वार्षिक रिपोर्ट - २०२४
ANNUAL REPORT - 2024

भाकृअनुप - कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान
ICAR-Agricultural Technology Application Research Institute
Zone XI, Hebbal, Bengaluru - 560024

Cover page photo and design: Dr. V Venkatasubramanian, Director, ICAR-ATARI, Bengaluru

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Published by

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Director, ICAR-ATARI, Bengaluru

Year of Publication
June, 2025

Citation

Annual Report 2024, ICAR-Agricultural Technology Application Research Institute, Zone XI, Bengaluru, Karnataka, India

Printed at

Precision Fototype Services
No 13, SNT Street,
Guptha Layout, Halasuru,
Bengaluru-560 008
Ph: 080-25364349/ 080-25546146

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Preface

The Agriculture and Allied sectors continuous to be the backbone of Indian economy, playing the key role in national productivity, employment and income. This sector contributes approximately 16 per cent of the country's GDP and supports about 46.1 per cent of the population as their livelihood options. It has demonstrated remarkable resilience in recent years, marked by consistent growth rates with stability which is directly attributed to Government of India's supporting initiatives to enhance productivity, promote crop diversification, and increase farmer's income for attaining Vikasit Bharat by 2047. Agricultural extension plays an important role in building a stronger India by 2047 through disseminating knowledge, enhancing productivity, and promoting sustainable agricultural practices. In this regard, KVKs contribution is significant and acknowledged for the development of agriculture and allied sectors in the country for the last fifty years through disseminating knowledge on new technologies and taking forward the agriculture beyond production and productivity.

The present Annual Report 2024 is the outcome of significant activities carried out by ICAR-ATARI, Zone XI, Bengaluru and its constituent KVKs during the year 2024. The milestone activities carried out by KVKs under the guidance of this institute during the year include organisation of training-cum-awareness program on PPV&FRA, Zonal Women Agripreneur Conclave 2024 to empower women entrepreneurs, live webcasting of PM Kisan Samman Nidhi programs and inauguration of farmer's hostels of KVK, Vijayapur-I, KVK, Belagavi-II,KVK, Kottayam and KVK, Palakkad by Sushri. Shobha Karandlaje, Hon'ble Union Minister of State for Agriculture & Farmer Welfare, Government of India.

KISAN SAMRIDDHI on line market portal developed by the institute was officially launched on January 03, 2025 by Dr. Himanshu Pathak, Director General (ICAR) and Secretary (DARE). The portal enables direct online sales of seeds, planting materials, bio-products, value-added products, and technological items produced by KVKs, supported FPOs, entrepreneurs, and SHGs. It promotes wider reach, transparency, market access, and fair pricing. Institute has obtained the Kisan Samriddhi trademark registration in five classes covering about 150 products and services.

Present report gives the details of KVK activities conducted during the year. KVKs in the zone have conducted 255 on farm tests through which 781 technologies were assessed and a total of 5495 frontline demonstrations were organized in crops, livestock and enterprises as an effort to promote adoption of improved technologies. KVKs have organized 5925 capacity development courses which include 4118 courses for farmers, 613 courses for rural youth, and 338 courses for extension personnel.

A total of 1.40 lakh frontline extension activities were organized to create awareness among 15.57 lakh farmers and 0.6 lakh extension personnel on varieties, production technologies, integrated pest and disease management, animal health, poultry production, fisheries management and human nutrition. KVKs supplied 3778.07 q of seeds of different crop varieties, 30.20 lakh planting materials, 4.39 lakh livestock strains and fish fingerlings benefiting 0.33 lakh farmers, supplied 8729.72 q of bio-products through which 2.02 lakh farmers were motivated to adopt bio-control measures in agriculture.

Other important programs that were under taken during the year are Farmer FIRST, Attracting and Retaining Youth in Agriculture, National Innovations in Climate Resilient Agriculture, Seed Hubs on Pulses, Mera Gaon Mera Gaurav, creation of awareness about government schemes, Cluster Frontline Demonstration of Pulses and Oilseeds.

It is my honour and pleasure to bring out the Annual Report 2024 of the institute as a testimony of the valuable contribution made by the KVKs of Karnataka, Kerala and Lakshadweep towards farmer's prosperity through sustainable agricultural development. I express my sincere thanks and gratitude to Honourable Director General (ICAR) and Secretary (DARE), DDG (AE) and ADGs (AE) from ICAR, New Delhi for their continued support and guidance given to me and my team. My hearty congratulations to our KVKs and ICAR-ATARI team for giving their best efforts and support to prepare this holistic and focused report.

(V. VENKATASUBRAMANIAN)
DIRECTOR

May 26, 2025

कार्यकारी सारांश

कार्यकारी सारांश हिंदी और अंग्रेज़ी में दिया गया है।

कार्यकारी सारांश

- संस्थान के परिचालन क्षेत्राधिकार में 48 केवीके हैं, जिनमें से 33 केवीके कर्नाटक में, 14 केवीके केरल में और एक केवीके लक्षद्वीप में है। केवीके के अधिदेश प्रौद्योगिकी मूल्यांकन, प्रदर्शन और क्षमता विकास हैं। इसे ऑन-फार्म परीक्षण, अग्रिम पंक्ति प्रदर्शन, क्षमता विकास, विस्तार गतिविधियों और कृषि सलाह, तकनीकी उत्पादों के उत्पादन और आपूर्ति के माध्यम से प्राप्त किया जाता है।

प्रमुख गतिविधियाँ

- संस्थान ने 28 फरवरी, 2024 को माननीय प्रधान मंत्री द्वारा पीएम किसान सम्मान निधि की 16वीं किस्त जारी करने की लाइव वेबकास्टिंग का समन्वय किया। कुल 2510 प्रतिभागियों ने केवीके में लाइव टेलीकास्ट कार्यक्रम देखा।
- सुश्री शोभा करंदलाजे, माननीय केंद्रीय कृषि एवं किसान कल्याण राज्य मंत्री, भारत सरकार ने 13 मार्च, 2024 को केवीके, विजयपुर-I के किसान छात्रावास का उद्घाटन किया और केवीके, बेलगावी II में किसान छात्रावास और स्टाफ क्वार्टर का उद्घाटन किया।
- माननीय सचिव (डीएआरई) और महानिदेशक (आईसीएआर), डॉ. हिमांशु पाठक ने 10 जनवरी, 2024 को संस्थान का दौरा किया।
- संस्थान ने केवीके की वार्षिक समीक्षा और कार्य योजना कार्यशालाएं, अनुसंधान सलाहकार समिति की बैठक, क्षेत्रीय महिला कृषि उद्यमी सम्मेलन, पौध किस्मों के संरक्षण और किसान अधिकार कार्यशाला और माननीय प्रधान मंत्री कार्यक्रमों का सीधा प्रसारण आयोजित किया।

प्रमुख उपलब्धियाँ

प्रौद्योगिकी मूल्यांकन

- केवीके ने 1443 किसानों को शामिल करके 1239 परीक्षणों के माध्यम से 781 प्रौद्योगिकियों का मूल्यांकन करने के लिए 255 ओएफटी आयोजित किए, जिनमें से 181 ओएफटी कर्नाटक के केवीके द्वारा, 72 ओएफटी केरल के केवीके द्वारा और दो ओएफटी केवीके लक्षद्वीप द्वारा आयोजित किए गए।
- फसलों पर कुल 218 ओएफटी आयोजित किए गए, जिनमें से 160 ओएफटी कर्नाटक में और 58 ओएफटी केरल में थे। 781 तकनीकी विकल्पों का मूल्यांकन करने के लिए कुल 1239 परीक्षण किए गए। कर्नाटक के केवीके ने 885 परीक्षणों के माध्यम से 560 प्रौद्योगिकी विकल्पों का मूल्यांकन किया और केरल के केवीके ने 338 परीक्षणों के माध्यम से 214 प्रौद्योगिकी विकल्पों का मूल्यांकन किया।
- पशुधन घटक में, केवीके ने 24 ओएफटी आयोजित किए, जिनमें से 14 कर्नाटक में, आठ केरल में और दो लक्षद्वीप में थे। यह 147 परीक्षणों के माध्यम से हासिल किया गया, जिसमें कर्नाटक में 95, केरल में 36 और लक्षद्वीप में 16 शामिल थे। 57 तकनीकी विकल्पों का मूल्यांकन किया गया, जिसमें कर्नाटक में 32, केरल में 18 और लक्षद्वीप में सात शामिल थे।
- उद्यमों के तहत तकनीकी विकल्पों का मूल्यांकन 49 परीक्षणों के माध्यम से कुल 13 ओएफटी लेकर किया गया।

अग्रिम पंक्ति प्रदर्शन

- कर्नाटक, केरल और लक्षद्वीप द्वीपसमूह में अनाज और बाजरा पर 1099, तिलहन पर 253, दलहन पर 533, वाणिज्यिक फसलों पर 235, रेशे वाली फसलों पर 119, चारा फसलों पर 43, सब्जी फसलों पर 559, कंद फसलों पर 82, फलों की फसलों पर 310, फूलों की फसलों पर 88, बागान फसलों पर 126, मसालों पर 237, औषधीय फसलों पर 10, विभिन्न फसलों के संकरों पर 536, कृषि फार्म उपकरणों पर 200 प्रदर्शन, पशुधन पर 860 प्रदर्शन, मत्स्य पालन पर 118 और उद्यमों पर 77 प्रदर्शन सहित कुल 5495 अग्रिम पंक्ति प्रदर्शन आयोजित किए गए।
- अनाज और बाजरा: कर्नाटक के केवीके ने 446.60 हेक्टेयर में अनाज और बाजरा पर 992 एफएलडी आयोजित किए और केरल के केवीके ने 42.00 हेक्टेयर में 107 एफएलडी आयोजित किए।
- तिलहन और दलहन: कर्नाटक के केवीके ने 99.40 हेक्टेयर में तिलहन पर 253 एफएलडी और 198.02 हेक्टेयर में दलहन फसलों पर 518 एफएलडी आयोजित किए और केरल के केवीके ने 0.28 हेक्टेयर में तिलहन पर 15 एफएलडी आयोजित किए।
- सब्जी की फसलें: कर्नाटक के केवीके ने 140.10 हेक्टेयर में सब्जी की फसलों पर 472 एफएलडी आयोजित किए और केरल के केवीके ने 3.15 हेक्टेयर में 87 एफएलडी आयोजित किए।
- कंद फसलें: कर्नाटक के केवीके ने 0.50 हेक्टेयर में आलू पर

5 एफएलडी आयोजित किए और केरल के केवीके ने 5.72 हेक्टेयर में हाथी पैर रतालू और कसावा पर 77 एफएलडी आयोजित किए।

- फल फसलें: कर्नाटक के केवीके ने 73 हेक्टेयर में फल फसलों पर 210 एफएलडी आयोजित किए और केरल के केवीके ने 4.66 हेक्टेयर में 100 एफएलडी आयोजित किए।
- बागान फसलें: कर्नाटक के केवीके ने 27.00 हेक्टेयर में बागान फसलों पर 86 एफएलडी आयोजित किए और केरल के केवीके ने 7.76 हेक्टेयर में 40 एफएलडी आयोजित किए।
- मसाला फसलें: कर्नाटक के केवीके ने 57.81 हेक्टेयर में मसाला फसलों पर 181 एफएलडी आयोजित किए और केरल के केवीके ने 7.26 हेक्टेयर में 56 एफएलडी आयोजित किए।
- फूलों की फसलें: कर्नाटक के केवीके ने 18 हेक्टेयर में फूलों की फसलों पर 85 एफएलडी आयोजित किए।
- कृषि उपकरण/मशीनरी: कर्नाटक के केवीके ने कृषि उपकरणों और मशीनरी पर 175 एफएलडी आयोजित किए और केरल के केवीके ने 25 एफएलडी आयोजित किए।
- कृषि उद्यम: कर्नाटक के केवीके ने 583 किसानों को शामिल करके 77 घरेलू कृषि उद्यम इकाइयों का प्रदर्शन किया और केरल के केवीके ने 244 किसानों को शामिल करके 45 लघु उद्यम इकाइयों का प्रदर्शन किया।
- पशुधन: कर्नाटक के केवीके ने 294 इकाइयों के माध्यम से 1308 पशुधन को शामिल करके पशुधन और मत्स्य पालन पर 394 एफएलडी आयोजित किए और केरल के केवीके ने 206 इकाइयों के माध्यम से 591 पशुधन को शामिल करके 457 एफएलडी आयोजित किए और केवीके लक्षद्वीप ने 21 इकाइयों के माध्यम से 11 किसानों को शामिल करके मुर्गी पालन पर दस एफएलडी आयोजित किए।
- मत्स्य पालन: कर्नाटक के कृषि विज्ञान केंद्रों ने 69 इकाइयों के माध्यम से 63800 अंगुलिकाओं को शामिल करके मत्स्य पालन पर 69 एफएलडी आयोजित किए और केरल के कृषि विज्ञान केंद्रों ने 49 इकाइयों के माध्यम से 16797 अंगुलिकाओं को शामिल करके 49 एफएलडी आयोजित किए।
- महिलाओं और बच्चों का सशक्तिकरण: कर्नाटक के कृषि विज्ञान केंद्रों ने 48710 महिलाओं के लिए 1000 कार्यक्रम और 5473 बच्चों के लिए 84 कार्यक्रम आयोजित किए और केरल के कृषि विज्ञान केंद्रों ने 690 महिलाओं के लिए 35 कार्यक्रम और 806 बच्चों के लिए 40 कार्यक्रम आयोजित किए।

क्षमता विकास

- कृषि विज्ञान केंद्रों ने 5925 क्षमता विकास पाठ्यक्रम आयोजित किए, जिनमें किसानों के लिए 4118 पाठ्यक्रम, ग्रामीण युवाओं के लिए 613 पाठ्यक्रम और विस्तार कर्मियों के लिए 338 पाठ्यक्रम शामिल थे। कुल 209554 प्रतिभागियों को प्रशिक्षित किया गया, जिसमें 144932 किसान, 20435 ग्रामीण युवा और 12821 विस्तार कर्मी शामिल थे। इसके अलावा, 668 प्रायोजित और 188 व्यावसायिक पाठ्यक्रम आयोजित किए गए।
- किसानों के लिए क्षमता विकास का प्रमुख क्षेत्र फसल उत्पादन था जिसमें 34968 किसानों को शामिल करते हुए 869 पाठ्यक्रम आयोजित किए गए। महिला सशक्तीकरण (667) और पौध संरक्षण (512) पर क्षमता विकास पाठ्यक्रम अगले सबसे अधिक मांग वाले पाठ्यक्रम थे, इसके बाद मृदा स्वास्थ्य और उर्वरता प्रबंधन (481 पाठ्यक्रम) और पशुधन उत्पादन और प्रबंधन (301) थे।
- ग्रामीण युवाओं को मूल्य संवर्धन (93), बागवानी फसलों के नर्सरी प्रबंधन (57), मशरूम उत्पादन (39), जैविक इनपुट के उत्पादन (35) और अन्य पाठ्यक्रमों जैसे कि जैव एजेंटों के उत्पादन, एकीकृत फसल प्रबंधन, सब्जी की खेती, एक्वापोनिक्स, नारियल चढ़नेवाला और पीसीआरए (138) पर प्रशिक्षण दिया गया।
- विस्तार कार्यकर्ताओं को इनपुट डीलरों, रेशम उत्पादन, नर्सरी प्रबंधन, बीज उत्पादन, रोग प्रबंधन के लिए क्षमता निर्माण पर प्रशिक्षित किया गया।

अग्रिम पंक्ति विस्तार कार्यक्रम

- केवीके ने कुल 1.40 लाख अग्रिम पंक्ति विस्तार गतिविधियाँ कीं और 15.57 लाख किसानों के बीच किस्मों, उत्पादन प्रौद्योगिकियों, एकीकृत कीट और रोग प्रबंधन, पशु स्वास्थ्य और पोषण, मुर्गी पालन उत्पादन, मत्स्य प्रबंधन और मानव पोषण पर जागरूकता पैदा की।
- केवीके ने विस्तार साहित्य (675), लोकप्रिय लेख (334), समाचार पत्र कवरेज (2878), रेडियो कवरेज (551), टीवी कवरेज (199) प्रकाशित किए और लघु वीडियो (227) विकसित किए।

तकनीकी इनपुट का उत्पादन

- विभिन्न फसल किस्मों के 3778.07 क्विंटल बीज, विभिन्न फसल संकरों की 30.20 लाख रोपण सामग्री, 4.39 लाख पशुधन उपभेदों और मछली के बच्चों का उत्पादन और आपूर्ति की, जिससे 33344 किसान लाभान्वित हुए।
- केवीके ने 8729.72 क्विंटल जैव उत्पादों का उत्पादन और आपूर्ति की गई, जिसके माध्यम से 2.02 लाख किसानों को रसायनों के उपयोग को कम करके जैव-नियंत्रण प्रथाओं को अपनाने के लिए प्रेरित किया गया।

किसान मोबाइल सलाहकार सेवाएँ

- केवीके ने 19.37 लाख किसानों को 9861 पाठ संदेश भेजे। संदेश फसलों (3467) से संबंधित थे, इसके बाद उद्यमों (1716), जागरूकता (1392), पशुधन (1369) और विपणन (994) से संबंधित थे।

मृदा, जल और पौध विश्लेषण

- केवीके ने 13505 गाँवों के 29365 किसानों से प्राप्त मिट्टी, जल, पौधे और जैविक खाद के 34223 नमूनों का विश्लेषण किया, जिसके आधार पर किसानों को 19921 मृदा स्वास्थ्य कार्ड वितरित किए गए।
- 05 दिसंबर, 2024 को अटारी बेंगलुरु के केवीके में 2456 किसानों, 865 विस्तार अधिकारियों और छात्रों और 43 वीआईपी की भागीदारी के साथ विश्व मृदा दिवस मनाया गया। इस अवसर पर किसानों को 965 मृदा स्वास्थ्य कार्ड वितरित किए गए।

वर्षा जल संचयन इकाइयाँ

- आठ केवीके में स्थापित वर्षा जल संचयन और पुनर्चक्रण इकाइयों का उपयोग 20 क्षमता विकास कार्यक्रमों और 22 प्रदर्शनों को आयोजित करने के लिए किया गया था। इस सुविधा का उपयोग केवीके में उपयोग और किसानों को प्रदान करने के लिए 269295 रोपण सामग्री का उत्पादन करने के लिए किया गया था। इन इकाइयों का दौरा 16898 किसानों और 126 अधिकारियों ने किया था।

केवीके का अभिसरण और संबंध

- एटीएमए के साथ अभिसरण के हिस्से के रूप में, केवीके ने एटीएमए द्वारा आयोजित 1072 कार्यक्रमों में भाग लिया मैनेज, हैदराबाद; राष्ट्रीय बागवानी मिशन; विभिन्न आईसीएआर संस्थानों की परियोजनाएं और राष्ट्रीय कृषि और ग्रामीण विकास बैंक प्रमुख एजेंसियां थीं जिन्होंने विभिन्न कार्यक्रमों और गतिविधियों के आयोजन के लिए केवीके को वित्त पोषित/समर्थित किया।

विशेष कार्यक्रम

- दलहनों पर क्लस्टर अग्रिम पंक्ति प्रदर्शनों के अंतर्गत 1000 हेक्टेयर क्षेत्र में विभिन्न दलहन फसलों पर कुल 2500 प्रदर्शन आयोजित किए गए।
- तिलहनों पर क्लस्टर अग्रिम पंक्ति प्रदर्शनों के अंतर्गत 1473 हेक्टेयर क्षेत्र में किसानों के खेतों में कुल 3570 प्रदर्शन आयोजित किए गए।
- बीज हब कार्यक्रम के अंतर्गत आठ केवीके ने दलहनों के 2313.33 क्विंटल बीज उत्पादित किए, जिनमें अरहर (1196 क्विंटल), उड़द (550.70 क्विंटल), चना (462.40 क्विंटल), मूंग (60.88 क्विंटल), लोबिया (18.85 क्विंटल), फील्ड बीन (18.30 क्विंटल) और कुल्थी (6.20 क्विंटल) शामिल हैं।
- जलवायु अनुकूल कृषि में राष्ट्रीय नवाचारों के अंतर्गत, कर्नाटक और केरल के चौदह जलवायु संवेदनशील जिलों को कवर करने वाले गांवों के समूह में जलवायु लचीलापन बनाने के लिए 914.24 हेक्टेयर क्षेत्र को कवर करते हुए विभिन्न कृषि प्रणाली प्रकारों में कुल 1165 प्रदर्शन आयोजित किए गए।
- कृषि में युवाओं को आकर्षित करने और बनाए रखने के अंतर्गत, विभिन्न कृषि और संबद्ध उद्यमों पर 970 ग्रामीण युवाओं के लिए 36 क्षमता निर्माण कार्यक्रम आयोजित किए गए।
- संस्थान ने केवीके के साथ मिलकर 16-31 दिसंबर, 2024 के दौरान स्वच्छता, स्वास्थ्य और सफाई से संबंधित स्वच्छता पखवाड़ा का आयोजन किया, जिसमें 12018 प्रतिभागियों ने भाग लिया।
- जोन के दस आईसीएआर संस्थानों ने 565 गोद लिए गए गांवों में किसानों और अन्य हितधारकों को शामिल करके वैज्ञानिकों की 126 बहु-विषयक टीमों के गठन के माध्यम से मेरा गांव-मेरा गौरव कार्यक्रम को लागू किया।
- तीन आईसीएआर संस्थानों ने किसान प्रथम कार्यक्रम लागू किया, जिसमें फसल, बागवानी, पशुधन, प्राकृतिक संसाधन

प्रबंधन, उद्यम और एकीकृत कृषि प्रणाली मॉड्यूल में क्षेत्र स्तर पर कई हस्तक्षेप शामिल थे। इस कार्यक्रम के तहत 37 गांवों में कुल 11964 परिवार शामिल हुए।

विस्तार निदेशालय और एटीआईसी द्वारा तकनीकी सहायता

- विस्तार निदेशकों ने 48 वैज्ञानिक सलाहकार समिति की बैठकों, 180 क्षेत्र दिवसों, 118 कार्यशालाओं/सेमिनारों, 13 प्रौद्योगिकी सप्ताहों और 1620 प्रशिक्षण कार्यक्रमों में भाग लिया। केवीके द्वारा आयोजित 112 फार्म परीक्षणों और 322 अग्रिम पंक्ति प्रदर्शनों के भूखंडों का दौरा करके क्षेत्र स्तर की निगरानी की गई।
- क्षेत्र में कुल 141244 किसानों ने कृषि प्रौद्योगिकी सूचना केंद्रों (एटीआईसी) का दौरा किया। उन्होंने 138492 किसानों को खेती के विभिन्न पहलुओं से संबंधित जानकारी प्रदान की। इन केंद्रों में उपलब्ध तकनीकी उत्पादों को 43829 किसानों ने खरीदा।

अनुसंधान परियोजनाएँ

- आईसीएआर-अटारी, बेंगलुरु ने चार संस्थान अनुसंधान परियोजनाएँ और एक राष्ट्रीय नेटवर्क परियोजना शुरू की है।

प्रकाशन

- संस्थान के वैज्ञानिकों ने दस शोध पत्र प्रकाशित किए। केवीके कर्मचारियों ने कृषि और संबद्ध उद्यमों के विभिन्न तकनीकी पहलुओं पर 127 शोध पत्र, 52 तकनीकी बुलेटिन, 329 लोकप्रिय लेख और 210 विस्तार साहित्य प्रकाशित किए।

मानव संसाधन विकास

- सितंबर 02-04, 2024 के दौरान "बीज, रोपण सामग्री और जैव-उत्पाद उत्पादन के माध्यम से संसाधन केंद्रों के रूप में केवीके को मजबूत करना" पर दो दिवसीय कार्यशाला आयोजित की गई।
- अक्टूबर 15-18, 2024 के दौरान नवनियुक्त सहायकों के लिए अभिविन्यास प्रशिक्षण कार्यक्रम आयोजित किया गया।
- जुलाई 25-30, 2024 और 27-31 दिसंबर, 2024 को नवनियुक्त केवीके प्रमुखों के लिए दो चरणों में प्रबंधन विकास कार्यक्रम आयोजित किया गया।

Executive Summary

Institute has 48 KVKs under its operational jurisdiction of which 33 KVKs are in Karnataka, 14 KVKs are in Kerala and one KVK is in Lakshadweep. The mandates of KVK are technology assessment, demonstration and capacity development. It is achieved through on-farm testing, frontline demonstration, capacity development, extension activities and farm advisories, production and supply of technological products.

Major Activities

- Institute coordinated live webcasting of Hon'ble Prime Minister released 16th installment of PM Kisan Samman Nidhi on February 28, 2024. A total of 2510 participants viewed live telecast program in KVKs.
- Sushri Shobha Karandlaje, Hon'ble Union Minister of State for Agriculture and Farmer Welfare, Government of India inaugurated the farmer's hostel of KVK,Vijayapur-I on March 13, 2024 and inaugurated farmers hostel and staff quarters in KVK, Belagavi II.
- Hon'ble Secretary (DARE) & Director General (ICAR), Dr. Himanshu Pathak, visited the institute on January 10, 2024.
- Institute organized Annual Review and Action Plan workshops of KVKs, Research Advisory Committee meeting, Zonal Women Agripreneur Conclave, Protection of Plant Varieties and Farmers Rights workshop and live telecast of Hon'ble Prime Minister programs.

Major Achievements

Technology Assessment

- KVKs conducted 255 OFTs for assessing 781 technologies through 1239 trials by involving 1443 farmers, out of which, 181 OFTs were conducted by KVKs of Karnataka, 72 OFTs were conducted by KVKs of Kerala and two OFT conducted by KVK Lakshadweep.
- A total of 218 OFTs conducted on crops, out of which 160 OFTs were in Karnataka and 58 OFTs were in Kerala. A total 1239 trials were laid for assessing 781 technological options. KVKs of Karnataka assessed 560 technology options through 885 trials and KVKs of Kerala assessed 214 technology options through 338 trials.
- In livestock component, KVKs conducted 24 OFTs, out of which 14 were in Karnataka, eight were in Kerala and two were in Lakshadweep. This was achieved through 147 trials, which included 95 in Karnataka, 36 in Kerala and 16 in Lakshadweep. The assessment of 57 technological options included, 32 in Karnataka, 18 in Kerala and seven in Lakshadweep.
- Technological options under enterprises were assessed by taking up a total of 13 OFTs through 49 trials.

Frontline Demonstrations

- A total of 5310 FLDs were conducted including 992 on cereals and millets, 253 on oilseeds, 533 on pulses, 157 on commercial crops, 119 on fibre crops, 43 on fodder crops, 559 on vegetable crops, 82 on tuber crops, 310 on fruit crops, 88 on flower crops, 126 on plantation crops, 237 on spices, 10 on medicinal crops, 536 on hybrids of various crops, 200 demonstrations on agricultural farm implements, 851 demonstrations on livestock, 118 on fisheries and 77 demonstrations on enterprises in the states of Karnataka, Kerala and Lakshadweep Islands.
- **Cereals and millets:** KVKs of Karnataka conducted 885 FLDs on cereals and millets in 404.60 ha and KVKs of Kerala conducted 107 FLDs in 42.00 ha.

- **Oilseeds and pulses:** KVKs of Karnataka conducted 253 FLDs on oilseeds in 99.40 ha and 518 FLDs on pulse crops in 198.02 ha and KVKs of Kerala conducted 15 FLDs on pulses in 0.28 ha.
- **Vegetable crops:** KVKs of Karnataka conducted 472 FLDs on vegetable crops in 140.10 ha and KVKs of Kerala conducted 87 FLDs in 3.15 ha.
- **Tuber crops:** KVKs of Karnataka conducted 5 FLDs on potato in 0.50 ha and KVKs of Kerala conducted 77 FLDs on elephant foot yam and cassava in 5.72 ha.
- **Fruit crops:** KVKs of Karnataka conducted 210 FLDs on fruit crops in 73 ha and KVKs of Kerala conducted 100 FLDs in 4.66 ha.
- **Plantation crops:** KVKs of Karnataka conducted 86 FLDs on plantation crops in 27.00 ha and KVKs of Kerala conducted 40 FLDs in 7.76 ha.
- **Spice crops:** KVKs of Karnataka conducted 181 FLDs on spice crops in 57.81 ha and KVKs of Kerala conducted 56 FLDs in 7.26 ha.
- **Flower crops:** KVKs of Karnataka conducted 85 FLDs on flower crops in 18 ha. KVKs of Kerala conducted 3 FLDs in 0.024ha.
- **Farm implements/machinery:** KVKs of Karnataka conducted 175 FLDs on farm implements and machinery and KVKs of Kerala conducted 25 FLDs.
- **Farm enterprises:** KVKs of Karnataka demonstrated 32 home scale farm enterprising units by involving 583 farmers and KVKs of Kerala demonstrated 45 small-scale enterprising units by involving 244 farmers.
- **Livestock:** KVKs of Karnataka conducted 394 FLDs on livestock and fisheries by involving 1308 livestock through 294 units and KVKs of Kerala conducted 457 FLDs by involving 591 livestock through 206 units and KVK Lakshadweep conducted ten FLDs on poultry by involving 11 farmers through 21 units.
- **Fisheries:** KVKs of Karnataka conducted 69 FLDs on fisheries by involving 63800 fingerlings through 69 units and KVKs of Kerala conducted 49 FLDs by involving 16797 fingerlings through 49 units.
- Empowerment of women and children: KVKs of Karnataka organized 1000 programmes for 48710 women and 84 programmes for 5473 children and KVKs of Kerala organized 35 programmes for 690 women and 5 programmes for 116 children.

