**57**	**200**	**40**	**240**	**246**	**51**	**297**
Grand Total	**56**	**471**	**43**	**514**	**1346**	**283**	**1629**	**1817**	**326**	**2085**

Table 3.3.21. Details of sponsored training programmes in Puducherry

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Livestock and Fisheries										

Livestock production and management	1	8	1	9	9	2	11	17	3	20
Total	**1**	**8**	**1**	**9**	**9**	**2**	**11**	**17**	**3**	**20**
Home Science										
Drudgery reduction of women	1	0	21	21	0	0	0	0	21	21
Total	**1**	**0**	**21**	**21**	**0**	**0**	**0**	**0**	**21**	**21**
Agricultural Extension										
Capacity Building and Group Dynamics / Others	1	17	4	21	0	0	0	17	4	21
Total	1	17	4	21	0	0	0	17	4	21
Grand Total	**3**	**25**	**26**	**51**	**9**	**2**	**11**	**34**	**28**	**62**

3.3.2 Vocational Training

Krishi Vigyan Kendras in Tamil Nadu, Andhra Pradesh, Telangana and Puducherry conducted vocational training courses to farmers, rural youth, school dropouts and women to create self employment and income generation in the rural areas. During 2017-18, a total of 265 vocational training courses were conducted in which 7353 farmers, women, rural youth and extension functionaries were participated (Table 3.3.22). The maximum number of courses were conducted on income generation activities (146) followed by crop production and management (47), post harvest technology and value addition (46), livestock and fisheries (10), *etc*.

Vocational training programme on millets at Gooty and Penukonda

Vocational training programme on herbal candles making for women (Jammikunta)

Table 3.3.22. Details of Vocational training programmes in Zone-X

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Commercial floriculture	17	64	16	80	14	7	21	78	23	101
Commercial fruit production	4	78	7	85	14	0	14	92	7	99
Commercial vegetable production	7	120	20	140	20	13	33	140	33	173
Integrated crop management	1	24	3	27	8	1	9	32	4	36
Organic farming	6	113	10	123	26	16	42	139	26	165
Others	12	150	6	156	30	7	37	180	13	193
Total	**47**	**549**	**62**	**611**	**112**	**44**	**156**	**661**	**106**	**767**
Post harvest technology and Value addition										
Value addition	44	102	685	787	14	259	273	116	944	1060
Others	2	24	3	27	1	1	2	25	4	29
Total	**46**	**126**	**688**	**814**	**15**	**260**	**275**	**141**	**948**	**1089**
Livestock and Fisheries										
Dairy farming	3	10	0	10	5	20	25	15	20	35
Sheep and goat rearing	3	13	0	13	20	10	30	33	10	43
Poultry farming	3	13	0	13	104	101	205	117	101	218

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Others	3	13	0	13	20	10	30	33	10	43
Total	**10**	**43**	**4**	**47**	**129**	**131**	**260**	**172**	**135**	**307**
Income generation activities										
Vermicomposting	10	137	15	152	44	9	53	181	24	205
Production of bio-agents, bio-pesticides	1	11	8	19	0	0	0	11	8	19
Bio-fertilizers, etc.	3	13	82	95	8	24	32	21	106	127
Repair and maintenance of farm machinery and implements	10	174	11	185	55	4	59	229	15	244
Rural Crafts	14	45	129	174	45	59	104	90	188	278
Seed production	3	28	36	64	6	9	15	34	45	79
Sericulture	2	36	0	36	7	0	7	43	0	43
Mushroom cultivation	55	385	303	688	78	88	166	463	391	854
Nursery, grafting, etc.	5	49	19	68	40	20	60	89	39	128
Tailoring, stitching, embroidery, dying, etc.	17	322	558	880	0	160	160	322	718	1040
Agril. para-workers, para-vet training	2	0	0	0	28	2	30	28	2	30
Others	21	361	326	687	423	372	795	784	698	1482
Total	**146**	**1659**	**1502**	**3161**	**774**	**757**	**1531**	**2433**	**2259**	**4692**
Agricultural Extension										
Capacity Building and Group Dynamics	8	72	30	102	34	115	149	106	145	251
Others	8	114	94	208	19	20	39	133	114	247
Total	**16**	**186**	**124**	**310**	**53**	**135**	**188**	**239**	**259**	**498**
Grand Total	**265**	**2563**	**2380**	**4943**	**1083**	**1327**	**2410**	**3646**	**3707**	**7353**

Table 3.3.23. Details of Vocational training programmes in Tamil Nadu

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Commercial floriculture	2	42	0	42	8	0	8	50	0	50
Commercial fruit production	2	58	7	65	0	0	0	58	7	65
Commercial vegetable production	4	104	15	119	1	0	1	105	15	120
Organic farming	4	77	2	79	14	0	14	91	2	93
Others	7	79	0	79	8	0	8	87	0	87
Total	**19**	**360**	**24**	**384**	**31**	**0**	**31**	**391**	**24**	**415**
Post harvest technology and value addition										
Value addition	14	61	224	285	9	52	61	70	276	346
Others	1	11	3	14	1	1	2	12	4	16
Total	**15**	**72**	**227**	**299**	**10**	**53**	**63**	**82**	**280**	**362**
Livestock and fisheries										
Integrated Farming	1	7	4	11	0	0	0	7	4	11
Total	**1**	**7**	**4**	**11**	**0**	**0**	**0**	**7**	**4**	**11**
Income generation activities										
Vermicomposting	3	70	12	82	14	7	21	84	19	103
Production of bio-agents, bio-pesticides	1	11	8	19	0	0	0	11	8	19
Bio-fertilizers, etc.	2	4	82	86	4	22	26	8	104	112
Repair and maintenance of farm	4	92	6	98	17	3	20	109	9	118

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
machinery and implements										
Rural Crafts	3	13	47	60	0	4	4	13	51	64
Seed production	3	28	36	64	6	9	15	34	45	79
Mushroom cultivation	8	106	27	133	7	5	12	113	32	145
Nursery, grafting, etc.	1	23	17	40	0	0	0	23	17	40
Tailoring, stitching, embroidery, dying, etc.	1	1	19	20	0	0	0	1	19	20
Others	6	71	131	202	4	38	42	75	169	244
Total	**32**	**419**	**385**	**804**	**52**	**88**	**140**	**471**	**473**	**944**
Agricultural extension										
Capacity building and group dynamics	1	0	0	0	23	15	38	23	15	38
Others	6	75	94	169	11	20	31	86	114	200
Total	**7**	**75**	**94**	**169**	**34**	**35**	**69**	**109**	**129**	**238**
Grand Total	**74**	**933**	**734**	**1667**	**127**	**176**	**303**	**1060**	**910**	**1970**

Table 3.3.24. Details of vocational training programmes in Andhra Pradesh

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Commercial floriculture	2	21	2	23	6	1	7	27	3	30
Commercial vegetable production	2	5	5	10	15	13	28	20	18	38
Others	3	36	1	37	12	2	14	48	3	51
Total	**7**	**62**	**8**	70	**33**	**16**	49	95	24	119
Post harvest technology and Value addition										
Value addition	29	41	432	473	5	205	210	46	637	683
Others	1	13	0	13	0	0	0	13	0	13
Total	**30**	**54**	**432**	**486**	**5**	**205**	**210**	**59**	**637**	**696**
Livestock and Fisheries										
Dairy farming	3	10	0	10	5	20	25	15	20	35
Sheep and goat rearing	3	13	0	13	20	10	30	33	10	43
Poultry farming	2	13	0	13	100	100	200	113	100	213
Total	**8**	**36**	**0**	**36**	**125**	**130**	**255**	**161**	**130**	**291**
Income generation activities										
Vermicomposting	1	13	0	13	0	0	0	13	0	13
Bio-fertilizers, etc.	1	9	0	9	4	2	6	13	2	15
Repair and maintenance of farm machinery and implements	5	70	5	75	35	1	36	105	6	111
Rural Crafts	11	32	82	114	45	55	100	77	137	214
Sericulture	2	36	0	36	7	0	7	43	0	43
Mushroom cultivation	47	279	276	555	71	83	154	350	359	709
Nursery, grafting, etc.	3	13	0	13	40	20	60	53	20	73
Tailoring, stitching, embroidery, dying, etc.	7	0	76	76	0	87	87	0	163	163
Agril. para-workers, para-vet training	2	0	0	0	28	2	30	28	2	30
Others	13	264	186	450	412	331	743	676	517	1193
Total	**92**	**716**	**625**	**1341**	**642**	**581**	**1223**	**1358**	**1206**	**2564**
Agricultural Extension										
Capacity building and group dynamics	3	98	15	113	40	10	50	138	25	163
Others	1	25	0	25	5	0	5	30	0	30
Total	**4**	**123**	**15**	**138**	**45**	**10**	**55**	**168**	**25**	**193**
Grand Total	**141**	**991**	**1080**	**2071**	**850**	**942**	**1792**	**1841**	**2022**	**3863**

Table 3.3.25. Details of Vocational training programmes in Telangana

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Commercial floriculture	13	1	14	15	0	6	6	1	20	21
Commercial fruit production	2	20	0	20	14	0	14	34	0	34
Commercial vegetable production	1	11	0	11	4	0	4	15	0	15
Integrated crop management	1	24	3	27	8	1	9	32	4	36
Organic farming	2	36	8	44	12	16	28	48	24	72
Others	2	35	5	40	10	5	15	45	10	55
Total	**21**	**127**	**30**	**157**	**48**	**28**	**76**	**175**	**58**	**233**
Post harvest technology and Value addition										

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Value addition	1	0	29	29	0	2	2	0	31	31
Total	**1**	**0**	**29**	**29**	**0**	**2**	**2**	**0**	**31**	**31**
Income generation activities										
Vermicomposting	6	54	3	57	30	2	32	84	5	89
Repair and maintenance of farm machinery and implements	1	12	0	12	3	0	3	15	0	15
Nursery, grafting, etc.	1	13	2	15	0	0	0	13	2	15
Tailoring, stitching, embroidery, dying,etc.	8	321	451	772	0	73	73	321	524	845
Others	1	1	9	10	2	3	5	3	12	15
Total	**17**	**401**	**465**	**866**	**35**	**78**	**113**	**436**	**543**	**979**
Agricultural Extension										
Capacity building and group dynamics	7	72	30	102	11	100	111	83	130	213
Others	2	39	0	39	8	0	8	47	0	47
Total	**9**	**111**	**30**	**141**	**19**	**100**	**119**	**130**	**130**	**260**
Grand Total	**48**	**639**	**554**	**1193**	**102**	**208**	**310**	**741**	**762**	**1503**

Table 3.3.26. Details of Vocational training programmes in Puducherry

Area of Training	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Livestock and Fisheries										
Poultry farming	1	0	0	0	4	1	5	4	1	5
Total	**1**	**0**	**0**	**0**	**4**	**1**	**5**	**4**	**1**	**5**
Income generation activities										
Tailoring, stitching, embroidery, dying, etc.	1	0	12	12	0	0	0	0	12	12
Total	**1**	**0**	**12**	**12**	**0**	**0**	**0**	**0**	**12**	**12**
Grand Total	**2**	**0**	**12**	**12**	**4**	**1**	**5**	**4**	**13**	**17**

3.4. Extension Activates

A total of 37056 activities were organized by KVKs in Zone-X involving 11,61,528 participants for creating awareness among farmers about latest improved agricultural technologies (Table 3.4.1). The extension activities includes advisory services, exposure visits, animal health camps, technology week, group discussions, method demonstrations, soil health camps, *kisan mela*, *kisan gosthi etc*. KVKs Tamil Nadu organized 18836 extension activities with 346195 participants. In Andhra Pradesh organized 11711 extension activities in which 619995 persons participated. In Telangana, 5819 activities were organized with the participation of 190373 people. In Puducherry 690 extension activities were organized with 4965 participants.

Table 3.4.1. Details of extension activities organized by KVKs in Zone-X

Activity	No. of activities	No. of farmers	No. of Extension officers	Total
Advisory services	18969	528968	15881	544849
Attended as resource person	188	7147	676	7823
Awareness programmes on PPV & FRA 2001	7	1050	94	1144
Celebration of important days	400	41685	2299	43984
Diagnostic visits	4076	21212	2298	23510
Exhibition	327	140838	4734	145572
Exposure visits	294	10874	644	11518
Ex-trainees Sammelan	10	275	51	326
Farm science club	56	1538	55	1593
Farmers' seminar/workshop	188	12030	1018	13048
Farmers visits to KVK	375	2900	40	2940
FFS	1	25	8	33
Field day	422	13968	847	14815
Field visit	420	1807	20	1827
Film show	616	33464	2259	35723
Mahila kisan divas	1	34	0	34
Group discussions	950	14712	2147	16859
Group meetings	14	198	28	226
Kisan ghosthi	87	7120	612	7732
Kisan mela	151	62148	3579	65727
Mana Telangana–Mana Vyavasayam	1	982	114	1096
Method demonstrations	1375	26289	1534	27823
Others	710	36477	3023	39500
Plant/animal health camps	432	7366	207	7573
PRA	5	421	92	513
Pre season campaign	4	233	16	249
Radio announcement	10			
Scientists' visit to farmers field	6574	120348	2351	122699
Self -help groups	223	3973	165	4138
Soil health camp	4	154	9	163
Special day celebration	161	17291	767	18058
World honey bee day	1	90	10	100
Week celebrations	4	321	12	333
Grand Total	**37056**	**1115938**	**45590**	**1161528**

Table 3.4.2. Details of Extension Activities organized by KVKs in Tamil Nadu

Activity	No. of activities	No. of farmers	No. of Extension Officers	Total
Advisory services	10280	36584	1870	38454
Awareness programmes	6	748	76	824
Celebration of important days	127	19130	733	19863
Diagnostic visits	1655	7751	590	8341
Exhibition	187	94874	3454	98328

Activity	No. of activities	No. of farmers	No. of Extension Officers	Total
Exposure visits	161	6494	361	6855
Ex-trainees sammelan	6	235	17	252
Farm science club	40	1146	45	1191
Farmers' seminar/workshop	117	8620	716	9336
Farmers visist to KVK	375	2900	40	2940
FFS	1	25	8	33
Field Day	190	6178	320	6498
Field visit	420	1807	20	1827
Film Show	455	24844	1769	26613
Group discussions	236	5478	1641	7119
Group meetings	14	198	28	226
Kisan ghosthi	14	1370	76	1446
Kisan mela	67	24042	1669	25711
Lectures delivered as resource persons	166	6174	428	6602
Method demonstrations	642	15150	983	16133
Others	586	29732	2824	32556
Plant/animal health camps	57	3210	66	3276
PRA	4	181	2	183
Pre season campaign	4	233	16	249
Radio announcement	10			
Scientists' visit to farmers field	2782	17492	578	18070
Self -help groups	159	2699	96	2795
Soil health camp	4	154	9	163
Special day celebration	71	10020	291	10311
Grand Total	18836	327469	18726	346195

Table 3.4.3. Details of extension activities organized by KVKs in Andhra Pradesh

Activity	No. of activities	No. of farmers	No. of Extension Officers	Total
Advisory services	5933	371124	13059	384183
Celebration of important days	169	18482	1304	19786
Diagnostic visits	1400	9465	1210	10675
Exhibition	97	36849	918	37767
Exposure visits	110	3800	248	4048
Ex-trainees sammelan	3	25	31	56
Farm science club	15	350		350
Farmers' seminar/workshop	26	2301	174	2475
Field day	167	5186	352	5538
Film show	73	5527	271	5798
Group discussions	417	6100	336	6436

Kisan ghosthi	36	3325	168	3493
Kisan mela	54	24791	1529	26320
Method demonstrations	529	7166	385	7551
Others	100	2885	82	2967
Plant/animal health camps	306	3360	117	3477
Scientists' visit to farmers field	2184	91675	1125	92800
Self -help groups	29	666	53	719
Special day celebration	59	4941	282	5223
Week celebrations	4	321	12	333
Grand Total	**11711**	**598339**	**21656**	**619995**

Table 3.4.4. Details of extension activities organized by KVKs in Telangana

Activity	No. of activities	No. of farmers	No. of Extension Officers	Total
Advisory services	2329	120626	931	121557
Attended as resource person	22	973	248	1221
Awareness programmes on PPV & FRA	1	302	18	320
Celebration of important days	101	3805	171	3976
Diagnostic visits	999	3950	491	4441
Exhibition	24	8417	223	8640
Exposure visits	23	580	35	615
Ex-trainees sammelan	1	15	3	18
Farm science club	1	42	10	52
Farmers' seminar/workshop	45	1109	128	1237
Field day	63	2548	175	2723
Film show	77	2792	214	3006
Group discussions	297	3134	170	3304
Kisan ghosthi	37	2425	368	2793
Kisan mela	30	13315	381	13696
Mana Telangana – Mana Vyavasayam	1	982	114	1096
Method demonstrations	198	3875	156	4031
Others	14	2552	38	2590
Plant/animal health camps	68	786	21	807
Scientists' visit to farmers field	1445	10862	634	11496
Self -help groups	13	306	16	322
Special day celebration	30	2269	163	2432
Grand Total	**5819**	**185665**	**4708**	**190373**

Entrepreneurship development programme - tailoring and fashion technology-CRIDA-Hyderabad

Lecture delivered to farmers on Expert systems through Android applications-Karur

World honey bee day celebration at Erode

Women Farmers meeting in Village Balijarala Tanda on Women Farmers' Day & World Food Day

Table 3.4.5. Details of extension activities organized by KVKs in Puducherry

Activity	No. of activities	No. of farmers	No. of Extension Officers	Total
Advisory services	427	634	21	655
Celebration of important days	3	268	91	359
Diagnostic visits	22	46	7	53
Exhibition	19	698	139	837
Field day	2	56		56
Film show	11	301	5	306
Mahila kisan divas	1	34		34
Method demonstrations	6	98	10	108
Others	10	1308	79	1387
Plant/animal health camps	1	10	3	13
Pre season campaign	1	240	90	330
Scientists' visit to farmers field	163	319	14	333
Self - help groups	22	302		302
Special day celebration	1	61	31	92
World honey bee day	1	90	10	100
Total	**690**	**4465**	**500**	**4965**

Technology week and *kisan* mobile advisories

A total of 27028 farmers participated in the technology week celebrations organized by the KVKs in Zone-X. The details of various activities organized during technology week are presented in Table 3.4.6.

Table 3.4.6. Details of technology week celebrations in KVKs in Zone-X

Activity	Tamil Nadu		Andhra Pradesh		Telangana		Zone-X	
	Q/No.	NF	Q/No.	NF	Q/No	NF	Q/No.	NF
Bio fertilizers (q)	3	108					3	108
Bio product distribution (Kg)	115	683					115	683
Diagnostic practices	11	199	12	180			23	379
Distribution of fingerlings								
Distribution of Literature (No.)	1759	6235	2	133	8	650	1769	7018
Distribution of Seed (q)	2	80	1	20			3	100
Exhibition	14	1775	2	177	1	700	17	2652
Fair	3	1696	2	156	4	875	9	2727
Farm Visit	29	1219	56	334	4	156	89	1709
Film show	30	2304	4	186	2	350	36	2840
Gosthies	3	525	5	732			8	1257
Lectures organized	49	1994	5	365	24	1320	78	3679
Total number of farmers visited the technology week		2546		670		660		3876
Grand Total		**19364**		**2953**		**4711**		**27028**

Title

Title

Kisan Mobile Advisories

To disseminate the latest information, knowledge on weather, market prices on various commodities, livestock and crop based technologies to the farmers, Kisan Mobile advisories were given by KVKs through text and voice messages.

Table 3.4.7. Details of Kisan Mobile Advisories

Category	Type of messages	Tamil Nadu		Andhra Pradesh		Telangana		Total	
		NM	NF	NM	NF	NM	NF	NM	NF
Crop	Text only	446	683392	725	47933	214	64152	1385	795477
	Voice & Text both			655	3574			655	3574
	Voice only	27	31245	67	6564			94	37809
	Grand Total	**473**	**714637**	**1447**	**58071**	**214**	**64152**	**2134**	**836860**
Livestock	Text only	68	88389	56	8817	8	16422	132	113628
	Voice & Text both			25	3024			25	3024
	Voice only	24	23157	25	3024			49	26181
	Grand Total	**92**	**111546**	**106**	**14865**	**8**	**16422**	**206**	**142833**

Category	Type of messages	Tamil Nadu		Andhra Pradesh		Telangana		Total	
		NM	NF	NM	NF	NM	NF	NM	NF
Weather	Text only	18	54196	24	8665	13	26221	55	89082
	Voice & Text both								
	Voice only								
	Grand Total	**18**	**54196**	**24**	**8665**	**13**	**26221**	**55**	**89082**
Marketing	Text only	33	38863	56	5519			89	44382
	Voice & Text both			4	3024			4	3024
	Voice only	12	17214	2	3024			14	20238
	Grand Total	**45**	**56077**	**62**	**11567**	**0**	**0**	**107**	**67644**
Awareness	Text only	73	310015	48	17388	19	20653	140	348056
	Voice & Text both			20	3024			20	3024
	Voice only			10	3024			10	3024
	Grand Total	**73**	**310015**	**78**	**23436**	**19**	**20653**	**170**	**354104**
Other enterprise	Text only	33	29811	34	8148	9	16101	76	54060
	Voice & Text both			10	3021			10	3021
	Voice only			5	3024			5	3024
	Grand Total	**33**	**29811**	**49**	**14193**	**9**	**16101**	**91**	**60105**

Table 3.4.8. Details of other Mobile Advisories

Category	Type of messages	Tamil Nadu		Andhra Pradesh		Telangana		Total	
		NM	NF	NM	NF	NM	NF	NM	NF
Crop	Text only	3540	24703	388	10676	450	17515	4378	52894
	Voice & Text both	51	750	29	6812	200	200	280	7762
	Voice only	195	33028	47	12383	575	4111	817	49522
	Grand Total	**3786**	**58481**	**464**	**29871**	**1225**	**21826**	**5475**	**110178**
Livestock	Text only	353	5169	59	2462	671	2980	1083	10611
	Voice & Text both	4	306	2	1600	0	0	6	1906
	Voice only	96	24192	12	3767	1237	1237	1345	29196
	Grand Total	**453**	**29667**	**73**	**7829**	**1908**	**4217**	**2434**	**41713**
Weather	Text only	278	13485	72	4783	19	1469	369	19737
	Voice & Text both	6	120	3	800	5	5	14	925
	Voice only	5	938	3	2400	16	10	24	3348
	Grand Total	**289**	**14543**	**78**	**7983**	**40**	**1484**	**407**	**24010**
Marketing	Text only	508	2889	13	2941	14	1250	535	7080
	Voice & Text both	14	336	39	770	0	0	53	1106
	Voice only	64	17931	5	1600	29	29	98	19560
	Grand Total	**586**	**21156**	**57**	**5311**	**43**	**1279**	**686**	**27746**
Awareness	Text only	235	5311	43	5228	1532	23777	1810	34316
	Voice & Text both	8	645	5	800	0	0	13	1445
	Voice only	60	2819	8	3000	68	66	136	5885
	Grand Total	**303**	**8775**	**56**	**9028**	**1600**	**23843**	**1959**	**41646**

Other enterprise	Text only	137	7957	25	2315	238	1488	400	11760
	Voice & Text both	7	645	6	810	81	81	94	1536
	Voice only	11	635	1	750	708	706	720	2091
	Grand Total	**155**	**9237**	**32**	**3875**	**1027**	**2275**	**1214**	**15387**

Table 3.4.9. Details of other extension programmes

Category	Tamil Nadu		Andhra Pradesh		Telangana		Puducherry		Zone-X	
	No. of activities	KVK	No. of activities	KVK	No. of activities	KVK	No. of activities	KVK	No. of activities	KVK
Animal health camps (No. of animals treated)	4154	20	196	12	2	8			4352	40
Bimonthly Newsletters (English, Telugu)					10	1			10	1
Electronic Media (CD./DVD)	152	20	9	10	14	9			175	39
Extension Literature	572	25	73	17	105	10	16	1	766	53
Farmers visit to KVK					4935	1			4935	1
Lectures delivered as resource persons					26	1			26	1
News paper coverage	840	26	1627	17	872	10	33	2	3372	55
Others	25	16	122	8	10	7			157	31
Popular articles	262	23	197	17	128	10	2	1	589	51
Radio Talks	327	25	149	18	101	9	8	2	585	54
Registration of farmers through AKPS					600	1			600	1
Research articles			4	1					4	1
Success stories					7	1			7	1
TV Talks	220	26	71	15	80	10	9	1	380	52
Grand Total	**6552**	**181**	**2448**	**115**	**6890**	**78**	**68**	**7**	**15890**	**374**

3.5 Publications

The KVKs of Zone-X have brought out 3526 publications, which include 717 popular articles, 505 leaflets/folders/pamphlets, 420 technical reports, 197 Research Papers, 136 Books/ Brochures, viz. CD/VCD/DVDs etc. and provided to the farmers and other clientele. The details are given in Table 3.5.1

Table 3.5.1. Details of Publications by KVKs

Types of Publications	Tamil Nadu	Andhra Pradesh	Telangana	Puducherry	Grand Total
Books Chapter	23	9	7	0	39
Books	55	10	16	1	82
Conference Papers	125	23	3	1	152
Extension Folders	92	59	14	2	167
Folders	47	39	19	0	105
Leaflets	98	28	21	4	151
Pamplets	157	59	33	0	249
Brochures	28	12	14	0	54

Poster Presentation	51	23	14	0	88
Ongoing Research Projects	10	24	0	0	34
Pocket Cards & Dairy	1	10	0	0	11
Popular Articles	341	270	106	0	717
Research Papers	83	80	33	1	197
Seminar Papers	40	18	0	0	58
Success Stories	101	60	35	2	198
Technical Bulletins	76	24	4	0	104
Technical Reports	141	179	100	0	420
Training Manual	113	17	33	1	164
Workshops	86	58	46	3	193
Others	102	231	10	0	343
Grand Total	**1770**	**1233**	**508**	**15**	**3526**

News letters published

STATE	KVK	Type of news letters published	
Tamil Nadu	Cuddalore	Aerkalam (Quarterly)	4
Tamil Nadu	Dharmapuri	Newsletter (April2017 – June 2017)	Quarterly
Tamil Nadu	Nagapattinam	UZHAVAN-News letter(each 100)	3
Tamil Nadu	Salem	Ermunai	2
Tamil Nadu	Villupuram	Velan Kathir	2
Tamil Nadu	Namakkal	KVK quartly newsletter	4
Tamil Nadu	Coimbatore	Kovai Velanmai	500
Tamil Nadu	Erode	Uzhavar Malar	4000
Tamil Nadu	Krishnagiri	Uzavar Thunaivan	3
Tamil Nadu	Perambalur	Jan 2017 – June 2017 Newsletter	200
Tamil Nadu		Jul 2017 – Dec 2017 Newsletter	200
Tamil Nadu	Theni	4	1000
Tamil Nadu	Tiruvannamalai	Pasumai kathir	2
Tamil Nadu	Tuticorin	Velan Thunaivan	5000
Tamil Nadu	Ariyalur	Seithi Malar	500
Andhra Pradesh	Anantapur (Reddipalli)	e- News letter Quarterly	Circulating online
Andhra Pradesh	East Godavari (Kalavacherla)	CTRI News letter	Quarterly
Andhra Pradesh	Guntur (Lam)	E bulleitn SVVU	10
Telangana	Adilabad	Krishi Vigyan Kendra, Adilabad	2
Telangana	Nizamabad (Rudrur)	KVK Rudrur Bi- Monthly news letters (English & Telugu)	50

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

One of the responsibilities of KVKS are to act as Knowledge and resource center. Hence KVKs produced and supplied to the farmers 6335quintals of seed of cereals, 258 quintals of oilseeds, about 1573quintals of pulses and supplied to about 37447 farmers. (Table 3.6.1)

Table 3.6.1. Production and supply of seed

Category	Tamil Nadu			Andhra Pradesh			Telangana			Puducherry			Zone-X		
	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	Quantity (q)	Value (Rs)	No. of farmers
Cereals	1138	1654237	1235	1629	5650487	267	3278	9789190	3892	291	1033763	969	6335	18127677	6363
Oilseeds	115	823815	20555	138	702540	12	5	2000	128				258	1528355	20695
Pulses	482	5786273	1061	781	5826153	99	311	2689000	757				1573	14301426	1917
Fodder	189	7310986	8425	1	27000	1	1	34000	12	0	225	1	191	7372211	8439
Spices	11	13200	23	10	5500								21	18700	23
Sesbania	2	8800	10										2	8800	10
Grand Total	**1937**	**15597311**	**31309**	**2558**	**12211680**	**379**	**3594**	**12514190**	**4789**	**291**	**1033988**	**970**	**8380**	**41357169**	**37447**

Planting material

A total of 1425765 slips of fodder crops, 380759 vegetable seedlings of tomato, brinjal, chillies etc, 58528 saplings of forestry and plantation were supplied to 81817 farmers in the Zone. (Table 3.6.2)

Table3.6.2. Production and supply of planting material

Category	Tamil Nadu			Andhra Pradesh			Telangana			Puducherry			Zone-X		
	Number	Value (Rs	No of farmers	Number	Value (Rs)	No of farmers	Number	Value (Rs)	No of farmers	Number	Value (Rs)	No of farmers	Number	Value (Rs)	No of farmers
Vegetables	53950	38516	400	181800	73520	2	33000	16500	30	112009	45174	180	380759	173710	612
Fodder	747025	489785	16641	203200	89780	121	457500	196500	60	18040	9020	26	1425765	785085	16848
Fruits	37871	1843614	2692	61993	338890	325	88595	915880	13348	14879	354478	1074	203338	3452862	17439
Forestry/ Plantation	12928	239260	426	45600	1368000	45600							58528	1607260	46026
Ornamental	756	14905	106	92250	109803					5497	133700	412	98503	258408	518
Fibre	4000	8000	2										4000	8000	2
Medicinal & Aromatic	5072	11810	35							2620	52400	325	7692	64210	360
Sugarcane										620	150350	12	620	150350	12
Grand Total	**861602**	**2645890**	**20302**	**584843**	**1979993**	**46048**	**579095**	**1128880**	**13438**	**153665**	**745122**	**2029**	**2179205**	**6499885**	**81817**

Bio-products and bio-agents

A total of 50876 kg of bio fertilizers, 15905.5 kg of bio pesticides and others were supplied to farmers details of which are as in (Table 3.6.3)

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

Category	Tamil Nadu			Andhra Pradesh			Telangana			Puducherry			Grand total		
	Quantity (Kg)	Value (Rs.)	No of farmers	Quantity (Kg)	Value (Rs.)	No of farmers	Quantity (Kg)	Value (Rs.)	No of farmers	Quantity (Kg)	Value (Rs.)	No of farmers	Quantity (Kg)	Value (Rs.)	No of farmers
Bio-fertilizer	49384.75	439814.5	1734	753	4050	56	527.5	11000	108	211	4610	178	50876.25	459474.5	2076
Bio-fungicide	3834.73	389873	1295	892	0	0	0	0	0	681.1	93881.5	450	5407.83	483754.5	1745
Bio-pesticide	9277.5	1026010	3297	0	0	0	0	0	0	6628	1057305.7	5040	15905.5	2083316	8337
Other bio-product	23654.4	1786712	4953	0	0	0	0	0	0	4024	118252	2074	27678.4	1904964	7027
Compost	115803	611693	32837	196000	36000	184	289250	1499562	140	0	0	178	601053	2147255	33339
Grand Total	**201954.38**	**4254102.5**	**44116**	**197645**	**40050**	**240**	**289777.5**	**1510562**	**248**	**11544.1**	**1274049.2**	**7742**	**700921**	**7078764**	**52524**

3.6.2 Livestock Species

A total of 583981 live stock species, comprising of Fish spawn/seed of 526948 numbers, 51069 back yard poultry chicks, 252 dairy animals and 5701 sheep and goat have been produced and provided to the farmers (Table 3.6.4).

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

Category	Tamil Nadu		Andhra Pradesh		Telangana		Puducherry		Zone-X	
	Number	Value (Rs)	Number	Value (Rs)	Number	Value (Rs)	Number	Value (Rs)	Number	Value (Rs)
Dairy animals	45	781310	68	382700			139	171367	252	1335377
Fisheries	29803	109200	11000	200000	395000	226250	91145	166109	526948	701559
Piggery	11	67600							11	67600
Poultry	31326	1192541	14394	1098251	5345	3735565	4	1552	51069	6027909
Sheep & Goat	5525	1239578	164	445900	12	86000			5701	1771478
Grand Total	**66710**	**3390229**	**25626**	**2126851**	**400357**	**4047815**	**91288**	**339028**	**583981**	**9903923**

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 33893 samples including soil (30052), water (3563), plant (259), manure (19) samples were analyzed by the KVKs benefitting 32866 farmers of 4428 villages (Table **3.6.5.**).

Table 3.6.5. Total Soil and water testing by KVKs of Zone-X

Samples	Zonal Total			
	No. of Samples	**No. of Farmers**	**No. of Villages**	**Amount realized (Rs.)**
Soil	30052	29608	3213	2371470
Water	3563	3138	1109	195725
Plant	259	108	100	5800
Manure	19	12	6	1050
Grand Total	**33893**	**32866**	**4428**	**2574045**

Table 3.6.6. Details of soil and water testing by KVKs

	Tamil Nadu				Andhra Pradesh				Telangana				Puducherry			
Samples	**NS**	**NB**	**NV**	**Amount (Rs.)**	**NS**	**NB**	**NV**	**Amount (Rs.)**	**NS**	**NB**	**NV**	**Amount (Rs.)**	**NS**	**NB**	**NV**	**Amount (Rs.)**
Soil	10086	9219	1900	508855	11174	29346	845	737155	8584	9006	417	1111160	208	177	51	14300
Water	2766	354	983	145495	694	305	55	31430	81	19	51	13720	22	0	20	5080
Plant	105	8	97	0	58	0	2	5800	0	0	0	0	96	0	1	0
Manure	16	0	5	900	0	0	0	0	0	0	0	0	3	0	1	150
Grand Total	**12973**	**9581**	**2985**	**655250**	**11926**	**29651**	**902**	**774385**	**8665**	**9025**	**468**	**1124880**	**329**	**177**	**73**	**19530**

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

3.7 Rainwater Harvesting

The details of training programmes on rainwater harvesting conducted by KVKs are given in Table 3.7.1. A total of 116 courses were conducted for 6554 farmers and farmwomen and extension personnel.

Table 3.7.1. Details of training programmes conducted on rainwater harvesting

State	KVK	No. of Training programmes	No. of Demonstration	No. of plant materials produced	Visit by farmers (No.)	Visit by officials (No.)
Tamil Nadu	Dharmapuri	2	2	Nil	220	12
Tamil Nadu	Vellore	2	3	35	145	58
Tamil Nadu	Shivagangai	15	2	125000 protray seedlings	215	38
Tamil Nadu	Coimbatore	11	11	3000	472	36
Tamil Nadu	Dindigul	17	11a	400 Acidlime layers	1245	17
Tamil Nadu	Perambalur	2	2	40	360	26
Tamil Nadu	Tuticorin	2-Drought management practices- Drip and sprinkler	2-Demo on Drip and rain gun	--	162	6

State	KVK	No. of Training programmes	No. of Demonstration	No. of plant materials produced	Visit by farmers (No.)	Visit by officials (No.)
		irrigation				
Tamil Nadu	Tuticorin	2-Fodder production through hydroponics system	2-Live demonstration on fodder production through Hydroponic	--	186	6
Andhra Pradesh	Anantapur (Reddipalli)	2	5	-	1053	73
Andhra Pradesh	Anantapur (Kalyandurg)	4	8	-	324	53
Telangana	Karimnagar (Jammikunta)	8	8	0	169	12
Telangana	Mahabubnagar (YFA)	5	0	0	0	0
Telangana	Ranga Reddy	19	38	0	535	19

3.8 Technological Backstopping

The responsibility of technology backstopping, capacity building, monitoring and review of activities of KVKs is vested with directorates of extension of state agricultural universities (SAUs) of the zone and also with ATARI. A total of 45 events related to training programmes, meetings, seminars, workshops and HRD programmes were conducted by directorates of extension of agricultural, horticultural, veterinary and fisheries universities present in the three states of Andhra Pradesh, Telangana and Tamil Nadu during 2017-18 for the benefit of 2360 members of staff of KVKs in the zone. The officials of directorates of extension of SAUs made 84 visits to 47 KVKs to monitor and review the activities and to take stock of the infrastructural facilities available and also the constraints faced by the KVKs operating in the jurisdiction of their respective universities.