Capacity Development

- KVKs organized 5925 capacity development courses which included 4118 courses for farmers, 613 courses for rural youth and 338 courses for extension personnel. A total of 209554 participants were trained comprising of 144932 farmers, 20435 rural youth and 12821 extension personnel. In addition, 668 sponsored and 188 vocational courses were organized.
- Major area of capacity development for farmers was crop production in which 869 courses were conducted involving 34968 farmers. Capacity development courses on women empowerment (667) and plant protection (512) were the next most demanded courses followed by Soil health and fertility management (481 courses) livestock production and management (301).
- Extension functionaries were trained on capacity building for input dealers, sericulture, nursery management, seed production, disease management in milch animals, postharvest management, FPOs, natural farming, water management, composting techniques, value addition,

processing, Integrated farming system, food safety with 76 courses followed by IPM (36).

- A total of 668 sponsored courses were organized involving 26198 participants on PM KUSUM, Pashu Sakhi, Krishi sakhi training, drone technology, Mushroom cultivation, Bee keeping, BEE star labelled energy efficient pump set and water conservation, Agro ecological module, Nursery management, processing and value addition.

- A total 188 vocational capacity development courses were conducted involving 5168 participants, out of which KVKs of Karnataka conducted 107 courses with the participation of 3554 and KVKs of Kerala conducted 81 courses benefitting 1614 participants.

Frontline Extension Programs

- KVKs carried out a total of 1.40 lakh frontline extension activities and created awareness among 15.57 lakh farmers on varieties, production technologies, integrated pest and disease management, animal health and nutrition, poultry production, fisheries management and human nutrition.

- KVKs published extension literature (675), popular articles (334), newspaper coverage (2878), radio coverage (551), T V coverage (199) and developed short videos (227).

Production of Technological Inputs

- Produced and supplied 3778.07 q of seeds of different crop varieties, 30.20 lakh planting material of different crop hybrids, 4.39 lakh livestock strains and fish fingerlings benefiting 33344 farmers.

- Produced and supplied 8729.72 q of bio products.

Kisan Mobile Advisory Services

- KVKs sent 9861 text messages to 19.37 lakh farmers. Messages were related to crops (3467) followed by enterprises (1716), awareness (1392), livestock (1369) and marketing (994).

Soil, Water and Plant Analysis

- KVKs analysed 34223 samples of soil, water, plant, and organic manure received from 29365 farmers belonging to 13505 villages based on which 19921 soil health cards were distributed to farmers.

- World Soil Day was celebrated on December 05, 2024 at KVKs of ATARI Bengaluru with the participation of 2456 farmers, 865 extension officers and students and 43 VIPs. On the occasion, 965 soil health cards were distributed to farmers.

Rainwater Harvesting Units

- Rainwater harvesting and recycling units established in eight KVKs were utilized to organize 20 capacity development programmes and 22 demonstrations. The facility was used to produce 269295 planting material for use in KVKs and to provide to farmers. These units were visited by 16898 farmers and 126 officials.

Convergence and Linkages of KVKs

- As part of convergence with ATMA, KVKs participated in 1072 programmes organized by ATMA and KVKs organized 594 programmes in collaboration with ATMA.

- Government of Karnataka; Government of Kerala; MANAGE, Hyderabad; National Horticultural Mission; projects of various ICAR Institutes and National Bank for Agriculture and Rural Development were the major agencies that funded/supported KVKs to organize various programs and activities.

Special Programs

- A total of 2500 Cluster Frontline Demonstrations on pulses were conducted in an area of 1000 ha.
- A total of 3570 Cluster Frontline Demonstrations on oilseeds were conducted in an area of 1473 ha.
- Seed hub program were implemented in eight KVKs and produced 2313.33 q seeds of pulses, which included pigeon pea (1196 q), black gram (550.70 q), chickpea (462.40 q), green gram (60.88 q), cowpea (18.85 q), field bean (18.30 q) and horse gram (6.20 q).
- A total of 1165 demonstrations were conducted under National Innovations in Climate Resilient Agriculture project in different farming system typologies covering 914.24 ha area to build climate resilience in cluster of villages covering fourteen climate vulnerability districts in Karnataka and Kerala.
- KVKs of ARYA organized 36 Capacity Development programs for 970 rural youth on various agricultural & allied enterprises.
- Institute along with KVKs organized Swachhta Pakhwada during December 16-31, 2024, related to cleanliness, health and hygiene with the participation of 12018 participants.
- Ten ICAR institutes in the Zone implemented Mera Gaon-Mera Gaurav programme through formation of 126 multidisciplinary teams of scientists by involving farmers and other stakeholders in 565 adopted villages.
- Three ICAR institutes implemented Farmer FIRST program which included several interventions at the field level in crop, horticulture, livestock, natural resource management, enterprise and integrated farming system modules. A total of 11964 households involved in 37 villages under this program.

Technological Backstopping by Directorate of Extension and ATIC

- Directors of Extension participated in 48 Scientific Advisory Committee meetings, 180 field days, 118 workshops/seminars, 13 technology weeks and 1620 training programs. Field level monitoring was done by visiting 112 on farm trials and 322 plots of frontline demonstrations conducted by the KVKs.
- A total of 141244 farmers visited Agriculture Technology Information Centers (ATIC) in the Zone. They provided information related to various aspects of farming to 138492 farmers. The technological products available in these centers were purchased by 43829 farmers.

Research Projects

- ICAR-ATARI, Bengaluru has undertaken four Institute Research Projects and one National Network Project.

Publications

- Institute Scientists published ten research papers. KVK staff published 177 research papers, 63 technical bulletins, 450 popular articles and 276 extension literatures on various technological aspects of agriculture and allied enterprises.

Human Resource Development

- Two days' workshop on "Strengthening KVKs as resource Centers through seeds, planting materials and bio - products production" organized by ICAR – ATARI, Bengaluru in collaboration with ICAR-Indian Institute of Spices Research, Kozhikode during September 02 - 04, 2024.

- Orientation Training Program for Newly Recruited Assistants was organized by ICAR – ATARI, Bengaluru during October 15-18, 2024.
- Management Development Programme organized by ICAR -ATARI, Bengaluruin two phases for newly recruited KVK Heads on July 25 – 30, 2024 and December 27 – 31, 2024.

Chapter - 1

ICAR - Agricultural Technology Application Research Institute

ICAR - Agricultural Technology Application Research Institute (ICAR-ATARI), Zone XI, Bengaluru has established 48 Krishi Vigyan Kendras (KVKs) of which 33 KVKs are in Karnataka, 14 KVKs are in Kerala and one KVK is in Lakshadweep under different host organization such as Indian Council of Agricultural Research, State Agricultural Universities and Non-Governmental Organisations.

This chapter consists of following heads:

1.1 ICAR - ATARI, Bengaluru

1.2 Krishi Vigyan Kendra

1.1 ICAR-ATARI, Bengaluru

ICAR-Agricultural Technology Application Research Institute, Zone XI, Bengaluru (ICAR-ATARI) has 48 KVKs under its operational jurisdiction of which 33 in Karnataka, 14 in Kerala and one in Lakshadweep. The mandates of the institute are to (i) Coordinate and monitor the technology application and frontline extension education programs and; (ii) Strengthen agricultural extension research and knowledge management. The Agricultural Extension Division headed by the Deputy Director General, monitors and reviews 48 KVKs through ICAR-ATARI, Zone XI, Bengaluru.

1.1.1 Staff

Total sanctioned staff strength of ICAR-ATARI, Zone -XI, Bengaluru is 18, out of which 12 are currently filled (Table 1.1). Total staff working in the institute as on December 31, 2024 are given in Table 1.2.

Table 1.1: Staff strength at ICAR-ATARI, Bengaluru as on December 31, 2024

Category	Sanctioned	Filled
Director	1	1
Scientific	6	5
Technical	2	1
Administrative	8	5
Skill Support Staff	1	0
Total	**18**	**12**

Table 1.2: Staff position as on December 31, 2024

Cadre	Name	Designation
Director	Dr. Venkatasubramanian V	Director
Scientific	Dr. Chandre Gowda M J	Principal Scientist (Agril Extension)
	Dr. Srinivasa Reddy D V	Principal Scientist (Agronomy)
	Dr. Rayudu B T	Principal Scientist (Agril Extension)
	Dr. Thimmappa K	Principal Scientist (Agril Economics)
	Dr. Dnyaneshwar V Kolekar	Senior Scientist (Agril Extension)
Technical	Shri. Hemanth Kumar	Driver
Administrative	Shri. J Mathew	Senior Administrative Officer (additional charge)
	Smt. Suma Srinivas	Assistant Finance & Accounts Officer
	Smt. Ramola Pinto	Personal Assistant
	Smt. Roopakala K	Upper Division Clerk
	Shri. Pradeep Kumar	Assistant

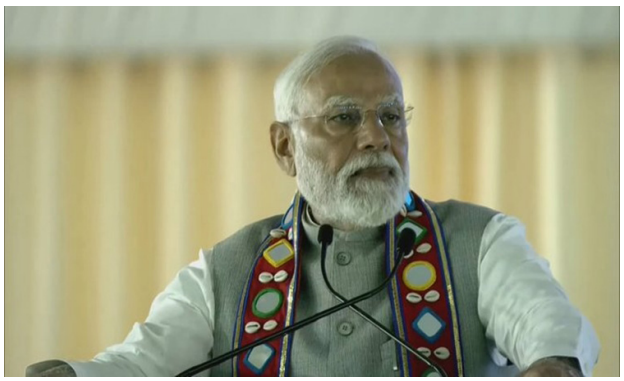
1.1.2 Major activities

(i) PM Kisan Samman Nidhi Program

(a) Hon'ble Prime Minister, Shri Narendra Modi released 16th installment of PM Kisan Samman Nidhi worth Rs 21,000 crores at Yavatmal in Maharashtra on February 28, 2024. During the program, Hon'ble Prime Minister inaugurated multiple development projects related to rail, road and irrigation worth more than Rs 4900 crores. Hon'ble Prime Minister also initiated the distribution of one crore Ayushman cards across Maharashtra and launched the Modi Awaas Gharkul Yojana for OBC category beneficiaries. A total of 2510 participants viewed live telecast program at their respective KVKs of Kerala, Karnataka and Lakshadweep.

(b) Hon'ble Prime Minister, Shri Narendra Modi released 17th installment under PM Kisan Samman Nidhi and distributed certificates to over 30000 self-help groups known as Krishi Sakhis online from Varanasi on June 18, 2024. A total of 4678 participants viewed live telecast program in the KVKs of Karnataka, Kerala and Lakshadweep. Shri. H. D. Kumaraswamy, Hon'ble Minister of Heavy Industries and Public Enterprises of India participated and addressed in the event at KVK Dharwad on this occasion. Also, Shri. George Kurian, Hon'ble Minister of State for Fisheries, Animal Husbandry and Dairying and Minority Affairs participated and addressed in the event at KVK Kottayam.

(c) Hon'ble Prime Minister, Shri Narendra Modi released 18th installment of PM Kisan Samman Nidhi on October 5, 2024 in Washim, Maharashtra. During the occasion, Hon'ble Prime Minister, launched various initiatives related to the agricultural and animal husbandry sector. The initiatives include launching the 5th installment of NaMo Shetkari Mahasanman Nidhi Yojana, dedication of more than 7500 projects under the Agriculture Infrastructure Fund, 9200 FPOs, five solar parks across Maharashtra with a total capacity of 19 MW and launch of Unified Genomic Chip for cattle and indigenous sex-sorted semen technology. A total of 2429 participants viewed live telecast program at their respective KVKs of Karnataka, Kerala and Lakshadweep.



Shri Narendra Modi addressing 16th installment of PM Kisan Samman Nidhi program

Address by Hon'ble Prime Minister, Shri Narendra Modi during the release of 18th installment of PM Kisan Samman Nidhi

Participants watching the 18th installment of PM Kisan Samman Nidhi program in KVK, Idukki

(ii) Inauguration of Farmer's Hostel

Farmer's hostel of ICAR-Krishi Vigyan Kendra, Vijayapur-I was inaugurated on March 13, 2024 by Sushri Shobha Karandlaje, Hon'ble Union Minister of State for Agriculture, Government of India. During the function Minster distributed power operated sprayer to farmers under SCSP project. Shri Vittal. D. Katakdond, Member of Legislative Assembly, Vijayapur, Shri. Ramesh Jigaginagi, Member of Parliament, Vijayapur, Dr. Venkatasubramanian, Director, ICAR-ATARI, Zone-XI, Bengaluru and other dignitaries graced the occasion.

Sushri Shobha Karandlaje, Hon'ble Union Minister of State for Agriculture, Govt of India inaugurated Farmers Hostel, Staff Quarters and Automated Drip Irrigation Unit at ICAR-KVK, Belagavi II on March 9, 2024. During her address, Minister stressed the farmers to adopt drip irrigation method to get more crop per drop of water.

(iii) Visit of Secretary (DARE) & Director General (ICAR)

(a) Dr. Himanshu Pathak, Hon'ble Secretary (DARE) & Director General (ICAR) visited ICAR-ATARI, Bengaluru on January 10, 2024. Dr. U. S. Gautam, Deputy Director General (AE) and KVKs of Karnataka, Kerala and Lakshadweep joined an online interaction with Hon'ble DG. Hon'ble DG reviewed the progress of online marketing app 'KISAN KART' and Kisan Samruddhi brand. A presentation on operation of KISAN KART was made during the program for knowing the applicability and scaling up of the same.

(b) Dr. Himanshu Pathak, Secretary, DARE and DG, ICAR visited ICAR - KVK Lakshadweep on April 22, 2024. ICAR - KVK Lakshadweep organised Farmers-Scientists Interaction Meeting in the august presence of Dr. Himanshu Pathak and Dr. Uttam K Sarkar, Director, National Bureau for Fish Genetics Resources, Lucknow. Dr. P.N. Ananth, Senior Scientist and Head, KVK Lakshadweep made a detailed presentation on the activities of KVK.

(iv) Zonal Women Agripreneur Conclave

Institute organised Zonal Women Agripreneur Conclave 2024 during January 20-21, 2024 at Kerala Agricultural University, Thrissur. A total of 600 women agripreneurs and delegates from 48 Krishi Vigyan Kendras participated in the program. During the inaugural program on January 20, 2024, Sushri. Shobha Karandlaje, Hon'ble Union Minister of State for Agriculture

Inauguration of farmer's hostels of KVK, Kottayam and KVK, Palakkad by Sushri. Shobha Karandlaje

Inagural address by Hon'ble Sushri. Shobha Karandlaje at KVK Vijayapura-I

Inauguration of KVK Belagavi-II farmer's hostel by Sushri. Shobha Karandlaje

and Farmers' Welfare & Food Processing Industries unveiled the plaque for the Farmer's Hostel Building at KVK, Kottayam and KVK, Palakkad.

(v) Annual Review cum Action Plan Meetings

Annual review cum action plan meeting of 48 KVKs of Zone-XI was conducted in three phases. During the meetings, the progress of KVKs for the year 2023 were reviewed, and action plans for the period 2024-25 were discussed and finalized. Three-days action plan cum review meeting of 16 KVKs under the jurisdiction of Directorate of Extension, UAS, Dharwad, UAS, Raichur and UHS, Bagalkot was held at UAS Raichur during April 15-17, 2024. Three-days action plan cum review meeting of 15 KVKs of Kerala and Lakshadweep was held at KAU, Thrissur during May 13-15, 2024. Three-days action plan cum review meeting of 17 KVKs under the jurisdiction of Directorate of Extension, UAS, Bengaluru and UAHS, Shivamogga was held at KVK Kodagu during April 17-19, 2024.

(vi) KVKs Zonal Workshop 2024

KVKs Zonal Workshop 2024 on "Strengthening KVKs as Resource Centers through seeds, planting material and bio-products" was organized by the institute in collaboration with ICAR-IISR, Kozhikode during September 2-4, 2024. All KVK Heads have participated in the workshop which involved lecture cum field visits. Dr. V. Venkatasubramanian, Director, ICAR-ATARI, Bengaluru welcomed the participants. Dr. R. R. Burman, ADG (AE), ICAR, New Delhi made inaugural address. Dr. Jacob John, DE, KAU along with other dignitaries and Heads of 48 KVKs of zone, staff of IISR and KVK Kozhikode graced the occasion.

Release of publications during KVKs Zonal Workshop 2024

(vii) Kisan Samriddhi Online Market Portal and Trademark Launched

The Kisan Samriddhi Market Portal, developed by ICAR-Agricultural Technology Application Research Institute, Bengaluru was officially launched on January 03, 2025 by Dr Himanshu Pathak, Director General (ICAR) and Secretary (DARE) at ICAR-Central Plantation Crops Research Institute, Kasaragod, during the inaugural ceremony of the National Seminar on 'Harnessing the Plantation Sector for Sustainable Development Goals' and Exhibition. The portal enables direct online sales of seeds, planting materials, bio-products, value-added products, and technological items produced by KVKs, FPOs, entrepreneurs, and SHGs. It promotes wider reach, transparency, market access, and fair pricing. The online portal is currently operational in Karnataka, Kerala, and Lakshadweep, connecting KVKs, farmers, agri-entrepreneurs, and consumers. It fosters entrepreneurship and expands market access. Institute has obtained the Kisan Samriddhi trademark registration in five classes covering about 150 products and services. Dr. V. Venkatasubramanian, Director, ICAR-ATARI, Bengaluru, Dr. V.B. Patel, Assistant Director General (F&PC), Dr. K. Balachandra Hebbar, Director, ICAR-CPCRI along with other dignitaries graced the occasion.

1.1.3 Budget

A total of ₹10597.16 lakh budget was sanctioned to ICAR-ATARI, Zone-XI, Bengaluru for the year 2024-25 of which ₹10314.74 lakh was sanctioned for recurring and non-recurring under KVK schemes. A total amount of ₹282.42 lakh was sanctioned for special programs. Head-wise details of budget are furnished in Table 1.3.

Table 1.3: Head-wise budget of ICAR-ATARI, Zone XI, Bengaluru for 2024-25

Heads	Sanction (₹ *In Lakh)*			
	ATARI	KVKs	Support to DEEs at SAUs	Total
(A) Recurring				
Pay & Allowance	397.57	7953.17	0.00	8350.74
Travelling Allowance	24.36	77.01	4.40	105.77
HRD	8.53	0.00	4.20	12.73
Contingencies	65.34	1131.24	21.92	1218.50
TOTAL (A)	**495.80**	**9161.42**	**30.52**	**9687.74**
(B) Non-Recurring				
Works	0.00	382.00	0.00	382.00
Vehicle	0.00	45.00	0.00	45.00
Furniture & Equipment	0.00	200.00	0.00	200.00
TOTAL (B)	**0.00**	**627.00**	**0.00**	**627.00**
TOTAL (A+B)	**495.80**	**9788.42**	**30.52**	**10314.74**
(C) Special Programmes				
ARYA	6.00	24.00	0.00	30.00
NICRA	7.29	183.53	0.00	190.82
FFP	6.00	50.00	0.00	56.00
NEMA	5.60	0.00	0.00	5.60
TOTAL (C)	**24.89**	**257.53**	**0.00**	**282.42**
TOTAL (A+B+C)	**520.69**	**10045.95**	**30.52**	**10597.16**

1.2 Krishi Vigyan Kendra

Krishi Vigyan Kendra (KVK) is a district level multidisciplinary scientific institution for frontline extension activities mandated with technology assessment and demonstration for its application and capacity development under different farming situations. KVK is the agricultural knowledge and resource centres for farmers, farm women, rural youth, extension functionaries and other stakeholders involved in agriculture and allied activities. These are innovative district level institutions meant for promoting science-based practices in agriculture and allied sectors in a problem-solving mode. KVKs accomplish this through assessment, demonstration and capacity development on location specific technology modules. Besides, they also perform related activities keeping in view the needs of farmers and other stakeholders. There are 48 KVKs in Zone XI at present. State and host organization wise distribution of KVKs is given in Table 1.4.

Table 1.4: State and host organization wise KVKs in Zone-XI

States/UT	Host organization wise KVKs (No.)			Total KVKs (No.)
	SAUs	NGOs	ICAR Institutes	
Karnataka	26	05	02	33
Kerala	07	03	04	14
Lakshadweep	-	-	01	01
Total	**33**	**08**	**07**	**48**

SAU - State Agricultural University; NGO - Non-Governmental Organization; ICAR - Indian Council of Agricultural Research

1.2.1 KVK Activities

- 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 on modern agricultural technologies.
- Act as knowledge and resource centre of agricultural technologies for supporting initiatives of public, private and voluntary sector in improving the agricultural economy of the district.
- Provide farm advisories using ICT and other media means on varied subjects of interest of farmers.

1.2.2 Staff strength

The approved strength of manpower at each KVK is 16, which include one Head of KVK at Senior Scientist level, six Scientists / Subject Matter Specialists, three Programme Assistants, two administrative staff, two drivers and two supporting staff. Accordingly, the total sanctioned staff for 48 KVKs of Zone-XI is 768, out of which 532 (69.27%) were in position. Details of state-wise and category wise staff strength of KVKs are furnished in Table 1.5.

1.2.3 Infrastructure

State wise details of infrastructure in KVKs are presented in Table 1.6. As on December, 2024, 47 KVKs have administrative building, 45 KVKs have farmers hostel, 28 KVKs have staff quarters, 16 KVKs have established rain water harvesting units, 21 KVKs have e-connectivity, 38 KVKs have soil and water testing labs, seven KVKs have portable carp hatchery, three KVKs have minimal processing unit and 14 KVKs have plant health diagnostic labs and 47 KVKs have four-wheelers. All together there are 81 demonstration units and 94 two-wheelers in KVKs.

Table 1.5: State wise and category wise staff strength of KVKs (as on 31.12.2024)

Category	Karnataka (33 KVKs)		Kerala (14 KVKs)		Lakshadweep (1 KVK)		Total (48 KVKs)	
	S	F	S	F	S	F	S	F
Heads of KVKs (Senior Scientists)	33	29	14	14	1	1	48	44
Scientists (Subject Matter Specialists)	198	157	84	70	6	6	288	233
Program Assistants	99	70	42	20	3	0	144	90
Administrative Staffs	66	34	28	22	2	0	96	56
Drivers	66	36	28	20	2	0	96	56
Supporting Staffs	66	33	28	19	2	1	96	53
Total	**528**	**359**	**224**	**165**	**16**	**8**	**768**	**532**
Filled (%)	**67.99**		**73.66**		**50.00**		**69.27**	

S = No. of sanctioned posts; F = No. of filled posts

Table 1.6: State wise details of infrastructure in KVKs

Type of infrastructure	Infrastructure (No.)			
	Karnataka	Kerala	Lakshadweep	Total
Administrative buildings	33	14	0	47
Farmers hostels	33	12	0	45
Staff quarters	19	09	0	28
Demonstration units	50	31	0	81
Rainwater harvesting units	10	06	0	16
E-connectivity	11	10	0	21
Soil and water testing labs	24	13	01	38
Portable carp hatcheries	04	03	0	7
Minimal processing units	01	02	0	3
Plant health diagnostic labs	09	05	0	14
Four wheelers	33	14	0	47
Two wheelers	63	28	03	94

1.2.4 Revolving fund

Revolving fund provided by ICAR is in operation at 46 KVKs. KVKs are utilizing revolving fund for production of technological products and the net available balance as on December 31, 2024 was ₹19.40 crore. Twenty-seven KVKs had closing balance of more than ₹20.00 lakh, nine KVKs had a balance in the range of ₹10.00 to 20.00 lakh, seven KVKs had closing balance in the range of ₹4.00 to 10.00 lakh and four KVKs had closing balance less than ₹4.00 lakh.

1.2.5 Thrust areas

Based on the agro-ecological situation and prevailing farming systems, KVKs are working on the following thrust areas.

- Promotion of improved varieties/hybrids of crops and livestock breeds.
- Promotion of Integrated Nutrient Management and Organic Farming.
- Promotion of Natural Farming.
- Promotion of Integrated Pest and Disease Management.
- Promotion of crop diversification and alternate land use systems.
- Empowerment of farm rural women and youth.
- Scientific management of large ruminants, small ruminants and poultry.
- Promotion of horticulture for augmenting farm income.
- Promotion of value addition, processing and market facilitation.
- Scientific management of soil health & water conservation.
- Farm mechanization for saving time, reducing cost and drudgery reduction.
- Promotion of Agri-entrepreneurship.

Chapter - 2

Achievements

KVKs are implementing the action plan under the technical guidance of ICAR – ATARI in association with Directorate of Extensions and host organizations.

This chapter consists of following heads:

2.1 Krishi Vigyan Kendras Programmes

2.2 Special Programmes

2.1 Krishi Vigyan Kendra Programmes

2.1.1 Technology Assessment/On Farm Trails

The summary of technology assessment/ On Farm Trails (OFTs) carried out by KVKs during the year 2024 is presented in Table 2.1. Karnataka KVKs tested 560 technological options through 181 technology assessment programmes taken up in 1094 locations. Kerala KVKs assessed 214 technological options in 333 locations. Lakshadweep KVK assessed seven technological options in 16 locations. Altogether, 255 technology assessment programmes were planned and implemented on crops, livestock and enterprises assessing a total of 781 technological options in 1443 locations.

Karnataka

(a) Crop wise technology assessment

KVKs in Karnataka were involved in implementing 160 technology assessment programmes, out of which 70 were on varietal evaluation, 20 on integrated nutrient management and 15 on integrated disease management (Table 2.2). Integrated pest management and resource conservation technologies were the other important areas of technology assessment in Karnataka.

Table 2.1: OFTs conducted by KVKs

States/UT	Technology Assessment Programmes	Technological options tested (No.)	Trials (No.)	Farmers/ locations (No.)
Karnataka				
Crops	160	509	764	925
Livestock	14	32	95	143
Enterprises	07	19	26	26
Total	**181**	**560**	**885**	**1094**
Kerala				
Crops	58	176	279	288
Livestock	08	18	36	34
Enterprises	06	20	23	11
Total	**72**	**214**	**338**	**333**
Lakshadweep				
Livestock	2	7	16	16
Total	**2**	**7**	**16**	**16**
Zone XI				
Crops	**218**	**685**	**1043**	**1213**
Livestock	**24**	**57**	**147**	**193**
Enterprises	**13**	**39**	**49**	**37**
Total	**255**	**781**	**1239**	**1443**

Table 2.2: Thematic area and crop category wise OFTs conducted by KVKs in Karnataka

Thematic areas	Crop category wise number of OFTs	Total OFTs
Biological Control	Cereal crops 1, Commercial crops 1	2
Crop Diversification	Cereal crops 1	1
Cropping Systems	Cereal crops 3, Pulse crops 2, Commercial crops 1, Vegetable crops 1, Fruit crops 1	8
Drudgery Reduction	Spices/Medicinal crops 1	1
Farm Machineries	Cereal crops 1, Pulse crops 4, Plantation crops 1	6
Integrated Crop Management	Pulse crops 1, Vegetable crops 1, Flower crops 1	3
Integrated Disease Management	Commercial crops 1, Vegetable crops 6, Fruit crops 5, Plantation crops 1, Spices/Medicinal crops 1, Flower crops 1	15
Integrated Nutrient Management	Cereal crops 4, Vegetable crops 6, Fruit crops 4, Plantation crops 1, Flower crops 1, Oilseed crops 2, Pulse crops 1, Spice/Medicinal crops 1	20
Integrated Pest Management	Cereal crops 1, Oilseed crops 1, Pulse crops 2, Commercial crops 2, Vegetable crops 3, Fruit crops 1, Plantation crops 4	14
Mushroom cultivation	Commercial crops 2	2
Post-Harvest Technology	Oilseed crops 1, Pulse crops 1, Vegetable crops 1, Plantation crops 1, Fruit crops 1	5
Resource Conservation Technology	Oilseed crops 1, Pulse crops 2, Commercial crops 2, Fruit crops 2, Planation crops 1	8
Soil health management	Commercial Crops 1	1
Varietal Evaluation	Cereals 18, Oilseed crops 17, Pulse crops 8, Commercial crops 2, Vegetable crops 19, Spice/ Medicinal crops 6	70
Weed Management	Spice/Medicinal crops 1	1
Others (Extension Methodology)	Fruit crops 1, Plantation crops 2	3
Total	**Cereals 30, Oilseed crops 22, Pulse crops 21, Commercial crops 11, Vegetable crops 37, Fruit crops 15, Flower crops 3, Plantation crops 11, Spice/ Medicinal crops 10**	**160**

Table 2.3 provides further details of the technology assessment carried out by KVKs of Karnataka during 2024. The varietal evaluation assessed a total of 227 technological options, taken up in 349 locations. Technology assessment on integrated nutrient management tested 61 technological options in 113 locations. Technology assessment on integrated pest management assessed a total of 48 technological options in 70 locations.