Table 3.8.1. Details of training programmes and meetings conducted by SAUs and ATARI

S.No.	SAU/ATARI	No. of meetings	No of participants
1	ANGRAU, Lam, Guntur	8	179
2	PJTSAU, Hyderabad	12	910
3	SVVU, Tirupathi, A.P	3	90
4	Dr.YSRHU, V.R.Gudem, A.P	5	133
5	TNAU, Coimbatore , Tamil Nadu	6	298
6	ATARI, Hyderabad	11	750
	Total	**45**	**2360**

Table 3.8.2. Details of visit by officials of directorate of extension of SAUs to KVKs

S.No	Name of SAU	No. of visits	No. of KVKs
1	ANGRAU, Lam, Guntur	21	18
2	PJTSAU, Hyderabad	11	9
3	Dr. YSRHU,V.R.Gudem, A.P	28	4
4	SVVU, Tirupathi, A.P	8	1
5	TNAU	16	15
	Total	**84**	**47**

3.9 Agricultural Technology Information Centre (ATIC)

Three Agricultural Technology Information Centres (ATICs) are operational in Zone-X, one each at three state agricultural / veterinary universities *viz*., Professor Jayashankar Telangana State Agricultural University (PJTSAU), Tamil Nadu Agricultural University (TNAU) and Tamil Nadu University of Veterinary and Animal Sciences (TANUVAS). The ATICs are vested with the responsibility of providing farmers with enhanced access to sources of information related to agriculture and allied sectors and also critical technology products and services. The three ATICs provided technology information, technology products, agro-advisory and conducted exposure visits to 2205, 176, 1421 and 35 farmers respectively on their visits to the centres during 2017-18. Publications *viz*., books, technical bulletins, CDs and DVDs were supplied by the three ATICs benefitting 17780 farmers during the year. Technology services like soil and water testing and plant diagnostic visits to farmers' fields were also rendered by ATICs to benefit 2363 farmers. Technology services like capacity building programmes were also conducted benefitting 406 officers in the line departments. Agro/veterinary services provided by ATICs could benefit 248420 farmers during the year under report.

Table 3.9.1. Details of visit of farmers to ATICs

Nature of visit	Number of farmers			
	PJTSAU	TANUVAS	TNAU	Total
Technology information	721	797	687	2205
Technology products	392	1021	363	1776
Agro-advisory	584	623	214	1421
Exposure visits	0	35	0	35

Table 3.9.2. Details of publications by ATICs

Nature of publication	Unit	PJTSAU	TANUVAS	TNAU	Total
Books	Number	1	1	1	3
	No. of copies	6000	3556	278	9834
	Revenue	720000	20463		740463
	No. of farmers	6000	932	278	7210
Technical bulletins	Number	3	19	0	22
	No. of copies	9908	19	0	9927
	Revenue	172930	564	0	173494

Nature of publication	Unit	PJTSAU	TANUVAS	TNAU	Total
	No. of farmers	9908	4	0	9912
CD, DVD and Video film	Number	2	0	1	3
	No. of copies	468	0	190	658
	Revenue	18720	0	0	18720
	No. of farmers	468		190	658

Table 3.9.3. Technology products provided by ATICs

Technology products provided	Quantity / Number	No. of farmers benefited
Seed (q)	205.55	1059
Planting material (No.)	2682	97
Livestock species	380	177
Poultry birds (Number)	5500	40
Bio-products (q)	12.55	403

Table 3.9.4. Technology services provided by ATICs

Service rendered	No. of farmers
Soil and water testing	1004
Plant diagnostics visits	1359
Services rendered to line Departments	406
Agro/Veterinary Advisory Services	248420

PROJECTS

3.10 National Innovations in Climate Resilient Agriculture (NICRA)

National Innovations in Climate Resilient Agriculture (NICRA) is a multi-institutional and multi-disciplinary network project launched by ICAR in 2011. The project aims to enhance resilience of Indian agriculture to climate change and climate variability through strategic research and technology demonstrations. Technology Demonstration Component is the lifeline of NICRA and was implemented through Krishi Vigyan Kendras (KVKs) during 2017-18 in 11 climatically vulnerable districts located in the states of Andhra Pradesh, Telangana and Tamil Nadu under ATARI, Hyderabad. These include KVKs of Anantapur, Chittoor, Kurnool, Srikakulam and West Godavari in Andhra Pradesh (5 KVKs). Khammam and Nalgonda in Telangana (2 KVKs) and Nammakal, Ramanathapuram, Villupuram and Tiruvarur in Tamil Nadu (4 KVKs).

Under the project, KVKs conducted demonstration of climate resilient technologies in four modules *viz*., NRM, crop production, livestock and fisheries and institutional interventions besides conducting capacity building and extension activities related to these technologies. Demonstrations were organized covering an area of 875.34 ha under NRM interventions *viz*., water harvesting and recycling, *in-situ* moisture conservation, ground water recharge, micro-irrigation, improved drainage and various resource conservation techniques. Under crop production module various interventions *viz*., drought tolerant, flood tolerant and short duration varieties, location specific intercropping systems, crop diversification, pest and disease management, nutrient management *etc*., were taken up on 898.8 ha. Under livestock and fisheries interventions 2150 farmers were covered on improved fodder production, hydroponic method of fodder production, silage making, breed upgradation, improved breeds of backyard poultry, management of fish ponds *etc*. Under institutional interventions like custom hiring center, fodder bank and seed bank 4509 farmers were benefited. Through capacity building and extension activities awareness on climate resilient technologies was brought among 2971 and 8013 farmers respectively.

Renovation of *Burrakunta*, a local water storage tank: KVK, Kurnool

The project committee of NICRA proposed to de-silt the existing percolation tank (*Burrakunta*) for deepening and use of tank silt for marginal soils to improve soil physical properties and fertility. The de-silting of *Burrakunta* (PT) was taken up during July 2012 and 1260 Cu.mt silt was excavated. The silt was applied to 6 ha covering 10 farmers and transportation cost was borne by the farmers. The silting

resulted in recharge of 40 bore wells in the vicinity of the tank and water table was maintained at 110-120 feet even during November and December, 2017 when no rain fall occurred.

Table 3.10.1. Impact of desilting of *Burrakunta* on bore well recharge during 2017-18 in Kurnool

Month	Water table in the bore well (ft)	Availability of water in water storage structure (ft.)	Average area irrigated (acre) / bore well	Rainfall (mm)
June-17	140	2.0	-	168.0 (8)
July-17	140-165	2.0	**2.0**	000.0
Aug.-17	126	4.0	**5.0**	136.0 (6)
Sept.-17	65	8.0	**6.0**	272.7 (7)
Oct.-17	90-95	6.0	**6-8**	221.8 (11)
Nov.-17	100-110	5.0	**6-8**	000.0
Dec.-17	110-120	3.5	**4-6**	000.0

Burrakunta tank with harvested rain water after desilting – Kurnool

In-situ moisture conservation in *Kharif* groundnut through sub-soiling with chisel plough - KVK , Reddipalli (Anantapur)

Sub-soiling with chisel plough was demonstrated as a successful in-situ moisture conservation measure in *kharif* groundnut in Anantapur district where soils are shallow, slopy with low moisture retention capacity. The practice resulted in enhanced yield of both pods and haulms of groundnut by 45.9 and 54.6 per cent respectively due to increased availability of water at critical stages of the crop.

Table 3.10.2. Impact of sub-soiling with chisel plough on the yield and economics of *Kharif* groundnut – KVK, Anantapur

Practice	Pod yield (kg/ha)	Haulm yield (kg/ha)	Cost of cultivation (Rs/ha)	Gross returns (Rs/ha)	Net returns (Rs/ha)	B:C ratio
Sub soiling	1863	2608	27650	75079	47429	2.7
No-sub soiling	1277	1687	22500	51262	28762	2.3
% increase in yield	45.9	54.6				

Sub-soiling with chisel plough in Groundnut - KVK, Ananthapur

Performance of drought tolerant variety, Dharani – KVK, Namakkal

The drought tolerant and high yielding variety of groundnut, Dharani was demonstrated at Namakkal for its performance under low rainfall situation along with micro-nutrient management during flowering and pegging stages. Dharani out yielded the local variety T-9 by 205 kg / ha and gave higher net returns of Rs. 32600/ha compared to Rs. 22,200/ha in the local check.

Table 3.10.3. Performance of groundnut variety Dharani at Namakkal, Tamil Nadu

Treatments	Seed yield (kg/ha)	Haulm Yield (kg/ha)	Cost of cultivation (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C ratio
Farmers practice (T-9)	815	2450	33,550	55,750	22,200	1:66
Improved varieties (Dharani)	1020	2760	33,400	66,000	32,600	1.97

Dharani, drought tolerant variety of Groundnut – KVK, Namakkal

Zero tillage maize cultivation – KVK, Srikakuklam

With a view to utilize residual soil moisture available after paddy harvesting and to utilize water available in Jagannadanaidu tank for crop diversification, maize was grown under zero till situation in place of blackgram which was yielding low due to YMV and adverse effect of low temperature during winter. This practice brought down cost of cultivation by Rs.2100/ha and gave higher net returns ofRs.7128/ha compared to normal method of maize cultivation.

Table 3.10.4. Performance of zero tillage in maize at KVK, Srikakuklam

Treatments	Yield (kg/ha)	Cost of cultivation (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C ratio
Zero tillage maize	7646	36400	91752	55352	2.5:1
Normal cultivation of maize	7052	38500	84624	46124	2.1:1

Field Visit on Zero Tillage Maize – KVK, Srikakulam

Utilization of crop residues for silage making – KVK, Namakkal

In order to circumvent the twin problems of unavailability of nutritious green fodder during summer lean months and burning of residues of small onion, the major crop of the operational area, KVK, Namakkal demonstrated the method of silage making utilizing small onion crop residues. This practice resulted in utilization of otherwise wasted and burnt crop residue and also enhanced milk yields and net returns during summer months.

Table 3.10.5. Influence of silage as a feed of livestock

Parameter with unit	Demo	Check
Milk yield (l/day)	6.5	6
SNF content (%)	7.8	7.8
Fat content (%)	3.4	3.4
Gross cost (Rs.)/peak lactation of 100days	12600	15600
Gross return (Rs.)/ peak lactation of 100days	26000	24000
Net return (Rs.)/ peak lactation of 100days	13400	8400
BCR	2.1	1.5

Silage making with small onion crop residue – KVK, Nammakal

3.11. Attracting and Retaining Youth in Agriculture (ARYA)

Attracting and Retaining Youth in Agriculture (ARYA), a project launched by agricultural extension division of ICAR during March 2015 aims to create interest and confidence among rural youth in agriculture by demonstrating the potential of enterprises based on agriculture and allied sectors to be profitable and reliable sources of livelihood in rural areas. This endeavour is expected to result in rural youth being retained in villages and prevention of migration of youth to urban areas in search of livelihood. The main objectives of the project are to attract rural youth to take up various agriculture, allied and service sector enterprises, to enable youth to establish net work groups to take up capital and resource intensive activities like processing, value addition and marketing and to demonstrate linkages with different stake holders for sustainable development of youth. This is envisioned to be achieved through imparting skill trying to youth with the right aptitude to be self reliant and facilitating establishment of enterprise units either singly or in groups by providing necessary critical inputs both general and capital. ARYA has been implemented by three KVKs in Zone-X *viz*., Nellore in Andhra Pradesh, Nalgonda (Kampasagar) in Telangana and Kanyakumari in Tamil Nadu.

KVK, Nellore established 60 enterprise units related to mushroom production, vermicompost production and production of vegetable and fruit nurseries benefitting 203 rural youth in the district. “Sri Gayatri nursery” established by a group of six rural youth in *Kalikivay* village of the district under ARYA project has been run very successfully and producing seedlings of acid lime and sweet orange fetching a net profit of Rs.2,53,000 to the group within a span of six months. Two groups of youth (5 and 4 members each) established mushroom production units in Purandarapuram village that produced both milky oyster mushrooms and made profits averaging Rs.35000 annually. Eighteen enterprise units related to vermicomposting, Integrated Farming System (IFS) and vegetable nurseries were established in Nalgonda district under the project benefitting 23 rural youth during 2017-18. Four commodity groups (Banana fibre extraction and value addition, banana dehydration and flour making, value added products from pseudostem and flower and novel bakery products from banana) of 25 farmers each were established and

the registration process of the groups is underway. The members of the groups have been provided with complete knowledge and skill on processing, value addition and marketing of banana through capacity building programmes involving small scale farmers and aspiring entrepreneurs of Kanyakumari district. They were also taken on exposure visits to various existing enterprise units for motivating them and to learn the techniques of running the units successfully. Similarly four different commodity groups (desiccated coconut, coconut jelly and confectionery, tender coconut and novel bakery products from coconut) were formed with 25 members in each group. Skill training cum demonstration on the coconut dehydration was imparted to the members of the first group taking up production of desiccated coconut products. The machinery *viz*., pulveriser, cabinet tray dryer, tender coconut snow ball making machine, coconut trimming machine were installed and FSSAI licensing obtained (two years) for the established of KVK-ARYA incubation centre at KVK campus. Site selection for the four enterprises under ARYA-Banana and four enterprises under ARYA-Coconut was made towards the registration of the commodity groups.

KVK, Nellore organized 4 different skill training programmes on vermicomposting, raising of fruit and vegetable nursery, construction of shade nets and portray nursery technology and mushroom production benefitting 344 rural youth. In Nalgonda, KVK, Kampasagar organized 4 skill training programmes related to bakery, IFS, vermicomposting and vegetable nursery production under shade net involving 123 rural youth of the district. KVK, Kanyakuamri in Tamil Nadu conducted three skill training programmes on value addition to banana fibre, banana fibre extraction and value addition to banana pseudostem and flower benefitting 27 rural youth. Three exposure visits were also organized to banana fibre handicraft cottage level unit, Kolvel, Nanjil Food Products on value addition to pseudostem and inflorescence and department of Catering Science and Technology, Immamuel Arasar College of Catering Science and Management, Natalam involving 29 rural youth.

Table 3.11.1. Establishment of enterprise units during 2017-18

S.No	State	Name of KVK	Name of enterprise established	No. of units established	No. of youth benefitted
1	Andhra Pradesh	Nellore	Vegetable and fruit nurseries	19	64
			Vermicompost	20	64
			Mushroom units	21	75
2	Telangana	Nalgonda (Kampasagar)	Vegetable nursery unit	1	5
			Vermicompost units	9	10
			IFS units	8	8

Table 3.11.2. Skill Training programmes organized to rural youth during 2017-18

S.No	State	Name of KVK	Training programme organized	No. of youth trained
1	Andhra Pradesh	Nellore	Vermicompost production (3 programmes)	115
			Raising of Fruits and Vegetable nursery under shade net	52
			Training programme on Construction	20

S.No	State	Name of KVK	Training programme organized	No. of youth trained
			methodology of shade net units and portray nursery technology	
			Mushroom production (4 programmes)	157
2	Telangana	Nalgonda (Kampasagar)	Commercial nursery raising of vegetables under shade net houses	30
			Bakery products	33
			Vermicompost production	30
			Integrated farming system	30
3	Tamil Nadu	Kanyakumari	Banana dehydration and banana flour making in KVK	7
			Banana fibre extraction at Valiyattinmugham, Thiruvattar block	14
			Value added products from banana pseudostem and banana flower at Kodupaikuzhi, Kurunthencode block	6
			Exposure visit to Banana fibre handicraft cottage level unit, Kolvel	14
			Exposure visit to value added products from banana pseudostem and banana flower at Nanjil Food Products	6
			Novel bakery products practical orientation in the Department of Catering Science and Technology, Immamuel Arasar College of Catering Science and Management, Natalam	9

IFS unit Backyard poultry (Rajasri)- KVK, Nalgonda

Mushroom unit in Puradharapuram- KVK, Nellore

Tomato nursery in shadenet - KVK, Nalgonda

Training on bakery products from banana-KVK, Kanyakumari

Training on banana fibre extraction- KVK, Kanyakumari

Training on novel bakery products from coconut- KVK, Kanyakumari

Training programme on shadenet construction - KVK, Nellore

Vermicompost_unit - KVK, Nalgonda

3.12 Tribal Sub Plan (TSP)

The Tribal Sub Plan (TSP) which aims to bring about equitable development of tribal people at a par with others through focused activities that would improve the socio-economic conditions of them was implemented through 10 KVKs in Zone-X last year, six from Andhra Pradesh (Vizianagaram, Visakhapatnam (BCT), Visakhapatnam (Kondempudi), West Godavari (V.R. Gudem), East Godavari (Pandirimamidi) and Prakasam (Darsi)) and four from Telangana (Adilabad, Nalgonda (Kampasagar),

Khammam and Kothagudem). 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 review workshop of KVKs implementing TSP was held at Hyderabad on 20thFebruary, 2018 to take stock of the achievements of the centers and to give a direction for better implementation of the plan in the future. The KVKs were suggested to take up activities benefitting all the members of the households in the operational area that would lead to doubling of tribal farmers' income in a period of 3-5 years against baseline of 2015-16. In this direction, the centers were suggested to take up more of skill training programmes pertaining to the assets / micro-enterprises created for enhancing income.

Table 3.12.1. Achievements of activities undertaken by KVKs under TSP during 2017-18

S.No	Activity	Units	Achievement		
			Andhra Pradesh	Telangana	Zone
1	On- farm trials	Number	23	6	29
		No. farmers	230	86	316
2	Frontline demonstrations	Number	26	18	44
		No. farmers	725	695	1420
3	Farmers training	Number	54	6	60
		Participants	1717	182	1899
4	Training of Rural Youth	Number	16	3	19
		Participants	479	73	552
5	Training of Extension Personnel	Number	17	0	17
		Participants	556	0	556
6	Skill Training	Number	23	7	30
			656	205	861
7	Extension activities	Number	79	36	115
		Participants	2817	1642	4459
8	Production of seed	Quantity (q)	244	185	429
		No. farmers	366	926	1292
9	Planting material supplied	Number	126878	3375	130253
		No. farmers	860	45	905
10	Live-stock strains and fish Fingerlings supplied	Number	205504	51994	257498
		No. farmers	421	488	909
11	Soil samples tested	Number	1904	1630	3534
		No. farmers	1865	1630	3495
12	Mobile agro- advisory provided to farmers	Number	702	36	738
		No. farmers	2591	10961	13552
13	Micro-enterprises established	Number	1531	831	2362
		Participants	792	10523	11315

A total of 2362 physical assets/micro-enterprises were created by KVKs during 2017-18 providing income generating opportunities to 11315 tribal people in 9 districts. Besides creating assets, skills related to these enterprises were imparted to 831 needy tribal beneficiaries through 30 skill training programmes.

Table 3.12.2. Skill training programmes conducted during 2017-18

S. No	Name of the KVK	Name of the training Programme	Duration of the training (Days)	No. of trainees
1	Adilabad, Telangana	Training Programme on establishing dhal mill	2	25
2	Nalgonda (Kampasagar), Telangana	Training programme on value addition of milk	3	30
		Value addition of fish and fishery products	3	30
		Training programme on paper plate making	2	30
		Vegetable cultivation under pandal system including exposure visit	3	30
		Training programme on tailoring	60	30
3	Khammam, Telangana	Skill development training programme on tailoring and embroidery	60	30
4	Vizianagaram, Andhra Pradesh	Use of liquid bio fertilizers in cereals and vegetables	2	30
		Skill trainings to SHG leaders /members on income generation activities	3	20
		Raising of nutri-gardens in backyards	3	20
		Agri based entrepreneurial activities to rural youth	3	20
		Non –farm entrepreneurial activities for income generation	3	20
		Reproductive education for tribal adolescents	3	20
		Demonstration of low cost iron rich foods to combat anemia	3	20
		Techniques of soil sample collection and its advantages	3	20
5	Visakhapatnam (BCT), Andhra Pradesh	Bee keeping	5	25
		Training on coffee plantation and processing	5	20
		Training on jack fruit processing and storage of pulp and value addition	9	78
		Value addition of cashew apple	3	21
		Skill training in tamarind candy preparation	2	19
		Mushroom cultivation	5	13
6	East Godavari (Pandirimamidi), Andhra Pradesh	Beekeeping	6	25
		Millets Value addition – Biscuit & Bakery products	3	15
7	West Godavari (VR Gudem), Andhra Pradesh	Millet processing	1	45
		Training programme on bee keeping at Koida	5	35
		Training programme on bee keeping at ITDA, K.R.Puram	5	40
		Training programme on bee keeping at Aliveru	5	25
8	Prakasam	Backyard Poultry rearing	3	34

	(Darsi), Andhra Pradesh	Shadenet cultivation of vegetables	3	40
		Raising and maintenance of nurseries	3	25
		Repairs and maintenance of sprayers	3	35
		Mushroom Production and marketing	3	25
		Farm mechanization and post harvest technology	3	25
		Value addition of millets	15	30
		Fodder cultivation and conservation	3	35
		Establishment of Vermicompost units	3	30
		Organic farming	3	22

Table 3.12.3. Physical assets / micro-enterprises established in tribal areas during 2017-18

S. No	Name of the KVK	Name of the physical asset / micro-enterprise	No. of units	No. of beneficiaries
1	Adilabad, Telangana	Vermi beds	150	150
		Establishment of millet processing (Multipurpose flour mill) unit	4	4
		Stitching Machines	10	10
		Manual cotton puller	200	200
		Tarpaulin sheets	100	100
		Hi-Teck Hand Sprayer	20	20
		High Pressure Knapsack Sprayer	5	5
2	Khammam, Telangana	Hatchery Unit	2	5
		Taiwan sprayers	12	60
		Tarpaulins	152	152
		Battery sprayers	50	50
		Sickles	100	100
		Mobile vermi beds	100	100
		Cotton stem applicators	200	200
		Sewing Machines	6	6
		Tailoring Kits	30	30
		Embroidery Machines	1	1
		Maggam work material (maggam work stand/ Tambour stand & Wooden hoop/ Embroidery frame stand)	1	1
3	Nalgonda (Kampasagar), Telangana	Rajasri birds	225	225
		Mobile Vermicompost units	10	10
		Integrated Farming Systems	4	40
		Chick hatchery	4	04
4	Kothagudem, Telangana	Taiwan sprayers	20	20
		Knapsack Sprayers	20	20
		Tarpaulin sheets	40	40
5	Vizianagaram, Andhra Pradesh	Honeybee unit	5	5
		Nutri garden kits	50	50
		Cycle weeders	6	6

		Value added products with Banana fiber	1	30
6	Visakhapatnam (BCT), Andhra Pradesh	Solar Traps	10	10
		Oven	2	20
		Bee hives	10	10
		Jack fruit processing units	5	5
		Mango harvesters	5	5
		Aseel birds	20	20
		Osmanabadi goats	5	5
		Juice extractors	5	5
		Pounding machine	5	5
		Tamarind deseeder	1	10
		Shade net houses	5	5
7	West Godavari (VR gudem), Andhra Pradesh	Poultry rearing shed	1	10
		Poultry cages on the pond dykes	25	25
		Tanks for transportation of fish seed	25	25
		Poultry incubator machine	1	10
		Generator (10KVa)	1	10
		Drag nets for fishing	2	25
		Cast nets for fishing	4	25
		Mulch rolls (400 mts)	500	100
		Sticky Traps	500	50
		Light Traps	25	25
		Feeders and drinkers to the poultry group	80	10
8	East Godavari (Pandirimamidi), Andhra Pradesh	Apiary units	15	15
		Millet Processing & Value Addition Unit	01	15
		Hydrophonics	01	01
		Vermicompost Unit	01	01
		Goat unit- Osmanabadi	05	05
9	Prakasam (Darsi), Andhra Pradesh	Backyard poultry units	100	100
		Vegetable cultivation under shade nets	5	25
		Nellore Brown sheep units	10	10
		Osmanabadi goat Units	10	10
		Battery operated sprayers	74	74

3.13 Soil Health Cards

Soil Health Management (SHM), one of the most important interventions under National Mission on Sustainable Agriculture (NMSA) aims at promoting Integrated Nutrient Management (INM) through judicious use of chemical fertilizers including secondary and micro nutrients in conjunction with organic manures and bio-fertilizers for improving soil health and its productivity. As a part of this project soil testing facilities of KVKs have been strengthened to provide soil test based recommendations to farmers for improving soil fertility, enhancing productivity of crops and to bring down cost of production through encouragement of judicious use of fertilizers. Soil Health Card Scheme is a scheme launched by the Government of India in February 2015. Under the scheme soil health cards are issued to farmers with

crop-wise recommendations of nutrients and fertilizers required for the individual farms to help farmers to improve productivity through judicious use of inputs. During 2017-18 KVKs in Zone-X comprising the states of Tamil Nadu , Andhra Pradesh, Telangana and Puducherry were provided with 490 mini soil testing kits. A total of 38017 soil health cards were issue by KVKs in the zone comprising of Andhra Pradesh (17949), Telangana (8752) and Tamil Nadu (11108) and Puducherry (208).

Table 3.13.1. Soil analysis and issue of soil health cards by KVKs during 2017-18

KVK	No. of soil samples analyzed			No. of Soil Health cards distributed			Total beneficiaries
	MSL	STL	Total	STL	MSL	Total	
Tamil Nadu							
Ariyalur	319	0	319	319	1719	2038	2023
Cuddalore	160	151	311	541	151	692	1003
Dharmapuri	293	0	293	752	0	752	746
Dindigul	206	94	300	206	94	300	300
Erode	364	178	542	364	178	542	462
Kancheepuram	100	487	587	100	487	587	587
Kanyakumari	134	0	134	134	0	134	132
Krishnagiri	25	0	25	0	0	0	0
Madurai	0	150	150	0	150	150	150
Nagapattinam	137	0	137	137	0	137	137
Namakkal	383	217	600	405	222	627	448
Perambulur	113	789	902	113	789	902	600
Pudukottai	150	145	295	150	145	295	295
Ramanathapuram	0	65	65	0	65	65	65
Salem	0	224	224	0	224	224	141
Sivagangai	114	642	756	114	642	756	756
Thiruvannmalai	80	536	616	80	536	616	609
Thuthukudi	166	201	367	183	238	421	421
Tiruvallur	88	0	88	88	0	88	88
Tiruvarur	75	0	75	75	0	75	62
Trichy	35	389	424	35	389	424	35
Vellore	285	156	441	286	245	531	531
Villupuram	305	220	525	305	220	525	450
Virudhanagar	199	66	265	199	28	227	227
Total (Tamil Nadu)	**3731**	**4710**	**8441**	**4586**	**6522**	**11108**	**10268**
Andhra Pradesh							
Anantapur (Reddipalli)	362	495	857	362	495	857	857
Anantapur (Kalyandurg)	222	0	222	219	0	219	219
Chittoor (Kalikiri)	541	0	541	453	0	453	502
Chittoor (RASS)	323	1112	1435	487	1112	1599	1599
East Godavari (Kalavacherla)	59	0	59	59	0	59	59
East Godavari (Pandirimamidi)	224	0	224	265	0	265	265
Guntur(Lam)	758	0	758	758	0	758	758
Kadapa	354	0	354	354	0	354	354
Kadapa-2	0	50	50		0	0	50
Krishna (Garikapadu)	811	0	811	750	0	750	811

Kurnool (Banavasi)	250	0	250	250	0	250	250
Kurnool (Yagantipalli)	286	1060	1346	853	3301	4154	3423
Nellore	869	0	869	869	0	869	760
Nellore (Periyavaram)	55	0	55	25	0	25	25
Prakasam (Darsi)	140	4074	4214	140	4071	4211	2943
Srikakulam	299	203	502	546	352	898	647
Vishakapatnam	330	0	330	330	0	330	330
Vizayanagaram	764	20	784	736	20	756	708
West godavari (V.R.gudem)	502	0	502	502	0	502	502
West godavari (Undi)	0	640	640	0	640	640	640
Total (AP)	**7149**	**7654**	**14803**	**7958**	**9991**	**17949**	**15702**
Telangana							
Adilabad	1130	0	1130	1130	0	1130	1130
Karimnagar (Jammikunta)	997	404	1401	997	404	1401	1401
Karimnagar (Ramgirikilla)	376	0	376	300	0	300	376
Khammam (Wyra)	250	0	250	250	0	250	170
Khammam-2	8	0	8	8	0	8	4
Mahaboobnagar (YFA)	1400	0	1400	1400	0	1400	1400
Mahaboobnagar (Palem)	250	0	250	250	0	250	250
Medak	18	1110	1128	18	974	992	992
Nalgonda (Gaddipalli)	729	179	908	729	179	908	901
Nalgonda (Kampasagar)	250	0	250	200	0	200	250
Nizamabad	96	0	96	96	0	96	96
Ranga reddy	0	550	550	0	512	512	512
Warangal (Malyal)	364	250	614	364	250	614	614
Warangal (Mamnoor)	0	737	737	0	691	691	588
Total (Telangana)	**5868**	**3230**	**9098**	**5742**	**3010**	**8752**	**8684**
Pondicherry	0	208	208	0	208	208	177

MSL = through Mini Soil Testing Laboratory Kits; STL = Through Soil Testing Laboratories

Table 3.13.2. State wise achievement of soil analysis and issue of soil health cards during 2017-18

State	No. of soil samples analyzed			No. of Soil Health cards distributed			Total beneficiaries
	MSL	STL	Total	STL	MSL	Total	
Andhra Pradesh	7149	7654	14803	7958	9991	17949	15702
Telangana	5868	3230	9098	5742	3010	8752	8684
Tamil Nadu	3731	4710	8441	4586	6522	11108	10268
Puducherry	0	208	208	0	208	208	177
Zone total	**16748**	**15802**	**32550**	**18286**	**19731**	**38017**	**34831**

MSL = through Mini Soil Testing Laboratory Kits; STL = Through Soil Testing Laboratories

World Soil Day Celebrations (5th December, 2016)

To create awareness on soil testing and Soil Health Cards to farmers, KVKs (55) celebrated World Soil Day on 5th December, 2017 with active participation of 16575 farmers. The dignitaries attended the programme involved public representatives *viz*., MPs, MLAs and local, state ministers and state level public representatives *etc*. Shri. G Nagesh, Hon'ble Member of Parliament (Loksabha), Shri. G.Sukhander Reddy, Member of Parliament (Loksabha), Shri. G. Jaidev,

Member of Parliament (Loksabha), Shri. M Ram Mohan, Member of Parliament (Loksabha), Shri. J.C. Diwakar Reddy, Member of Parliament (Loksabha), Shri. Y.V. Subba Reddy, Member of Parliament (Loksabha), Shri. R. Kamalakannan, Agricultural Minister, Puducherry (UT) participated and emphasized on importance of soil testing and distributed Soil Health Cards to the farmers. A total of 9278 Soil Health Cards were distributed to farmers across the zone.

The programme comprised of screening of film on soil health, lectures on soil health by experts in the field of soil sciences, lectures on *rabi* crops to be cultivated during *rabi* season 2017, demonstrations on soil analysis, address by chief guests and VIPs on soil health and distribution of soil health cards to farmers.

Table 3.13.3: Summary details of Soil Health Cards distributed as part of World Soil Day

State	No. of KVKs	No. of farmers participated	Total No. of Participants	No. of Soil Health Cards distributed
Tamil Nadu	26	6414	7140	3709
Andhra Pradesh	17	5589	6929	3675
Telangana	10	4427	5304	1823
Puducherry	2	145	219	71
Atari Total	**55**	**16575**	**19592**	**9278**

Shri. G.Jaidev addressing the participants on WSD at Guntur

Shri. G.Nagesh, M.P, Adilabad

Shri. R. Kamalakannan, Hon'ble Agricultural Minister, Puducherry distributing soil health cards

Soil card distributed to the farmers by the district Collector, Ramanadhapuram

Sri Gutta Sukender Reddy, M.P, addressing the participants at Gaddipalli

Sri Mekapati Rajmohana Reddy M.P, Nellore addressing the participants on WSD

Sri Y.V.Subba Reddy,M.P, at Prakasam Darsi

Participants at KVK Adilabad

Participants at Guntur on WSD

Participants at KVK Nellore on WSD

3.14 Protection of Plant Varieties and Farmers Rights Act 2001 (PPVFRA)

Fifty five KVKs under ICAR-ATARI, Zone-X organised awareness cum training programmes on protection of plant varieties and farmers rights act 2001 during the year 2017-18. Awareness has been created to 29609 farmers and other stake holders during the programme. . In Tamil Nadu, 10543 farmers and stake holders were imparted awareness cum training by 27 KVKs. Twenty five VIPs including one MP of Rajaya Sabha, 10 MPs of Lok Sabha, five ministers of state government and nine MLAs participated in the awareness programmes. In Andhra Pradesh, 16 KVKs were involved in the conduct of

the programme in which 12390 farmers and other stake holders participated. Twelve KVKs of Telangana organised the programme involving 6676 participants.

Table 3.14.1. Summary of training cum awareness programmes on PPV&FRA act

S.No	State	No of KVKs	No. of Participants
1	Andhra Pradesh	16	12390
2	Telangana	12	6676
3	Tamil Nadu	27	10543
Total		55	29609

Table 3.14.2. Details of VIP participation in awareness cum training programmes on PPV&FRA

State	No. of MPs (Rajya sabha)	No. o MPs (Lok sabha)	No. of ministers of State Government	No. of MLAs	Total number of VIPs
Telangana	-	2	1	1	4
Andhra Pradesh	-	1	1	4	6
Tamil Nadu	1	7	3	4	15
Total	1	10	5	9	25

Sri. Chandra Mohan Reddy Somireddy, Hon'ble Minister for Agriculture, Horticulture, Sericulture and Agri-processing, Govt. of A.P at KVK Visakhapatnam

Sri. P. Srinivas Reddy , Hon'ble Minister for Agriculture and allied sectors, Govt of Telangana, at KVK Nizamabad

Shri.J.J. Thiyagaraj Natterjee, Hon'ble MP Lok Sabha, KVK Thoothukudi

3.15 Cluster Frontline Demonstrations on Pulses under NFSM

Monitoring visit by Dr. Y.G. Prasad, Director, ATARI to CFLD Bengal gram in R.R. Dist

During the year 2017-2018 the programme was conducted through 58 KVK's associated with ICAR-ATARI Zone-X during *kharif*, *rabi* and Summer seasons in Tamil Nadu, Andhra Pradesh and Telangana. A total of 2750 ha area was allotted to this zone in which 2730.6 ha programme was implemented by organizing 6295 demonstrations on pigeon pea, chick pea, blackgram and greengram crops with an achievement of 99.29%. Latest improved varieties released and notified by central varietal release committee and that are not older than 15 years, crop production and protection technologies were demonstrated. The farmers were with bio-fertilizers, bio-pesticides and micro irrigation. Financial assistance of Rs 7500/ha was sanctioned to each crop for inputs, extension activities and monitoring of the programme. The demonstrations were conducted in Cluster approach in interior areas mainly with small and marginal farmers and weaker sections.

Table 3.15.1. Crop-wise achievement of CFLD

Crop	Tamil Nadu			Andhra Pradesh			Telangana			Zone		
	Area (ha) T	Area (ha) A	Demo (No)	Area (ha) T	Area (ha) A	Demo (No)	Area (ha) T	Area (ha) A	Demo (No)	Area (ha) T	Area (ha) A	Demo (No)
Kharif												
Blackgram	80	101	230	110	90	180				190	191.0	410
Greengram	100	60	150	90	110	225	150	120	267	340	290.0	642
Red gram	50	70	175	300	330	694	250	259.6	576	600	659.6	1445
Total	230	231	555	500	530	1099	400	379.6	843	1130	1140.6	2497
***Rabi* and summer**												
Bengal gram	50	40	100	130	180	400	130	130	300	310	350	800
Black gram	350	330	825	320	270	650	60	60	137	730	660	1612
Green gram	180	220	550	170	150	350	120	190	436	470	560	1336
Red gram	20	0	0	50	0	0	40	20	50	20	20	50
Total	600	590	1475	670	600	1400	350	400	923	1530	1590	3798
Grand Total	750	779.6	1766	830	821	2030	750	779.6	1166	2750	2730.6	6295

Results

Tamil Nadu

In Tamil Nadu, 1766 cluster frontline demonstrations on pulses covering an area of about 780 ha were conducted with blackgram, greengram and red gram during *kharif* season and blackgram, greengram and Bengal gram during *rabi* season. Recently released cultivars along with integrated pest and disease management, nutrient management and agronomical management practices formed the part of cluster demonstrations in the state.

Blackgram: VBN 6 and VBN 8, improved black gram cultivars notified for cultivation were demonstrated during *kharif* season. VBN 8 recorded an increase yield of about 56% over check in Dharmapuri and Perambalur districts, while VBN 6 recorded an increase of about 19% in Theni and Erode district. During the *rabi* season, VBN 8 recorded an average yield of 9 q/ha showing an increase of about 30% over the check which recorded an average yield of 7q/ha.