Table 2.3: Thematic area wise OFTs conducted under crops by KVKs of Karnataka

Thematic areas	Technological options tested (No.)	Trials (No.)	Farmers / Locations (No.)
Biological Control	6	10	10
Crop Diversification	3	3	3
Cropping System	23	28	28
Drudgery Reduction	3	5	5
Farm Machineries	20	30	30
Fodder and Nursery	4	5	5
Integrated Crop Management	10	13	13
Integrated Disease Management	42	81	81
Integrated Nutrient Management	61	113	113
Integrated Pest Management	48	70	70
Mushroom Cultivation	6	6	6
Post-Harvest Technology	16	10	10
Resource Conservation Technology	25	30	30
Soil Health Management	3	5	5
Varietal Evaluation	227	337	349
Weed Management	2	4	4
Others (Extension Methodology)	10	14	163
Karnataka	**509**	**764**	**925**

(b) Livestock wise technology assessment

The assessment of technologies on livestock was carried out through 95 trials taken up in 143 locations (Table 2.4), in which a total of 32 technological options were subjected for location specificity. The major area of assessment was livestock disease management taken up in 73 locations for assessing nine technological options. The other two important areas are feed and fodder management and fish production, wherein six technological options were assessed in each thematic area.

Table 2.4: Thematic area wise OFTs conducted among Livestock by KVKs of Karnataka

Thematic areas	Technological options tested (No.)	Trials (No.)	Farmers / Locations (No.)
Disease Management	9	28	73
Health Management	3	15	15
Nutrition Management	3	15	15
Evaluation of Breeds	2	3	3
Feed and Fodder management	6	20	20
Fish Production	6	11	14
Production Management	3	3	3
Karnataka	**32**	**95**	**143**

(c) Enterprise wise technology assessment

Under different enterprises, KVKs in Karnataka assessed 19 technological options in 26 locations (Table 2.5). The major area of enterprises is bee keeping with seven trials, followed by five trials on storage techniques.

Table 2.5: Thematic area wise OFTs conducted under enterprises by KVKs of Karnataka

Thematic areas	Technological options tested (No.)	Trials (No.)	Farmers / Locations (No.)
Bee Keeping	3	7	7
Crop Residue Management	4	3	3
Livestock Production and Management	3	3	3
Organic Farming	3	3	3
Resource Conservation Technology	3	3	3
Small-scale Income Generation	1	2	2
Storage Techniques	2	5	5
Total	**19**	**26**	**26**

Table 2.6: Crop-category and thematic area wise number of OFTs conducted by KVKs of Kerala

Thematic areas	Crop category wise number of OFTs	Total OFTs
Biological Control	Vegetable crops 2, Spice/Medicinal crops 1	3
Canopy Management	Flower crops 2	2
Climate Resilient Technologies	Fruit crops 1	1
Crop Residue management	Cereal crops 1	1
Cropping Systems	Cereal crops 1	1
Farm Machineries	Cereal crops 3	3
Integrated Crop Management	Vegetable crops 1	1
Integrated Disease Management	Fruit crops 1, Vegetable crops 1, Tuber crops 2, Spice/Medicinal crops 2	6
Integrated Nutrient Management	Cereal crops 2, Vegetable crops 1	3
Integrated Pest and Disease Management	Tuber crops 1	1
Integrated Pest Management	Vegetable crops 1, Fruit crops 2	3
Post-Harvest Technology	Vegetable crops 1, Plantation crops 1, Spice/ Medicinal crops 1	3
Varietal Evaluation	Cereal crops 7, Pulse crops 1, Commercial crops 1, Vegetable crops 10, Fruit crops 1, Flower crops 3, Tuber crops 3, Plantation crops 1, Spice/ Medicinal crops 1	28
Water Management	Fruit crops 1	1
Weed Management	Cereal crops 1	1
Total	**Cereal crops 15, Pulse crops 1, Commercial crops 1, Vegetable crops 17, Fruit crops 6, Flower crops 5, Plantation crops 2, Tuber crops 6, Spice/Medicinal crops 5**	**58**

Kerala

(a) Crop wise technology assessment

The technology assessment in Kerala was carried out through 58 OFTs as detailed in Table 2.6. Varietal evaluation (28 OFTs) and integrated disease management (06 OFTs) were the major areas of technology assessment.

More details on the technology assessment in Kerala are provided in Table 2.7. The KVKs in Kerala tested 176 technological options, implemented in 288 locations. The varietal evaluation created an opportunity to test 91 technological options in 155 locations. The next important area was integrated disease management with 16 technological options tested in 28 locations.

Table 2.7: Thematic area wise details under crop OFTs by KVKs of Kerala

Thematic areas	Technological options tested (No.)	Trials (No.)	Farmers / Locations (No.)
Biological Control	8	15	15
Canopy Management	6	6	10
Climate Resilient Technologies	3	3	5
Crop Residue Management	3	2	2
Cropping Systems	4	3	3
Farm Machineries	9	13	13
Integrated Crop Management	2	3	3
Integrated Disease Management	16	28	28
Integrated Nutrient Management	9	17	17
Integrated Pest and Disease Management	3	1	5
Integrated Pest Management	8	14	14
Post-Harvest Technology	8	8	8
Varietal Evaluation	91	156	155
Water Management	3	5	5
Weed Management	3	5	5
Total	**176**	**279**	**288**

Table 2.8: Thematic area wise details of number of technologies assessed, number of trials and farmers involved under Livestock OFTs by KVKs of Kerala

Thematic areas	OFTs (No.)	Technological options tested (No.)	Trials (No.)	Farmers / Locations (No.)
Disease Management	1	1	4	4
Evaluation of Breeds	4	9	22	22
Fish Production	1	3	3	1
Mussel Farming	1	3	2	2
Production Management	1	2	5	5
Total	**08**	**18**	**36**	**34**

Table 2.9: Thematic area wise details of number of technologies assessed, number of trials and farmers involved under Enterprises OFTs by KVKs of Kerala

Thematic areas	OFTs (No.)	Technological options tested (No.)	Trials (No.)	Farmers / Locations (No.)
Drudgery reduction	1	3	3	3
Mechanization	2	6	10	2
Mussel farming	1	3	2	1
Processing and Value Addition	2	8	8	5
Total	**06**	**20**	**23**	**11**

(b) Livestock wise technology assessment

Livestock related technology assessment in Kerala provided an opportunity to test 18 technological options in 34 locations. Major area of assessment was evaluation of breeds, in which four technological options were assessed in 22 locations. The details are provided in table 2.8.

(c) Enterprise wise technology assessment

The technology assessment in the field of enterprises in Kerala was taken up through six OFTs which tested 20 technological options in 11 locations. The details are provided in Table 2.9.

(d) Lakshadweep

Two OFT was conducted in livestock under the thematic area production management with one technology assessment through 16 trails involving 16 farmers.

2.1.1.1 Location specificity of technology

Karnataka

(a) Assessment of chickpea varieties under mechanical harvesting

Among the different locations which tested the varieties of chickpea for mechanical harvesting, Kalaburgi-II recorded highest yield ranging from 15.20 to 17.20 q/ha. Most varieties performed better in this location with an exception of DBGV 204, which performed better in Koppal centre. In terms of varietal performance in different locations, the yield ranged from 10.30 q/ha with Farmers Practice of JG-11 at Koppal and the highest yield of 17.20 q/ha, also with variety JG11. However, the BC ratio reflected the benefits of varieties suitable for mechanical harvesting where Variety NBeG47 was found to be more economically viable with a BC ratio of 3.54 (Table 2.10).

(b) Assessment of soybean varieties under rainfed condition

Four KVKs took up assessment of varietal performance in soybean. Yield obtained was in the range of 10.16 q/ha (Farmers Practice of JS-335 at Ballari) and 26.75 q/ha, with variety DSb-34 at Haveri. Among the four locations which tested the soybean varieties for higher yield, Haveri recorded higher yields, with minimum being 18.25 q/ha. Most varieties performed better in this location with an exception of KDS-726 which performed better in Ballari centre. BC ratios confirmed the economic viability of variety DSb-34 with highest BC ratio of 3.93 (Table 2.11).

(c) Assessment of okra hybrids

Three okra hybrids were assessed by three KVKs during the year for better yield. Higher yields were recorded in Haveri with a maximum of 252.70 q/ha among all the centres. Arka

Table 2.10: Assessment of chickpea varieties suitable for mechanical harvesting

KVK	Varieties tested	Yield (q/ha)	Gross return (₹/ha)	Net return (₹/ha)	BC ratio
Bagalkot	GBM-2	11.67	57577	28593	1.98
Bagalkot	DBGV-204	12.06	59412	30429	2.05
Bagalkot	NBeG-47	11.52	56912	59412	1.96
Kalaburgi-II	JG-11	17.20	68800	43800	2.75
Kalaburgi-II	GBM-2	15.80	63200	39700	2.69
Kalaburgi-II	NBeG-47	16.50	66000	43500	2.93
Kalaburgi-II	Phule Vikram	15.20	60800	37800	2.64
Koppal	JG-11	10.30	49440	24240	1.96
Koppal	DBGV-204	13.00	62400	39400	2.71
Koppal	GBM-2	11.80	56640	33340	2.43
Koppal	NBeG-47	14.50	69600	46300	2.98
Koppal	Phule Vikram	13.80	66240	43440	2.90
Vijayapura-II	JG-11	10.60	66780	37780	2.3
Vijayapura-II	DBGV-204	11.20	70560	44060	2.66
Vijayapura-II	GBM-2	12.40	78120	51620	2.95
Vijayapura-II	NBeG-47	14.90	93870	67370	3.54
Vijayapura-II	Phule Vikram	13.50	85050	58550	3.21

Table 2.11: Assessment of soybean varieties for higher yield

KVK	Varieties tested	Yield (q/ha)	Gross return (₹/ha)	Net return (₹/ha)	BC Ratio
Ballari	JS-335	10.16	55880	27130	1.94
Ballari	DSb-34	15.85	87175	49475	2.31
Ballari	KDS-726	18.16	99880	61080	2.57
Belagavi-II	JS-335	11.60	62870	31020	2.00
Belagavi-II	DSb-34	13.40	73320	41370	2.30
Belagavi-II	KDS-726	15.60	83855	51905	2.60
Belagavi-II	RVS-24	11.90	67225	35185	2.10
Dharwad	DSb-21	14.33	60000	35000	2.40
Dharwad	DSb-34	15.93	67000	42000	2.68
Dharwad	KDS-726	16.70	70000	45000	2.80
Dharwad	KDS-753	17.41	74000	49000	2.96
Haveri	JS-335	18.25	91250	61000	3.02
Haveri	DSb-34	26.75	133750	99750	3.93
Haveri	KDS-736	25.50	127500	93500	3.75
Haveri	KDS-753	24.25	121250	87250	3.57

Nikhita also performed better in this location with a yield of 210.40 q/ha. BC ratio (minimum of 2.89) indicated the economic viability of all the hybrids of okra, and the highest was with hybrid CoBH-1 with a BC ratio of 9.90 (able 2.12).

(d) Assessment of chilli hybrids for disease resistance and higher productivity

Five hybrids of chilli crops from ICAR IIHR and one from TNAU were assessed in three KVKs of Karnataka. Vijayapura-I recorded very high yield levels ranging from 284.70 to 324.30 q/ha (Arka Tanvi). There was lot of variation in the yield levels of different hybrids as evident from higher range and differences, both among the hybrids as well as between the centres. Hybrid Arka Gagan emerged as the most profitable cultivar with a BC ratio of 3.88, at Mandya centre (Table 2.13).

Kerala

(a) Assessment of okra varieties for YVM disease resistance

Under different farming situations in Kerala, four okra varieties were assessed for yellow vein mosaic disease resistance and yield. In all

Table 2.12: Assessment of high yielding okra hybrids

KVK	Varieties tested	Yield (q/ha)	Gross return (₹/ha)	Net return (₹/ha)	BC Ratio
Dharwad	Local	162.20	405500	283000	3.32
Dharwad	Arka Nikitha	178.80	447000	328800	3.78
Dharwad	CO-4	191.80	479500	361300	4.05
Haveri	Nethra	163.80	245700	164600	2.89
Haveri	Arka Nikitha	210.40	315600	229500	3.47
Haveri	CO-4	252.70	379050	292790	3.95
Kalaburgi-II	Commercial Hybrid	149.20	358080	311148	7.63
Kalaburgi-II	Arka Nikitha	159.60	383040	339940	8.89
Kalaburgi-II	CoBH-1	171.00	410400	368920	9.90

Table 2.13: Assessment of chilli hybrids for disease resistance and higher productivity

KVK	Varieties tested	Yield (q/ha)	Gross return (₹/ha)	Net return (₹/ha)	BC Ratio
Mandya	Demon	153.80	481523	247854	2.06
Mandya	Arka Gagan	207.60	620470	460686	3.88
Mandya	Arka Haritha	183.20	535123	372378	3.20
Mandya	Arka Tanvi	189.90	550487	401923	3.70
Tumkur-II	Demon	198.50	297000	161250	2.19
Tumkur-II	Arka Nihira	246.00	369000	239150	2.84
Tumkur-II	CO-1	213.50	320250	188800	2.44
Vijayapura-I	Private Hybrid	284.70	455467	296617	2.87
Vijayapura-I	Arka Tanvi	324.30	518933	371767	3.53
Vijayapura-I	Arka Yashasvi	298.00	476800	329633	3.24

the locations, variety Phule Vimukta (159.00 q/ha, 180.00 q/ha, and 196.60 q/ha) performed better than the other varieties and was more profitable in Thiruvananthapuram district with BC ratio of 3.60(Table 2.14).

(b) Assessment of finger millet varieties

Three KVKs in Kerala conducted assessment of seven finger millet varieties under rainfed and irrigated conditions. In the irrigated

Table 2.14: Assessment of okra varieties for yellow vein mosaic disease resistance and yield

KVK	Farming situation	Source	Yield (q/ha)	Gross return (₹/ha)	Net return (₹/ha)	BC Ratio
Kollam	Upland	Farmers Practice	100.00	647500	372500	1.45
Kollam	Upland	KAU, Thrissur	188.90	755600	442350	2.41
Kollam	Upland	IIHR, Bangalore	161.10	644400	339800	2.11
Kollam	Upland	IIHR, Bangalore	178.50	714000	409400	2.34
Kollam	Upland	MPKV, Rahuri	196.60	786400	483150	2.59
Kozhikode	Irrigated	Farmers Practice	103.50	517500	263134	2.04
Kozhikode	Irrigated	KAU, Thrissur	125.00	625300	356375	2.33
Kozhikode	Irrigated	MPKV, Rahuri	159.00	795300	526375	2.98
Thiruvananthapuram	Irrigated	Farmers Practice	110.00	1100000	700000	2.75
Thiruvananthapuram	Irrigated	KAU, Thrissur	125.00	1040000	604000	2.60
Thiruvananthapuram	Irrigated	MPKV, Rahuri	180.00	1440000	1040000	3.60

Table 2.15: Assessment of finger millet varieties

KVK	Farming situation	Variety Tested	Yield (q/ha)	Gross Return (₹/ha)	Net Return (₹/ha)	BC Ratio
Idukki	Rainfed	Local Panchamutti	11.75	35250	8460	1.10
Idukki	Rainfed	ATL-1	15.01	45030	18300	1.69
Idukki	Rainfed	CFMV-1	10.042	30126	2756	1.10
Idukki	Rainfed	GPU-67	9.974	29922	2632	1.10
Palakkad	Rainfed	CFMV-1	11.8	59000	23600	1.67
Palakkad	Rainfed	GPU-28	7.67	38350	2950	1.08
Palakkad	Rainfed	KMR-301	16.02	80100	44700	2.26
Palakkad	Rainfed	ML-365	10.15	50750	15350	1.43
Thiruvananthapuram	Irrigated	Farmers Practice	13.29	48000	8000	1.20
Thiruvananthapuram	Irrigated	CFMV-1	20.72	84500	39214	1.87
Thiruvananthapuram	Irrigated	CFMV-2	16.29	58500	13214	1.29
Thiruvananthapuram	Irrigated	GPU-67	15.43	55500	10214	1.23

condition, yield ranged from 13.29 q/ha to 20.72 q/ha, whereas, in rainfed conditions, yield ranged from 7.67 q/ha to 16.02 q/ha. The yield of variety CFMV-I was almost double under irrigated condition (20.72 q/ha at Thiruvananthapuram) compared to rainfed condition (11.8 q/ha at Palakkad). The variety KMR301 proved to be economically more viable with the highest BC ratio of 2.26 (Table 2.15).

2.1.2 Frontline Demonstrations

Frontline demonstrations (FLD) on field crops, horticulture crops, livestock's, fisheries, farm implements and allied enterprises were taken up to demonstrate the production potentials of newly released crop varieties, natural resource conservation technologies, crop production technologies, improved technologies in livestock, fisheries in problem solving mode. A total of 5310 frontline demonstrations were conducted during the reporting period (Table 2.16).

Table 2.16: State-wise frontline demonstrations conducted by KVKs in Zone-XI

Crop category	Karnataka		Kerala		Total	
	Demo (No.)	Area (ha)	Demo (No)	Area (ha)	Demo (No.)	Area (ha)
Cereals and millets	885	404.60	107	42.00	992	446.60
Oilseeds	253	99.40			253	99.40
Pulses	518	198.02	15	2.83	533	200.85
Commercial crops	135	49.00	22	3.02	157	52.02
Fibre crops	119	52.00			119	52.00
Fodder crops	38	11.00	5	0.08	43	11.08
Vegetables	472	140.10	87	3.15	559	143.25
Tubers	5	0.50	77	5.72	82	6.22
Fruits	210	73.00	100	4.66	310	77.66
Flowers	85	18.00	3	0.02	88	18.02
Plantation crops	86	27.00	40	7.76	126	34.76
Spices	181	57.81	56	7.26	237	65.07
Medicinal crops			10	0.30	10	0.30
Green manure crops	10	4.00			10	4.00
Hybrids	533	165.36	3	0.6	536	165.96
Farm implements	175	55.0	25	6.4	200	61.40
Livestock (units)	394		457		851	0
Fisheries (units)	69		49		118	0
Enterprises (units)	32		45		77	0
Total	**4200**	**950.19**	**1101**	**83.86**	**5310**	**1438.59**

2.1.2.1 Cereals and millets

Karnataka: KVK conducted 885 demonstrations covering an area of 404.60 ha, of which 284 FLDs in paddy, 40 in wheat, 40 in maize, 62 in sorghum, 17 in pearl millet, 247 in finger millet, 22 in little millet, 161 in foxtail millet, 10 in chia and two in proso millet in farmers' fields, (Table 2.17).

Table 2.17: Frontline demonstrations conducted on cereals and millets by the KVKs of Karnataka

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check (₹/ha)	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Paddy	Integrated nutrient management	4	35	14.00	53.59	45.86	17.85	62324	2.16	47059	1.86
	Integrated pest and disease management	2	30	12	59.12	56.92	3.87	56935	2.04	50045	1.87
	Integrated pest management	3	30	9.00	55.34	51.41	8.22	70607	2.38	56818	2.02
	Mechanization	3	30	88.00	56.25	50.88	11.25	74565	2.25	53977	1.85
	Problematic soils management	1	13	5.20	23.00	21.00	9.52	32600	2.03	27000	1.85
	Resource conservation	1	10	4.00	51.73	45.84	12.85	66532	3.36	55360	2.21
	Seed production	1	12	4.00	48.60	47.00	3.40	113875	3.03	72025	2.31
	Green mannuring	1	10	4.00	25.53	23.53	8.50	28702	1.94	22444	1.76
	Varietal introduction-RNR-15048	2	15	5.00	41.62	31.63	28.56	44887	1.95	64014	2.25
	Varietal introduction-GNV-1109	1	10	4.00	81.91	74.83	9.46	104327	2.37	92876	2.29
	Varietal introduction-Sahyadri Kempumukthi	1	10	4.00	53.20	46.30	14.90	83510	2.89	62648	2.29
	Varietal introduction-Gandhasale (Desi variety)	11	3	1.20	39.60	36.80	7.61	77600	2.88	59840	2.39
	Varietal introduction-KPR-1	1	10	4.00	49.80	44.20	12.67	70980	1.90	39227	1.60
	Varietal introduction-KHP-11	1	10	4.00	52.20	45.00	16.00	87780	2.20	42500	1.68

	Varietal introduction-GNV-1109	1	10	4.00	69.67	65.53	6.32	110887	0.35	91026	2.95
	Integrated Water management	1	10	8.00	66.43	63.55	4.53	60898	1.71	49145	2.84
	Integrated Weed management	1	36	14.4	23.50	21.30	10.33	32620	1.98	24240	1.68
	Total/ Average		**284**	**188.8**	**51.98**	**47.10**	**10.93**	**71872**	**2.24**	**55684**	**2.12**
Sorghum	Integrated crop management	4	30	12.00	18.34	17.03	8.76	55100	3.55	43231	3.35
	Varietal introduction-SPV-2217	1	20	8.00	17.98	13.80	30.29	56638	4.32	41212	3.68
	Varietal introduction-RTS-43	1	12	5.00	12.50	10.70	16.82	19200	1.43	30000	1.67
	Total/ Average		**62**	**25.00**	**16.27**	**13.84**	**18.62**	**43646**	**3.10**	**38148**	**2.90**
Maize	Integrated nutrient management	1	10	4.00	59.43	53.22	11.67	89587	3.10	78024	2.90
	Integrated pest and disease management	2	20	8.00	75.80	64.91	17.78	123597	3.42	96782	2.82
	Integrated pest management	1	10	4.00	58.00	52.02	11.50	83850	2.92	63044	2.23
	Total/ Average		**40**	**16.00**	**64.41**	**56.72**	**13.65**	**99011**	**3.15**	**79283**	**2.65**
Pearl millet	Varietal introduction-VPMV-9	2	15	6.0	50.39	43.47	31.63	68379	2.58	50719	1.98
	Varietal introduction-VPMH-14	1	2	0.40	21.20	18.40	15.22	37080	2.35	10280	1.91
	Total/ Average		**17**	**6.40**	**35.80**	**30.94**	**23.43**	**52730**	**2.47**	**30500**	**1.95**
Proso millet	Varietal introduction-DHPM-2769	1	2	0.25	18.21	14.11	-29.06	82452	5.31	61982	5.27
Finger millet	Integrated nutrient management	1	10	4.0	24.50	19.30	26.94	29635	1.46	17716	1.31
	Varietal introduction-Bio fortified CFMV 1 Indravathi	1	2	0.4	24.43	19.40	25.93	47120	2.22	22520	1.75
	Varietal introduction-KMR-316	1	10	4.0	31.80	28.30	12.37	65100	2.41	51730	2.09

	Varietal introduction-KMR 630	1	50	10.0	32.55	28.60	13.81	62650	2.79	49800	2.38
	Varietal introduction-ML322 f	1	10	4.0	32.64	29.90	9.16	89173	2.54	78170	2.38
	Varietal introduction-HR-13	1	10	4.0	20.45	18.15	12.67	55780	3.33	48750	3.04
	Varietal introduction	1	5	2.0	29.00	19.50	48.72	46419	2.08	21858	1.51
	Varietal introduction-KMR-340	1	10	1.6	9.16	7.65	19.74	19518	3.78	13953	2.92
	Integrated crop management	7	70	24.0	27.74	22.70	22.63	73936	2.78	53906	2.40
	Total/ Average		**247**	**78.0**	**26.00**	**21.62**	**21.46**	**56327**	**2.62**	**41230**	**2.22**
Little millet	Integrated crop management	2	20	8.0	15.81	12.79	24.96	33144	2.08	23229	1.79
	Varietal introduction-DHLM 36-3	1	1	0.2	14.83	9.30	59.46	51974	4.50	40519	3.79
	Varietal introduction-GPUL-6	1	1	1.00	15.00	10.00	50.00	79000	8.18	58000	7.11
	Total/ Average		**22**	**9.3**	**15.21**	**10.70**	**44.81**	**54706**	**4.92**	**40583**	**4.23**
Foxtail Millets	Integrated crop management	5	42	16.25	14.98	12.69	23.38	40065	2.70	23890	2.27
	Varietal introduction-HN-46	5	47	19.00	15.63	12.14	31.64	37008	3.09	26067	2.44
	Varietal introduction-GPUF-3	2	62	21.60	12.26	8.60	47.76	29275	3.20	23890	2.61
	varietal introduction – DHft-109-03	1	10	4.00	9.56	5.56	41.00	22404	2.73	9503	1.99
	Total/ Average		**161**	**60.85**	**13.11**	**9.75**	**35.95**	**32188**	**2.93**	**20838**	**2.33**
Wheat	Integrated nutrient management	1	5	2.00	33.05	26.83	23.18	71281	2.72	52552	2.36
	Integrated pest management	1	10	4.00	25.60	22.10	15.84	50725	2.56	37705	2.10
	Varietal introduction-UAS-428	1	10	4.00	20.10	17.25	16.52	55500	3.22	46400	3.02

	varietal introduction-DDK-1029	1	15	6.00	29.42	22.35	24.00	56993	3.12	40578	2.75
	Total/ Average		**40**	**16.00**	**27.04**	**22.13**	**19.89**	**58625**	**2.91**	**44309**	**2.56**
Chia	Double crop		10	4.00	8.55	5.32	60.71	83450	3.30	26630	2.25
	Grand total		**885**	**404.6**							

Foxtail millet variety HN-46 (KVK, Belagavi –II)

Kerala: A total of 107 demonstrations on paddy and little millet in 42 ha area have been conducted by KVKs of Kerala which include 39 ha under paddy and 3 ha under little millet. (Table 2.18). Technologies such as problematic soil management, ICM, INM, IPDM, IPM, mechanization, improved variety (Ezhom) and integrate water management and integrate weed management demonstrations gave an average yield of 43.25 q/ha compared to check (32.89 q/ha). The highest paddy yield was recorded under problematic soil management with 67.00 q/ha followed by mechanization with 54.25 q/ha. Improved variety, Co-4 of little millet recorded higher yield of 7.74 q/ha compared to check (6.26 q/ha).

Table 2.18: Frontline demonstrations on cereals conducted by KVKs of Kerala

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Paddy	Integrated disease management	1	5	5.00	24.70	17.30	42.77	21690	1.27	1710	1.02
	Integrated nutrient management	1	20	10.00	32.50	27.20	19.49	36150	1.65	25454	1.50
	Integrated pest management	2	20	10.00	48.29	40.48	7.04	66116	1.89	43369	1.57
	Integrated water management	1	5	2.00	51.80	34.70	49%	65734	1.83	22854	1.30
	Mechanization	2	20	4.20	54.25	48.10	11.66	77575	1.89	54740	1.62
	Problematic soils management	1	5	0.60	67	43	55.81	104550	1.91	72300	2.06
	Varietal introduction-Ezhom 4	1	5	4.00	24.70	17.30	42.77	26690	1.38	11790	1.17

	Integrated Weed management	2	17	3.20	42.75	35.00	27.84	47189	1.64	19620	1.20
	Total/ Average		97	39.00	43.25	32.89	25.98	55712	1.68	31480	1.43
Little millet	Varietal evaluation- CO 4	1	10	3.00	7.74	6.26	23.6	14040	1.43	5160	1.15
	Grand total		**107**	**42.00**							

INM in paddy (KVK, Kottayam)

Weed management in paddy (KVK, Palakkad)

2.1.2.2 Oilseeds

During the year, 253 demonstrations were conducted by KVKs of Karnataka covering groundnut, sunflower, safflower and soybean under 99.4 ha area in farmers' fields. Crop wise results are presented in table 2.19.

Table 2.19: Frontline demonstrations on oilseeds conducted by KVKs of Karnataka

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Groundnut	Intercropping with pigeonpea	1	5	2.00	21.86	16.74	30.59	133043	3.10	98291	2.88
	Integrated disease management	1	10	4.00	13.25	11.00	20.45	22125	1.59	8250	1.20
	Integrated nutrient management	2	16	6.40	19.43	15.78	23.12	60395	2.21	46007	1.98
	Integrated pest and disease management	1	10	4.00	23.40	19.12	22.38	69700	2.47	45020	1.89
	Integrated pest management	1	10	1.00	22.10	17.56	25.85	81370	2.46	57005	2.09

	Varietal introduction-Dh-256	1	12	5.00	26.50	18.50	43.24	137500	3.86	81500	2.70
	Total/ Average		**58**	**20.40**	**20.94**	**16.39**	**27.01**	**74218**	**2.52**	**47556**	**1.97**
Sunflower	Integrated disease management	1	12	5.00	16.97	15.00	13.13	32524	1.84	23870	1.63
Safflower	Varietal introduction-ISF-764	1	10	4.00	14.60	11.40	28.07	42820	3.31	31880	2.99
	Integrated crop management	1	10	4.00	8.51	6.41	32.76	20489	2.15	12799	1.75
	Integrated nutrient management	1	12	5.00	8.70	7.75	12.26	24350	2.04	20525	1.93
	Total/ Average		**32**	**13.00**	**10.60**	**8.52**	**24.36**	**29220**	**2.50**	**21735**	**2.22**
Soybean	INM	1	12	5.00	15.00	12.50	20.00	47100	2.33	28450	1.71
	Integrated crop management	3	72	29.00	22.07	18.11	22.58	70870	3.07	53796	2.67
	Integrated disease management	1	10	4.00	21.48	18.01	19.27	78492	2.74	54139	2.16
	Integrated nutrient management	1	12	5.00	15.00	12.50	20.00	44000	2.14	27450	1.66
	Integrated pest and disease management	1	10	4.00	22.92	18.55	23.56	68836	3.51	48609	2.66
	NRM	1	12	5.00	18.00	15.50	16.13	31200	2.18	29600	1.91
	Varietal introduction-DSb-34	2	20	8.00	15.65	13.5	15.93	57560	3.45	46550	2.77
	Varietal introduction-JS-335	1	10	4.00	12.50	-		25000	1.50	-	
	Varietal introduction-KDS-753	1	5	2.00	15.38	11.05	39.19	35059	2.13	16140	1.51
	Total/ Average		**151**	**61.00**	**17.88**	**15.32**	**22.38**	**51377**	**2.59**	**39469**	**2.19**
	Grand total		**253**	**99.4**							

2.1.2.3 Pulses

A total of 533 demonstrations have been undertaken on major pulses in 200.80 ha by KVKs of Karnataka and Kerala. State and crop wise results are presented below:

Karnataka: A total of 518 FLDs were conducted by KVKs of Karnataka of which 75 in chickpea, 77 in black gram, 10 in cowpea, 10 in field bean, 55 in green gram, 40 in horse gram and 251 in pigeonpea (Table 2.20). The higher chickpea yield of 17.50 q/ha was recorded under IPM technology compared to check. Black gram improved variety BDU-12 recorded higher yield of 14.44 q/ha over check. Demonstration of intercropping system in cowpea recorded higher yield of 11.00 q/ha compared to check. Field bean under ICM recorded yield of 7.15 q/ha, which was 14.40 per cent higher compared to check (6.25 q/ha). Improved variety–DGGV-2 of green gram recorded higher yield of 11.30 q/ha compared to 8.25 q/ha in check. Horse gram improved variety-CRHG-19 recorded higher yield of 7.55 q/ha compared to check (6.27 q/ha). Pigeonpea under intercropping system recorded higher yield of 37.65 q/ha, which was followed by resource management (20.19 q/ha).

Table 2.20: Frontline demonstrations on pulses conducted by KVKs of Karnataka

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	(%) Increase	Net return	BCR	Net return	BCR
Chickpea	ICM	1	10	4.00	12.25	10.50	16.67	15850	1.45	6500	1.17
	Resource conservation	1	10	4.00	11.60	10.50	10.48	24600	1.55	16700	1.36
	Integrated crop management	1	10	4.00	9.10	7.10	28.17	20950	2.05	13500	1.75
	Integrated pest management	1	10	1.00	17.50	15.70	11.46	56430	3.59	44950	2.75
	Mechanization	1	10	4.00	9.50	7.50	26.67	20000	1.91	13000	1.52
	Varietal introduction-JAKI-9218	1	25	10.00	14.20	11.50	23.48	58420	3.44	45620	3.15
	Varietal introduction-BGD-111-1	1	10	4.00	16.58	13.51	22.72	45860	2.60	26671	1.78
	Total/ Average		**75**	**27.00**	**13.08**	**10.97**	**20.50**	**37710**	**2.52**	**26740**	**2.05**
Black gram	Integrated crop management	1	20	4.00	6.35	4.50	41.11	23415	2.43	11640	1.69
	Integrated disease management	1	12	5.00	8.75	7.50	16.67	28750	2.21	22500	2.00
	Integrated nutrient management	1	15	6.00	13.47	12.14	10.96	68180	2.85	51606	2.50

	Varietal introduction-TRCRU-22	1	10	4.00	8.30	6.25	32.80	49700	2.99	35250	2.68
	Varietal introduction-LBG-791	1	10	4.00	5.50	3.76	46.28	15537	1.69	8300	1.42
	Varietal introduction-BDU-12	1	10	4.00	14.44	11.96	20.74	70420	2.56	49380	2.07
	Total/ Average		**77**	**27.00**	**9.47**	**7.69**	**28.09**	**42667**	**2.46**	**29779**	**2.06**
Cowpea	Intercropping system	1	10	2.00	11.00	9.00	22.22	32465	2.85	21625	1.86
Field bean	Integrated crop management	1	10	4.00	7.15	6.25	14.40	23850	1.59	16250	1.41
Horse gram	Varietal introduction-CRHG-19	2	30	12.00	7.55	6.27	20.62	21275	3.35	16067	2.72
	Seed production	1	10	4.00	3.04	2.50	21.60	14490	3.13	9800	2.88
	Total/ Average		**40**	**16.00**	**5.30**	**4.39**	**21.11**	**17883**	**3.24**	**12934**	**2.80**
Green gram	Varietal introduction-TRCR M-147	2	20	8.00	9.68	7.88	23.63	57166	3.04	70620	1.99
	Resource conservation	1	10	4.00	9.16	6.95	31.80	38280	2.09	19900	1.56
	Varietal introduction-DGGV-2	1	25	10.00	11.30	8.25	36.97	55835	2.97	36013	2.42
	Total/ Average		**55**	**22.00**	**10.05**	**7.69**	**30.80**	**50427**	**2.70**	**42178**	**1.99**
Pigeon pea	Resource conservation	3	32	9.00	20.19	10.23	95.98	85118	2.14	18391	1.33
	intercropping system	2	20	8.00	37.65	28.78	34.74	76212	2.66	62068	2.58
	Integrated crop management	12	107	46.20	19.70	15.63	31.74				
	Integrated disease management	1	12	5.00	15.54	12.67	22.65	70250	3.11	50025	2.64
	Integrated pest management	3	30	6.00	12.52	11.14	12.17	68342	3.35	54570	2.67
	Soil and Moisture conservation	1	10	10.00	10.89	7.45	46	46895	2.22	25246	2.00

	Varietal introduction-GRG 152	3	30	12.00	14.04	11.13	28.52	63327	2.52	44540	2.19
	Varietal introduction-GRG-811	1	10	4.00	16.45	14.58	12.83	81810	2.76	68724	2.53
	Total/ Average		**251**	**100.20**	**18.37**	**13.95**	**35.58**	**70279**	**2.68**	**46223**	**2.28**
	Grand total		**518**	**198.20**							

Green gram varietal introduction-DGGV-2 (KVK, Gadag)

ICM in pigeonpea (KVK, Vijayapura -I)

Kerala: A total of 15 demonstrations were conducted on cowpea under double crop by one KVK of Kerala in 2.83 ha area that recorded net return ₹82161/ha and BCR of 4.32.

2.1.2.4 Commercial crops

A total of 157 demonstrations have been implemented on major pulses in 52.02 ha area by KVKs of Karnataka and Kerala. State and crop wise results are presented below:

Karnataka: A total of 135 FLDs were conducted by KVKs of Karnataka of which 85 in sugarcane, 30 in betel vine and 20 in mulberry covering an area of 49.00 ha (Table 2.21). In sugarcane, technologies like ICM, INM, IPM, and resource management demonstrated in farmers' field gave an average yield of 1308.96 q/ha and BCR of 4.31 compared to check (1071.69 q/ha). In mulberry, IPM and INM technologies demonstrations have recorded an increased average mulberry leaf yield by 13.24 % over check. Similarly, in betel vine ICM and IDM technologies increased the leaf yield by 19.08 %.

Resource conservation sugarcane (KVK, Belagavi-I)

INM in mulberry (KVK, Kolar)

Table 2.21: Frontline demonstrations on commercial crops conducted by KVKs of Karnataka

Crop	Production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Sugar cane	ICM	2	10	4.00	1367.63	968.75	40.75	304359	2.68	140117	1.93
	Integrated crop management	3	20	8	1412.33	1064.87	31.85	315743	3.08	164939	2.09
	Integrated nutrient management	1	10	4	1113.00	938.10	18.64	243914	4.60	198444	3.39
	Integrated pest management	2	20	8	1160.50	1050.00	10.67	251281	3.63	212437	2.94
	Resource Conservation	2	35	14	1550.00	1233.80	25.90	302753	5.94	222799	4.34
	Total/ Average		**85**	**34**	**1308.96**	**1071.69**	**21.77**	**278423**	**4.31**	**199655**	**3.19**
Mul berry	Integrated disease management	1	5	2	111.86	104.85	6.69	21694	1.26	16500	1.20
	Integrated nutrient management	2	15	5	153.11	128.07	19.78	440998	4.64	324467	3.77
	Total/ Average		**20**	**7**	**132.49**	**116.46**	**13.24**	**231346**	**2.95**	**170484**	**2.49**
Betel vine	Integrated disease management	2	20	6	1934700 (Leaf No)	1591500 (Leaf No)	23.73	1095013	2.95	780833	2.30
	Integrated crop manage-ment	1	10	2	3190000 (Leaf No)	2788000 (Leaf No)	14.42	481709	6.19	404380	5.15
	Total/ Average		**30**	**8**	**2562350**	**2189750**	**19.08**	**788361**	**4.57**	**592607**	**3.73**
	Grand total		**135**	**49**							

Kerala: A total of 22 FLDs have been implemented by KVKs of Kerala covering 7 in sugarcane and 15 in betel vine in an area of 3.02 ha (Table 2.22). Sugarcane under INM technology recorded higher yield of 774.80 q/ha and BCR of 1.90 compared to other technologies. Betelvine under IDM technology increases the leaf yield by 32.73 %.

Table 2.22: Frontline demonstrations on commercial crops conducted by KVKs of Kerala

Crop	Production technology	KVKs (No.)	Far-mers (N o.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Sugar cane	Foliar nutrition	1	10	4.00	10.25	8.00	28.13	5450	1.08	1625	1.03
	Varietal introduc-tion- CO-86032	1	2	0.2	708.75	-		138000	1.35	-	-
	Integrated nutrient management	1	5	2.0	774.80	669.64	15.70	257207	1.90	183967	1.65
Betel vine	Integrated disease management	1	15	1	1634600	1231510	32.73	941250	1.54	177500	1.82
	Grand total		**22**	**3.02**							

2.1.2.5 Fiber crops

Karnataka: A total of 119 demonstrations on cotton were implemented by KVKs of Karnataka in an area of 52.00 ha (Table 2.23). Technologies like INM and IPM recorded an average yield of 24.10 q/ha and BCR of 3.33 compared to check (19.92 q/ha yield and BCR 2.82).

IPM in cotton (KVK Vijayapura - I)

Table 2.23: Frontline demonstrations on fiber crops conducted by KVKs of Karnataka

Crop	Production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Cotton	ICM	2	15	5.00	222.94	182.87	20.54	308160	3.64	228582	2.87
	Integrated nutrient management	3	30	12	21.11	18.51	14.13	97509	3.15	82326	2.87
	Integrated pest management	7	89	40	27.08	21.33	21	136515	3.50	94078	2.77
	Total / Average		**119**	**52**	**24.10**	**19.92**	**17.57**	**117012**	**3.33**	**88202**	**2.82**

2.1.2.6 Fodder crops

A total of 43 demonstrations have been implemented on fodder crops in 11.08 ha area by KVKs of Karnataka and Kerala. State and crop wise results are presented below:

Karnataka: A total of 38 demonstrations were conducted on fodder crops in 11 ha by KVKs of Karnataka. ICM technology demonstration recorded green fodder yield of 1652 q/ha with net profit of ₹107967 /ha and 3.27 BCR compared to check yield of 1214 q/ha with net profit of ₹62397 and 2.38 BCR.

Kerala: A total of 5 demonstrations were conducted on fodder crops in 0.08 ha by KVKs of Kerala. ICM technology demonstration recorded green fodder cowpea yield of 1475 q/ha with net profit of ₹76293 /ha and 1.91 BCR compared to check yield of 1235 q/ha with net profit of ₹59500 and 1.70 BCR.

2.1.2.7 Green manure crop

A total of 10 demonstrations on green manure crop macuna in an area of 4.00 ha have been implemented by one KVK of Karnataka. Resource conservation technology demonstration recorded higher macuna green biomass yield of 162.50 q/ha with net return of ₹26500/ha and 5.45 BCR.

2.1.2.8 Vegetable crops

A total of 559 FLDs have been conducted on different vegetable crops in an area of 143.25 ha by the KVKs of Karnataka and Kerala. State and crop wise results are presented below:

Karnataka: A total of 472 demonstrations were conducted in major vegetables covering an area of 140.10 ha by the KVKs of Karnataka (Table 2.25). Demonstration of IPM in brinjal gave a yield of 676.00 q/ha with BCR of 4.90. Similarly, IPDM technology demonstration recorded an increased yield of 584.00 q/ha in cabbage over check. ICM technology in okra recorded higher yield of 160.60 q/ha compared to check (116.80 q/ha). IPDM technology in knokhol recorded higher yield of 250.70 q/ha as compared to check (215.00 q/ha). Improved variety (Arka amogh) of dolichos bean gave an increased yield to the tune of 50.54 per cent over check. French bean variety Arka sharath recorded an increased yield of 15.07 per cent over check. Green chilli under IPM technology demonstration recorded higher yield of 331.25 q/ha compared to check. Onion under IPM technology demonstration recorded higher onion yield of 316.80 q/ha compared to other technologies. In pole bean, IPDM demonstration has led to an increased yield to the tune of 12.29 per cent over check.

Table 2.24: Frontline demonstrations on fiber crops conducted by KVKs of Kerala

Crop	Production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Coleus	ICM	2	15	5.00	222.94	182.87	20.54	308160	3.64	228582	2.87
	Varietal introduction-Sreedhara	1	5	0.16	420.00	390.00	7.69	510000	1.32	360000	1.23
	Integrated crop management	1	5	0.20	260.00	200.00	30.00	836000	2.80	450000	2.00
	Total / Average		**10**	**0.30**	**340.00**	**295.00**	**18.85**	**673000**	**2.06**	**405000**	**1.62**

Ridge gourd under ICM recorded higher yield of 226.13 compared to check. Tomato under IPDM resulted in higher yield of 685.12 q/ha over check (602.63 q/ha). Improved variety, Arka Mangala of Yardlong bean recorded higher yield of 207.75 q/ha compared to check. Nutri- garden demonstrated with improved technologies under 100 farmers' fields covering an area of 2.00 ha helped to meet the household requirement of vegetables on daily basis.

Table 2.25: Frontline demonstrations on vegetables crops conducted by KVKs of Karnataka

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Brinjal	Integrated disease management	1	10	2.00	215.00	176.50	21.81	309000	3.55	221000	2.67
	Varietal Introduction-Mahyco-4	1	10	4.00	576.0	361.6	59.29	453718	5.85	277496	5.20
	Integrated crop management	2	15	5.00	249.95	205.15	21.03	335894	4.14	241667	3.14
	Integrated pest management	1	10	4.00	676.00	607.00	11.37	742500	4.90	499360	3.17
	Total / Average		**45**	**15.00**	**429.24**	**337.56**	**28.38**	**460278**	**4.61**	**309881**	**3.55**
Cabba-ge	Integrated pest and disease management	1	5	2.00	584.00	497.50	17.39	268275	4.27	211643	3.44
	Integrated pest management	1	10	2.00	234.3	205.7	13.90	146731	2.53	205871	3.37
	Total / Average		**15**	**4.00**	**409.15**	**351.60**	**15.65**	**207503**	**3.40**	**208757**	**3.41**
Dolichos bean	Varietal introduction-Arka Amogh	1	10	0.20	194.20	129.00	50.54	194896	4.00	114350	2.4 3
French bean	Inter cropping system	2	20	2.20	108.70			103500	2.01	0	
	Varietal Introduction-Arka sharat	4	30	12.00	112.26	99.18	15.07	310323	5.01	237525	4.20
	Total / Average		**50**	**14.40**	**109.43**	**99.18**	**15.07**	**206912**	**3.51**	**237525**	**4.20**
Green chilli	Integrated nutrient management	1	10	4.00	159.00	115.20	38.02	380150	4.93	257340	3.92
	Integrated pest management	3	30	9.00	331.25	249.84	35.61	406703	3.66	324191	3.04

	Varietal Introduction -Arka yashasvi	1	10	2.00	257.50	222.00	15.99	488110	4.13	391100	3.39
	Varietal Introduction- Arka tanvi	1	10	4.00	215.00	140.00	53.57	446318	3.61	339945	2.81
	Total / Average		**60**	**19.00**	**240.69**	**181.76**	**35.80**	**430320**	**4.08**	**328144**	**3.29**
Onion	Integrated crop management	7	55	22.00	220.07	166.97	31.48	459250	5.83	328505	4.04
	Integrated nutrient management	2	15	6.00	257.73	223.05	16.04	501337	5.27	374676	4.19
	Integrated pest management	3	25	8.00	316.80	267.80	17.38	234080	3.43	187247	13.12
	Varietal introduction- Bhima Red	1	10	4.00	183.00	146.00	25.34	157100	3.51	112700	2.80
	Varietal introduction- Bheema Super	1	10	4.00	83.25	63.48	31.14	261920	7.24	148285	5.14
	Varietal Introduction- Bhima Shakti	1	12	5.00	260.00	193.00	34.72	351000	3.08	215100	2.25
	Total / Average		**127**	**49.00**	**220.14**	**176.72**	**26.02**	**327448**	**4.73**	**227752**	**5.26**
Okra	Integrated crop management	2	15	3.00	160.60	116.80	44.80	299451	3.09	191819	2.44
Knol Khol	Integrated nutrient management	1	10	2.00	250.70	215.00	16.60	352741	4.18	288809	3.65
Pole beans	Integrated pest and disease management	1	10	2.00	31.34	27.91	12.29	603112	5.05	461961	4.04
	Integrated nutrient management	1	10	4.00	21.65	18.70	15.78	366785	3.18	278613	2.69
	Total / Average		**20**	**6.00**	**26.50**	**23.31**	**14.04**	**484949**	**4.12**	**370287**	**3.37**
Ridge gourd	Integrated crop management	1	5	1.00	226.13	186.50	21.25	112267	2.23	78196	1.87
	Varietal introduction- Arka Prasana	3	20	7.00	172.55	161.15	7.07	254334	4.58	175447	3.45
	Integrated crop management	1	5	2.00	160.91	150.00	12.73	154394	3.71	87215	2.40
	Total / Average		**30**	**10.00**	**183.53**	**165.88**	**10.32**	**173665**	**3.51**	**113619**	**2.57**

Tomato	Integrated crop management	1	10	4.00	571.00	515.00	10.87	587900	3.94	390000	2.71
	Integrated pest and disease management	2	20	4.00	685.12	602.63	13.58	453723	3.12	322527	2.54
	Integrated pest management	2	20	3.00	301.90	267.61	13.45	200545	2.59	152023	2.19
	Total / Average		**50**	**11.00**	**519.34**	**461.75**	**12.63**	**414056**	**3.22**	**288183**	**2.48**
Yard long bean	Varietal introduction Arka Mangala	4	30	2.70	207.75	155.48	34.91	449479	3.41	244578	2.35
	Integrated crop management	2	10	2.00	204.25	115.00	77.61	657575	6.88	253520	3.38
	Total / Average		**40**	**4.70**	**205.42**	**128.49**	**63.38**	**588210**	**5.72**	**250539**	**3.04**
Nutri - Garden	Nutri-garden		100	2.00							
	Grand total		472	140.10							

IPM in Tomato (KVK, Davanagere)

Amaranthus (KVK, Kozhikode)

Kerala: A total of 87 demonstrations have been implemented by KVKs of Kerala in vegetable crops in an area of 3.15 ha, mostly in the homestead farming situation (Table 2.26). In amaranthus, the Vaika variety recorded a higher green leaf yield of 169 q/ha compared to check. Improved vegetable cowpea variety Hridaya gave 62.50 q/ha which was found to be higher yield compared to check. Bitter gourd under ICM demonstration gave 107 q / ha compared to 100 q/ha in check. Okra under ICM technology demonstration recorded higher yield of 30.28 q/ha compared to check (21.32 q/ha). Tomato under INM recorded higher yield of 290 q/ha compared to check. Snake gourd under IDM technology demonstration recorded higher yield of 340 q/ha compared to check (250 q/ha). Yardlong bean under ICM technology demonstration recorded higher yield of 225 q/ha compared to check. Chilli under INM recorded higher yield of 128.42 q/ ha compared to check.

2.1.2.9 Tuber crops

During the year, a total of 82 demonstrations have been implemented on major tuber crops like elephant foot yam, potato, cassava, and lesser yam covering an area of 6.22 ha by KVKs of Zone-XI. State and crop wise results are discussed below:

Table 2.26: Frontline demonstrations on vegetables conducted by KVKs of Kerala

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Amaranthus	Varietal introduction-Vaika	1	8	0.16	169.00	143.50	16.77	92000	1.59	80000	1.46
Cowpea	Varietal introduction-Hridaya	1	5	1.00	62.50	55.00	13.64	56600	1.68	36000	1.52
Bitter gourd	Integrated crop management	1	10	0.02	107.00	100.00	7.00	60050	1.54	14937	1.10
	Integrated pest management	1	10	0.40	85.00	62.50	36.00	418750	2.21	208750	1.59
	Total / Average		**20**	**0.42**	**96.00**	**81.25**	**21.50**	**239400**	**1.88**	**111844**	**1.35**
Chilli	Integrated nutrient management	1	10	0.12	128.42	77.04	66.69	332000	1.24	451616	1.91
Okra	Integrated crop management	1	2	0.02	30.28	21.32	42.00	59220	2.05	14220	1.32
Snake gourd	Integrated disease management	1	20	1.00	340.00	250.00	36.00	390000	1.49	167500	1.23
Tomato	Integrated nutrient management	1	5	0.02	290.00	224.00	29.46	80688	1.39	22644	1.11
Yard long bean	Integrated pest management	1	7	0.21	126.80	96.20	31.81	471600	2.48	258000	1.89
	Integrated crop management	1	10	0.20	225.00	150.00	50.00	379033	1.73	79303	1.15
	Total / Average		**17**	**0.41**	**175.90**	**123.10**	**40.91**	**425317**	**2.11**	**168652**	**1.52**
	Grand total		**87**	**3.15**							

Karnataka: A total of 5 demonstrations were conducted in potato covering an area of 0.50 ha by KVKs of Karnataka. Variety Kufri Himalini demonstration in potato recorded higher yield of 174.00 q/ha with net returns of ₹241100/ha and BCR 2.23 compared to check.

Kerala: A total of 77 FLDs were conducted on cassava and white yam in an area of 5.72 ha by KVKs of Kerala (Table 2.27). Cassava, under INM technology demonstration recorded higher yield of 400 q/ha compared to check. White yam variety, Sree Haritha gave higher tuber yield (100 q/ha) compared to check.

2.1.2.10 Fruit crops

A total of 310 demonstrations on major fruit crops have been implemented by KVKs in

Table 2.27: Frontline demonstrations on tuber crops conducted by KVKs of Kerala

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Cassava	Integrated disease management	7	52	1.70	387.77	267.72	55.68	588657	2.53	313423	1.19
	Integrated nutrient management	1	5	1.00	400.00	328.00	21.95	331000	2.23	223400	1.83
	Integrated pest management	2	10	3.00	340.29	199.80	69.26	542924	2.41	221545	1.81
	Total / Average		**72**	**5.71**	**307.02**	**221.13**	**39.81**	**391145**	**2.17**	**206842**	**1.55**
White yam	Varietal introduction- Sree Haritha	1	5	0.01	100	89	12.36	102000	1.52	69000	1.35
	Grand total		**77**	**5.72**							

an area of 77.66 ha during the year. State and crop wise results are discussed in the foregoing discussions.

Karnataka: A total of 210 demonstrations on various fruit crops were conducted by KVKs in 73 ha area (Table 2.28). Among the technologies demonstrated in acid lime, INM registered a highest yield of 230.15q/ha with higher economic benefits compared to check. In banana, ICM recorded higher yield of 337.82 q/ha compared to check (280 q/ha). INM in grapes gave 7.28 per cent higher yield (324 / ha) over check. IPM in guava gave higher yield of 253.25 q/ha over check. In papaya, ICM technology gave higher yield of 970. 50 q/ha as compared to 830.55 q/ha in farmers' practices. IPDM in mango resulted higher yield (120.80 q/ha) compared to check (107.60 q/ha). IPM in pomegranate gave an increased yield of 49.29 per cent over local check. IPM in muskmelon recorded higher yield of 363.75 q/ha compared to check (306 q/ha).

Table 2.28: Frontline demonstrations on fruit crops conducted by KVKs of Karnataka

Crop	Production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (Nuts/ha/year)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Acid lime	ICM	1	10	4.00	882.00	825.00	6.91	478430	4.99	317902	3.60
	IDM	1	10	4.00	200.75	170.13	18.00	186987	4.02	131000	3.18
	Integrated pest and disease manage-ment	1	10	4	210.80	172.70	22.00	1158286	10.10	759982	6.50

	Integrated crop manage-ment	1	15	6	200.53	170.02	17.94	414175	7.07	313014	6.09
	Integrated nutrient manage-ment	1	10	4	230.15	220.25	13.94	762950	4.88	749500	5.05
	Total / Average		**35**	**14**	**213.82**	**187.60**	**17.96**	**778470**	**7.35**	**607499**	**5.88**
Banana	Integrated nutrient manage-ment	1	5	2	140.05	110.72	19.88	261570	2.69	320450	2.32
	Integrated disease manage-ment	1	10	2	285.00	230.00	23.91	380000	3.00	265000	2.36
	Integrated crop manage-ment	2	20	6	337.82	280.00	20.70	487227	3.63	379589	3.13
	Total / Average		**35**	**10**	**254.29**	**206.90**	**23.70**	**376266**	**3.11**	**321680**	**2.60**
Grapes	Integrated nutrient manage-ment	1	10	4	324.00	302.00	7.28	617980	2.74	551980	2.55
Guava	Integrated pest manage-ment	2	20	5	253.25	202.50	23.51	301980	4.34	233945	3.56
Mango	Integrated crop manage-ment	2	15	6	105.95	85.80	24.40	186090	3.20	138020	2.63
	Integrated pest and disease manage-ment	1	10	4	120.80	107.60	12.27	243015	3.93	209411	3.97
	Total / Average		25	10	113.38	96.70	18.34	214553	3.57	173716	3.30
Papaya	Integrated crop manage-ment	2	15	8	970.50	830.55	16.17	743068	3.08	561660	2.35

Musk melon	Integrated pest manage-ment	1	10	4	363.75	306.00	18.87	600000	4.00	467450	3.27
Pome granate	Integrated pest and disease manage-ment	4	40	14	144.05	117.78	24.00	993374	4.86	735363	3.68
	Integrated pest manage-ment	1	10	4	150.71	100.95	49.29	530400	6.41	346000	4.76
	Varietal introduc-tion- Keasar	1	10	2	101.20	87.20	16.06	623390	3.52	492680	2.92
	Total / Average		**60**	**20**	**131.99**	**101.98**	**29.78**	**715721**	**4.93**	**524681**	**3.79**
	Grand total		**210**	**73**							

Kerala: A total of 100 demonstrations were conducted by KVKs of Kerala on fruit crops in an area of 4.66 ha. Technologies such as integrated pest and disease management, ICM, IDM, INM and IPM demonstrated in banana have performed better with average yield of 284.60 q/ha as against checks (197.75 q/ha). IPDM demonstration in banana gave higher yield of 403 q/ha as compared to 193.00 q/ha with check. ICM in mango recorded higher yield of 50 q/ha compared to check. Mangosteen improved variety – Arka Shyama recorded higher yield of 210 q/ha compared to check. ICM in watermelon recorded higher yield of 456 q/ha compared to check (370.40 q/ha) (Table 2.29).

Table 2.29: Frontline demonstrations on fruit crops conducted by KVKs of Kerala

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Banana	Integrated crop management	1	10	1.00	245.00	205.00	19.51	650000	2.13	525000	2.05
	Integrated disease management	1	5	0.50	194.40	155.94	24.66	475761	2.19	314033	1.81
	Integrated nutrient management	1	5	0.10	300.00	243.00	23.46	228750	1.55	92500	3.72
	Integrated pest and disease management	1	10	0.60	403.00	193.00	108.81	1089063	2.50	220600	1.34

	Integrated pest management	1	5	0.20	280.60	191.80	46.30	903000	2.81	320000	1.67
	Total / Average		**35**	**2.40**	**284.60**	**197.75**	**44.55**	**669315**	**2.24**	**294427**	**2.12**
Mango	Integrated crop management	1	50	2.00	50.00	48.00	4.17	4,50,000	2.50	370000	2.05
Mangos teen	Integrated nutrient management	1	5	0.10	63.90	33.00	93.64	582138	3.68	113619	1.61
	Varietal introduction-Arka Shyama	1	5	0.06	210.00	182.00	15.38	347000	2.23	263000	1.93
Water melon	Integrated crop management	1	5	0.10	456.00	370.40	23.11	398416	3.69	259136	2.75
	Total / Average		**10**	**0.16**	**333.00**	**276.20**	**19.25**	**372708**	**2.96**	**261068**	**2.34**
	Grand total		**100**	**4.66**							

2.1.2.11 Plantation crops

A total of 126 demonstrations were undertaken by KVKs on major plantation crops in an area of 34.76 ha. State and crop wise results are discussed below:

Karnataka: A total of 86 demonstrations on plantation crops like coconut, arecanut and coffee were conducted in 27 ha area by KVKs of Karnataka (Table 2.30). Coconut under IPDM technology demonstration recorded yield of 28000 nuts/ha/year. Arecanut under technology demonstrations resulted in higher average yield of 22.6 q/ha. Coffee under IPM technology recorded higher yield of 31.25q/ha compared to check.