Table 3.15.2. Cluster frontline demonstrations on pulses in Tamil Nadu

Season	Crop	Variety	Name of KVK	Average yield q/ha)		% increase over check
				Demo	Check	
Kharif	Blackgram	VBN 8	Dharmapuri, Perambalur	9.57	6.29	52.57
Kharif	Blackgram	VBN 6	Theni, Erode	7.57	6.36	19.15
Kharif	Greengram	Co-8	Dindigul, Erode, Namakkal, Theni	7.09	6.04	17.38
Kharif	Red gram	LRG-41	Dindigul	10.6	6.5	63.08
Kharif	Red gram	CO 8	Karur	6.1	5	22
Kharif	Red gram	BRG-2	Krishnagiri	13.73	12.64	8.62
Rabi	Blackgram	A1	Dindigul	5.8	4.5	28.89
Rabi	Blackgram	VBN 8	Tiruvallur, Namakkal	9.0	7.0	29.70
Rabi	Blackgram	Co6	Cuddalore	6.9	4.25	63.76
Rabi	Blackgram	VBN 6	Villipuram, Virudhanagar, Puddukottai, Shivagangai, Ariyalur	6.88	5.40	30.83
Rabi	Greengram	VBN 3	Cuddalore	6.52	4.9	33.06
Rabi	Greengram	CO 8	Namakkal, Dharmapuri, Tiruvallur, Villupuram	8.81	6.63	35.73
Rabi	Bengalgram	Co 4	Coimbatore	11.65	10.47	11.27
Rabi	Bengalgram	JG 11	Dindigul	11.3	7.9	43.04
Rabi	Bengalgram	NBeG 3	Dharmapuri	7.28	6.07	19.93

Greengram: Improved cultivar Co 8 was demonstrated both during *kharif* and *rabi* seasons. During the *kharif* season this variety recorded an average yield of about 7 q/ha showing an increase of 17% over the check in districts of Dindigul, Erode, Namakkal and Theni while in the *rabi* reason, the yield recorded by Co 8 was about 9 q/ha as compared to about 7q/ha recorded by check, showing an increase by about 36q/ha.

Monitoring of CFLD in Villupuram District by Dr. K. Dattatri, PS and nodal officer CFLD, ATARI, Hyderabad

Redgram: Three varieties of red gram *viz.*, BRG 2, LRG 52 and Co 8 were demonstrated under cluster frontline demonstrations during *kharif* season. The yield gap between improved cultivar BRG 2 and that of check was only about 9% in Krishnagiri district followed by Co 8, which recorded an yield gap of about 22% over check.

Andhra Pradesh

A total of 2030 Cluster frontline demonstrations on pulses was implemented in Andhra Pradesh by 21 KVKs in blackgram, greengram, redgram and Bengalgram in an area of 821 ha.

Black gram: 830 cluster FLDs in blackgram were conducted covering an area of 360 ha both in *kharif* and *rabi* season. The technology demonstrated included improved variety, seed management, integrated pest and disease management apart from integrated crop management. TBG 104 recorded highest yield of 11.08 q/ha in the districts of Guntur, West Godavari and Kurnool with an increase of 34% over local check. During the *rabi* season, LBG 752 recorded an average yield increase of 18% and average yield of 15.5 q/ha over check.

Table 3.15.3. Cluster Frontline demonstrations on pulses in Andhra Pradesh

Crop	Variety	Name of KVK	Average yield (q/ha)		% increase over check
			Demo	Check	
Kharif					
Greengram	WGG 42	Chittoor, East Godavari, Kurnool, West Godavari, Krishna	10	7	40.6
Greengram	IPM 2-14	Prakasam	9.5	8.6	10.5
Red gram	LRG 52	Chittoor, East Godavari, Kadapa, Krishna, Kurnool, Srikakulam, Vishakapatnam, Guntur	12.7	8.2	67.7
Red gram	PRG 276	Prakasham, Kurnool	11.12	8.39	39.07
Blackgram	LBG 752	East Godavari	10.95	9.12	20.07
Blackgram	TBG-104	Guntur, West Godavari, Kurnool	11.08	8.58	34.32
Rabi					
Blackgram	TBG-104	Kadapa, Krishna, Prakasham, West Godavari, Chittoor, Kurnool, West Godavari	10.90	8.31	35.37
Blackgram	LBG-752	Krishna	15.5	13.1	18.32
Greengram	IPM 2-14	West Godavari, Chittoor	12.36	6.46	91.33
Bengalgram	NBeG-49 & NS-1	Anantapur, Kadapa, Krishna, Prakasham, Kurnool	14.76	12.4	19.03

CFLD on *Kharif* Blackgram Variety LBG-752 in East Godavari District (Pandirimamidi)-2017

Spot guidance to CFLD farmer on *Rabi* Bengalgram variety NBeG-49 in Krishna District 2017-18

Green gram: 260 ha area was covered in 575 cluster frontline demonstrations on pulses involving green gram both in *kharif* and *rabi* seasons. Two varieties WGG 42 and IPM2-14 were demonstrated during *kharif* season, while WGG 42 recorded an average yield of 10 q/ha, with an increase of about 41%, IPM 2-14 recorded an average yield of 12.7 q/ha showing an increase of about 67% over check. During the *rabi* season, IPM 2-14 was demonstrated, which recorded an increase yield of about 91% over the local check in the districts of West Godavari and Chittoor.

Red gram: The improved varieties LRG-52 and PRG-176 were demonstrated along with bio-fertilizers *Rhizobium*, PSB and bio-pesticides *Trichoderma viridae*, recommended fertilizers and plant protection measures during the *kharif* season in an area of 330 ha in 694 demonstrations. While LRG 52 recorded an average increase in yield of about 67% over local check with an average yield of about 13q/ha, PRG 276 recorded an average yield of about 11 q/ha with an increase of 39 % over local check.

Bengal gram: 400 demonstrations covering an area of 180 ha were demonstrated with recently released varieties NBeG-49 and NS-1. Both NBeG 49 and NS -1 recorded an average yield of about 15q/ha with an increase of 19% over local check which recorded an average yield of about 12q/ha.

Telangana

A total of 1166 cluster frontline demonstrations on pulses were organized in Telangana state covering an area of 779.6 ha during 2017-18. Improved varieties along with integrated crop production technology, seed treatment, integrated nutrient management and integrated pest management were the technologies demonstrated.

Green gram: In Telangana, three varieties WGG-42, MGG-347 and PU-31 were demonstrated in *Kharif* as well as *rabi* seasons. During *kharif* season, WGG 42 recorded an average yield of about 7 q/ha under rain fed situation showing an improvement of about 20% over the local variety in the districts of Mahaboobnagar, Nalgonda and Warangal. During *rabi* season, average yield of 13.7 q/ha was recorded at Warangal with MGG-347 against the check yield of 10.2q/ha.

Table 3.15.4. Performance of improved greengram cultivars under cluster frontline demonstrations in Telangana

Crop	Variety	Name of KVK	Average yield q/ha)		% increase over check
			Demo	Check	
Kharif					
Greengram	WGG 42	Mahaboobnagar, Nalgonda, Warangal	6.69	5.59	19.68
Red gram	PRG 176	Adilabad, Karimnagar, Mahaboobnagar, Medak, Nalgonda, Warangal	13.5	11.4	42.3
Red gram	WRG65	Warangal, Khammam	15.1	10.1	50.7
Rabi					
Blackgram	LBG752	Mahaboobnagar	11.0	9.1	20.1
Greengram	WGG 42	Karimnagar, Mahaboobnagar, Warangal,	11.6	9.0	33.2
Greengram	PU-31	Khammam	10.0	8.9	12.8
Greengram	MGG-374	Warangal	13.7	10.2	34.31
Redgram	PRG 176	Nalgonda	7.73	4.25	81.88
Bengalgram	NBeG-3	Rangareddy, Karimnagar, Mahaboobnagar, Medak, Adilabad, Nizamabad, Warangal	18.07	13.92	29.81

Red gram: Two varieties of pegion pea *viz*., PRG 176 and WRG 65 were demonstrated under cluster frontline demonstrations during 2017-18. WRG 65 recorded an average yield of 15.1q/ha as compared to check whose yield was about 10 q/ha in Warangal and Khammam districts. PRG-176 recorded the highest average yield of 13.3 q/ha with an increase of 42% over check in the rain fed districts of Telangana state.

Bengal gram: 400 Cluster frontline demonstrations were undertaken in 180 ha in the districts of Rangareddy, Karimnagar, Mahaboobnagar, Medak, Adilabad, Nizamabad, Warangal. Improved variety NBeG-3 along with recommended package of practices was demonstrated. The improved variety recorded an average yield of 18q/ha which was about 30% higher over check.

Field Day on Rabi CFLD on Greengram var. MGG-347 in Warangal district

Performance of Rabi Chickpea NBeG-3 in Adilabad district

3.16 Cluster Frontline Demonstrations (CFLDs) on Oilseeds under NMOOP

Cluster front line demonstrations on oilseeds was conducted by KVKs in Zone-X under National Mission on Oilseeds and Oil Palm (NMOOP) during 2017-18 in *kharif, rabi* and summer seasons. The crops covered are groundnut, sesame, sunflower, castor, safflower, soybean and niger. A total of 2630 hectares area was allotted to 48 KVKs in Tamil Nadu, Andhra Pradesh and Telangana and the programme was implemented in 2472 ha by organizing 6180 demonstrations with 94 per cent achievement of the total allotted area.

Visit of Dr. U.S. Sadana, National consultant NFSM, CFLDs in Gaddipalli, Nalgonda District.

Table 3.16.1. Cluster Frontline Demonstrations (CFLDs) on Oilseeds

Crop	State	Area (ha)		No. of Demos.	
		Target	Achievement	Target	Achievement
Kharif					
Groundnut	Tamil Nadu	290	206.8	725	517
	Andhra Pradesh	280	204	700	510
	Telangana	50	10	125	25
	Sub total	**620**	**420.8**	**1550**	**1052**
Sesame	Tamil Nadu	10	10	25	25
	Andhra Pradesh	50	26	125	65
	Sub total	**60**	**36**	**150**	**90**
Sunflower	Andhra Pradesh	40	0	100	0
	Sub total	**40**	**0**	**100**	**0**
Castor	Andhra Pradesh	60	60	150	150
	Telangana	20	20	50	50
	Sub total	**80**	**80**	**200**	**200**
Soybean	Telangana	40	40	100	100
	Sub total	**40**	**40**	**100**	**100**
Total *Kharif* Season		**840**	**576.8**	**2100**	**1442**
***Rabi* & Summer**					
Groundnut	Tamil Nadu	440	503.2	1100	1258
	Andhra Pradesh	330	410	825	1025
	Telangana	160	160	400	400
	Sub total	**930**	**1073.2**	**2325**	**2683**
Sesame	Tamil Nadu	10	20	25	50
	Andhra Pradesh	360	339	900	848
	Telangana	90	90	225	225
	Sub total	**460**	**449**	**1150**	**1123**
Sunflower	Tamil Nadu	130	120	325	300
	Andhra Pradesh	160	140	400	350
	Sub total	**290**	**260**	**725**	**650**
Castor	Andhra Pradesh	30	30	75	75
	Telangana	0	20	0	50
	Sub total	**30**	**50**	**75**	**125**
Safflower	Andhra Pradesh	30	38	75	95
	Telangana	30	5	75	12
	Sub total	**60**	**43**	**150**	**107**
Niger	Andhra Pradesh	20	20	50	50
	Sub total	**20**	**20**	**50**	**50**
Total *Rabi* and Summer Season		**1790**	**1895.2**	**4475**	**4738**
Grand Total		**2630**	**2472**	**6575**	**6180**

Tamil Nadu

Groundnut: Cluster frontline demonstrations on groundnut were conducted during both *kharif* and *rabi* seasons by 18 KVKs in Tamil Nadu. Improved varieties Dharani, CO-6, Kadiri-9, VRI-8 with recommended package of practices resulted in 10.04 to 48.75% increase in yields compared to existing farmers' yields. Highest yield increase of 60.66% was reported in Dharmapuri district. In *rabi*, improved variety VRI-8 with integrated crop management practices registered highest average yield of 27.77 q/ha which is 48.75% higher than the yield of farmers practice (18.46q/ha).

Sesame: Improved variety TMV-7 with recommended package of practices was demonstrated by KVK in Theni district during *kharif* under rainfed situation. Increase in yield was 23.44% with an average demonstration yield of 7.53 q/ha against 6.10 q/ha in local check.

Table 3.16.2. Performance of CFLDs on Oilseeds in Tamil Nadu

Crop	Variety	Name of KVK	Average Yield(q/ha)		% increase over check
			Demo	Check	
Kharif					
Groundnut	Dharani	Villupuram, Dindigul, Dharmapuri, Theni, Tiruvannamalai	22.22	17.54	29.13
Groundnut	K-9	Vellore	20.79	14.52	43.18
Groundnut	CO-6	Coimbatore	12.60	11.45	10.04
Sesame	TMV-7	Theni	7.53	6.10	23.44
Rabi					
Groundnut	Dharani	Kancheepuram, Ariyalur, Sivagangai	19.40	15.86	21.02
Groundnut	VRI-8	Cuddalore, Namakkal, Karur	27.77	18.46	48.75
Sunflower	KBSH-53	Tuticorin	12.89	9.59	34.41

Harvested groundnut Var. Dharani at KVK, Sivagangai

Demonstration of NPV application in groundnut

CFLD on Groundnut Variety VRI-8 at KVK, Namakkal

CFLD on Groundnut Variety VRI-8 at KVK, Namakkal

Sunflower: Cluster FLDs on sunflower crop were conducted during *rabi* season in Tuticorin district. The technology demonstrations included sunflower hybrid KBSH-53 along with recommended package of practices after harvesting pulses/ maize/ sorghum. These technology demonstrations resulted in an average yield of 12.89 q/ha against local check yield of 9.59 q/ha with 34.41% increase in yields. These demonstrations increased the productivity of sunflower to the extent of 65.47% compared to district average of 7.79 q/ha.

CFLD on Sunflower var.KBSH-53, KVK-Tuticorin

Andhra Pradesh

Cluster Frontline Demonstrations on Oilseeds programme was implemented by 19 KVKs in Andhra Pradesh during 2017-18in groundnut, sesame, sunflower, castor, safflower and niger crops in an area of 1267 ha.

Table 3.16.3. Cluster Frontline Demonstrations (CFLDs) on Oilseeds in Andhra Pradesh

Crop	Variety	Name of KVK	Average yield (q/ha)		% increase over check
			Demo	Check	
Kharif					
Groundnut	K-7	Krishna	38.30	30.00	27.67
Groundnut	Dharani	Chittoor, Kadapa, West Godavari, Kurnool	16.65	14.01	22.48
Sesame	YLM-66	Prakasam, Visakhapatnam	5.53	3.88	31.41
Castor	DCH-519	Kurnool	7.50	5.80	29.31
Castor	PCH-111	Kurnool	13.08	10.85	20.55
Rabi					
Groundnut	Dharani	Kurnool, Prakasam, West Godavari, Chittoor	26.67	23.85	12.71
Sesame	YLM-66	Kadapa, West Godavari, Nellore, East Godavari, West Godavari	8.90	6.94	30.02
Sunflower	NDSH-1012	Prakasam, Kurnool	16.32	13.92	17.24
Safflower	DSH-185	Kurnool	12.50	9.80	27.55
Safflower	ISF-764	Kurnool	10.80	9.80	10.20
Castor	PCH-111	Prakasam	11.9	10	19.00

Groundnut: 1535 Cluster FLDs on groundnut were conducted covering an area of 614 ha in *Kharif, rabi* and summer seasons in Andhra Pradesh. In *kharif*, the technology demonstrated included improved variety, seed treatment, pest management, soil test based nutrient management under rainfed conditions. Highest average demonstration yield of 38.30 q/ha was recorded in K-7 variety in Krishna district with 27.67 % and 12.25 % increase compared to local check and district average yields respectively. During *rabi*, demonstrations were conducted with improved variety Dharani following integrated crop management practices under irrigated situation which recorded 12.71% yield increase over local check.

Sesame: The cluster frontline demonstrations of YLM-66 variety were taken up in both *kharif* and *rabi* seasons. In *kharif*, improved variety YLM-66 along with other technological interventions resulted in 31.41% increase in yields with an average demonstration yield of 5.53 q/ha over the check yield of 3.88 q/ha. In *rabi*, the varietal demonstration of YLM-66 with recommended package of practices under irrigated conditions resulted in 135.65% increase in yields compared to district average yields.

CFLD on Sesame variety YLM-66 at KVK, Pandirimamidi

CFLD on Castor hybrid PCH-111 at KVK, Darsi

CFLD Safflower field at flowering stage

Castor: In castor, the demonstrations of improved variety with integrated crop management were organized in both *kharif* and *rabi* seasons. During *kharif* season DCH-519 hybrid resulted in 29.31% yield

increase over the existing farmers practice in Kurnool district. Average yield obtained in demonstrations was highest in Kurnool (13.08q/ha) with castor hybrid PCH-111 during *kharif* season against check yield of 10.85 q/ha.

Safflower: Cluster frontline demonstrations on safflower were organized in Kurnool district during *rabi* season under irrigated situation. The safflower hybrid DSH-185 resulted in an average yield of 12.50 q/ha against farmers yield of 9.80q/ha with 27.55% increase in productivity.

Sunflower: Cluster frontline demonstrations on sunflower were conducted by KVKs in Kurnool and Prakasam districts during *rabi* season. The technology demonstrated was improved hybrid with integrated crop management practices. The hybrid NDSH-1012 resulted in average yield of 16.32 q/ha against 13.92 q/ha of check with 17.24% increase in yields which recorded 110% yield increase over district average yields.

CFLD on Sunflower hybridNDSH-1012 at KVK, Yagantipalli

Telangana

Groundnut: Improved variety K-9 along with recommended package of practices increased the pod yield by 13.65 per cent over the local check in *kharif* season and 15.47 per cent in *rabi* season. K-9 variety recorded 86.64 per cent yield increase compared to district average yield. Highest yield of 30.17 q/ha was recorded in Nalgonda (Gaddipalli) followed by Warangal (Malyal) and increase in yield was highest in Warangal (Malyal) which is 25.85% over local check.