Table 2.30: Frontline demonstrations on plantation crops conducted by KVKs of Karnataka

Crop	Production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Arecanut	Integrated nutrient manage-ment	2	14	4	16.89	14.23	18.31	442568	2.99	351716	2.72
	Integrated disease manage-ment	1	25	10	27.42	23.05	18.96	786610	5.21	631832	4.39
	Integrated crop manage-ment	1	5	1	23.50	21.50	9.30	529000	3.15	439950	2.96
	Total/ Average		**44**	**15**	**22.60**	**19.59**	**15.52**	**586059**	**3.78**	**474499**	**3.36**

Coconut (Nuts/ha/ year)	Integrated pest and disease manage-ment	1	10	4	28000	20000	40.00	197611	4.57	168696	4.19
	Integrated pest manage-ment	1	12	4	14094	10125	39.20	187290	2.98	73600	1.57
	Integrated crop manage-ment	1	10	2	7850	7850.00	0.00	209555	3.96	156200	3.80
	Total/ Average		32	10	16648	12658	26.40	198152	3.84	132832	3.19
Coffee	Integrated pest manage-ment	1	10	2	31.25	25.29	23.57	437445	3.33	326927	2.83
	Grand total		**86**	**27**							

Kerala: A total of 40 demonstrations on plantation crops like coconut and arecanut were conducted in an area of 7.76 ha by KVKs of Kerala (Table 2.31). INM and IDM technology demonstrations in coconut gave higher net profit of ₹188292/ha and ₹91630 / ha, respectively. Arecanut under ICM recorded higher yield of 25 q/ha compared to check (20 q/ha).

2.1.2.12 Spice crops

A total of 237 demonstrations have been conducted in major spices in an area of 65.06 ha by KVKs. State and crop wise results are discussed below:

Karnataka: A total of 181 demonstrations were conducted under spice viz., ajwain, black pepper, dry chilli, garlic, turmeric and ginger covering an area of 57.81 ha (Table 2.32). Ajwain under IPM recorded yield of 10.32 q/ ha with net return ₹107790 /ha. IPDM in dry chilli recorded higher yield of 32.70 q/ha, which was 16.79 per cent higher over check. Ginger under INM recorded higher yield of 322 q/ha compared to check. Garlic under ICM recorded higher yield of 41.56 q/ha compared to check. ICM in black pepper gave higher dry pepper yield of 11.30q/ha compared to check. Turmeric improved variety- IISR Prathiba recorded higher yield of 295.25 q/ha compared to check.

IDM for stem bleeding (KVK, Kottayam)

ICM in Arecanut (KVK, Palakkad)

Table 2.31: Frontline demonstrations on plantation crops conducted by KVKs of Kerala

Crop	Production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	(%) Increase	Net return	BCR	Net return	BCR
Arecanut	INM	1	20	0.10	14.00	9.13	53.34	310000	3.67	169550	2.13
(q/ha)	Integrated nutrient manage-ment	1	5	5.00	14.50	9.50	52	375000	2.82	210000	2.24
	Integrated crop manage-ment	1	10	1.00	25.00	20.00	25.00	602350	4.05	457700	3.51
	Total/ Average		**15**	**6.00**	**19.75**	**14.75**	**38.50**	**488675**	**3.44**	**333850**	**2.88**
Coconut	Integrated nutrient manage-ment	2	15	0.90	15208	11164	36.37	188282	0.85	89172	1.27
	Integrated disease manage-ment	1	10	0.86	15000	8502	76.43	91630	1.55	40189	0.71
	Total/ Average		**25**	**1.76**	**15104**	**9833**	**56.40**	**139956**	**1.20**	**64681**	**0.99**
	Grand total		**40**	**7.76**							

Table 2.32: Frontline demonstrations on spices conducted by KVKs of Karnataka

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	(%) Increase	Net return	BCR	Net return	BCR
Ajwain	Integrated pest manage-ment	1	10	4.00	10.32	8.75	17.94	107790	3.58	85025	3.03
Chilli	Integrated pest and disease manage-ment	1	10	4.00	32.70	28.00	16.79	198500	1.94	141000	1.67
	Integrated pest manage-ment	1	10	4.00	12.23	9.81	24.67	304140	3.48	209060	2.56

	Integrated crop manage-ment	1	7	2.80	9.61	7.63	25.95	150212	3.45	110882	2.95
	Total/ Average		**37**	**14.80**	**16.22**	**13.55**	**21.34**	**190161**	**3.11**	**136492**	**2.55**
Ginger	Integrated crop manage-ment	1	10	1.00	225.00	140.00	60.71	375000	3.00	186000	2.14
	Integrated disease manage-ment	2	25	9.00	105.18	94.80	11.48	711923	2.91	615165	2.70
	Integrated nutrient manage-ment	1	10	4.00	322.00	285.00	12.98	1789642	3.28	149542	2.92
	Total/ Average		**45**	**14.00**	**217.39**	**173.27**	**28.39**	**958855**	**3.06**	**316902**	**2.59**
Garlic	Integrated crop manage-ment	2	15	5.00	41.56	33.48	22.35	430352	2.64	284178	2.20
Black pepper	Integrated disease manage-ment	1	10	1.00	8.25	6.27	31.58	342360	3.24	240327	2.77
	Integrated crop manage-ment	1	10	2.00	11.30	10.10	11.88	439075	3.37	342505	2.59
	Integrated pest and disease manage-ment	1	25	10.00	8.76	5.79	51.30	268098	2.99	131708	1.98
	Total/ Average		**60**	**18.00**	**17.47**	**13.91**	**29.28**	**369971**	**3.06**	**249680**	**2.39**
Turme ric	Varietal introduc-tion-IISR Prathiba	2	14	2.00	295.25	249.45	18.26	529291	2.30	350206	2.05
	Grand total		**181**	**57.8**							

Kerala: A total of 56 demonstrations were implemented in black pepper, ginger and turmeric crops in an area of 7.26 ha by KVKs of Kerala (Table 2.33). IDM in black pepper recorded 24.24 per cent increased yield over check. INM in ginger recorded higher yield of 175 q/ha compared to check (144 q/ha). IDM in chilli recorded 17.38 per cent increased yield over check. IDM in small cardamom recorded higher yield of 8.64 q/ha compared to check (6.10 q/ha). INM in turmeric gave 228.50 q/ha yield compared to check (194.85 /ha).

Varietal introduction-IISR Prathiba (KVK, Belagavi-I)

INM in chilli (KVK, Gadag)

Table 2.33: Frontline demonstrations on spice crops conducted by KVKs of Kerala

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (Nuts/ha/year)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Black pepper	Integrated disease management	1	10	2.00	20.50	16.50	24.24	644500	3.32	437500	2.75
Chilli	Integrated disease management	1	5	0.06	66.20	56.40	17.38	81700	1.54	37400	1.23
Ginger	Integrated nutrient management	1	10	2.00	175.00	144.00	21.53	356000	3.11	265000	2.59
Small Carda-mom	Integrated disease management	1	1	1.00	8.64	6.10	41.64	1005200	2.83	548000	2.00
Turmeric	Integrated nutrient management	1	10	2.00	228.50	194.85	17.27	483300	4.09	389680	3.50
	Varietal introduction Pragathi	1	20	0.20	172.50	96.00	79.69	158875	1.44	39625	1.16
	Total/ Average		**30**	**2.20**	**200.50**	**145.43**	**48.48**	**321088**	**2.77**	**214653**	**2.33**
	Grand total		**56**	**7.26**							

IDM in black pepper (KVK, Kottayam)

INM in Ginger (KVK, Pathanamthitta)

2.1.2.13 Flower crops

A total of 88 demonstrations have been conducted in major flower crops in an area of 18.02 ha by KVKs of Zone XI. State and crop wise results are discussed below:

Karnataka: A total of 85 demonstrations on flower crops were implemented in an area of 18 ha by KVKs of Karnataka (Table 2.34). INM in marigold recorded higher flower yield of 149.40 q/ha compared to check (123.00 q/ha). IPM in chrysanthemum recorded higher yield of 145.28 q/ha with BCR of 2.24 compared to check. Tube rose under IPDM recorded higher yield of 80 q/ha compared to check. IPM in rose gave higher yield of 234.78 q/ha compared to check.

Table 2.34: Frontline demonstrations on flower crops conducted by KVKs of Karnataka

Crop	Variety/ production technology	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Increase (%)	Net return	BCR	Net return	BCR
Marigold	Integrated nutrient management	1	5	1	149.40	123.80	20.68	379870	4.59	294872	3.74
Chrysanthemum	Integrated crop management	4	40	9	60.26	47.87	21.13	354200	2.76	258738	2.24
	Integrated pest management	1	10	2	145.28	126.49	14.85	480828	2.24	208572	1.54
	Total/ Average		**55**	**12**	**118.31**	**99.39**	**18.89**	**404966**	**3.20**	**254061**	**2.51**
Rose	Integrated pest and disease management	1	5	1	187.20	156.00	20.00	587900	3.31	394655	2.38
	Integrated pest management	1	10	2	234.78	197.82	18.68	629056	2.94	312696	1.84
	Total/ Average		**15**	**3**	**210.99**	**176.91**	**19.34**	**608478**	**3.13**	**353676**	**2.11**
Tube rose	Integrated pest and disease management	1	10	2	80.00	65.00	23.08	340000	2.55	195000	1.75
	Grand total		**85**	**18**							

Kerala: A total of three demonstrations were conducted on flower crops in 0.02 ha area by KVKs of Kerala. ICM in orchid recorded higher per cent flowering of 82 per cent with net profit of ₹362000 /ha and BCR of 3.01 compared to check yield.

2.1.2.14 Demonstrations on hybrids

A total of 536 demonstrations were conducted in hybrid crop varieties in an area of 165.96 ha during the year. A total of 533 demonstrations on hybrids in various crops were conducted in an area of 165.36 ha by the KVKs of Karnataka (Table 2.35). Baby corn hybrid-5417 recorded higher yield of 12500 q/ha compared to 11250 q/ha in check. In bottle gourd, Arka Nutan hybrid recorded higher yield of 373.50 q/ha compared to check. In cotton, private hybrid (MRC-221) (24.1 q/ ha) has performed superior to other hybrids. In cabbage, Arka polo (528.50/ha) performed better than checks and gave better economic returns. Castor hybrids, ICH-66 (17.15 q/ha) recorded higher yield compared to check. Green chilli, hybrid Arka Meghana recorded 10.09 per cent higher yield (318.50 q/ha) over check (289.30 q/ha). In maize, private hybrids gave higher yield ranging from 11.37 per cent to 27.42 per cent over checks. In marigold, Max Yellow (240.80 q/ha) has performed superior to their check (200.30 q/ha). The performance of hybrids, such as Arka Nikita in okra, GRV 1109 in paddy, VPMH-14 in pearl millet, GRD-152 in pigeonpea and RFSH -1887 in sunflower were superior over their respective checks. In tomato, Arka Abhed (415 q/ha) has performed better than other hybrids and gave better economic returns. Tuberose, Arka Prajwal recorded higher yield of 114.23 q/ha compared to 88.03 q/ha in check.

Table 2.35: Frontline demonstrations on hybrids conducted by KVKs of Karnataka

Crop	Name of hybrid	KVKs (No.)	Farmers (No.)	Area (ha)	Yield (q/ha)			Economics (₹/ha)			
								Demo		Check	
					Demo	Check	Change (%)	Net returns	BCR	Net returns	BCR
Baby corn	Hybrid-5417	1	5	1.0	12500	11250	11.11	84750	2.99	52375	2.21
Bottle Guard	Arka Nutan	1	10	2.0	373.50	305.50	22.26	185450	3.07	255150	4.15
Bt Cotton	Jadoo Jackpot	2	20	8.0	25.40	21.10	20.38	117425	2.805	87340	2.26
	Ambari	1	10	4.0	11.30	8.70	29.89	30150	1.78	22155	1.45
	Kuber	1	10	4.0	14.37	11.96	20.15	41112	2.05	60161	2.6
	MRC-221	1	10	4.0	24.15	21.75	11.03	100150	2.65	131010	3.74
	Kanaka	1	10	4.0	16.40	11.50	42.61	67490	2.10	23775	1.35
Cabbage	Saint	1	10	2.0	230.43	20.57	13.90	146731	2.53	205871	3.37
	Arka Polo	1	10	2.0	528.50	412.75	28.04	233030	2.22	112700	1.51
Castor	ICH-66	2	29	12.0	17.15	13.78	24.46	50350	1.28	33790	0.89
Chilli	UASRCh 42	1	10	4.0	300.50	260.25	16.19	331500	3.35	411000	3.98
	Arka Meghana	1	5	1.0	318.50	289.30	10.09	333990	3.12	394188	3.68
	Arka yashasvi	1	10	2.0	257.50	222.00	15.99	488110	4.14	391100	3.39

	Arka Gagan	1	5	0.5	247.30	201.90	22.49	139592	2.05	86916	1.64
	Arka Tejasvi	1	10	1.0	215.50	182.50	18.08	254800	2.98	332100	3.75
Maize	MAH-14-138	1	10	4.0	76.40	68.60	11.37	93880	2.59	77890	2.31
	CP 818	1	10	4.0	64.60	50.70	27.42	83530	3.3	107780	3.5
	GH-150125	1	10	4.0	64.45	55.67	15.77	115575	3.53	96585	3.26
Marigold	Arka Abhi	2	15	3.0	162.28	141.15	14.97	470883	3.31	718530	4.65
	Max Yellow	1	5	2.0	240.80	200.30	22.17	635400	4.67	790400	5.2
Okra	Arka Nikitha	4	28	7.1	162.09	136.45	17.13	221899	3.10	222950	3.03
Paddy	GRV 1109	1	10	4.0	74.06	53.25	39.08	93308	2.32	63875	1.75
Pearl millet	VPMH-14	2	12	4.4	20.00	14.45	38.44	29215	2.555	21260	2.915
Pigeonpea	GRG-152	1	10	4.0	16.56	12.25	35.18	102320	2.86	70125	2.52
Sunflower	RSFH-700	3	30	12.0	14.77	12.45	18.52	47083	2.66	40176	2.35
	KBSH-85	1	10	4.0	15.30	12.00	27.50	36000	1.75	59100	2.23
Tomato	Arka Abhed	1	10	2.0	415.00	362.50	14.48	286000	2.91	354500	3.47
	Sagar	1	10	4.0	225.00	182.00	23.63	128220	3.38	174250	4.43
	Arka Rakshak	1	5	0.1	378.00	261.00	44.83	293625	1.81	519750	2.22
	Saho	1	10	2.0	326.00	271.00	20.30	163500	2.00	91450	1.5
Tuberose	Arka Prajwal	3	25	1.0	114.23	88.03	31.91	307363	2.76	267045	2.56
	Total		**533**	**165.36**							

A total of three demonstrations conducted on musk melon hybrid, Kundan recorded higher yield of 55000 q/ha compared to 32800 q/ha in check in the state of Kerala.

Okra hybrid – Arka Nikita (KVK, Belagavi-II)

2.1.2.15 Demonstrations on farm machinery

A total of 200 FLDs on farm machinery were implemented in an area of 61.4 ha. State wise details of machinery demonstrated are presented in the forgoing discussion.

Karnataka: Farm machinery such as coconut de-husking machine, compartment bund former, cotton shredder, crop processing machine, engine operated weeder in green gram, groundnut digger cum elevator, improved hand weeder, laser levelling in paddy, onion de-topper, paddy straw baler and solar nipping machine in Bengal gram were demonstrated by KVKs of Karnataka in an area of 55.0 ha and 20 units by involving 175 farmers (Table 2.36).

Table 2.36: Frontline demonstrations on farm implements conducted by KVKs of Karnataka

Crops	Implement	KVKs (No.)	Farmer (No.)	Area (ha)
Coconut	Coconut de-husking machine	1	20	20 units
Dryland farming	Compartment Bund Former	1	20	8
Green gram	Compartment bunding	1	10	4
Cotton	Cotton shredder	1	10	4
Multi Crop	Crop Processing Machine	1	10	10 units
Green gram	Engine operated weeder	1	10	4
Groundnut	Groundnut Digger cum Elevator	1	10	4
Ragi/Groundnut	Improved Hand weeder	1	10	4
Paddy	Laser Levelling	1	5	1
Onoin	Onion de-topper	3	50	18
Paddy	Paddy straw baler	1	10	4
Bengal gram	Solar nipping machine	1	10	4
	Total		**175**	**55.0/ 20 unit**

Engine operated weeder (KVK, Gadag)

Foliar spray by using drone (KVK,Kottayam)

Kerala: Farm implements/machinery such as collar ring in banana, drone in paddy and amaranthus, and power tiller operated coconut basin maker were demonstrated by KVKs of Kerala in an area of 6.4 ha by involving 25 farmers (Table 2.37).

Table 2.37: Frontline demonstrations on farm implements conducted by KVKs of Kerala

Crop	Implement	KVKs (No)	Farmers (No)	Area (ha)
Banana	Collar ring	1	2	0.3
Paddy	Drone	2	13	5.0
Amaranthus	Drone	1	5	1.0
Coconut	Power tiller operated Coconut basin	1	5	0.1
	Total		**25**	**6.4**

2.1.2.16 Farm enterprises

A total of 77 demonstration units were established on farm enterprises by involving 583 farmers/farm women in Karnataka and Kerala. State-wise demonstrations on enterprises are presented below. A total of 32 units were established under various small scale income generating enterprises benefitting 339 farmers/farm women by KVKs of Karnataka. Details are presented in Table 2.38. A total of 45 demonstration units were established under various small-scale enterprises for the benefit of 244 farmers/farm women by KVKs of Kerala (Table 2.39).

Table 2.38: Frontline demonstrations on farm enterprises conducted by KVKs of Karnataka

Farm enterprise demonstration units (EDP)	KVKs (No.)	Farmers (No.)	Units (No.)
Demonstration of scientific bee keeping Apis cerana indica	1	5	1
Demonstration of decomposing cultures in compost preparation	2	25	1
Grain storage	1	40	1
Special programme on Demonstration of nutri-farms for year-round nutrition security among farm families	3	60	1
Popularization of UV protective farm apron for farm women	1	10	1
Demonstration of bivoltine double hybrid FC1 x FC2 for quality cocoon production and crop stability	2	15	15
Effective bed disease management through lime dusting by battery operated sieving machine in silk worm rearing	1	10	4
Demonstration of uzi fly sticky pads in silkworm rearing house for increased productivity	1	10	4
Strengthening rural youth as Bana-Siri Techno Experts (Service Providers)	1	10	4
Value addition in tamarind, millets, dry flowers, jackfruit, coconut shell. Tomato, Fisheries, mango	8	154	31
Total		**339**	**32**

Table 2.39: Frontline demonstrations on farm enterprises conducted by KVKs of Kerala

Farm enterprises demonstration units (EDP)	KVKs (No.)	Farmers (No.)	Units (No.)
Value addition in tuber crops, banana, millets, moringa	7	171	32
Low-cost egg incubator and hatchery to enhance income and food security to self-help groups	1	10	2
Beekeeping and its value addition	1	8	4
Demonstration of organic manure production from Trash fish	1	5	2
In-situ composting of farm bio-waste using EM solution	1	50	5
Total		**244**	**45**

2.1.2.17 Livestock

A total of 851 demonstration units in livestock including poultry were established benefiting 500 farmers. State and enterprise wise details are given below.

Karnataka: A total of 394 FLDs were conducted under livestock with 1308 animal / birds involving 394 farmers by KVKs by Karnataka. Out of which, 106 FLDs on dairy with 238 animals involving 173 farmers, two FLDs on piggery with 20 animals involving 10 farmers, 140 FLDs on poultry with 410 birds involving 25 farmers and 146 FLDs on sheep and goat with 640 animals involving 86 farmers were implemented during the year (Table 2.40).

Kerala: A total of 457 FLDs were conducted under livestock with 591 animals / birds involving 206 farmers by KVKs of Kerala (Table 2.41). In which, 418 FLDs on dairy with 409 animals involving 153 farmer, 30 FLDs on poultry with 105 birds involving 28 farmers and nine FLDs on sheep and goat with 77 animals involving 25 farmers were implemented.

Table 2.40: Frontline demonstrations on livestock conducted by KVKs of Karnataka

Category	Technology demonstrated	KVKs (No.)	Farmers (No.)	Units (No.)	Animals (No.)
Dairy	Calf Management	3	30	12	30
	Dairy management	3	30	22	50
	Nutritional management	6	53	27	68
	Pest and Disease management	3	30	15	60
	Reproductive management	3	30	30	30
Piggery	Nutritional management	1	10	2	20
Poultry	Backyard poultry nutrient management	3	25	140	410
Sheep and goat	Integrated Health management	5	38	83	305
	Mechanization	1	10	10	10
	Nutritional management	4	28	43	225
	Pest and Disease management	1	10	10	100
	Total		**294**	**394**	**1308**

Table 2.41: Frontline demonstrations on livestock conducted by KVKs of Kerala

Category	Technology demonstrated	KVKs (No.)	Farmers (No.)	Units (No.)	Animals (No.)
Dairy	Nutritional management	3	29	31	64
	Pest and Disease management	7	120	382	325
	Reproductive management	1	4	5	20
Poultry	Pest and Disease management	1	20	20	25
	Backyard poultry management	1	8	10	80
Sheep and goat	Reproductive management	2	20	4	52
	Nutritional management	1	5	5	25
	Total	**16**	**206**	**457**	**591**

Nutritional management in goat (KVK, Pathanamthitta)

Lakshadweep: A total of 10 FLDs on poultry with 280 birds involving 11 farmers were conducted by KVK Lakshadweep. A total of five FLDs on duckery strain Chaithra with 250 birds involving 5 farmer and six FLDs on sheep and goat with 30 animals involving 5 farmers in Island ecosystem were demonstrated.

2.1.2.18 Fisheries

A total of 118 FLD units in fisheries were established benefiting 118 farmers during the year. A total of 69 FLDs were conducted on fisheries with 63800 fish fingerlings (21300 m2 pond size) involving 69 farmers by the KVKs of Karnataka. Details are presented in Table 2.42. A total of 49 FLDs were conducted on fishing with 16797 fish fingerlings involving 49 farmers by the KVKs of Kerala (Table 2.43).

Table 2.42: Frontline demonstrations on fisheries conducted by KVK at Karnataka

Technology demonstrated	KVK (No)	Farmers (No)	Units (No)	Unit (m^2)	Fingerlings (No)
Striped murrel fish culture in weed fish infested ponds	1	4	4	200	1000
Demonstration of genetically improved farmed tilapia (GIFT) in farm ponds	2	20	20	1500	7000
Production of Pacu, *Piaractusbrachypomus* (Roopchand) in lined/farm pond	1	4	4	4000	4000
Promotion of composite fish farming in storage ponds	4	23	23	1600	35000
Demonstration of Pangasius in farm ponds	1	5	5	2500	7500
Demonstration of Roopchand in farm pond	1	5	5	2500	7500
Culture of Seabass fish in low salinity inland freshwater ponds	1	4	4	4000	1000
Culture of Silver Pompano as an alternative species to cage culture in coastal Karnataka	1	4	4	5000	800
Total		**69**	**69**	**21300**	**63800**

Releasing of fingerlings (KVK, Kolar)

Distribution of fingerlings KVK, Pathanamthitta

Table 2.43: Frontline demonstrations on fisheries conducted by KVK at Kerala

Technology demonstrated	KVKs (No)	Farmers (No)	Units (No)	Size of the unit (m^2)	Fingerlings (No)
Giant Gourami fish in fresh water ponds	1	10	10	240	1407
Demonstration of Giant gourami farming in fresh water ponds	1	5	5	10000	250
Integrated farming of Green Mussel within protective nets on floating fish cages	1	2	2	100	50
Demonstration on Integrated Fish-Duck farming	1	1	1	5000	1000
Demonstration on Cage culture fin fish in open brackish water creeks	1	1	1	96	600
Demonstration of Giant Gourami in Fresh Water Ponds in Kollam district	1	3	3	150	240
Demonstration of ICAR-CIFA Jayanthi Rohu (Labea Rohita) In Kollam District	1	3	3	1000	1200
Demonstration of Red Snapper in floating fish cages in brackish water creeks	1	2	2	48	200
Fattening of Mud Crab species Scylla serrata in inter-float spaces in fish cages	1	3	3	500	30
Scientific farming of scampi Macrobrachium rosenbergii	4	14	14	2680	11800
Feed supplements for improving reproductive health of fishes	1	5	3	10000	30000
Total		**49**	**49**	**20114**	**16797**

2.1.2.19 Women empowerment programmes

A total of 1084 programmes on empowerment of women and children were conducted by Karnataka with 54183 participants and details are presented in Table 2.44. KVKs of Karnataka have organized 1000 programmes for women with 48710 participants and 84 programmes on children with 5473 participations. Kerala, KVKs organized 35 programmes for women with 690 participants and 5 programmes on children with 116 participants (table 2.45).

Releasing of fingerlings (KVK, Kolar)

Distribution of fingerlings KVK, Pathanamthitta

Table 2.44: Women empowerment programmes conducted by KVKs of Karnataka

Category	Name of the programme	KVKs (No)	Programmes (No)	Participants (No)
Women	Awareness programmes	25	190	21344
	Coconut tree climbing	2	3	42
	Drudgery reduction	17	52	973
	Enterprises	19	61	1571
	Farming system	10	63	1677
	Health and nutrition	21	84	2758
	Kitchen garden	17	44	2731
	Nutri-garden	28	117	2741
	Storage technique	16	43	4004
	Value addition	25	110	3362
	Women empowerment	22	145	3962
	Others	11	88	3545
	Total		**1000**	**48710**
Children	Health and nutrition	22	50	2787
	Others	10	34	2686
	Total		**84**	**5473**
Total			**1084**	**54183**

Table 2.45: Children empowerment programmes conducted by KVKs of Kerala

Category	Name of the programme	KVKs (No)	Programmes (No)	Participants (No)
Women	Awareness programmes	1	3	47
	Enterprises	3	5	181
	Health and nutrition	2	5	84
	Nutri-garden	3	7	77
	Value addition	3	12	260
	Women empowerment	1	3	41
	Total		**35**	**690**
Children	Others	1	5	116
	Total		**5**	**116**
Total			**40**	**806**

2.1.3 Capacity Development Program

Capacity development is one of the major activities of KVKs for famers, rural youth and extension personnel to train and impart knowledge on new agricultural methods and technologies. Table 2.46 presents state-wise and participant category-wise capacity development courses organized. Total of 5925 courses were conducted during the year benefitting 209554 participants across all the categories. KVKs in Karnataka organized 3928 courses with 143704 participants, KVKs in Kerala organized 1951 courses with 64708 participants and KVK Lakshadweep organized 46 courses with 1142 participants. Among these, 4118 courses were organized for farmers and farm-women with 144932 participants followed by 668 sponsored courses with 26198 participants, and 613 courses for rural youth with 20435 participants. KVKs organized 338 courses for extension personnel and 188 vocational courses.

2.1.3.1 Farmers and farm women

(a) State wise

Table 2.47 depicts state-wise capacity development courses organized for farmers and farm-women. A total of 4118 capacity development courses were conducted with a total of 144932 farmers and farm-women participation. In Karnataka, 2837 capacity development courses were organized with 102630 participants. KVKs of Kerala organized 1240 capacity development courses involving 41235 participants. KVK Lakshadweep organized 41 capacity development courses with participation of 1067 participants.

Table 2.46: State and participant category wise capacity development courses organized

State	Participant category and capacity development courses (No.)											
	Farmers/ Farm women		Rural youth		Extension personnel		Sponsored courses		Vocational courses		Total	
	C	P	C	P	C	P	C	P	C	P	C	P
Karnataka	2837	102630	335	12599	237	8635	412	16286	107	3554	3928	143704
Kerala	1240	41235	276	7804	98	4143	256	9912	81	1614	1951	64708
Lakshadweep	41	1067	2	32	3	43	0	0	0	0	46	1142
Total	**4118**	**144932**	**613**	**20435**	**338**	**12821**	**668**	**26198**	**188**	**5168**	**5925**	**209554**

C = Courses; P = Participants

Table 2.47: State wise capacity development courses organized for farmers and farm women

State	Capacity development courses (No.)	Participant farmers and farm women (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Karnataka	2837	54520	22399	76919	15904	9807	25711	70424	32206	102630
Kerala	1240	19912	14415	34327	3141	3767	6908	23053	18182	41235
Lakshadweep	41	0	0	0	608	459	1067	608	459	1067
Total	**4118**	**74432**	**36814**	**111246**	**19653**	**14033**	**33686**	**94085**	**50847**	**144932**

(b) Area wise

Table 2.48 presents the area-wise capacity development courses conducted for farmers and farm-women by KVKs during the year. Data indicate that highest number of courses conducted were in crop production area (869 courses), followed by horticulture (678 courses), home science (667 courses), plant protection (512 courses), soil health and fertility management (481 courses) and livestock production and management (346 courses). Area-wise capacity development courses conducted for farmers and farm-women by KVKs of Karnataka, Kerala and Lakshadweep are given in Table 2.49, 2.50 and 2.51, respectively.