Field day on Groundnut Variety K-9 at KVK, Malyal

Table 3.16.4. Performance of CFLDs on oilseeds in Telangana

Season	Crop	Variety	Name of KVK	Average yield (q/ha)		% increase over existing
				Demo	Check	
Kharif	Groundnut	K-9	Nalgonda, Warangal	22.48	19.90	13.65
Kharif	Soybean	ASb-22	Adilabad, Nizamabad	20.01	17.13	16.68
Kharif	Castor	DCH-519	Mahabubnagar	7.33	6.05	21.16
Rabi	Groundnut	K-9	Warangal, Nalgonda	27.67	24.36	15.47
Rabi	Sesamum	Swetha til	Karimnagar	8.65	7.50	15.33

Soybean: Cluster FLDs on soybean crop were conducted during *kharif* season in Adilabad and Nizamabad. Improved variety ASb-22 along with recommended package of practices resulted in highest average yield of 20.01 q/ha against local check yield of 17.13 q/ha with 94.47% increase in yields compared to district average yield of 10.33 q/ha.


CFLD on Soybean Variety ASb-22 sown with BBF Planter at KVK, Rudrur

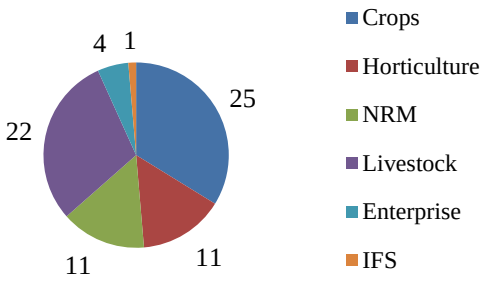
Castor: Varietal demonstrations of DCH-519 hybrid in Mahabubnagar district increased the yields by 21.16% with average demonstration yield of 7.33q/ha against the farmers yield of 6.05q/ha and reported 104.81% increase over district average yield of 3.58 q/ha.

Sesame: KVK, Ramgirikilla conducted CFLDs on sesame crop in Karimnagar district. Technology demonstrated included improved variety Swetha Til with integrated crop management practices in *rabi* season. These demonstrations resulted in an average yield of 8.65q/ha which is 15.33% higher when compared to local check yield of 7.50 q/ha.

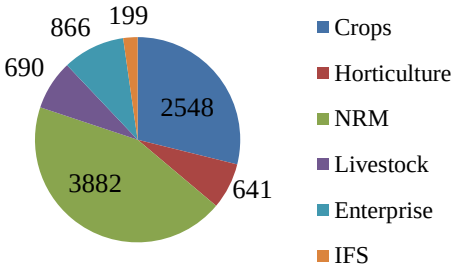
3.18 Farmers FIRST Programme (FFP)

The Farmer FIRST Programme (FFP) is an ICAR initiative to privilege the small holder agriculture operating in complex, diverse and risk prone situations through enhancing farmers-scientists interface. It is a farmer centric approach for research problem identification, prioritization and conduct of experiments and their management in farmers' conditions. The focus is on farmer's Farm, Innovations, Resources, Science and Technology (FIRST). The project is undertaken covering four major components *viz*., a) Enhancing Farmer-Scientist Interface b) Technology Assemblage, Application and Feedback c) Partnership and Institution Building and d) Content Mobilization. FFP was implemented by four ICAR research Institutes (IIMR, IIOPR, IIOR and CRIDA) and one University (TANUVAS, Chennai) in Zone-X.

Under Crop module the FF centers undertook 25 interventions like varietal evaluation, intercropping, seed production, integrated crop management, integrated pest and disease management, fertigation, weather based scheduling of irrigation, use of bio-fertilizers, weed management *etc*., covering 2458 ha area and 2548 households in the operational villages. Horticultural interventions included activities like IPM, plastic mulching, ICM in tomato and chillies, micro-nutrient management, intercropping in coconut and oil palm *etc*., which were conducted over 272.56 ha area covering 641 households. Eleven different technological interventions like construction of gabion structures across small drains, micro-irrigation, soil test based fertilizer application, tank silt application, land leveling, green manuring, dead furrow for moisture conservation, ridge and furrow method of planting *etc*., were taken up on 2242 ha benefitting 3882 households under NRM module. A total of 22 interventions related to introduction of superior fodder varieties, demonstration of backyard poultry breeds, introduction of mineral and nutrient mixtures, oestrous synchronization protocols, conduct of animal health camps, breed improvement in sheep and goats *etc*., were taken up under livestock covering 690 households. In enterprise / mechanization based module 4 different interventions (custom hiring center, hand weeders for drudgery reduction, primary processing of millets, community hatchery units *etc*. In IFS module, ICAR-IIOR undertook interventions covering 49 ha of area and 199 households.



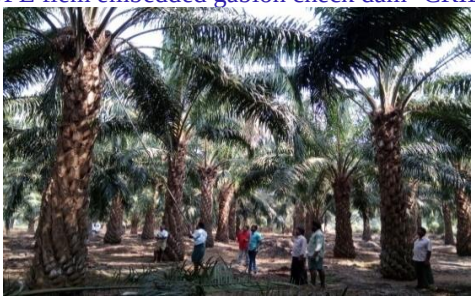
Number of technologies



No. of farmers participated

HDPE fiem embedded gabion check dam- CRIDA

Exposure visit to Srini food park, Madanapalli-CRIDA



Demonstration of harvester-IIOP

Vermicompost production using oil palm fonds - IIOPR

Demonstration on ICM of castor-IIOR

Issue of soil health cards – IIOR

Farmer-Scientist interface – IIMR

Custom hiring center for millet processing- IIMR

Gabion structures embedded with 1 mm HDPE film at the centre of the structure were constructed and evaluated in the farmers fields/watershed areas of the project cluster by ICAR-CRIDA. These structures reduced sediment concentration by 70% than traditional check dams and were able to store water in the range of 9000-15,000 m^3/structure and conserve rainwater up to 60% increasing the water table in the surrounding wells by 0.6 m. The stored rainwater in each structure was used through drip and fertigation to tomato and chilles in an area of 1 ha which ensured 60% saving of irrigation water and 35% higher yields.

3.19 Skill Development Training Programmes by ASCI

Seven skill training programmes were allotted by Agricultural Skill Council of India (ASCI)to Zone-X during 2017-18 which were to be coordinated by ATARI with the participation of four KVKs (Visakhapatnam (BCT), Kurnool (Yagantipalli), Nalgonda (Gaddipalli) and Salem, two ICAR Institutes (IIRR, Hyderabad and IIOPR, Pedavegi) and one agricultural university (PJTSAU, Hyderabad). Among them three KVKs (Visakhapatnam, Salem and Nalgonda) completed the training programme, and KVK, Kurnool could conduct the programme partially. Among the ICAR Institutes and SAU, ICAR-IIOPR, Pedavegi conducted the programme successfully. The details of the skill training programmes conducted by various training partners under Zone-X are presented in Table.

Table 3.19.1. Details of skill training programmes by ASCI

S.No.	Name the training institute	Job role	No. of trainees	Notional hours	Skills imparted
1	KVK, Visakhapatnam (BCT)	Community service provider	20	200	• Online registration of community service center (CSC) • Computer skills • Use ofinternet • Use of ICT tools in agriculture like mobile apps • Seed treatment • Use of plant protection equipment • Communication skills • Methods of organic farming • Applying for PAN card ,bank loans andtravel reservation • Identification of pests and diseases • Preparation of spray fluid
2	KVK, Nalgonda (Gaddipalli)	Sericulturist	20	200	• Cultivation of mulberry: planting, irrigation, nutrition and pest management • Rearing of silk worms: Feeding,

S.No.	Name the training institute	Job role	No. of trainees	Notional hours	Skills imparted
					maintenance of hygiene. • Handling and marketing of cocoons
3	KVK, Salem	Quality seed grower	20	200	• Skills related toproduction ofbreeder,foundation and certified seed • Hands on trainingsfor management of crop (seed to seed) like pre sowing seedmanagement, field preparation, sowing, crop and quality management and seedcertification procedures • Maintenance of quality of seedlike drying to optimummoisture level ,seed storage and packing • Exposure visits toseed processingunits, different equipment used for mechanization of seed production process
4	ICAR- IIOPR, Pedavegi	Seed processing worker	20	200	• Indian minimum seed certification standards (IMSCS) • Cleaning, grading, seed enhancement techniques • Seed quality control, packing, labeling and marketing • Safety measures followed in seed processing plant • Skills required for leadership and entrepreneurship • General aspects of seed development and maturation • Seed godown maintenance, seed quality testing and standards • Exposure visits to seed processing plants at Puliyangudi, Tamil Nadu and college of Agriculture,Vellayani, Thiruvananthapuram

3.20 Seed Hubs

Twelve KVKs including six in Tamil Nadu, two in Telangana and four in Andhra Pradesh are involved in the production of quality seed with a seed production target of 10550 q of pulses to meet the demand of quality seed from farmers. The total quantity of foundation, certified and truthfully labeled seed of pulses produced in the Zone was 1810.86 q under the seed hub programme. The state wise production and varietal details are presented in Table.

In Tamil Nadu, 1035.1 q of quality seeds of blackgram varieties MDU 1, VBN 5, VBN 6, VBN 7, VBN 8 and KKM1, red gram varieties KKM 1 and CoRg 7 and greengram variety Co 8 were produced which includes certified seed, truthfully labeled seed and foundation seed during the late *kharif* and *rabi* seasons. In Telangana 267.76 q of certified/truthfully labeled seeds of newly released greengram variety WGG 42, red gram variety PRG 176, blackgram variety PU 31 and Horse gram variety Crhg 4 were produced. In Andhra Pradesh under the seed hub programme 508 quintals of certified and foundation seeds of blackgram varieties LBG 752 and TBG 104, red gram variety PRG 176 and greengram variety WGG 42 were produced.

Table 3.20.1. Details of quality seed produced under seed hub programme

Name of KVK	District	Seed production					
		Season	Crop	Variety	Target (q)	Actual production (q)	Class of seed
Tamil Nadu							
Madurai	Madurai	*Rabi*	Blackgram	VBN6	400	16.03	CS
Madurai	Madurai	*Rabi*	Blackgram	MDU 1		1.44	FS
Madurai	Madurai	*Rabi*	Blackgram	VBN 8		41.70	TFL
Madurai	Madurai	*Rabi*	Blackgram	KKM 1		47.00	TFL
Madurai	Madurai	*Kharif*	Red gram	CO (Rg) 7	50	0.13	FS
Madurai	Madurai	Summer	Greengram	CO 8	400	46.92	FS
Virudhunagar	Virudhunagar	*Rabi*	Blackgram	VBN 6	600	44.65	CS
Virudhunagar	Virudhunagar	*Rabi*	Blackgram	CO 6		2.50	FS
Virudhunagar	Virudhunagar	*Rabi*	Blackgram	VBN 8		29.55	TFL
Virudhunagar	Virudhunagar	*Rabi*	Greengram	CO 8	450	10.25	CS
Virudhunagar	Virudhunagar	*Rabi*	Greengram	CO 8		12.32	FS
Sandhiyur	Salem	Late *kharif* and *rabi*	Blackgram	VBN 6	500	37.56	FS
Sandhiyur	Salem	Late *kharif* and *rabi*	Blackgram	VBN 7		33.35	CS
Sandhiyur	Salem	Late *kharif* and *rabi*	Blackgram	CO 6		6.33	FS
Sandhiyur	Salem	Late *kharif* and *rabi*	Blackgram	MDU 1		1.90	FS
Sandhiyur	Salem	Pre *rabi* (Sep-Oct)	Greengram	Co 8	300	64.45	FS
Sandhiyur	Salem	Late *kharif* (Sep-Oct)	Redgram	Co(Rg) 7	200	8.23	FS
Sandhiyur	Salem	Late *kharif* (Sep-Oct)	Re gram	Co(Rg) 7		8.99	CS
Villupuram	Villupuram	*Rabi*	Blackgram	VBN 6	600	394.40	CS

Name of KVK	District	Seed production					
		Season	Crop	Variety	Target (q)	Actual production (q)	Class of seed
Villupuram	Villupuram	*Rabi*	Blackgram	VBN 8		64.40	CS
Villupuram	Villupuram	*Rabi*	Greengram	CO 8	100	24.50	CS
Kancheepuram	Kancheepuram	*Rabi*	Greengram	VBN 3	300	74.50	FS
Kancheepuram	Kancheepuram	*Rabi*	Blackgram	VBN 5	700	30.00	CS
Kancheepuram	Kancheepuram	*Rabi*	Blackgram	VBN 6		22.00	CS
Kancheepuram	Kancheepuram	*Rabi*	Blackgram	Co 6		3.00	FS
Kancheepuram	Kancheepuram	*Rabi*	Blackgram	Co 6		9.00	CS
Total						1035.10	
Telangana							
CRIDA	Ranga Reddy	*Kharif*	Redgram	PRG-176	250	20.00	CS
CRIDA	Ranga Reddy	*Kharif*	Horsegram	CRhg-4	250	6.00	TLS
Palem	Mahaboobnagar	*Kharif*	Redgram	PRG 176	250	150.00	CS
Palem	Mahaboobnagar	*Kharif*	Greengram	WGG 42	300	27.00	CS
Palem	Mahaboobnagar	*Kharif*	Blackgram	PU 31	300	64.76	CS
Total					1350	267.76	
Andhra Pradesh							
Ghantasala	Krishna	*Rabi*	Blackgram	LBG 752	1000	67.00	FS
Ghantasala	Krishna	*Rabi*	Blackgram	TBG 104		8.50	FS
Ghantasala	Krishna	*Rabi*	Blackgram	LBG 752		37.80	CS
Reddipally	Anantapur	*Kharif*	Red gram	PRG-176	300	200.00	CS
Reddipally	Anantapur	*Rabi*	Greengram	WGG-42	100	80.00	CS
Srikakulam	Srikakulam	*Rabi*	Blackgram	LBG 752	400	15.00	CS
Yagentipalli	Kurnool	*Rabi*				100.00	CS
Total					1800	508.30	
Grand Total						**1810.86**	

Seed Farm (VBN 6 Blackgram) visit by Dr. Y.G. Prasad, Director, ATARI, Hyderabad and DEE, TNAU on 20.9.2017 at Endhur village, Marakkanam Block



Seed certification team visit to seed production plots in farmers field organized by KVK Ranga Reddy, KVK Palem, Mahaboobnagar and KVK Kurnool districts

3.21 Mera Gaon Mera Gaurav

An institute village linkage programme *"Mera Gaon Mera Gaurav"* (MGMG) was implemented by 10 ICAR- research Institutes in Andhra Pradesh, Telangana and Tamil Nadu. The main objective of this programme is to provide farmers with required information, knowledge and advisories on regular basis by adopting few villages by a team of scientists.

Eighty two teams of scientists from 10 institutes adopted 339 villages and implemented various activities. A total of 7224 activities were organized in the adopted villages and 27702 rural people and farmers participated in them.

A total of 967 awareness cum demonstration programmes on various aspects of agriculture, climate change, value addition *etc*., were conducted involving 2413 farmers. Also, 829 interface meetings/*Kisan Ghoshtis* involving 10294 farmers were organized, 152 training programmes on agriculture, animal husbandry, poultry, improved implements and other related programmes were conducted benefitting 5302 farmers. Various types of literatures (4378 Nos.) on improved agricultural practices, sanitation and health, nutrition, value addition, soil health *etc*., were provided to 8454 farmers and women.

Table 3.21.1. Details of institutes participating in MGMG programme

S.No.	Name of institute/ university	No of Teams	No of Scientists	No. of villages
	Tamil Nadu			
1	National Research Centre for Banana, Tiruchirapalli	5	18	21
2	Central Institute Brackish water Aquaculture, Chennai	10	62	12
3	Sugarcane Breeding Institute, Coimbatore	18	57	90
	Andhra Pradesh			
4	Indian Institute of Oil palm Research, Pedavegi	3	13	13
5	Central Tobacco Research Institute, Rajahmundry	7	34	26
	Telangana			
6	Indian Institute of Oilseeds Research, Rajendranagar, Hyderabad	10	39	46
7	Indian Institute of Millets Research, Rajendranagar, Hyderabad	9	36	45
8	Directorate of Poultry Research, Rajendranagar, Hyderabad	5	19	14
9	National Academy of Agricultural Research Management, Hyderabad	2	5	2
10	Central Research Institute for Dryland Agriculture, Hyderabad	13	70	70
	Total	**82**	**353**	**339**

Table 3.21.2. Details of activities conducted under MGMG programme

S.No.	Activity	Activates conducted (No)	Farmers Participated
1	No. of Visits	892	1239
2	No. of interface meetings	829	10294
3	Awareness cum demonstration programmes	967	2413
4	Training	152	5302
5	Literature support provided	4384	8454
	Total	**7224**	**27702**

Composting demonstration-IIOR

Brackish water cage farming harvest CIBA

Method demonstration on oil palm-IIOPR

Result demonstration on new variety- CTRI

Foxtail millet demonstration IIMR

Viral disease management training NRCB

CRIDA Planter demonstration-CRIDA

Castor demonstration IIOR

3.22 NFDB sponsored HRD Programmes in fisheries

Skills on fisheries management in reservoirs were imparted to 350 fishermen and fisherwomen through seven skill development programmes organized to reservoir fishermen as per the guidelines of the National Fisheries Development Board, Hyderabad. The funds to a tune of Rs.6,82,500 were provided by the Managing Director, Telangana State Fishermen Cooperative Societies Federation, Ltd., Hyderabad, Government of Telangana for undertaking the programme. KVK Jammikunta, Karimnagar organized two programmes involving 100 fish farmers of lower Maneer dam and Sripadsagar reservoir, while KVK Mamunuru, Warangal conducted four training programmes in which 200 fish farmers near Dharmasagar, Mylaram, Ramappa and Laknavaram reservoirs were trained. KVK Gaddipally, Nalgonda organised one training for fish farmers of Veluluri reservoir project involving 50 fishermen.

Table 3.22.1. Details of skill development programmes on fisheries management in reservoirs

Sl. No	Name of the KVK and district	Name of the Reservoir	No of Trainees
1	Jammikunta, Karimnagar	Lower Maneer Dam	50
2	Jammikunta, Karimnagar	Sripadasagar	50
3	Gaddipally, Nalgonda	Vemuluri project	50
4	Mamunuru, Warangal	Dharmasagar	50
5	Mamunuru, Warangal	Mylaram	50
6	Mamunuru, Warangal	Ramappa	50
7	Mamunuru, Warangal	Laknavaram	50
		Total	**350**

KVK Gaddepalli

KVK Warangal , Mamnoor


Hon'ble Minister for Tribal Welfare and Tourism and Culture Sri. Azmeera Chandulal addressing the trainees of Ramappa Reservoir training programme on 6th July 2017

3.23 *Swachhta Pakhwada*

Swachhata Pakhwada was observed by 68 KVKs from 16-31 May 2017, marked by administering the pledge and explaining the importance of cleanliness to the staff. Each KVK chalked out detailed programme for action during the fortnight. The activities included awareness programmes, special lectures, cleaning of office and village premises, demonstrations on preparation of compost pit, use of biodegradable material, discouraging use of plastics, use of energy saving technologies (cooking tips, low cost refrigerator, solar cooker, hay basket) *etc*. Sixty eight KVKs organized meetings to identify factors associated with creation of dirt/garbage with staff, municipal/civic authorities, gram panchayats, schools *etc*. Fortnight programme was chalked out and implemented in 75 villages involving 2457 participants. Sixty five training programs were organized during the pakhwada both on and off campus by KVKs. One hundred and fifty two awareness programmes on "*Swachha Bharat*" theme involving students, farm women farmers, were conducted. Method demonstrations on treatment of bio-degradable waste (70) and use of eco friendly technologies (55) were organized. Programme coordinators of KVKs also used All India Radio, community radio facilities for transmitting message of *Swacch bharat*.