2.1.3.2 Rural youth

(a) State wise

Capacity development courses conducted for rural youth by KVKs in different states are presented in Table 2.52. Data reveals that a total of 613 capacity development courses were conducted with 20435 participants. KVKs of Karnataka conducted 335 courses in which 12599 (8422 males and 4177 females) rural youth were trained. KVKs of Kerala organized 276 capacity development courses with 7804

Table 2.48: Area wise capacity development courses conducted for farmers and farm women

Capacity development area	CD Courses (No.)	Participant farmers and farm women (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop Production	869	20093	7176	27269	5329	2370	7699	25422	9546	34968
Horticulture	678	13447	5900	19347	3281	2078	5359	16728	7978	24706
Soil health and fertility management	481	10722	3103	13825	2743	1500	4243	13465	4603	18068
Livestock production and management	346	5392	2583	7975	2284	1630	3914	7676	4033	11889
Home science/ Women empowerment	667	3857	9663	13520	865	3593	4458	4722	13256	17978
Agricultural engineering	78	1669	687	2356	364	196	560	2033	883	2916
Plant protection	512	10532	3154	13686	2731	1104	3835	13263	4258	17521
Production of inputs at site	300	4837	2807	7644	1439	1147	2586	6276	3954	10230
Capacity building and group dynamics	166	3450	1398	4848	449	273	722	3899	1671	5570
Agro-forestry	21	433	343	776	168	142	310	601	485	1086
Total	**4118**	**74432**	**36814**	**111246**	**19653**	**14033**	**33686**	**94085**	**50847**	**144932**

Table 2.49: Area wise capacity development courses conducted for farmers and farm women in Karnataka

Capacity development area	CD courses (No.)	Participant farmers and farm women (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop Production	669	15964	4676	20640	4604	1833	6437	20568	6509	27077
Horticulture	431	8930	2896	11826	2396	1087	3483	11326	3983	15309
Soil health and fertility management	415	8988	2446	11434	2479	1238	3717	11467	3684	15151
Livestock production and management	231	4009	1697	5706	1731	1174	2905	5740	2871	8611
Home science/ Women empowerment	382	2254	6525	8779	595	2748	3343	2849	9273	12122
Agricultural engineering	43	965	227	1192	316	121	437	1281	348	1629
Plant protection	378	7958	1914	9872	2250	683	2933	10208	2597	12805
Production of inputs at site	166	3027	1041	4068	1089	602	1691	4116	1643	5759
Capacity building and group dynamics	102	2086	640	2726	276	179	455	2362	819	3181
Agro-forestry	20	339	337	676	168	142	310	507	479	986
Total	**2837**	**54520**	**22399**	**76919**	**15904**	**9807**	**25711**	**70424**	**32206**	**102630**

Table 2.50: Area wise capacity development courses conducted for farmers and farm women in Kerala

Capacity development area	CD courses (No.)	Participant farmers and farm women (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop Production	199	4129	2500	6629	709	518	1227	4838	3018	7856
Horticulture	234	4517	3004	7521	568	749	1317	5085	3753	8838
Soil health and fertility management	64	1734	657	2391	229	224	453	1963	881	2844
Livestock production and management	93	1383	886	2269	390	360	750	1773	1246	3019
Home science/ Women empowerment	284	1603	3138	4741	267	814	1081	1870	3952	5822

Agricultural engineering	35	704	460	1164	48	75	123	752	535	1287
Plant protection	134	2574	1240	3814	481	421	902	3055	1661	4716
Production of inputs at site	133	1810	1766	3576	326	529	855	2136	2295	4431
Capacity building and group dynamics	63	1364	758	2122	123	77	200	1487	835	2322
Agro-forestry	1	94	6	100	0	0	0	94	6	100
Total	**1240**	**19912**	**14415**	**34327**	**3141**	**3767**	**6908**	**23053**	**18182**	**41235**

Table 2.51: Area wise capacity development courses conducted for farmers and farm women in Lakshadweep

Capacity development area	CD courses (No.)	Participant farmers and farm women (No.)					
		SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total
Crop Production	1	16	19	35	16	19	35
Horticulture	13	317	242	559	317	242	559
Soil health and fertility management	2	35	38	73	35	38	73
Livestock production and management	22	163	96	259	163	96	259
Home science/ Women empowerment	1	3	31	34	3	31	34
Production of inputs at site	1	24	16	40	24	16	40
Capacity building and group dynamics	1	50	17	67	50	17	67
Total	**41**	**608**	**459**	**1067**	**608**	**459**	**1067**

Table 2.52: State wise capacity development courses conducted for rural youth by KVKs

State	CD courses (No.)	Participant rural youth (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Karnataka	335	6085	2508	8593	2337	1669	4006	8422	4177	12599
Kerala	276	2772	3641	6413	622	769	1391	3394	4410	7804
Lakshadweep	2	0	0	0	18	14	32	18	14	32
Total	**613**	**8857**	**6149**	**15006**	**2977**	**2452**	**5429**	**11834**	**8601**	**20435**

participants. Two capacity development courses were organized by KVK, Lakshadweep in which 32 rural youths were trained.

(b) Area wise

Table 2.53 presents the area wise capacity development courses conducted for rural youth by KVKs. A total of 613 capacity development courses were conducted in various areas by KVKs and 20435 rural youth got benefitted from these courses. EDP and income generating activities is the major area with highest number of courses (181) and participants (5924). Crop production and management stands second with 143 courses and 5013 participants followed by post-harvest technology and value addition, livestock production and management (108 courses and 3774 participants) and courses in other areas. The other important areas were agricultural extension activities, farm machinery, home science / women empowerment and soil health and fertility management. Area wise capacity development courses conducted for rural youth by KVKs of Karnataka, Kerala and Lakshadweep are depicted in Table 2.54, 2.55 and 2.56, respectively.

Table 2.53: Area wise capacity development courses conducted for rural youth by KVKs

Capacity development area	CD courses (No.)	Participant rural youth (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and Management	143	1990	1528	3518	880	615	1495	2870	2143	5013
Soil health and fertility management	3	27	36	63	0	0	0	27	36	63
Post harvest technology and value addition	115	1080	1602	2682	284	532	816	1364	2134	3498
Farm machinery	9	198	4	202	69	3	72	267	7	274
Livestock production and management	108	1944	1011	2955	353	466	819	2297	1477	3774
EDP/income generation activities	181	2706	1409	4115	1095	714	1809	3801	2123	5924
Home Science/ Women empowerment	4	108	92	200	6	7	13	114	99	213
Agricultural extension activities	15	242	143	385	30	17	47	272	160	432
Any other	35	562	324	886	260	98	358	822	422	1244
Total	**613**	**8857**	**6149**	**15006**	**2977**	**2452**	**5429**	**11834**	**8601**	**20435**

Table 2.54: Area wise capacity development courses conducted for rural youth in Karnataka

Capacity development area	CD courses (No.)	Participant rural youth (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and Management	88	1318	760	2078	607	362	969	1925	1122	3047
Soil health and fertility management	1	20	22	42	0	0	0	20	22	42
Post harvest technology and value addition	36	349	432	781	156	281	437	505	713	1218
Farm machinery	8	180	0	180	60	0	60	240	0	240
Livestock production and management	72	1540	693	2233	278	385	663	1818	1078	2896
EDP/income generation activities	103	2008	415	2423	962	568	1530	2970	983	3953
Home Science/ Women empowerment	2	90	0	90	4	0	4	94	0	94
Agricultural extension activities	8	150	91	241	27	9	36	177	100	277
Any other	17	430	95	525	243	64	307	673	159	832
Total	**335**	**6085**	**2508**	**8593**	**2337**	**1669**	**4006**	**8422**	**4177**	**12599**

Table 2.55: Area wise capacity development courses conducted for rural youth in Kerala

Capacity development area	CD courses (No.)	Participant rural youth (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and Management	56	676	775	1451	273	253	526	949	1028	1977
Soil health and Fertility management	1	3	7	10	0	0	0	3	7	10
Post harvest technology and value addition	79	731	1170	1901	128	251	379	859	1421	2280
Farm Machinery	11	65	39	104	73	33	106	138	72	210
Livestock production and management	34	404	318	722	57	67	124	461	385	846
EDP/income generation activities	68	651	959	1610	69	116	185	720	1075	1795

Home Science/ Women empowerment	2	18	92	110	2	7	9	20	99	119
Agricultural extension activities	7	92	52	144	3	8	11	95	60	155
Any other	18	132	229	361	17	34	51	149	263	412
Total	**276**	**2772**	**3641**	**6413**	**622**	**769**	**1391**	**3394**	**4410**	**7804**

Table 2.56: Area wide capacity development courses conducted for rural youth in Lakshadweep

Capacity development area	CD courses (No.)	Participant farmers and farm women (No.)					
		SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total
Sheep and goat rearing	2	18	14	32	18	14	32
Total	**2**	**18**	**14**	**32**	**18**	**14**	**32**

2.1.3.3 Extension personnel

(a) State wise

Capacity development courses were conducted for extension personnel by KVKs (Table 2.57). A total of 338 capacity development courses were conducted with 12821 participants. KVKs of Karnataka conducted 237 courses and trained 8635 extension personnel. KVKs of Kerala organized 98 capacity development courses with 4143 extension personnel. Three capacity development courses were organized by KVK, Lakshadweep in which 43 extension personnel were trained.

(b) Area wise

Table 2.58 shows the area wise capacity development courses conducted for extension personnel by KVKs. The important areas were crop production and management (128 courses and 5406 participants), Agriculture extension activities (121 courses and 4053 participants), home science/ women empowerment and livestock production and management (32 courses and 1120 and 1097 participants respectively). EDP/ income generating activities (22 courses and 710 participants) and 78 other area courses conducted for 2978 participants. Area wise capacity development courses conducted for extension personnel by KVKs of Karnataka, Kerala and Lakshadweep are depicted in Table 2.59, 2.60 and 2.61, respectively.

Table 2.57: State wise capacity development courses conducted for extension personnel

State	CD courses (No.)	Extension personnel (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Karnataka	237	3006	3333	6339	802	1494	2296	3808	4827	8635
Kerala	98	1447	2135	3582	254	307	561	1701	2442	4143
Lakshadweep	3	0	0	0	23	20	43	23	20	43
Total	**338**	**4453**	**5468**	**9921**	**1079**	**1821**	**2900**	**5532**	**7289**	**12821**

Table 2.58: Area wise capacity development courses conducted for extension personnel

Capacity development area	CD courses (No.)	Participant extension personnel (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and Management	128	2538	1569	4107	780	519	1299	3318	2088	5406
Soil health and Fertility management	2	0	102	102	0	10	10	0	112	112
Post harvest technology and value addition	6	41	35	76	3	40	43	44	75	119
Livestock production and management	32	559	395	954	71	95	166	630	490	1120
EDP/income generation activities	22	150	403	553	30	127	157	180	530	710
Home Science/Women empowerment	32	120	704	824	34	239	273	154	943	1097
Agricultural extension activities	121	531	2535	3066	133	854	987	664	3389	4053
Other	78	647	1590	2237	107	634	741	754	2224	2978
Total	**338**	**4453**	**5468**	**9921**	**1079**	**1821**	**2900**	**5532**	**7289**	**12821**

Table 2.59: Area wise capacity development courses conducted for extension personnel in Karnataka

Capacity development area	CD courses (No.)	Participant extension personnel (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and Management	93	2038	838	2876	628	407	1035	2666	1245	3911
Soil health and Fertility management	2	0	102	102	0	10	10	0	112	112
Post harvest technology and value addition	3	18	23	41	3	36	39	21	59	80
Livestock production and management	24	429	318	747	48	92	140	477	410	887
EDP/income generation activities	20	121	391	512	29	127	156	150	518	668
Home Science/Women empowerment	24	89	508	597	25	199	224	114	707	821
Agricultural extension activities	56	182	847	1029	38	512	550	220	1359	1579
Other	56	182	847	1029	38	512	550	220	1359	1579
Total	**237**	**3006**	**3333**	**6339**	**802**	**1494**	**2296**	**3808**	**4827**	**8635**

Table 2.60: Area wise capacity development courses conducted for extension personnel by KVKs in Kerala

Capacity Development area	CD courses (No.)	Participant extension personnel (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and Management	35	500	731	1231	152	112	264	652	843	1495
Post harvest technology and value addition	3	23	12	35	0	4	4	23	16	39
Livestock production and management	6	130	77	207	0	0	0	130	77	207
EDP/income generation activities	2	29	12	41	1	0	1	30	12	42
Home Science/ Women empowerment	8	31	196	227	9	40	49	40	236	276
Agricultural extension activities	22	269	364	633	23	29	52	292	393	685
Other	22	465	743	1208	69	122	191	534	865	1399
Total	**98**	**1447**	**2135**	**3582**	**254**	**307**	**561**	**1701**	**2442**	**4143**

Table 2.61: Area wise capacity development courses conducted for extension personnel by KVK Lakshadweep

Capacity Development area	CD courses (No.)	Participant extension personnel (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Formation and Management of SHGs	1	0	17	17	0	17	17	35	0	35
Livestock feed and fodder production	2	23	3	26	23	3	26	35	0	35
Total	**3**	**23**	**20**	**43**	**23**	**20**	**43**	**70**	**0**	**70**

2.1.3.4 Sponsored capacity development courses

Institute sponsored for capacity development programmes are Centre of Excellence for Animal Husbandry (CEAH), Coconut Board, coconut Board, Directorate of Arecanut and Spices Development (DASD), Directorate of Cashewnut and Cocoa Development (DCCD), Evangelical Fellowship of India Commission on Relief (EFICOR) (EFICOR), Government of Karnataka, National Institute of Agricultural Extension Management (MANAGE), Mission for Integrated Development of Horticulture

(MIDH), National Bank for Agriculture and Rural Development (NABARD), PA Industries, Pradhana Mantri -Viswa karma, Solar Electric Light Company (SELCO), Government of Kerala, Kalpavriksha Foundation, Local Self-Government Department (LSGD), Kattakada, Kerala State Council for Science - Technology and Environment (KSCSTE) and National Horticultural Mission

(a) State wise

Sponsored capacity development courses conducted by KVKs are presented in Table 2.62. A total of 668 capacity development courses were conducted with 26198 participants. KVKs of Karnataka conducted 412 sponsored capacity development courses with 16286 participations. KVKs of Kerala organized 256 sponsored capacity development courses with 9912 participants.

(b) Area wise

An area wise sponsored capacity development courses conducted by KVKs are presented in Table 2.63. Major areas of capacity development courses were crop production and management and soil health and fertility management with 155, 156 courses and 7887, 5319 participants respectively. A total of 143 courses conducted on agricultural extension

Table 2.62: State wise sponsored capacity development courses organized by KVKs

State	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Karnataka	412	5820	5856	11676	1939	2671	4610	7759	8527	16286
Kerala	256	4849	3526	8375	756	781	1537	5605	4307	9912
Total	**668**	**10669**	**9382**	**20051**	**2695**	**3452**	**6147**	**13364**	**12834**	**26198**

Table 2.63: Area wise sponsored capacity development courses conducted by KVKs

Capacity development area	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	155	4059	2460	6519	705	663	1368	4764	3123	7887
Soil health and fertility management	156	1964	1894	3858	575	886	1461	2539	2780	5319
Post harvest technology and value addition	72	806	1043	1849	108	392	500	914	1435	2349
Farm machinery	41	1171	268	1439	506	100	606	1677	368	2045
Livestock production and management	62	1094	896	1990	405	335	740	1499	1231	2730
Home Science/Women empowerment	39	157	551	708	31	104	135	188	655	843
Agricultural extension activities	143	1418	2270	3688	365	972	1337	1783	3242	5025
Total	**668**	**10669**	**9382**	**20051**	**2695**	**3452**	**6147**	**13364**	**12834**	**26198**

activities for 5025 participants followed by post-harvest technology and value addition, livestock production and management, farm machinery and home science/ women empowerment. Area wise sponsored capacity development courses conducted by KVKs of Karnataka and Kerala are depicted in Table 2.64 and 2.65 respectively.

Table 2.64: Area wise sponsored capacity development courses conducted by KVKs of Karnataka

Capacity development area	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	94	1739	1330	3069	460	483	943	2199	1813	4012
Soil health and fertility management	34	748	273	1021	285	105	390	1033	378	1411
Post harvest technology and value addition	28	332	345	677	44	232	276	376	577	953
Farm machinery	34	983	230	1213	491	89	580	1474	319	1793
Livestock production and management	58	1053	867	1920	396	326	722	1449	1193	2642
Home Science/Women empowerment	33	108	459	567	27	76	103	135	535	670
Agricultural extension activities	85	720	1594	2314	171	806	977	891	2400	3291
Others	46	137	758	895	65	554	619	202	1312	1514
Total	**412**	**5820**	**5856**	**11676**	**1939**	**2671**	**4610**	**7759**	**8527**	**16286**

Table 2.65: Area wise sponsored capacity development courses conducted by KVKs of Kerala

Capacity development area	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	61	2320	1130	3450	245	180	425	2565	1310	3875
Soil health and fertility management	8	291	66	357	18	24	42	309	90	399
Post- Harvest technology and value addition	44	474	698	1172	64	160	224	538	858	1396
Farm machinery	7	188	38	226	15	11	26	203	49	252
Livestock production and management	4	41	29	70	9	9	18	50	38	88
Home Science/Women empowerment	6	49	92	141	4	28	32	53	120	173
Agricultural Extension Activities	58	698	676	1374	194	166	360	892	842	1734
Others	68	788	797	1585	207	203	410	995	1000	1995
Total	**256**	**4849**	**3526**	**8375**	**756**	**781**	**1537**	**5605**	**4307**	**9912**

2.1.3.5 Vocational capacity development courses

(a) State wise

Table 2.66 presents the vocational capacity development courses by KVKs of different states. Data indicate that a total 188 vocational capacity development courses with 5168 participants were conducted. Highest numbers of 107 courses were conducted by KVKs of Karnataka with the participation of 3554. KVKs of Kerala conducted 81 courses benefitting 1614 participants.

(b) Area wise

Area wise vocational capacity development courses conducted by KVKs are presented in Table 2.67. The major area with highest number of courses (68) was conducted for EDP/Income generation activities with 1638 participants. The other important areas included crop production and management livestock production and management, agricultural extension activities and Post harvest technology and value addition. Area wise sponsored capacity development courses conducted by KVKs of Karnataka and Kerala are depicted in Table 2.68 and 2.69 respectively.

2.1.3.6 On campus and off campus capacity development courses

(a) On campus

Table 2.70 presents the state and participant wise on campus capacity development courses conducted by KVKs. Data reveal that a total of 3712 capacity development courses benefitting 129169 participants were conducted. A

Table 2.66: State wise vocational capacity development courses conducted by KVKs

State	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Karnataka	107	1805	971	2776	509	269	778	2314	1240	3554
Kerala	81	509	709	1218	183	213	396	692	922	1614
Total	**188**	**2314**	**1680**	**3994**	**692**	**482**	**1174**	**3006**	**2162**	**5168**

Table 2.67: Area wise vocational capacity development courses conducted by KVKs

Capacity development area	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	43	467	669	1136	156	64	220	623	733	1356
Post harvest technology and value addition	21	166	208	374	24	56	80	190	264	454
Livestock production and management	28	760	75	835	117	19	136	877	94	971
EDP/Income generation activities	68	615	416	1031	300	307	607	915	723	1638
Agricultural extension activities	28	306	312	618	95	36	131	401	348	749
Total	**188**	**2314**	**1680**	**3994**	**692**	**482**	**1174**	**3006**	**2162**	**5168**

Table 2.68: Area wise vocational capacity development courses conducted by KVKs of Karnataka

Capacity development area	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	26	287	434	721	108	44	152	395	478	873
Post harvest technology and value addition	7	92	95	187	13	31	44	105	126	231
Livestock production and management	27	740	71	811	111	17	128	851	88	939
EDP/Income generation activities	31	473	184	657	185	150	335	658	334	992
Agricultural extension activities	2	18	7	25	4	0	4	22	7	29
Others	14	195	180	375	88	27	115	283	207	490
Total	**107**	**1805**	**971**	**2776**	**509**	**269**	**778**	**2314**	**1240**	**3554**

Table 2.69: Area wise vocational capacity development courses conducted by KVKs of Kerala

Capacity development area	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	17	180	235	415	48	20	68	228	255	483
Post harvest technology and value addition	14	74	113	187	11	25	36	85	138	223
Livestock production and management	1	20	4	24	6	2	8	26	6	32
EDP/income generation activities	37	142	232	374	115	157	272	257	389	646
Agricultural extension activities	12	93	125	218	3	9	12	96	134	230
Total	**81**	**509**	**709**	**1218**	**183**	**213**	**396**	**692**	**922**	**1614**

large number of 2133 capacity development courses were conducted for farmers and farm women. 668 capacity development courses were conducted in sponsored training areas which benefitted 26198 participants. A total of 468 capacity development courses were conducted for 15179 rural youth. 255 capacity development courses were conducted for 9558 extension personnel. 188 vocational capacity development courses were organized for 5168 participants.

Table 2.70: State wise on campus capacity development courses conducted by KVKs

Capacity development category and state	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
(i) Farmers and farm women										
Karnataka	1359	26050	12094	38144	7405	5288	12693	33455	17382	50837
Kerala	740	9769	7563	17332	1889	2076	3965	11658	9639	21297
Lakshadweep	34	0	0	0	544	388	932	544	388	932
Total	**2133**	**35819**	**19657**	**55476**	**9838**	**7752**	**17590**	**45657**	**27409**	**73066**
(ii) Rural youth										
Karnataka	246	4411	1832	6243	1839	1466	3305	6250	3298	9548
Kerala	220	1944	2492	4436	520	643	1163	2464	3135	5599
Lakshadweep	2	0	0	0	18	14	32	18	14	32
Total	**468**	**6355**	**4324**	**10679**	**2377**	**2123**	**4500**	**8732**	**6447**	**15179**
(iii) Extension personnel										
Karnataka	192	2101	2812	4913	554	1322	1876	2655	4134	6789
Kerala	61	892	1384	2276	214	253	467	1106	1637	2743
Lakshadweep	2	0	0	0	23	3	26	23	3	26
Total	**255**	**2993**	**4196**	**7189**	**791**	**1578**	**2369**	**3784**	**5774**	**9558**
(iv) Sponsored training courses										
Karnataka	412	5820	5856	11676	1939	2671	4610	7759	8527	16286
Kerala	256	4849	3526	8375	756	781	1537	5605	4307	9912
Lakshadweep	0	0	0	0	0	0	0	0	0	0
Total	**668**	**10669**	**9382**	**20051**	**2695**	**3452**	**6147**	**13364**	**12834**	**26198**
(v) Vocational training courses										
Karnataka	107	1805	971	2776	509	269	778	2314	1240	3554
Kerala	81	509	709	1218	183	213	396	692	922	1614
Total	**188**	**2314**	**1680**	**3994**	**692**	**482**	**1174**	**3006**	**2162**	**5168**
Zone- XI										
Karnataka	2316	40187	23565	63752	12246	11016	23262	52433	34581	87014
Kerala	1358	17963	15674	33637	3562	3966	7528	21525	19640	41165
Lakshadweep	38	0	0	0	585	405	990	585	405	990
Total	**3712**	**58150**	**39239**	**97389**	**16393**	**15387**	**31780**	**74543**	**54626**	**129169**

(b) Off campus

State and participants wise off campus capacity development courses conducted by KVKs of different states are presented in Table 2.71. Data indicated that a total of 2213 capacity development courses with 80385 participants were organized by all the KVKs. Out of this, 1985 capacity development courses trained 71866 farmers and farm women, 145 capacity development courses benefitted 5256 rural youth and 83 capacity development courses upskilled 3263 extension personnel.

2.1.4 Frontline extension programmes

Extension activities were carried out by KVKs to create awareness among farmers, extension personnel, other stakeholders and public about various technologies in agriculture and allied sectors. Details are described below:

(a) State wise

A total of 140821 extension programmes were carried out by KVKs through different methods by involving 1557213 farmers and 60491 extension personnel. Out of which,

Table 2.71: State wise off campus capacity development courses conducted by KVKs

Capacity development category and state	CD courses (No.)	Participants (No.)								
		General			SC/ST			Grand total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
(i) Farmers and farm women										
Karnataka	1478	28470	10305	38775	8499	4519	13018	36969	14824	51793
Kerala	500	10143	6852	16995	1252	1691	2943	11395	8543	19938
Lakshadweep	7	0	0	0	64	71	135	64	71	135
Total	**1985**	**38613**	**17157**	**55770**	**9815**	**6281**	**16096**	**48428**	**23438**	**71866**
(ii) Rural youth										
Karnataka	89	1674	676	2350	498	203	701	2172	879	3051
Kerala	56	828	1149	1977	102	126	228	930	1275	2205
Total	**145**	**2502**	**1825**	**4327**	**600**	**329**	**929**	**3102**	**2154**	**5256**
(iii) Extension personnel										
Karnataka	45	905	521	1426	248	172	420	1153	693	1846
Kerala	37	555	751	1306	40	54	94	595	805	1400
Lakshadweep	1	0	0	0	0	17	17	0	17	17
Total	**83**	**1460**	**1272**	**2732**	**288**	**243**	**531**	**1748**	**1515**	**3263**
Zone- XI										
Karnataka	1612	31049	11502	42551	9245	4894	14139	40294	16396	56690
Kerala	593	11526	8752	20278	1394	1871	3265	12920	10623	23543
Lakshadweep	8	0	0	0	64	88	152	64	88	152
Total	**2213**	**42575**	**20254**	**62829**	**10703**	**6853**	**17556**	**53278**	**27107**	**80385**

82534, 56600, 1687 extension programmes were conducted with the participation of 1149733, 391171, 16309 farmers and 47040, 13254, 197 extension personnel by KVKs of Karnataka, Kerala, Lakshadweep, respectively (Table 2.72)

(b) Activity wise

KVKs of Karnataka organised more extension programmes on advisory services (36970) followed by farmers visits to KVKs (30931) and scientists visits to farmers fields (5782) (Table 2.73). KVKs of Kerala organized more extension programmes on farmers visit to KVKs (26550) followed by advisory services (24997) and scientists visit to farmers fields (2118) (Table 2.74). KVK, Lakshadweep carried out more advisory services (1420) followed by diagnostic visits (118) and scientists visit to farmers fields (42) (Table 2.75).

Data in Table 2.76 shows that KVKs carried out more advisory services (63387) followed by farmers visit to KVKs (57481), scientists visit to farmers fields (7942), lectures delivered as resource persons (3877), diagnostic visits (1819), method demonstrations (1259), group discussion s /meetings (1108), field days (542), film shows (487), celebration of important days (454), exposure visits (445) special day celebrations (317), exhibitions (222), self-help group meetings (203), workshops (191), farmers seminars (141), soil health camps (126), kisan melas (91), kisan gosthies (85), plant health camps (30), ex-trainees sammelan (30), farm science club meetings (13), mahila mandals conveners meetings (13) and others (483).