Cleaning of office premises by KVK Kadapa

Cleaning of traditional cattle shed in Krishna district by KVK Garikapadu

Pond cleaning -KVK Guntur, Lam (PHC) premises, KVK Mahaboobnagar, Kottakota

Swachhata Pakhwara event at Primary Health Centre

Swachhata Pakhwada rally by KVK, Visakhapatnam (BCT)

Swachhta Pakhwada at KVK, Kalikiri

3.24. *Sankalp Se Siddhi* Programme

Sankalp Se Siddhi, an integrated *yojana* as a part of New India movement 2017, for betterment of the nation and doubling farmers' income by 2022, was launched in August 2017. ICAR-ATARI Zone-X, Hyderabad conducted "*Salkalp Se Siddhi* - New India Movement program across India from 19-30th August 2017, later extended to 10thSeptember 2017 through KVKs.

The programme was attended by three Union Ministers, one Chief Minister in Union territory of Puducherry, 24 Members of Parliament (both Rajya Sabha and Lok Sabha), 10 State ministers and 21 Members of Legislative Assembly. A total of 34166 participants comprising of farmers, government officials, chairpersons of *zilla parishad*, other public representatives were administered the pledge on *Sankalp Se Siddhi* for building new India as well as doubling farmers income by 2022.

Table 3.24.1. Details of *Sankalp Se Siddhi* Programme organized by KVK's in Zone-X

State	No of KVKs		Total
	KVKs near State Capital	Other KVKs	
Tamil Nadu	-	27	27
Andhra Pradesh	1	12	13
Telangana	1	8	9
Puducherry UT	1	1	2
Total	**3**	**48**	**51**

Sri.Y.S. Chowdary, Union Minister for Science, Technology and Earth Sciences addressing the participants during the programme at KVK Guntur, Lam, Andhra Pradesh on 21.8.2017

Sri, Ashok Gajapathi Raju ,Union Minister for Civil Aviation, taking oath and addressing the participants during the programme at KVK Vijayanagaram, Andhra Pradesh on 28.8.2017

Shri. Pon Radhakrishnan, Hon'ble Union Minister of State for Road Transport, Highways and Shipping, Government of India taking oath along with other dignitaries during the programme at KVK Kanyakumari , on 29.8.2017.

Shri. Pon Radhakrishnan, Hon'ble Union Minister of State for Road Transport, Highways and Shipping, Government of India taking oath during the *Sankalp Se Siddhi* programme at KVK Coimbatore on 30.8.2017

Shri. V. Narayanasamy, Hon'ble Chief Minister of Puducherry addressing during Sankalp Se Siddhi Program at KVK Pondicherry on 28.8.2017

3.25. *Swachhta Hi Sewa* programme

The *Swachhta Hi Sewa* programmes were organised by 60 KVKs of Zone-X from 15.9.2017 to 2.10.2017. KVKs of the Zone performed *Shramdhan* in 143 villages and contributed towards cleanliness and hygiene in adopted villages/ public places. Rallies, awareness campaign in schools and colleges, cleaning of office, farmers hostel, laboratories, weeding in demonstration plots, awareness camps in adopted villages, training programmes on cleanliness and sanitation, cleaning of public places, display of banners, *etc*. were undertaken during the period. Smt. Krishna Raj, Minister of State for Agriculture, Ministry of Agriculture and Farmers Welfare, GOI, participated in *Sewa Divas* at KVK Ramanathapuram on 17.9.17. She participated in the "*Swachhta Hi Seva* programme" conducted at KVK, Ramanathapuram in Pekarumbu village. The minister later visited the sea weed cultivation in Mundakadu village and observed the activities undertaken by women.

Table 3.25.1 Details of activities undertaken during "*Swachhta Hi Sewa*"

S.No	Activities undertaken during Swachhta Hi Sewa	Numbers
1	Basic maintenance	58
2	Sanitation and SWM	58
3	Cleaning and beautification of surrounding areas	58
4	Vermicomposting/Composting of biodegradable waste& other activities on generation of wealth from waste	24
5	Re-use of water for agriculture/ horticulture purposes	38
6	*Swachhta* Awareness at local level	53
7	*Swachhta* workshops	18
8	*Swachhta* pledge	60

9	Display and Banner	60
10	Foster healthy competition	48
11	Involvement of print and electronic media	38
12	Involving and farmers, farm women and village youth inadopted villages (no of adopted villages)	143
13	No. of members of staff involved in the activities	720
14	No. of VIP/VVIPs involved in the activities	1

Director Dr. YG Prasad administering *Swachhta pledge* to staff on 15.9.2017

Mrs. Krishna Raj, Union Minister of State for Agriculture and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, GOI participating in *Swacchta* programme at Ramanathapuram, Tamil Nadu

3.26 Awareness Training Programme on National Warehousing (Development and Regulatory) Act

Two hundred and fifty farmers, traders and dall mill owners participated in 5 one day awareness training programme for farmers, traders and dall mill owners on national warehousing (development and regulatory) act. The programmes were organized to enable the farmers, traders and dall mill owners to know the benefits of negotiable receipts and encourage them to store their agricultural produce in registered warehouses. KVK (Erode) in Tamil Nadu, Guntur (Lam) and Prakasam (Darsi) in Andhra Pradesh and Karimnagar, Jammikunta and Khammam, Wyra in Telangana organized the programmes.

Table 3.26.1. Details of Farmers Awareness Programs conducted on behalf of WDRA covering WDR Act and related activities of WDRA

State	Name of KVK	Date of organizing WDRA programme	No of participants
Tamil Nadu	Erode	27-12-17	50
Andhra Pradesh	Guntur Lam	20-2-18	50
	Prakasham Darsi	12-3-18	50
Telangana	Karimnagar, Jammikunta	10-3-18	50
	Khammam, Wyra	21-3-18	50
Total			**250**

Farmers Awareness Programs National Warehousing (Development and Regulatory) Act

3.27. *Annapurna Krishi Prasaar Seva* (AKPS)

The interactive information dissemination system (IIDS) named as *Annapurna Krishi Prasaar Seva* (AKPS) is a joint initiative of Digital India Corporation (formerly Media Lab Asia), Acharya N.G. Ranga Agricultural University (ANGRAU) and Professor Jayashankar Telangana State Agricultural University which delivers web, mobile and IVRS (Interactive Voice Response Software) based solutions and enables agricultural related information to be pulled by farmers and also pushed by experts to send problem and context dependent information to the farmers. This system enables data to be transferred from farmers to experts and back in the form of voice, text, images and videos. Under ANGRAU, AKPS has been implemented through KVKs/DAATCs in 13 centers (Nellore, Srikakulam, Kadapa, Anantapur, Prakasam, Krishna, West Godavari, Chittoor, Kurnool, Guntur, Vizianagaram, East Godavari and Visakhapatnam) and through 11 centers (Nalgonda, Khammam, Nagarkurnool, Mahabubnagar, Nizamabad, Mahabubabad, Warangal, Adilabad Medak, Karimnagar, Rangareddy) under PJTSAU. The project review steering group (PRSG) meeting to review the implementation of AKPS in Andhra Pradesh and Telangana was held on 19th May, 2017 at PJTSAU, Hyderabad under the chairmanship of Director, ICAR-ATARI, Hyderabad. The Centers were suggested by PRSG to register all the beneficiary farmers from various schemes like CFLDs, TSP, ARYA *etc*. under AKPS. They were also suggested to rope in

the officials from line departments of the districts in registering farmers, bringing awareness about AKPS and also sharing of information related to government schemes, market prices etc.

Table 3.27.1 Achievement of AKPS during 2017-18

Activity	Achievements during 2017-18	
	ANGRAU	**PJTSAU**
No. of calls from farmers	3913	1395
No. of farmers called back by KVKs/DAATTCs	2159	280
No. of text messages sent by KVKs/DAATTCs	1035	1006
No. of voice messages sent by KVKs/DAATTCs	204	104
No. of voice sensitization programmes organized	13	13
No. of farmers registered	7712	3248
No. of villages registered	2997	2091
No. of women farmers registered	632	242
No. of feedback from farmers	2338	649
No. of best practices recorded	8	5

AKPS facility at KVK, Darsi

Dr. Y.G.Prasad, Director, ATARI chairing PRSG meeting at Hyderabad

3.28. Sponsored programmes in KVKs

The KVKs of the zone received funds to a tune of Rs. 768.84 lakhs from 29 different sponsoring agencies both from public and private sector to conduct 173 varied activities like skill training programmes, training programmes to farmers , rural youth, farm women and input dealers, entrepreneurship development programmes, infrastructure development, demonstrations , exposure visits, establishment of value addition units. In Andhra Pradesh, the KVKs got Rs.166.62 lakhs to conduct 66 varied activities for the benefit of farmers. In Telangana 39 programmes were conducted with Rs. 59.96 lakhs sponsored by different agencies. The highest sponsorship of Rs. 542.26 lakhs was realized by the KVKs of Tamil Nadu which could take up 68 different programmes. Some of the funds in long term projects sponsored by agencies like RKVY, World Bank and State Planning Commission will be incurred over a period of 3-5 years in this state.

Table 3.28.1. Details of sponsored programmes undertaken by KVKs

S.No	Name of the sponsor	Nature of programs sponsored	Tamil Nadu		Andhra Pradesh		Telangana		Zone-X	
			No.	Fund (Lakh Rs.)	No.	Fund (Lakh Rs.)	No.	Fund (Lakh Rs.)	No.	Fund (Lakh Rs.)
1	NABARD	Entrepreneurship Development Program (EDP)					3	1.173	3	1.173
		Skill training					1	0.5	1	0.5
		Training	7	12.075					7	12.07
		Training & demos.	2	14.54					2	14.54
2	MANAGE	Skill Training for Rural Youth (STRY)	24	10.08	29	12.18	24	10.08	77	32.34
		Agri clinics & Agribusiness centres (AC&ABC)	0		2	8.1	1	6.76	3	14.86
		Diploma in agricultural extension services for Input Dealers (DAESI)	3	22.2	5	37	3	22.2	11	81.4
		Agricultural extension executive programme	1	1.45	1	1.40			2	2.85
3	AIR	Radio kisan diwas			1	0.17			1	0.17
4	Department of animal husbandry	Training programme	1	0.618					1	0.618
5	APMAB	Workshop on cultivation of medicinal and aromatic plants and their marketing			1	0.8			1	0.8
6	APSSCA	Vittana mitra			1	1.62			1	1.62
7	ATMA	Training programmes	2	1.08	6	2.99			8	4.07
		EDP			1	0.15			1	0.15
		Demonstrations, training & exposure visits			2	9.5			2	9.50
		Farmer scientist interaction			1	0.1			1	0.1
8	Coconcut Development board (CDB)	Skill training (Friends of coconut)	1	1.13	2	1.69			3	2.82
9	ITDA	Skill training			6	19.37			6	19.37
10	Coromondal international limited	Skill training			1	0.1	1	0.1	2	0.2
11	DASD, Calicut	Integrated development of horticulture	1	6.50					1	6.50
12	DCCD, Kochi	Training	1	0.9	1	0.9			2	1.8
13	Dept. of horticulture	Skill training	1	0.15					1	0.15
14	DST	Socio Economic upliftment of SC/ST farmers of Ariyalur district of Tamil Nadu through IFS .	1	18.98					1	18.98
15	Dept. of agriculture	Training programmes	2	2.6					2	2.6
16	District collector, Nalgonda	Training on selection of quality fish seed , stocking and management of tanks (KVK, Gaddipalli)					1	1.8	1	1.8
17	Dr. Reddy foundation	Training					1	0.8	1	0.8
18	Fertilizer association of India (FAI)	Training			1	0.1	0	0	1	0.1
19	Fullerton India Ltd, Mumbai	Training (KVK, Erode)	2	13					2	13

20	NFDB	Skill training					2	1.95	2	1.95
21	National horticulture mission (NHM)	Model nursery unit	1	15					1	15
22	NIPHM, Hyderabad	Training					1	1.5	1	1.5
23	Pudhuvazhvu Thittam	Microenterprise development	2	1.13					2	1.13
24	RKVY	Training programmes			2	2.4			2	2.4
		Field days			1	1.5			1	1.5
		Infrastructure			1	65.5			1	65.5
		Precision farming project	1	150					1	150
25	State planning commission (Tamil Nadu)	Value addition to millets	2	45.72					2	45.72
		Bee keeping and value addition to honey	1	12.48					1	12.48
		Establishment of nutri-gardens	1	9.98					1	9.98
		Revitalization of millets for nutritional security	4	53					4	53
		Promotion of vermicompost production	1	16.25					1	16.25
		EDP programmes	1	16.15					1	16.15
26	Tamil Nadu livestock development agency (TNLDA)	Training	3	2.0					3	2.0
27	Watershed support services and activities network (WASSAN)	Vittana mitra			1	1.05			1	1.05
28	World bank	Enhancing productivity in irrigated agriculture	1	97.07					1	97.07
		Demonstrations	1	18.18					1	18.18
29	WWF	Better cotton initiative					1	13.1	1	13.1
Total					**68**	**542.26**	**39**	**59.963**	**173**	**768.84**

Exposure visit to AC & ABC Trainees to Paddy Processing Unit –KVK, Chittoor (RASS)

3.29. Awards and recognition to the KVKs

In recognition of contribution to the welfare of farming community in terms of enhancement of productivity / profitability of agriculture and allied sectors, skills and knowledge imparted, income generating opportunities created and presentation skills exhibited in zonal or

national fora, either the individual scientists of a KVK or KVK as a team were given awards at district /state/zone/national level during 2017-18. The individual members of staff of KVKs of the Zone got 15, 23, 7 and 23 different awards at district, state, zone and national level respectively. KVKs of the Zone got four and six awards at state and zonal respectively as successful teams during the year. Two KVKs of the zone, Dharmapuri of Tamil Nadu and West Godavari (V.R. Gudem) were awarded Pandit Deen Dayal Upadhyay Krishi Vigyan Protshahan Puraskar for Zone-X based on their performance as measured by 15 indicators viz., functioning of KVK as a knowledge and resource centre of agricultural technology, output, outcome and socio-economic impact of the various programmes and activities, the nature and quality of interaction and convergence with different stake holders of agricultural development in the district, publications of extension literature, popular articles, research papers, productivity, profitability and income enhancement of farmers as well as their improved livelihood, work done on promotion of production of pulses and oilseeds in the district , creation of job opportunities and self employment among rural youth through skill enhancement and entrepreneurship development *etc*.

State	District level awards		State level awards		Zonal level award s		National level awards	
	Individual	Team	Individual	Team	Individual	Team	Individual	Team
Tamil Nadu	0	0	15	3	1	1	11	0
Andhra Pradesh	6	0	3	0	3	3	5	0
Telangana	9	0	5	1	3	2	7	0
Total	**15**	**0**	**23**	**4**	**7**	**6**	**23**	**0**

KVK, Dharmapuri receiving the best KVK award for the Zone from the Hon'ble Prime Minister of India

KVK, West Godavari (VR Gudem) receiving the best KVK award for the Zone from the Hon'ble Prime Minister of India

3.30 Important Events

Annual Zonal Workshop for KVKs of Andhra Pradesh, Telangana and Maharashtra inaugurated

A three-day Annual Zonal Workshop involving 85 KVKs of Andhra Pradesh, Telangana and Maharashtra was inaugurated by Dr A.K. Singh, DDG (AE), ICAR on 23rd July at YCMOU, Nashik. Speaking on the occasion, Dr Singh complimented and directed the KVKs to focus on skill and entrepreneurship development, soil health, seed production, integrated farming system models, agro-processing, value added agro-advisories and climate smart villages. He outlined new initiatives and interventions contemplated by ICAR to work with farmers, farm women and rural youth in operational villages towards doubling their income.

Earlier, Dr Y.G. Prasad, Director, ATARI, Hyderabad presented the Zonal highlights of achievements in technology assessment and demonstrations in agriculture and allied sectors during 2016-17. Dr Lakhan Singh, Director, ATARI, Pune emphasized on science based frontline extension and skill oriented programs by KVKs in the Zone.

Prof. E. Vayunandan, VC, YCMOU, Nashik shared his experiences on open distance learning especially in agriculture. Dr S.N. Puri, former VC, CAU, Imphal exhorted the KVKs to spread their outreach activities in the district and laid special emphasis on processing, value addition and providing market linkage for better realization of prices.

Senior Scientists and Heads of 83 KVKs presented the progress of work during the year, which was reviewed by Directors of Extension Education of seven State Agricultural Universities from the three states and former Director, ATARI.

A number of publications by KVKs were released in the inaugural session of the three-day Annual Zonal Workshop (23-25th July, 2017) organized by KVK, Nashik (YCMOU).

Zonal Review of Cluster Frontline Demonstrations on Pulses and Oilseeds by KVKs in Andhra Pradesh and Telangana

A Group meeting of 38 KVKs in Andhra Pradesh and Telangana was organized by ICAR-ATARI, Hyderabad during 16-17th October, 2017 to review the progress of *kharif* implementation of Cluster Frontline Demonstrations (CFLDs) on Pulses & Oilseeds and finalization of *rabi* action plan for 2017-18 under central schemes of NFSM and NMOOP, GoI. The review meeting was inaugurated by Dr.Y.S. Ramakrishna, former Director, ICAR-CRIDA. Dr. A.Vishnu Vardhan Reddy, Director, ICAR-IIOR presented the strategy for horizontal expansion and productivity enhancement in oilseed crops in the two states. Technical backstopping through effective planning of technology packages was provided by Directors of Extension and Principal Scientists of pulses and oilseed crops from ANGRAU and PJTSAU. Deputy Director (DOD) shared the monitoring reports based on field visits to implementing KVKs during the *kharif* season.

Dr. V. Praveen Rao, Vice Chancellor, PJTSAU chaired the valedictory session and stressed on the importance of participatory seed production by KVKs and development of skills by KVK scientists for agro-knowledge management through documentation of success stories, case studies, farmer testimonials and video films.

Dr. Y.G. Prasad, Director, ICAR-ATARI, Hyderabad presented the summary recommendations emanating from the Group meeting for improving the quality of implementation of CFLDs by KVKs. It was decided to organize field days and adopt crop cuts to assess the performance of technology packages in farmers' fields.

Heads and nodal scientists (65) of CFLDs from 38 KVKs participated in the review cum action plan meeting. The meeting was organized at IIOR by Drs. K. Dattatri & B. Malathi, Scientists of ICAR-ATARI.

Zonal Review and Planning Workshop of NICRA KVKs in ATARI, Zone-X

One-day Review and Planning Workshop of National Innovations on Climate Resilient Agriculture (Technology Demonstration Component) of ICAR- Agricultural Technology Application Research Institute, Hyderabad was held at CRIDA, Hyderabad on 13th July, 2017.

Dr YG Prasad, Director, ICAR-ATARI, Hyderabad reviewed the performance of NICRA KVKs during 2016-17 and emphasized that efforts should be made in the operational villages through appropriate interventions aimed at enhancing productivity, reducing costs and stability to farmer's income for achieving climate resilience and also doubling it. Appropriate surveys to establish baseline in new villages, quantify resilience and impact of interventions in existing villages will be designed for implementation by KVKs.

Earlier, Dr. K. Sammi Reddy, Director, ICAR-CRIDA, Hyderabad in his opening remarks advised NICRA KVKs to upscale few proven interventions to transform the adopted villages into climate resilient villages. Directors of Extension of ANGRAU and PJTSAU, Project Coordinators, NICRA scientists of CRIDA and ATARI, Heads and Nodal Scientists of 11 KVKs from Andhra Pradesh, Telangana and Tamil Nadu participated in the workshop.

ICAR – ATARI, Zone-X, Hyderabad organizes "Regional Workshop and Agro-biodiversity Exhibition"

A joint "Regional Workshop and Agro-biodiversity Exhibition" in association with Protection of Plant Varieties and Farmers' Rights Authority, Ministry of Agriculture and Farmers Welfare, GoI, New Delhi; PJTSAU, Hyderabad; ICAR – ATARI, Zone-X, Hyderabad and ICAR-ATARI, Zone-IX, Bengaluru was organized at State Agricultural University, Hyderabad on the 27th January 2018. The regional workshop was inaugurated by Mr. C. Parthasarathi, I.A.S, Agricultural Production Commissioner and Secretary to Government, Government of Telangana. Dr. B. Rajender, IAS, Chairperson, PPV and FR authority, New Delhi; Dr. Praveen Rao, Vice Chancellor, PJTSAU, Hyderabad and Dr. RC Agrawal, Register General, PPV and FR authority, New Delhi addressed in the workshop. Speaking in the inaugural session, Dr. YG Prasad, Director ICAR-ATARI, Zone-X, Hyderabad, informed that the institute is associated in creating awareness on the PPV and FR act 2001 since 2013. It has organized 134 awareness programmes and created awareness to over 14442 farmers, extension officials and other stake holders.

The Agro bio diversity exhibition was inaugurated by Dr. B. Rajender, Chairperson, PPV and FR authority along with other dignitaries and visited the exhibition. Eighteen KVKs from ICAR-ATARI, Zone-X, Hyderabad and ICAR ATARI, Zone-XI, Bengaluru participated along with farmers and displayed bio diverse materials of different crops in the exhibition. Over 700 farmers, officials of the State Agricultural University, State Department of Agriculture, Non-Governmental organizations *etc*, press and media participated in the programme. Dr. Chari Appaji, Principal scientist, ICAR- ATARI, Zone-X and Dr. MV Nagesh Director seeds, PJTSAU, Hyderabad coordinated the event. Dr. T. Pradeep, Director of Research, PJTSAU, Hyderabad proposed vote of thanks.

Review of progress by Seed Hub KVKs on Pulses under NFSM

A review of Seed Hubs on Pulses under NFSM by Krishi Vigyan Kendras (KVKs) in Zone-X was organized on 5th January, 2018 at ICAR-ATARI, Hyderabad. Dr. Y.G. Prasad, Director, ATARI, Hyderabad advised the KVKs to produce seed of only latest recommended varieties of pulses, and emphasized on completion of infrastructure development for seed processing and storage. The KVKs were advised to produce certified seed and comply with all modalities of seed production, procurement, marketing and supply to the farmers under the Seed Hub programme. During the review, Nodal scientists of KVKs presented the details of target and achievement of seed production under Seed Hub programme organized during the year 2017-18. Nearly 5000 q of Foundation and Certified seed of latest varieties of pulses (blackgram, greengram, red gram, chickpea and horse gram) were produced by 12 Seed Hub KVKs in Andhra Pradesh, Telangana and Tamil Nadu states for supply of quality seed of pulses and making it available to the farming community for improving productivity. The seed hub programme has been linked with farmers participating in Cluster Frontline Demonstrations (CFLDs). The seed hubs and CFLD activities are regularly monitored.

Review meeting of Seed Hubs on Pulses under NFSM by KVKs in Zone-X on 5th January, 2018

Participants in the review meeting

Dr. B.K. Srivastava, Director, DOD, Dr.K. Sammi Reddy, Director, ICAR-CRIDA, Dr. T. Pradeep, Director of Research, PJTSAU, Hyderabad, Dr.K. Keshavulu, Director, Telangana State Seed and Organic Certification Authority, Dr.K.S. Varaprasad, Former Director, ICAR-IIOR, Dr. B.

Vijayabhinandana, Dy. Director of Extension, ANGRAU, Programme Coordinators of KVKs of Seed Hub project from Andhra Pradesh, Telangana and Tamil Nadu states and scientists of ATARI, Hyderabad participated in the review. Dr.K. Dattatri, Principal Scientist and Nodal Officer (Pulses) coordinated the seed hub review meeting.

Ranking of KVKs in ABC&D category- visit of National Institute of Labor Economics Research and Development (NILERD), NITI Aayog Team

Dr. YG Prasad, Director interacting with NILERD team at ICAR-ATARI, Hyderabad

Dr. Shachi Joshi, Joint Director, National Institute of Labor Economics Research and Development (NILERD) (formerly IAMR), NITI Aayog, Govt. of India, New Delhi, along with her colleague Sh. D Indra Kumar, visited ICAR-ATARI, Hyderabad Zone-X on 22nd November 2017. They interacted with Director, Dr. YG Prasad and briefed him of the study conducted by them on Ranking of KVKs in ABC&D category of the KVKs of Zone-X (Telangana, Andhra Pradesh, Pondicherry and Tamil Nadu). Dr. Shachi Joshi, while interacting, informed of the purpose of visit was to have the first hand information of working at KVKs. She informed that four KVKs in Telengana and Andhra Pradesh were identified for the visit. Mr. D. Inder Kumar, faculty member of NILERD made a brief presentation on the study. In his presentation, Mr. Kumar presented the objectives, process followed for conducted of the ranking study, methodology and in brief the ranking of 61 KVKs in Zone-X as compared to All India KVKs. Scientists of ICAR-ATARI, Hyderabad, participated in the deliberations. The visit was coordinated by Dr. K Dattatri, principal scientist of the institute.

ICAR-ATARI, Zone-X, Hyderabad, launches "*Swachhta Hi seva*" campaign

Dr. Y.G.Prasad, Director, ICAR-ATARI, Zone-X launched the campaign the "*Swachhta Hi Seva*" on 15th September, 2017, as a part of *Swachh Bharat* Mission. The programme was initiated with a cleanliness drive in the office premises. *Swachhta* pledge was administered to all ATARI staff. An action plan for the fortnight will be implemented with the active participation of all officials and special activities have been identified to celebrated the *Swachhta Pakhwada* on 17th (*Sewa Diwas*), 24th Sep (*Samagra Swachhta Diwas*), 25th Sep (*Sarwatra Swachhta*) and *Swachhta* at nearby tourist spots (1st October). Competitions related to cleanliness and hygiene will be conducted to imbibe the spirit of cleanliness. All staff pledged to contribute by way of *shramadhan* during the fortnight.

Dr. Y.G.Prasad, Director, ICAR-ATARI, Zone-X launched the campaign the "*Swachhta Hi Seva*" on 15th September, 2017

Swachhta pledge by ATARI Staff

3. STAFF POSITION

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.	Vacant	Principal Scientist (Agril. Extn.)
6.	Vacant	Senior Scientist (Soil Science)
7.	Smt.B. Malathi	Scientist (Agril. Economics)
8.	Shri.V.V. Ramana	Asst. Admin. Officer
9.	Shri.S. Balakamesh	Asst. Finance & Accounts Officer
10.	Vacant	Jr. Accounts Officer
11.	Vacant	Private Secretary
12.	Shri P. Venkatesh (W.e.f. 15.12.2016)	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	Senior Technical Officer
17.	Smt. Subbalakshmi	Skilled Supporting Staff

5. List of KVKS in Zone-X

S.No	KVK/ District	Name and Address of KVKs
	Tamil Nadu	
1	Cuddalore	Krishi Vigyan Kendra, Vriddhachalam, Cuddalore-606 001
2	Dharmapuri	Krishi Vigyan Kendra, Papparapatti, Dharmapuri – 636809
3	Kanyakumari	Krishi Vigyan Kendra, Thirupathisaram, Kanyakumari - 629 901
4	Madurai	Krishi Vigyan Kendra, Agricultural College and Research Institute, Madurai – 625 104
5	Nagapattinam	Krishi Vigyan Kendra, Sikkal, Nagapattinam –611 108
6	Pudukottai	Krishi Vigyan Kendra, Vamban Colony, Pudukkottai – 622 303
7	Ramanathapuram	Krishi Vigyan Kendra, Coastal Saline Research Centre Collectorate Complex, Ramanathapuram – 623 503
8	Salem	Krishi Vigyan Kendra, Sandhiyur, Via Mallur, Salem – 636 203
9	Tiruvarur	Krishi Vigyan Kendra, Needamangalam, Thiruvarur-614404
10	Tiruvallur	Krishi Vigyan Kendra, Tirur, Tiruvallur-602025
11	Trichy	Krishi Vigyan Kendra, Sirugamani, Trichy - 639 115
12	Vellore	Krishi Vigyan Kendra, Virinjipuram, Vellore - 632 104
13	Villupuram	Krishi Vigyan Kendra, Tindivanam, Villupuram – 604002
14	Virudhanagar	Krishi Vigyan Kendra, Kovilangulam, Aruppukkottai, Virudhunagar – 626107
15	Kancheepuram	Krishi Vigyan Kendra , Kattangulathur (P.O.), Kattupakkam - 603 203, Kancheepuram
16	Namakkal	Krishi Vigyan Kendra, VC & RI Campus, Namakkal - 637002
17	Shivagangai	Krishi Vigyan Kendra, Kundrakudi, Sivagangai-630 206
18	Coimbatore	Krishi Vigyan Kendra, Vivekananduram, Seeliyur Via, Karamadai Block, Coimbatore-641113
19	Dindigul	Krishi Vigyan Kendra, Gandhigram Rural Institute, Gandhigram, Dindigul-624302
20	Erode	Krishi Vigyan Kendra ,272, Perumal Nagar, Puduvalliampalayam Road, Kalingiyam Post Gobichettipalayam Taluk, Erode-638 453
21	Karur	Krishi Vigyan Kendra, Pulutheri, RT Malai Post, Kulithalai Taluk, Karur-621313
22	Krishnagiri	Krishi Vigyan Kendra, Elumichangiri, Mallinayanalli Post, Krishnagiri – 635120.
23	Perambalur	Krishi Vigyan Kendra, Valikanduram Distt. Perambalur – 621115
24	Theni	ICAR Krishi Vigyan Kendra, Kamatchipuram (S.O) Theni-625520
25	Tiruvannamalai	Krishi Vigyan Kendra, Kilnelli Village, Chithathur Post, Vembakkam Taluk, District. Thiruvannamalai-604 410
26	Tuticorin	Krishi Vigyan Kendra, Mudivaithanendal Vagaikulam, Thoothukudi-628102
27	Ariyalur	Krishi Vigyan Kendra, Cholamadevi Post, Jayamkondam, Udayarpalayam, Ariyalur – 612902
28	Tirunalveli	Krishi Vigyan Kendra, Urmelalagian, Ayikudi Post, Tenkasi-Tk,Tirunelveli District, Tamil Nadu - 627 852
	Andhra Pradesh	
1	Anantapur (Reddipalli)	Krishi Vigyan Kendra, Reddipalli (V), B.K. Samudram (Mdl), Anantapuram (Dist) - 515701
2	Anantapur (Kalyandurg)	Krishi Vigyan Kendra, Garudapuram (V), Kalyandurg (M), Krishi Vigyan Kendra, Kalyandurg, Anantapur-515761
3	Chittoor(Kalikiri)	Krishi Vigyan Kendra, CLRC Building, Madanapalle Road, Kalikiri - 517 234. Chittoor district. Andhra Pradesh
4	Chittoor(Rass)	Krishi Vigyan Kendra, RASS-KVK, Vanasthali, Karakambadi Post,

S.No	KVK/ District	Name and Address of KVKs
		Renigunta Mandal, Chittoor Dt., A.P-517 520
5	East Godavari(Kalavacherla)	Krishi Vigyan Kendra, Kalavacharla, Rajanagram Mandal, East Godavari - 533 294
6	East Godavari(Pandirimamidi)	Krishi Vigyan Kendra, Pandirimamidi, Rampachodavaram, East Godavari District, Pin: 533 288
7	Guntur(Vinayshram)	
8	Guntur(Lam)	Krishi Vigyan Kendra, Lam, Guntur - 520034
9	Kadapa	Krishi Vigyan Kendra, Utukur, Kadapa, Y.S.R district, Andhra Pradesh - 516003
10	Kadapa-2	Krishi Vigyan Kendra, Vonipenta, YSR Kadapa district-516173
11	Krishna (Garikapadu)	Krishi Vigyan Kendra, Garikapadu, Krishna District, 521175, Andhra Pradesh
12	Krishna (Ghantasala)	Krishi Vigyan Kendra, Agril. Research Station, Ghantasala Krishna , AP– 521 133
13	Kurnool (Banavasi)	Krishi Vigyan Kendra, Near G.L.S. Farm,, Banavasi, Yemmiganur Mandal, Kurnool District -518360, Andhra Pradesh
14	Kurnool (Yagantipalli)	Krishi Vigyan Kendra, Yagantipalle, Kurnool Dt, Andhra Pradesh - 518124
15	Nellore	Krishi Vigyan Kendra, Mini By Pass Road, A.K. Nagar (Post), B.V. Nagar, Andhra Pradesh-524 004
16	Nellore (Periyavaram)	Krishi Vigyan Kendra, Periyavaram, Venkatagiri Post, SPSR Nellore district-524 132
17	Prakasam (Darsi)	Krishi Vigyan Kendra, Agril. Research Station, PO: Darsi, Prakasam – 523247
18	Prakasam (Kandukur)	Krishi Vigyan Kendra, Central Tobacco Research Institute, Research Station Premises, Kandukur – 523 105, Prakasam
19	Srikakulam	Krishi Vigyan Kendra, Amadalavalasa-532185
20	Vishakapatnam	Krishi Vigyan Kendra, BCT-Krishi Vigyan Kendra, Haripuram, Rambilli Mandal, Visakhapatnam-531061
21	Vishakapatnam (Kondempudi)	Krishi Vigyan Kendra, C/o Jyothirmaya trust, Amarapuri, Pottidorapalem post, Butchayyapeta Mandal, Visakhapatnam-531026
22	Vizayanagaram	Krishi Vigyan Kendra, Rastakuntabai, Vizianagaram-535523
23	West Godavari (Vrgudem)	Krishi Vigyan Kendra, Venkataramannagudem,West Godavari-534 101
24	West Godavari (Undi)	Krishi Vigyan Kendra, Undi, West Godavari-534199
	Telangana	
1	Adilabad	Krishi Vigyan Kendra, ARS premises, Ramnagar, Adilabad- 504 002
2	Mancherial	Krishi Vigyan Kendra, Bellampalli, Mancherial
3	Karimnagar (Jammikunta)	Krishi Vigyan Kendra, Jammikunta, Karimnagar-505 122
4	Karimnagar (Ramgirikilla)	Krishi Vigyan Kendra, Ramagirikhilla, Ratnapu, Ramagiri, Peddapalli district-505212
5	Khammam	Krishi Vigyan Kendra, ARS Wyra, Khammam-507 165
6	Khammam (Kothagudem)	Krishi Vigyan Kendra, Garimellapadu Village, Kothagudem Mandal, Khammam-507165
7	Mahabubnagar (YFA)	Krishi Vigyan Kendra, Madanapuram (Vill. & Mdl), Wanaparthy, Mahabubnagar -509110
8	Mahabubnagar (Palem)	Krishi Vigyan Kendra, Palem,Mahabubnagar-509215
9	Medak	Krishi Vigyan Kendra, Didgi Village, Zaheerabad, Medak-502 220
10	Medak-2	Krishi Vigyan Kendra, Tunki Village, Kowdipally, Mandal, Medak
11	Nalgonda (Gaddipalli)	Krishi Vigyan Kendra, Gaddipalli, Garedapalli Mandal, Nalgonda -508201
12	Nalgonda (Kampasagar)	Krishi Vigyan Kendra, Kampasagar, Babusaipet Post , Tripuraram Mandal, Nalgonda-508 207
13	Nizamabad	Krishi Vigyan Kendra, Farm Science Centre, Rudrur, Varmi Mandal,

S.No	KVK/ District	Name and Address of KVKs
		Nizamabad-503188
14	Ranga Reddy	Krishi Vigyan Kendra, Near Deer Park, Bhagyalatha Bus stop, Hayathnagar Research Farm, Telangana -501 505
15	Warangal (Malyal)	Krishi Vigyan Kendra, Malyal, Mahabubabad, Warangal 506 101
16	Warangal (Mamnoor)	Krishi Vigyan Kendra, Mamnoor, Warangal, Telangana -506 166
	Puducherry	
1	Karaikal	Krishi Vigyan Kendra , Madur, Sellore Thirunallar, Karaikal-609 607
2	Pondicherry	Krishi Vigyan Kendra, Kurumbet, Puducherry-605 009