Table 2.72: State wise extension programmes carried out by KVKs

State/UT	Extension Programmes (No.)	Farmers (No.)							Extension personnel (No.)		
		General			SC/ST			Grand total			
		Male	Female	Total	Male	Female	Total		Male	Female	Total
Karnataka	82534	860100	149678	1009778	104000	35955	139955	1149733	33588	13452	47040
Kerala	56600	224444	114597	339041	31872	20258	52130	391171	6488	6766	13254
Lakshadweep	1687	0	0	0	7510	8799	16309	16309	83	114	197
Zone Total	**140821**	**1084544**	**264275**	**1348819**	**143382**	**65012**	**208394**	**1557213**	**40159**	**20332**	**60491**

Table 2.73: Activity wise extension programmes carried out by KVKs of Karnataka

Activity	Programmes (No.)	General farmers (No.)			SC, ST Farmers (No.)			Grand total	Extension personnel (No.)		
		Male	Female	Total	Male	Female	Total		Male	Female	Total
Advisory services	36970	24353	6261	30614	3409	1541	4950	35564	2137	1044	3181
Animal health camps	49	1403	374	1777	761	279	1040	2817	64	27	91
Celebration of important days	318	13312	5950	19262	3244	1890	5134	24396	996	506	1502
Diagnostic Visits	1274	5528	946	6474	1495	344	1839	8313	787	338	1125
Exhibitions	140	99601	19704	119305	15340	5372	20712	140017	4737	1414	6151
Exposure Visits	316	3668	1977	5645	952	642	1594	7239	432	171	603

Ex-trainees Sammelans	8	240	233	473	211	34	245	718	29	2	31
Farm Science Club meetings	4	186	50	236	0	0	0	236	0	0	0
Farmers Seminars	30	2072	1031	3103	895	260	1155	4258	158	43	201
Farmers visit to KVKs	30931	23658	5890	29548	4410	2459	6869	36417	261	90	351
Field Days	363	14906	3238	18144	3162	829	3991	22135	784	265	1049
Film Shows	404	12576	3462	16038	3027	1599	4626	20664	564	280	844
Group discussions/ meetings	745	12297	3636	15933	3054	1050	4104	20037	1201	540	1741
Kisan Gosthies	63	5684	1128	6812	1290	573	1863	8675	304	135	439
KisanMelas	67	488369	53646	542015	34841	8363	43204	585219	8411	3259	11670
Lectures delivered as resource persons	3380	75000	21240	96240	14428	4601	19029	115269	8456	3417	11873
Mahilamandals meetings	13	0	436	436	0	107	107	543	4	18	22
Method Demo-nstrations	891	15178	4023	19201	3451	1426	4877	24078	1092	467	1559
Plant health camps	19	1470	272	1742	290	155	445	2187	101	53	154
Scientist visit to farmers fields	5782	25478	4370	29848	2898	980	3878	33726	962	268	1230
Self-help group meetings	80	228	2099	2327	183	420	603	2930	32	93	125
Soil test campaigns	90	1552	482	2034	390	220	610	2644	176	89	265
Special day celebrations	225	9821	4100	13921	1696	1055	2751	16672	538	291	829
Workshops	137	4985	2565	7550	1175	760	1935	9485	485	319	804
Others	235	18535	2565	21100	3398	996	4394	25494	877	323	1200
Total	**82534**	**860100**	**149678**	**1009778**	**104000**	**35955**	**139955**	**1149733**	**33588**	**13452**	**47040**

Table 2.74: Activity wise extension programmes carried out by KVKs of Kerala

Activity	Programmes (No.)	General farmers (No.)			SC, ST Farmers (No.)			Grand total	Extension personnel (No.)		
		Male	Female	Total	Male	Female	Total		Male	Female	Total
Advisory services	24997	13790	5660	19450	3225	1275	4500	23950	621	426	1047

Animal health camps	23	456	223	679	140	62	202	881	185	90	275
Celebration of important days	131	6194	3578	9772	763	277	1040	10812	508	567	1075
Diagnostic Visits	427	1489	800	2289	683	397	1080	3369	404	397	801
Exhibitions	79	115399	49099	164498	15313	8380	23693	188191	768	549	1317
Exposure visits	124	1874	1517	3391	421	394	815	4206	267	314	581
Ex-trainees Sammelans	22	505	285	790	89	103	192	982	67	124	191
Farm Science Club meetings	9	375	240	615	75	35	110	725	2	7	9
Farmers seminars	106	4130	2065	6195	817	450	1267	7462	351	216	567
Farmers visit to KVKs	26550	16297	10448	26745	2305	765	3070	29815	218	307	525
Field Days	163	3204	2109	5313	635	700	1335	6648	185	242	427
Film Shows	83	2688	994	3682	676	425	1101	4783	115	123	238
Group discussions/ meetings	335	4942	2307	7249	1750	1299	3049	10298	325	430	755
KisanGosthies	22	625	427	1052	131	187	318	1370	97	138	235
KisanMelas	24	10482	6009	16491	738	344	1082	17573	335	380	715
Lectures delivered as resource persons	494	12383	7980	20363	1058	1805	2863	23226	706	719	1425
Method Demo-nstrations	349	9443	5177	14620	810	513	1323	15943	356	485	841
Plant health camps	11	333	135	468	70	90	160	628	50	75	125
Scientist visit to farmers fields	2118	5358	3280	8638	480	811	1291	9929	263	310	573
Self-help group meetings	105	798	2330	3128	190	120	310	3438	131	110	241
Soil health camps	36	1060	661	1721	168	125	293	2014	35	128	163
Special day celebrations	90	3185	2579	5764	462	874	1336	7100	200	229	429
Workshops	54	3966	1908	5874	394	178	572	6446	157	218	375
Others	248	5468	4786	10254	479	649	1128	11382	142	182	324
Total	**56600**	**224444**	**114597**	**339041**	**31872**	**20258**	**52130**	**391171**	**6488**	**6766**	**13254**

Table 2.75: Activity wise extension programmes carried out by KVK, Lakshadweep

Activity	Programmes (No.)	General farmers (No.)			SC, ST Farmers (No.)			Grand total	Extension personnel (No.)		
		Male	Female	Total	Male	Female	Total		Male	Female	Total
Advisory services	1420	0	0	0	900	520	1420	1420	13	12	25
Animal health camps	3	0	0	0	670	123	793	793	1	4	5
Celebration of important days	5	0	0	0	167	62	229	229	5	15	20
Diagnostic visits	118	0	0	0	98	20	118	118	2	0	2
Exhibitions	3	0	0	0	5000	7600	12600	12600	25	15	40
Exposure visits	5	0	0	0	16	8	24	24	1	2	3
Farmers seminars	5	0	0	0	213	112	325	325	8	24	32
Field days	16	0	0	0	12	4	16	16	2	5	7
Group discussions/ meetings	28	0	0	0	125	80	205	205	6	7	13
Lectures delivered as resource persons	3	0	0	0	63	42	105	105	1	1	2
Method demonstrations	19	0	0	0	23	14	37	37	5	6	11
Scientists visit to farmers fields	42	0	0	0	90	43	133	133	0	0	0
Self - help group conveners' meetings	18	0	0	0		120	120	120	4	8	12
Special day celebrations	2	0	0	0	133	51	184	184	10	15	25
Total	**1687**	**0**	**0**	**0**	**7510**	**8799**	**16309**	**16309**	**83**	**114**	**197**

Table 2.76: Activity wise extension programmes carried out by KVKs

Activity	Programmes (No.)	General farmers (No.)			SC, ST Farmers (No.)			Grand total	Extension personnel (No.)		
		Male	Female	Total	Male	Female	Total		Male	Female	Total
Advisory services	63387	38143	11921	50064	7534	3336	10870	60934	2771	1482	4253
Animal health camps	75	1859	597	2456	1571	464	2035	4491	250	121	371

Celebration of important days	454	19506	9528	29034	4174	2229	6403	35437	1509	1088	2597
Diagnostic visits	1819	7017	1746	8763	2276	761	3037	11800	1193	735	1928
Exhibitions	222	215000	68803	283803	35653	21352	57005	340808	5530	1978	7508
Exposure visits	445	5542	3494	9036	1389	1044	2433	11469	700	487	1187
Ex-trainees Sammelans	30	745	518	1263	300	137	437	1700	96	126	222
Farm Science Club meetings	13	561	290	851	75	35	110	961	2	7	9
Farmers seminars	141	6202	3096	9298	1925	822	2747	12045	517	283	800
Farmers visit to KVKs	57481	39955	16338	56293	6715	3224	9939	66232	479	397	876
Field days	542	18110	5347	23457	3809	1533	5342	28799	971	512	1483
Film Shows	487	15264	4456	19720	3703	2024	5727	25447	679	403	1082
Group discussions/ meetings	1108	17239	5943	23182	4929	2429	7358	30540	1532	977	2509
Kisan Gosthies	85	6309	1555	7864	1421	760	2181	10045	401	273	674
Kisan Melas	91	498851	59655	558506	35579	8707	44286	602792	8746	3639	12385
Lectures delivered as resource persons	3877	87383	29220	116603	15549	6448	21997	138600	9163	4137	13300
Mahila mandals meetings	13	0	436	436	0	107	107	543	4	18	22
Method demon-strations	1259	24621	9200	33821	4284	1953	6237	40058	1453	958	2411
Plant health camps	30	1803	407	2210	360	245	605	2815	151	128	279
Scientists visit to farmers fields	7942	30836	7650	38486	3468	1834	5302	43788	1225	578	1803
Self-help group meetings	203	1026	4429	5455	373	660	1033	6488	167	211	378
Soil health camps	126	2612	1143	3755	558	345	903	4658	211	217	428
Special day celebrations	317	13006	6679	19685	2291	1980	4271	23956	748	535	1283
Workshops	191	8951	4473	13424	1569	938	2507	15931	642	537	1179
Others	483	24003	7351	31354	3877	1645	5522	36876	1019	505	1524
Zone Total	**140821**	**1084544**	**264275**	**1348819**	**143382**	**65012**	**208394**	**1557213**	**40159**	**20332**	**60491**

(c) Mass contact

Data in Table 2.77 shows that the KVKs carried out 4864 extension programmes of mass contact. 3506 programmes carried out by Karnataka KVKs and 1358 programmes by Kerala KVKs. Large number of programmes provided through publications of 2878 news items published in local and national dailies. Further, KVK scientists published 675 extension literature and 334 popular articles. 227 DVD/CD/Video clippings are prepared. KVKs also participated in 551 radio talks and 199 TV talks. It is worth to mention here that KVKs participated in agricultural exhibitions and kisan melas organized as mega events annually by their respective host organizations wherein lakhs of farmers, extension personnel and other stakeholders took part.

Table 2.77: Extension programmes carried out for mass contact by KVKs

Type of media/activity	Extension programmes for mass contact (No.)		
	Karnataka	Kerala	Total
Newspaper coverage	1960	918	2878
Extension literature	526	149	675
Radio talks	476	75	551
Popular articles	221	113	334
TV talks	171	28	199
CD/DVD/Video clips	152	75	227
Total	**3506**	**1358**	**4864**

Field day on finger millet FLD (KVK, Chamarajanagara)

Group meeting with tribal farm women (KVK, Idukki)

World fisheries day celebration (KVK, Kozhikode)

Jan Jatiya Gaurav Diwas (KVK, Pathanamthitta)

Animal health camp (KVK, Kolar)

Exhibition held at Lakshadweep (KVK, Kottayam)

2.1.5 Production of technological inputs

Timely availability of quality technological products such as seeds, planting material, livestock breeds and bio-products are essential to achieve the potential yield in agriculture and allied sectors. Keeping this in view, KVKs are actively involved in production of technological products and the details are given here under.

(a) Seeds: A total of 3778.07 q of seeds of different crops were produced by KVKs of Zone XI and supplied to 145307 farmers. Out of which, 3610.18 q seeds produced by KVKs of Karnataka and 167.89 q seeds produced by KVKs of Kerala (Table 2.78).

Table 2.78: State wise production of seeds by KVKs

State	Quantity (q)	Value (₹)	Farmers (No.)
Karnataka	3610.18	19701180	108741
Kerala	167.89	1082871	36566
Total	**3778.07**	**20784051**	**145307**

(i) Karnataka: KVKs of Karnataka produced more seeds of cereals (1806.70 q) followed by oilseeds (773.00 q), pulses (722.60q), millets (197.90 q), fodder (68.59q), vegetables (34.37q), green manure crops (7.02 q) and supplied to 108741 farmers (Table 2.79).

Table 2.79: Crop category wise production of seeds by KVKs of Karnataka

Crop category	Quantity (q)	Value (₹)	Farmers (No.)
Cereals	1806.70	4728000	16279
Oilseeds	773.00	6654000	43812
Pulses	722.60	5190720	19407
Millets	197.90	977952	19843
Fodder	68.59	968594	5030
Vegetables	34.37	1022224	3797
Green manure	7.02	159690	573
Total	**3610.18**	**19701180**	**108741**

(ii) Kerala: Kerala KVKs have produced more spices seeds (63.30q) followed by cereals (53.24q), tubers (18.83 q), vegetables (16.39 q), pulses (16.13 q) and supplied to 36566 farmers (Table 2.80).

Table 2.80: Crop category wise production of seeds by KVKs of Kerala

Crop category	Quantity (q)	Value (₹)	Farmers (No.)
Spices	63.30	645418	921
Cereals	53.24	202312	590
Tubers	18.83	61379	242
Vegetables	16.39	76075	34433
Pulses	16.13	97687	380
Total	**167.89**	**1082871**	**36566**

(b) Planting materials: A total of 3020289 planting materials of different crops were produced by KVKs and supplied to 126599 farmers. Out of which, 1655866 numbers of planting materials produced by KVKs of Karnataka and 1364423 numbers of planting materials produced by KVKs of Kerala.

(i) Karnataka: KVKs of Karnataka produced highest number of fodder plants (875370) followed by plantation (417703), vegetables (114976), fruits (75429), spices (67652), ornamental (57560), Commercial (32129), tubers (9592), medicinal and aromatic (3007), tree species (1961), flowers (487) are distributed to 42168 farmers (Table 2.81).

Table 2.81: Crop category wise production of planting materials by KVKs of Karnataka

Crop category	Quantity (q)	Value (₹)	Farmers (No.)
Fodder	875370	779485	7540
Plantation	417703	31736542	1867
Vegetables	114976	1372223	11129
Fruits	75429	2907866	8338
Spices	67652	645401	11395
Orna-mental	57560	156405	441
Commer-cial	32129	160412	128
Tubers	9592	108727	118
Medicinal and aromatic	3007	41830	695
Tree Species	1961	49770	394
Flowers	487	7970	123
Total	**1655866**	**37966631**	**42168**

(ii) Kerala: KVKs of Kerala produced higher number of planting materials of vegetables (827409) followed by spices (283989), plantation (151275), fruits (61525), ornamental (19750), tubers (14939) tree species (3575), medicinal and aromatic (1961) are supplied to 84431 farmers (Table 2.82).

Table 2.82: Crop category wise production of planting materials by KVKs of Kerala

Crop category	Quantity (q)	Value (₹)	Farmers (No.)
Vegetables	827409	4459749	31574
Spices	283989	4369652	29161
Plantation	151275	5408780	7392
Fruits	61525	3636138	9914
Orna-mental	19750	518149	3894
Tubers	14939	119512	230
Tree species	3575	86691	1292
Medicinal and aromatic	1961	48894	974
Total	**1364423**	**18647565**	**84431**

(iii) Hybrids: State and crop category wise planting materials of crop hybrids produced by KVKs presented in Table 2.83. A total of 543273 numbers of hybrid planting materials of different crops were produced by KVKs and supplied to 17962 farmers. Out of which, KVKs of Karnataka produced 318630 number of hybrid planting materials and provided to 14327 farmers. KVKs of Kerala produced 224643 number of vegetable hybrid planting materials and supplied to 3635 farmers.

Table 2.83: State and crop category wise production of hybrid planting materials by KVKs

State	Crop category	Quantity (No.)	Value (₹)	Farmers (No.)
Karnataka	Vegetables	249060	1037142.50	7247
	Vegetables	251510	1074140	7295
	Fruits	17361	676500	2683
	Fodder	45148	66272	3895
	Flowers	4611	22983	454
	Total	**318630**	**1839895**	**14327**
Kerala	Fodder	179782	381156	1661
	Vegetable	42861	232530	1946
	Fodder	181782	381665	1689
	Total	**224643**	**614195**	**3635**
	Grand total	**543273**	**2454090**	**17962**

(c) Bio-products: A total of 8729.72 q of bio-products were produced by KVKs and supplied to 202401 farmers. Out of which, 2724.24 q of bio-products produced by KVKs of Karnataka and 6005.48q of bio-products produced by KVKs of Kerala (Table 2.84).

Table 2.84: State wise production of bio-products by KVKs

State	Quantity (No.)	Value (₹)	Farmers (No.)
Karnataka	2724.24	17787298	56949
Kerala	6005.48	47073870	145452
Total	**8729.72**	**64861168**	**202401**

(i) Karnataka: KVKs of Karnataka produced more quantity of bio-products of which bio-fertilisers (1787.65q) followed by micro nutrient mixtures (608.63 q), bio-fungicides (114.65 q), organic manures (108.25q), bio-pesticides (100.31 q), bio-agents (4.75q) are distributed to 56949 farmers (Table 2.85).

Table 2.85: Category wise production of bio-products by KVKs of Karnataka

Bio product category	Quantity (No.)	Value (₹)	Farmers (No.)
Bio-fertilizers	1787.65	2254423	11712
Micro nutrient mixtures	608.63	12689850	16843
Bio-fungicides	114.65	1255146	9872
Organic manures	108.25	64767	7444
Bio-pesticides	100.31	1285432	10588
Bio-agents	4.75	237680	490
Total	**2724.24**	**17787298**	**56949**

(ii) Kerala: KVKs of Kerala produced more quantity of bio-products related to bio-fertilizers (1858.49q) followed by micro nutrient mixtures (1468.81 q), bio - pesticides (1278.49 q), organic manures (975.31 q), bio-fungicides (420.29 q), bio-agents (2.57 q), mushroom spawn (1.53 q) and supplied to 145452 farmers (Table 2.86).

Table 2.86: Category wise production of bio-products by KVKs of Kerala

Bio product category	Quantity (No.)	Value (₹)	Farmers (No.)
Bio-fertilizers	1858.49	9416026	22885
Micro nutrient mixtures	1468.81	19706535	23660
Bio-pesticides	1278.49	7682276	37122
Organic manures	975.31	2106824	23583
Bio-fungicides	420.29	7532819	31500
Bio-agents	2.57	105370	181
Mushroom spawn	1.53	524020	6521
Total	**6005.48**	**47073870**	**145452**

(d) Livestock and fisheries: A total of 439955 numbers of livestock and fish fingerlings were produced by KVKs and supplied to 33344 farmers. Out of which, 133872 livestock and fish fingerlings produced by KVKs of Karnataka and 306083 livestock and fish fingerlings produced by KVKs of Kerala (Table 2.87).

Table 2.87: State wise production of livestock and fish fingerlings by KVKs in Zone XI

State	Quantity (No.)	Value (₹)	Farmers (No.)
Karnataka	133872	3109450	14010
Kerala	306083	9139950	19334
Total	**439955**	**12249400**	**33344**

(i) Karnataka: KVKs of Karnataka produced highest number of fish fingerlings (98460) followed by poultry chicks (25916), poultry eggs (8460), piglets (484), sheep and goat kids (439), dairy claves (113) and provided to 14010 farmers (Table 2.88).

Table 2.88: Category wise production of livestock and fish fingerlings by KVKs of Karnataka

Particulars of Livestock	Numbers	Value (₹)	Farmers (No.)
Fish fingerlings	98460	492580	1161
Poultry chicks	25916	584530	8834
Poultry eggs	8460	49900	3200
Piglets	484	565640	455
Sheep and goat kids	439	683800	261
Dairy calves	113	733000	99
Total	**133872**	**3109450**	**14010**

Table 2.89: Category wise production of livestock and fish fingerlings by KVKs of Kerala

Particulars of Livestock	Numbers	Value (₹)	Farmers (No.)
Fish fingerlings	256468	7193721	1240
Poultry chicks	47213	1457964	17757
Poultry eggs	2213	11065	238
Sheep and goat kids	172	344000	91
Dairy calves	13	132000	7
Piglets	4	1200	1
Total	**306083**	**9139950**	**19334**

(ii) Kerala: KVKs of Kerala produced highest number of fish fingerlings (256468) followed by poultry chicks (47213), poultry eggs (2213), sheep and goat kids (172), dairy calves (13), piglets (4) and supplied to 19334 farmers (Table 2.89).

2.1.6 Kisan Mobile Advisory Service

The Kisan Mobile Advisory Service (KIMAS) is one of the Information and Communication Technology tools for dissemination of requisite and need based information at the right time to needy people. KVKs are sending text

Table 2.90: State wise Kisan Advisory Services

State	KVKs (No.)	Farmers (No.)	Advisories (No.)						
			Crop	Livestock	Weather	Marketing	Awareness	Other enterprises	Total
Karnataka	17	1759122	951	327	367	215	583	1012	3455
Kerala	7	176934	2516	712	556	779	809	704	6076
Lakshadweep	1	665	0	330	0	0	0	0	330
Total	**25**	**1936721**	**3467**	**1369**	**923**	**994**	**1392**	**1716**	**9861**

Bio-agents production unit (KVK, Idukki)

Nursery Unit (KVK, Mysuru)

information/voice calls to registered farmers advising them on the issues of agricultural importance on real time basis. A total of 25 KVKs have advised farmers regularly on the areas of crops, livestock, weather, marketing and new technologies through text messages (table 2.90). Altogether, 9861 text messages were sent to 19.36 lakh farmers. Among these most messaging was related to crop (3467) followed by other enterprises (1716), awareness (1392), livestock (1369), marketing (923) and weather (923).

2.1.7 Soil, Water and Plant Analysis and World Soil Health Day Celebrations

KVKs carried out the analysis of soil, water and plant samples for the benefit of the farming community. KVKs utilized this analysis information and provided soil test based nutrient recommendation for demonstrations and on-farm trials besides, rendering advisory services to the farmers. Data presented in Table 2.91 indicated that a total of 34223 samples of soil, water, plant, manure and others received from 29365 farmers belonging to 13505 villages were analyzed during the year. State wise data presented in Table 2.92 showed that KVKs of Karnataka analyzed 31274 samples, KVKs of Kerala analyzed 2860 samples and KVK Lakshadweep analyzed 89 samples.

Table 2.91: Samples analyzed by KVKs

Type of sample	Samples (No.)	Farmers (No.)	Villages (No.)
Soil	25674	22367	8596
Water	7934	6901	4863
Plant	565	48	29
Manure	50	49	17
Total	**34223**	**29365**	**13505**

KVKs tested 2175 soil samples belonging to 2607 farmers spread across 784 villages through mobile soil testing kits (Table 2.93). After soil testing, KVKs provided soil health cards to the farmers along with necessary recommendations based on the results of soil testing for efficient use of resources. State wise soil health card distribution data is furnished in Table 2.94. A total of 19921 soil health cards were distributed. Out of which 17846 soil health cards are through SWTL and 2075 through Mobile Soil Testing Kits.

Table 2.92: State wise soil, water and plant analysis

State	Samples (No.)	Farmers (No.)	Villages (No.)
Karnataka	31274	26078	13399
Kerala	2860	3198	97
Lakshadweep	89	89	9
Total	**34223**	**29365**	**13505**

Table 2.93: State wise soil analysis using mobile soil testing kits

State	Samples (No.)	Farmers (No.)	Villages (No.)
Karnataka	1338	1339	532
Kerala	837	1268	252
Total	**2175**	**2607**	**784**

Table 2.94: State wise distribution of soil health cards

State	Distribution of soil health cards		
	SWPTL	Mobile soil testing kit	Total
Karnataka	17675	490	18165
Kerala	171	1585	1756
Total	**17846**	**2075**	**19921**

Krishi Vigyan Kendras celebrated World Soil Day on December 5, 2024 with a theme "Caring for soils: measure, monitor, manage" at 35 KVKs of the zone with the participation of 2456 farmers, 865 extension officers and students, 43 VIPs and public representatives. On the occasion, 965 soil health cards were also distributed to farmers.

Celebration of World Soil Day in KVK, Idukki

Distribution of Soil Health Cards in KVK, Kolar

2.1.8 Rainwater Harvesting Units

Rainwater harvesting units with micro irrigation system established in KVKs were utilized by the eight KVKs for extending services to farming community. During the period, KVKs conducted 20 training courses and 22 demonstrations as well as produced 269295 planting material utilizing the facility. Further, 16898 farmers and 126 officials visited these units.

2.1.9 Convergence and Linkages

KVKs continued their linkage with various organizations and agencies while discharging their responsibilities as agricultural science centres at the district level. KVKs worked closely with the development departments for sharing technology and information through bi-monthly workshops, seminars, technology weeks, frontline demonstrations, field days, farmers-scientists interfaces and kisan goshti/ mela. Capacity development of extension personnel was ensured through training, farm schools and farmers field schools. Extension activities involved all stakeholders including media, local institutions, district administration and people representatives. Diagnostic field visits and joint field visits with development departments were made to problematic fields and helped to identify emerging problems. Technical backstopping required for successful implementation of various schemes and programes in the district was the major responsibility of the KVKs in the collaborative activities.

(a) Convergence through Agricultural Technology Management Agency

Convergence with Agricultural Technology Management Agency (ATMA) enabled KVKs to promote various technologies in their respective districts and details are given in Table 2.95. Data indicated that KVKs participated in 1072 programmes organized by ATMA and at the same time KVKs organized 594 programmes in collaboration with ATMA.

Table 2.95: Linkages with ATMA by KVKs

Programmes	Convergence with ATMA by KVKs					
	Karnataka		Kerala		Total	
	Programmes attended by KVKs (No.)	Programmes organized by KVKs (No.)	Programmes attended by KVKs (No.)	Programmes organized by KVKs (No.)	Programmes attended by KVKs (No.)	Programmes organized by KVKs (No.)
Meetings	132	28	96	11	228	39
Research projects	8	4	2	0	10	4
Training programmes	226	69	118	55	344	124

Demonstrations	97	208	137	23	234	231
Kisan Mela	19	12	6	4	25	16
Technology Week	13	8	0	1	13	9
Exposure visit	77	48	22	19	99	67
Exhibition	39	34	9	5	48	39
Soil health camps	35	27	5	5	40	32
Animal Health Campaigns	2	3	0	2	2	5
Video Films	17	9	2	2	19	11
Books	2	0	0	0	2	0
Extension Literature	6	15	2	2	8	17
Total	**673**	**465**	**399**	**129**	**1072**	**594**

(b) External funded projects/schemes

External funds received by KVKs to organize various programmes and activities through convergence and linkage is presented in Table 2.96. A total of ₹397.94 lakhs funds received from various agencies by KVKs out of which ₹331.59 lakh by KVKs of Karnataka and ₹66.34 lakh by KVKs of Kerala.

Table 2.96: External fund received by KVKs of Zone-XI through convergence and linkages

Agency / Department	KVKs (No.)	Amount received (Rs.)
Karnataka		
Centre of Excellence for Animal Husbandry (CEAH), Bengaluru	1	45900
Coconut Board	1	67650
Coffee Board	1	9600
Directorate of Arecanut and Spices Development (DASD), Calicut	2	558000
Directorate of Cashewnut and Cocoa Development (DCCD), Kochi	3	1090000
Evangelical Fellowship of India Commission on Relief (EFICOR) (EFICOR), Athani	1	30000
Government of Karnataka	13	16400433
National Institute of Agricultural Extension Management (MANAGE), Hyderabad	11	10485582
Mission for Integrated Development of Horticulture (MIDH)	1	847200
National Bank for Agriculture and Rural Development (NABARD)	1	2500000
PA Industries	1	895000
Pradhana Mantri -Viswa karma	1	150000
Solar Electric Light Company (SELCO), Hubbali	1	80000

Total		**33159365**
Kerala		
Government of Kerala	3	1990100
Kalpavriksha Foundation	1	191380
Local Self-Government Department (LSGD), Kattakada	1	215175
Kerala State Council for Science - Technology and Environment (KSCSTE)	1	100000
National Institute of Agricultural Extension Management (MANAGE), Hyderabad	3	2280000
Mission for Integrated Development of Horticulture (MIDH)	1	70000
National Bank for Agriculture and Rural Development (NABARD)	3	1673000
National Horticultural Mission	1	115000
Total		**6634655**
Grand Total		**39794020**

2.1.10 Agriculture Technology Information Centre

Agriculture Technology Information Centers (ATICs) are serving as a single window delivery system in the country by providing technology information, advisory services and technological inputs to farmers. During the reporting period, 141244 farmers visited ATICs for obtaining solutions related to their agricultural problems. ATICs provided information related to various aspects of farming to 138492 farmers, both through print and electronic media. Technology products provided to 43829 farmers. They received 13300 q seeds of various crops, 1220214 planting materials, 14608 poultry birds and 23233 q bio-products through ATICs. The prominent technological related services provided by the ATICs were veterinary services to 5269 farmers, 23327 farmers received information through kisan call center and 253014 farmers received information through kisan mobile advisory services.

2.1.11 Technological Backstopping by Directorate of Extension

KVKs serve as a bridge between the source of technology and their stakeholders. In this process, the Directorate of Extension under various state agricultural universities play an important role by providing technological backstopping to the KVKs under their jurisdiction. The Directorate of Extension play a major role in coordinating and monitoring of KVK activities. During the year, Directorates of Extension officials participated in 48 scientific advisory committee meetings, 180 field days, 118 workshops/seminars, 13 technology weeks and 1620 training programs. In addition, they have attended 4049 other programs including interface meetings, group discussion with KVK officials, annual review meeting, farmers meet, animal health camp and Krishi Mela. Directorates of Extension officials visited 112 on farm trials and 322 frontline demonstration plots to review and monitor the technology dissemination process at KVKs in the respective operational areas. The Directorates of Extension also undertook the technological backstopping by delivering 1585 lectures, 54 TV talks, 523 radio talks and published 794 news items in newspapers.

2.1.12 Success stories and cases of large-scale adoptions

(a) Intercropping of Groundnut + Pigeon Pea (3:1) in Athani Taluka (KVK, Belagavi-I)

Farmers in the villages of Chamakeri, Adalhatti, and Kohalli traditionally cultivated sole

Groundnut over 276 acres annually. However, repeated issues such as moisture stress and prolonged dry spells led to poor yields and crop failure, making the practice economically unsustainable. Although farmers were aware of the benefits of intercropping, they had not adopted this practice and this prompted the KVK, Belagavi-I to step in with a solution. KVK Team conducted Front Line Demonstration on Groundnut + Pigeon Pea intercropping with 3:1 ratio by involvement of 15 farmers over three Kharif seasons during 2022–2025. Out of these farmers, Shri Siddappa Appasab Tamshi who is highly successful farmer-participant in this demonstration from Kohalli village of Athani Taluka. KVK provided him technical guidance on intercropping system, seeds and critical inputs, training on weed, pest, and nutrient management, regular field monitoring and digital follow-up via WhatsApp and mobile advisories. Shri Siddappa Appasab Tamshi harvested 6.85 q yield with net income of ₹40271 from traditional sole groundnut in 0.4 ha during Kharif 2024-25, whereas he got 3.95 q yield of Groundnut and 8.55 q yield of pigeonpea with net income of ₹91975 from intercropping of Groundnut + Pigeonpea in 0.4 ha. Thus, he got an additional net income of ₹51704 per 0.40 ha over sole crop.

Intercropping of Groundnut + Pigeon Pea seems simple technology but created situation wherein farmers now get two crops instead of one, maximizing land use with double harvest from unit area followed by better canopy and competition suppress weeds naturally, increased net revenue and additional eight man-days provided for pigeonpea harvest. By seeing the results remaining 110 farmers from Kohalli and nearby villages have shown interest to adopt this intercropping technology. They visited Mr. Siddappa's field, interacted with him and KVK scientists. Many plan to adopt this system in Kharif season. If the technology is scaled up in 116 ha of Groundnut area in Kohalli shifts to intercropping, potential additional revenue will be ₹5327880.

The Groundnut + Pigeon Pea (3:1) intercropping system has proven to be a resilient, profitable, and sustainable practice for small and marginal farmers in drought-prone areas. With farmer champions like Mr. Siddappa and strong KVK support, this model can drive agricultural transformation across the region.

(b) Turning Waste to Wealth: A Successful Banana Fibre Enterprise (KVK, Chamarajanagara)

Heavy losses incurred in banana cultivation during the COVID-19 pandemic; an enterprising woman farmer drew inspiration from the Mann ki Baat radio programme. Motivated to explore alternative sources of income, she embarked on a journey to transform agricultural waste into valuable products. She visited KVK, Chamarajanagara, where she learned about banana fibre extraction technology and procured a fibre-extracting machine. She sourced banana stems directly

A field view of Groundnut + Pigeon pea (3:1) intercropping

from growers at ₹7-8. This initiative not only provided her raw material but also helped to reduce environmental hazards caused by the unsafe disposal of banana stems, which are known to attract pests like pseudostem weevil and diseases such as Sigatoka and Panama wilt. This indirectly contributed to reduced pesticide usage and cost of cultivation for banana farmers. She used machine to extract fibre from banana pseudostems. She is producing non-edible products like pen stands, bangle boxes, hotpot plates, sitting mats, yoga mats, mobile holders, refrigerator covers, baskets, wall hangings, trays, and ladies' wallets from banana fibre. Further, she is producing edible products like pickles, juice, chutney powder, banana flower relish, papad etc from banana pseudostem bulb. Thus, she made effective conversion of banana stem waste into a wide range of marketable products with which she achieved an annual turnover of ₹5.40 lakh with a net profit of ₹1.60 lakh. The enterprise provided jobs to four persons in 2021, seven persons in 2023 and 10 persons in 2024. Both edible and non-edible products gained popularity among consumers for their eco-friendliness and utility.

(c) Inland fish culture in coastal farm ponds (KVK, Dhakshina Kannada)

India's growing population demands sustainable and nutritious food sources. Fish, a rich source of high-quality protein, vitamins, minerals, and omega-3 fatty acids, plays a crucial role in ensuring nutritional security. However, the depletion of capture fisheries has led to a paradigm shift towards aquaculture, especially inland fish culture, which offers immense potential through diversified species and improved farming practices. In this direction, since four years Shri Rajesh D. Kotian, belonging to Moodubidri, Dakshina Kannada has adopted inland fish culture with the technical guidance of KVK, Dakshina Kannada. KVK provided comprehensive training to him on water quality management, scientific feeding practices, periodical sampling for fish health assessment and best management practices of inland fish culture. Additionally, he received critical inputs like high-quality fish seed and feed under On-Farm Trials and Front-Line Demonstrations. In 2024-25, a portable fish hatchery with five lakh egg capacity was established on his farm under the Entrepreneurship Development Program, using cost-effective local materials and KVK's technical guidance.

Shri Kotian developed infrastructure like two plastic-lined grow-out ponds (85 ft x 75 ft and 60 ft x 50 ft) and four plastic-lined nursery ponds (15 ft x 20 ft each). He practices polyculture with Catla, Rohu, and Pangasius as well as Monoculture with Murrel (Snakehead). He harvested 9.90 t/ha from Polyculture and 14.6 t/ha from Murrel monoculture. He got net profit of ₹125000 per year by selling Pangasius

Weaving banana fibre

Sushri Shobha Karandlaje, Hon'ble Union Minister visited exhibition held at Thrissur, Kerala

@ ₹300/kg, Carps @ ₹250/kg and Murrel @ ₹400/kg through direct sale of live, farm-fresh fish as it ensures better prices. With the support of KVK, Shri Kotian has not only succeeded in scientific fish culture but also won accolades viz., District-level Vijaya Karnataka Super Star Farmer – 2024 and Fellow Farmer-Doubling of Farmer's Income Award from ICAR-KVK, Dakshina Kannada. Farmers in Panapila and surrounding villages have adopted scientific fish farming, influenced by Shri Kotian's success. Many farmers have taken training and advisory services from KVK, Dakshina Kannada. Shri Kotian's model of integrating fish culture in farm ponds is a replicable and profitable in all farm ponds in coastal area. His entrepreneurial journey expanded into selling fish seed and feed, sourcing them from other states and catering to local farmers in Dakshina Kannada.

(d) Shri Hanumanthappa Belagumpi: A Pioneer in Organic/Natural Farming (KVK, Kalaburagi-I)

Shri Hanumanthappa Belagumpi S/o Malleshappa Belagumpi, a native of Hasargundagi village in Afzalpur taluka, Kalaburagi district, holds a Master's degree in Social Work. Initially working as counsellor at a cancer hospital in Chennai, he realized the critical need for chemical-free, organic food for a healthier society. This insight motivated him to return to his village and take up organic farming on his family's land. Shri Hanumanthappa has been practicing organic farming for the past 25 years on his 15 acres of dry land and seven acres of irrigated land. Committed to sustainability, all agricultural inputs such as manure, jeevamrutha, compost, and bio-pesticides are produced in-situ at his farm. He has established multiple low-cost units viz., bio-digester, vermicompost, jeevamrutha, panchagavya, gopajala, gokrupamrutha, waste decomposer, Agni Astra, Brahmastra, Neemastra, dashaparni Kashaya and fish culture, neem oil unit, goat farming, farm pond, cement pole production for fencing and dragon fruit cultivation. Initially, he struggled due to limited knowledge and poor market access. However, after connecting with KVK, Kalaburagi-I, and the Agriculture Department, he adopted scientific organic farming techniques, which significantly improved productivity and income.

Now he grows multiple crops organically including mango, sapota, guava, lime, citrus fruits, pulses, cereals, practices beekeeping, vermicomposting, and goat farming. He produces products like organic millets, white rice, wheat, jowar, pulses, natural honey, Gir cow ghee, lemon pickle, nursery saplings, bio-inputs and enriched compost. He provides consultancy services and his products, marketed under the brand name "Belagumpi Organic Farms", are sold directly to consumers in Kalaburagi.

Shri Hanumanthappa is a community leader and trainer and trained over 850 participants

A view of Shri Kotian fish farm pond

Growth of Pangasius fish

Trainees at Jeevamrutha Unit

A view of organic guava orchard

including farmers, students, NGOs and colleges on organic practices. His work has influenced over 150 farmers in neighbouring villages to adopt organic farming in the last two years. His remarkable journey has earned him multiple prestigious awards viz., Emerging Krishi Pandit – Govt. of Karnataka (2021–22), Best Farmer – Bank of Baroda (2022–23), Super Star Farmer – Vijaya Karnataka (2022–23), Raitha Ratna" – Suvarna News TV (2022–23), Organic-Natural Farming System-2023 – Karnataka Biodiversity Board (Presented by CM of Karnataka on World Environment Day, 2024). His achievements are widely recognized and published in several national and regional magazines.

(e) Staking techniques in cucurbitaceous crops for relay cropping system adopted by Shri Basavaraj

Shri Basavaraj, a progressive farmer belonging to Palakamdoddi, Kotlakur, Raichur district, was facing challenges in solo cropping in his 7.08 ha such as water scarcity, high pest and disease incidence due to lateral vine spreading, and ultimately, low income. To overcome these issues, he adopted a relay cropping system combined with innovative staking methods for cucurbitaceous crops, particularly Bitter gourd. He sown Bitter gourd as first crop followed by Indian Broad Bean as relay crop for sustainable income. He made staking by using locally available wooden poles arranged in a criss-cross manner, ensuring longer durability of the structure and easier access for harvesting even from the interior of the vines. This method reduced the vine's contact with soil, resulting in lower disease incidence and improved crop hygiene. He adopted drip Irrigation via solar power wherein double row planting saved 50 per cent drip line cost, efficient irrigation saved 90 per cent water and ensured energy sustainability through solar-powered system. Relay crop Indian broad bean utilizes residual moisture, nutrients and input cost reduced by 75 per cent for the second crop and staking structure reused, reducing land prep and cultural costs. Further, managed pests and diseases effectively by improved hygiene reduced the need for chemical sprays by 20 per cent and better airflow and sunlight penetration due to vertical staking. Cost efficiency shows that 50 per cent saving on drip pipeline cost, 75 per cent saving in land preparation and cultural operations and 75 % reduction in input cost for relay crop.

Shri Basavaraj gained higher and sustainable income due to year-round cropping and reduced input cost. His innovative approach of combining staking with relay cropping and solar-power drip irrigation serves as a model for sustainable horticultural practices in water-scarce regions. His initiative, supported by his father, demonstrates the impact of low-cost, eco-friendly innovations on crop health, input efficiency, and rural livelihoods. By seeing the results practically, 10-12 fellow farmers adopted the technique in their own fields, validating the success of the model.

Staking for Bitter gourd field

Indian Broad Bean as a relay crop in Bitter gourd field

(f) Appemidi mango nursery by Shri Dinesh, S.N (KVK, Shivamogga)

Appemidi (midi means tender mango in Kannada) is considered as the king of all tender mangoes due to its unique size, taste, and aroma, that makes these pickles one of the best in India. Areas of Ripponpet in general have a natural population of Appemidi mango trees along the river beds, which were selected for their peculiar flavour suitable for pickle making and are maintained traditionally by the local families. Ripponpet market in Shivamogga gets a lakhs of turnover during the months of March and April. A good quality tender mango costs rupees two to three, the price for a quintal could go up to Rs 6000, depending on demand and availability.

Mr. Dinesh S.N., 21 years of Engineering student basically was very keen on multiplying the best performing Appemidis of his area and has actively participated in the training programme on Nursery techniques in horticulture crops under ARYA during February 2023 at KVK, Shivamogga and gained knowledge and skills and established Nursery cum pickle processing unit along with his father Shri Nagabhushan K.J. with special preference to Appemidi mango nursery in polyhouse at Sooduru gate, a village located in near Ripponpete, Hosanagaraa, Shivamogga district. He owns around 150 bearing trees of Appemidi and has planted around 250 plants that are now in pre-bearing stage. The family runs a home industry of Appemidi pickles from years and are marketing around 20 quintals of the same per year with price ranging from ₹300 to ₹600 per kg based on quality. With the facility of shade net and low-cost polyhouse, Shri Dinesh, is producing around 3000 numbers of Appemidi grafts per year, which is sold at a price of ₹200 per sapling earning a gross return of ₹3.00 lakh per year from the exclusive nursery of Appemidi mango. In addition, his family is also earning a gross income of around ₹8.00 lakh annually through sale of pickles.

Appemidi mango nursery in polyhouse

Appemidi mango tree

(g) Silver pompano cage culture in estuaries (KVK, Udupi)

Silver pompano (*Trachinotus blochii*), a promising alternative species for coastal cage culture, has gained attention due to its fast growth and market value. Technologies for its seed production and grow-out have been developed by ICAR-Central Marine Fisheries Research Institute, Cochin. KVK, Udupi initiated a Front-Line Demonstration to promote this species among coastal fish farmers. Shri Ravi Kharvi, an experienced seabass cage farmer, was selected for the FLD due to his expertise in marine cage farming. Seabass, though profitable, has a long grow-out period (over a year) and requires labor-intensive care and trash fish feeding. KVK introduced him to silver pompano, which reaches marketable size in just six months and thrives on pelleted formulated feed. KVK provided seeds and technical support, enabling Shri Kharvi to integrate silver pompano into his existing cage system without modifications during 2023-24. Shri Kharvi produced over two tonnes of silver pompano, selling it at ₹400/kg, and achieved significant profits.

The successful demonstration led to quick adoption by nearby farmers, proving the feasibility of silver pompano culture using existing infrastructure. Over 15 farmers in Kundapura and Tallur (Udupi district) have adopted silver pompano, converting 30 cages from other species. Farmers investing one lakh rupees and earning two lakh rupees that is almost double in six months. Further it enables two cropping cycles per year. This encouraged rural youth to engage in cage culture, reversing migration trends and revitalizing idle cages. KVK intervention in promoting silver pompano has demonstrated high economic returns, scalability, and sustainability. It stands as a model for rural coastal aquaculture development in coming years.

Performance of Silver pompano in cage culture

(h) Nutmeg revitalization through nutrient intervention (KVK, Idukki)

Nutmeg is a vital cash crop for farmers in Idukki. Post-2018 floods and erratic climate led to severe productivity issues, such as flower and fruit drops, nutrient deficiencies and reduced income for farmers. In this direction, KVK, Idukki conducted FLD on IISR Nutmeg Nutrient Mixture, developed by ICAR - IISR, Calicut. This mixture corrects critical nutrient deficiencies, boosts plant health and flowering, enhances resilience to climate stress and improves consistency in productivity. KVK conducted technical training sessions as well as provided on-site guidance to FLD farmers. Further, KVK Team made continuous monitoring to ensure correct usage. Farmers expanded to more orchard areas. Further, IISR Nutmeg Nutrient Mixture application is being integrated to other practices like pruning, irrigation etc. for better results. This intervention increased mace yield from 1.87 to 3.02 q/ha and nut yield from 10.6 to 15.60 q/ha with BCR ranged from 2.02 to 2.44 there by increased income and market opportunities.

Adoption of this technology spread to neighbouring villages as well as other villages in the district. Science-backed, farmer-friendly solution that rejuvenated nutmeg cultivation showcased the power of research-extension-farmer linkages. Steps planned for scaling up IISR Nutmeg Nutrient Mixture among farmers are awareness drives and community meetings, training programs and farmer field schools, reliable supply chain for nutrient

Preparation of IISR Nutmeg Nutrient Mixture

Spraying of IISR Nutmeg Nutrient Mixture

mixture, feedback mechanisms for ongoing improvement and institutional partnerships to support for its diffusion.

(i) Beyond tradition: Siddique's vision for sustainability, diversity, and prosperity

Shri Siddique V. K. belonging to Vengalathukandy, Manthankavu, Naduvannur, Kozhikode had 0.8 ha own land, 5 ha own paddy land and 2.40 ha leased land. He grows crops like Arecanut, black pepper, coconut, Ginger, turmeric, Mango, sapota, jackfruit, guava, papaya, exotic minor fruits, Vegetables, pulses, millets and flower crops. He adopted technologies like organic farming, Zero Budget Natural Farming (ZBNF), coconut-based mixed farming, vermicomposting, polyhouse nursery production, vrikshayurveda for plant health, mechanized field operations, use of drones in agriculture and trials of exotic crops like basmati rice and Kashmiri chilli. Under the technical guidance of KVK, Kozhikode, Shri Siddique has established a sustainable and low-cost farming model combining traditional knowledge and modern technologies which are (i) Integrated Coconut-Based Mixed Farming: Enhanced biodiversity and resilience by integrating a wide range of intercrops, reducing risk and boosting income, (ii) Organic & ZBNF Methods: Focused on soil regeneration and chemical-free farming, ensuring healthier produce, (iii) Vrikshayurveda Practices: Traditional Ayurvedic plant care methods have led to improved crop vitality and yield, (iv) Introduction of Novel Crops: First in the locality to successfully introduce millets, pulses, basmati rice, and Kashmiri chilli, expanding the market base and consumer interest, (v) Floriculture Expansion: Promoted non-traditional flowers like marigold, chrysanthemum, gomphrena, especially during festive seasons, creating a niche market, (vi) Polyhouse Nursery: Producing over 4 lakh quality seedlings annually, supporting local farmers and improving crop success rates, and (vii) Land Reclamation Initiative: Led the transformation of 150 acres of barren, flood-prone land into fertile paddy fields through community collaboration and smart drainage planning. The model became successfull and was recognized at the district level.

Shri Siddique is being recognised and honoured with Best Paddy Farmer Award – Local Panchayat (2021–22), Best Organic Farmer Award 2020–21 – Block Malabar Vrikshayurveda Karshika Group, Best Organic Farmer Award 2023 & 2024 – Kairali Multi-State Co-operative Society, Participant – National Stakeholder Workshop (8 July 2023, New Delhi): "Strategy for Promotion of Alternative Nutrition to Reduce Dependence on Chemical Fertilizers" and Millionaire Farmer of India (MFOI) Awards – 2024. Shri Siddique represents a new wave of Indian farming-rooted in tradition, powered by innovation, and aimed at community upliftment and ecological balance.

A view of Siddique's organic farm

Organic banana bunch

(j) Pheromone traps against fruit fly management in cucurbits

Cucurbit crops in the Malappuram district have faced severe yield losses due to fruit fly infestations. These pests primarily targeting cucumbers, melons, pumpkins, and squash cause deformities, fluid leakage, and premature fruit dropping. The female fruit fly lays eggs on fruit surfaces, and the emerging maggots burrow into the fruit, rendering it unmarketable. To combat this issue, KVK Malappuram conducted FLD on Cuelure-based pheromone trap, a technology developed by Kerala Agricultural University. These traps attract and capture male fruit flies, disrupting their mating cycle and thereby reducing population levels. KVK conducted capacity building sessions wherein trained farmers on proper trap placement and maintenance, while also promoting integrated pest management. Hands-on demonstration showed farmers the effectiveness of pheromone traps in real field conditions. A total of 3261 traps were produced and provided through KVK outlet, ensuring affordability and accessibility for local farmers. Results indicated that significant drop in fruit fly populations with which 75 per cent reduction in infestation, leading to healthier cucurbit crops. Farmers avoided eight insecticide sprays per hectare, saving ₹2500 per spray, and reducing environmental impact. Additional yield of 1.32 tonnes per hectare obtained which resulted in income increase of ₹25116 per ha.

Usage of pheromone traps under the guidance of KVK Malappuram has proven to be an effective, sustainable, and eco-friendly solution for managing fruit fly infestation in cucurbit farming. This intervention not only enhanced crop productivity and farmer income but also contributed to safer farming practices and environmental conservation.

Healthy bitter gourd crop with installation of Cuelure-based pheromone trap

Cuelure-based pheromone trap

2.2 Special Programmes

2.2.1 Cluster Frontline Demonstrations on Pulses under National Food Security Mission

(a) CFLDS on pulse crops: Institute implemented Cluster Frontline Demonstrations (CFLDs) on Pulses under National Food Security Mission (NFSM) with the financial support from the Department of Agriculture & Farmers Welfare with an aim to enhance the production of pulses in the country. KVKs of Karnataka conducted 2500 CFLDs on different pulse crops in 1000 ha (Table 2.97). During kharif, 2250 CFLDs were conducted in 900 ha which include 100 ha on black gram by involving 250 farmers and 800 ha on pigeon pea by involving 2000 farmers. During summer, 250 demonstrations were conducted on black gram in 100 ha.

(b) Model pulse villages approach: The Division of Agricultural Extension, ICAR, New Delhi has implemented the project on Model Pulse Villages (MPVs) approach under NFSM with the financial support from the Department of Agriculture & Farmers Welfare with an aim to ensure pulses sufficiency in India through ICAR-ATARI, Kanpur as Lead Centre. ICAR-ATARI, Bengaluru is implemented the project through KVKs. Out of five KVKs selected under the project, four KVKs viz., Mandya, Kalaburagi-II, Vijayapura-I and Mysuru of Karnataka have conducted 1050 demonstrations on two pulse crops such as pigeonpea and black gram in 420 ha (Table 2.98).

During Kharif, 750 demonstrations were conducted by three KVKs in 300 ha which includes 60 ha on black gram by involving 150 farmers by KVK Mandya, 120 ha on pigeonpea by involving 300 farmers by KVK Kalburgi-II and 120 ha on pigeonpea by involving 300 farmers by KVK Vijayapura-I. During summer, KVK Mysore has conducted 300 demonstrations on black gram in 120 ha.

Table 2.97: CFLDs on pulses under NFSM

Season	State	Crop	CFLDs on Pulses	
			Area (ha)	Demonstrations (No.)
(a) *Kharif*	Karnataka	Black gram	100	250
	Karnataka	Pigeon pea	800	2000
Total			**900**	**2250**
(b) Summer	Karnataka	Black gram	100	250
Grand Total (a+b)			**1000**	**2500**

Pigeon pea variety TS 3R (KVK, Belagavi-I)

Pigeon pea variety BRG-5 (KVK, Tumakuru-II)

Table 2.98: Model pulse village approach under NFSM

Season	State	Crop	Model pulse villages (MPVs)	
			Area (ha)	Demonstrations (No.)
Kharif	Mandya	Blackgram	60	150
	Kalburgi-II	Pigeon pea	120	300
	Vijayapura-I	Pigeon pea	120	300
Total			**300**	**750**
Summer	Mysuru	Black Gram	120	300
Grand Total			**420**	**1050**

Pigeon pea variety GRG-152
(KVK, Vijayapura-I)

Blackgram variety LBG-791
(KVK, Mandya)

2.2.2 Cluster Frontline CFLDs on Oilseeds under National Food Security Mission

(a) CFLDs on oilseed crops: The Division of Agricultural Extension, ICAR has implemented the project on Cluster Frontline Demonstrations (CFLDs) on Oilseeds under National Food Security Mission (NFSM) with the financial support from the Department of Agriculture & Farmers Welfare with an aim to enhance the production of oilseeds in the country. Institute implemented the project through KVKs. A total of 3570 CFLDs conducted on different oilseed crops were conducted by KVKs in 1473 ha (Table 2.99).

Table 2.99: CFLDs on oilseeds under NFSM (NMOOP)

Season	State	Crop	CFLDs on oilseeds	
			Area (ha)	CFLDs (No.)
(a) Kharif	Karnataka	Castor	40	100
	Karnataka	Groundnut	90	225
	Karnataka	Soybean	290	725
	Karnataka	Sunflower	185	400
	Karnataka	Niger	20	50
Total			**625**	**1500**

(b) Rabi	Karnataka	Sunflower	130	314
	Karnataka	Groundnut	120	300
	Karnataka	Safflower	30	75
	Karnataka	Linseed	10	25
	Karnataka	Mustard	10	25
	Karnataka	Sesame	20	30
	Kerala	Groundnut	2	5
	Kerala	Sesame	12	14
Total			**334**	**788**
(c) Summer	Karnataka	Groundnut	504	1257
	Kerala	Sesame	10	25
Total			**514**	**1282**
Grand Total (a+b+c)			**1473**	**3570**

Pigeon pea variety TS 3R (KVK, Belagavi-I)

Pigeon pea variety BRG-5 (KVK, Tumakuru-II)

(b) Oilseed model villages: The Division of Agricultural Extension, ICAR has implemented the project on Oilseed model villages (OMVs) under NMFS with an aim to achieve self-sufficiency in edible oilseeds in the country by the financial support from the Department of Agriculture & Farmers Welfare through ICAR-ATARI, Jabalpur as Lead Centre. Institute has

Soybean variety (KVK, Bellary)

Groundnut variety K-6 (KVK, Tumakuru-II)

Table 2.100: Oilseed model villages (OMVs) under NMFS

Season	Name of the KVK	Crop	Oilseed model villages (OMVs)	
			Area (ha)	CFLDs (No.)
Kharif	Tumkuru-II	Groundnut	140	350
	Yadgir	Groundnut	150	375
	Bagalkote	Soyabean	100	250
	Belagavi-II	Soyabean	100	250
	Bidar	Soyabean	200	500
	Bagalkote	Sunflower	**30**	**75**
	Belagavi-II	Sunflower	**100**	**250**
	Yadgir	Sunflower	**50**	**125**
Total			**870**	**2175**

implemented the project through KVKs. Out of six KVKs, five KVKs viz., Bidar, Bagalkote, Belagavi-II, Tumakuru-II and Yadgir have conducted 2175 demonstrations on different oilseed crops such as groundnut, sunflower and soyabean in 870 ha during Kharif (Table 2.100).

2.2.3 Seed Hubs

Timely availability of adequate quantity and quality seed is one of the most critical factors to enhance the productivity of pulses. In this direction the Department of Agriculture & Farmers Welfare, Government of India has sanctioned a project on 'Creation of Seed Hubs for Increasing Indigenous Production of Pulses in India' under National Food Security Mission (NFSM) with ICAR-Indian Institute of Pulses Research (ICAR-IIPR), Kanpur as Nodal Agency for its implementation at 150 Seed Hub centres across the country through State Agricultural Universities/Krishi Vigyan Kendras/ ICAR Institutes.

As a part of it, eight KVKs viz., Bagalkot, Bidar, Belagavi-II, Dharwad, Kalaburagi-II, Mysuru, Vijayapura-I and Mandya established Seed Hubs under ICAR-ATARI, Bengaluru and started functioning since 2016-17. Data in Table 2.101 indicate that 2313.33 q pulse seed were produced by Seed Hub KVKs of which highest quantity produced in pigeon pea (1196.00 q) followed by black gram (550.70 q), Bengal gram (462.40 q), green gram (60.88 q), cowpea (18.85 q), field bean (18.30 q) and horse gram (6.20 q) during the year 2024-25.

Table 2.101: Seed production of pulses through seed hubs under NFSM by KVKs

Crop	Varieties	Seed produced (q)
Pigeon pea	GRG-152, GRG-811, BRG-1, BRG-3, BRG-5	1196.00
Blackgram	LBG 791, DBGV-5	550.70
Bengal gram	NBeG-452, Phule Vikram, BGD-111-1	462.40
green gram	DGGV-2, KKM-3	60.88
Cowpea	KBC-9, KBC-11, KBC-12	18.85
Field bean	HA-3 and HA-4	18.30
Horse gram	CRHG 19, PHG-9	6.20
Total		**2313.33**

Black gram variety-LBG-791 (KVK, Mysuru)

Chikpea variety BGD-111-1 (KVK, Dharwad)

2.2.4 National Innovations in Climate Resilient Agriculture

National Innovations in Climate Resilient Agriculture (NICRA) is a network project being implemented in the country to develop improved climate resilient technologies through research and demonstration of the existing climate resilient technologies on farmers' fields under Technology Demonstration Component (TDC) through KVKs for enhancing climate resilience. In ICAR-ATARI, Bengaluru, climate resilient technological interventions are being implemented in farmer participatory mode in 14 climatically vulnerable districts namely; Chamarajanagara, Chikkaballapura, Chitradurga Gadag, Haveri, Kalaburagi, and Tumakuru in Karnataka, Alappuzha, Kannur, Kozhikode, Kottayam, Palakkad and Wayanad in Kerala and Lakshadweep Islands through respective Krishi Vigyan Kendras (KVKs) in these districts.

Table 2.102: Farming System Typologies (FST) interventions

Name of the KVK	FST-1		FST-2		FST-3		FST-4		Total	
	Demo (No.)	Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	Area (ha)
Karnataka										
Chamarajanagara	15	135.00	15	44.6	15	9.0	12	6.0	57	194.6
Chikkaballapura	10	25.00	15	30.0	12	25.0	15	30.0	52	110
Chitradurga	58	56.00	52	40.0	10	2.0	8	2.5	128	100.5
Gadag	50	20.00	55	22.0	7	2.8	8	3.2	120	48.0
Haveri	45	18.00	65	17.5	30	10.0	40	11.0	180	56.5
Kalaburgi-I	10	8.00	18	8.0	15	12.0	18	8.0	61	19
Tumakuru-II	19	9.00	21	9.0	7	4.0	105	29.0	152	51
Total	**207**	**271.00**	**241**	**171.1**	**96**	**64.8**	**206**	**89.7**	**750**	**579.6**
Kerala										
Alapuzzha	8	70.00	7	5					15	75
Kannur	6	10.00	3	1.0	2	1.0	1	2.0	12	14
Kottayam	7	28.00	9	-	3				19	28
Kozhikode	152	1.33	158	1.63	7	0.16	21	0.52	338	3.64
Palakkad	6	160.00	1	2.0	4	2.0	2	1.0	15	165
Wayanad	3	40.00	3	2.0	4	2.0	6	5.0	16	49
Total	**182**	**309.33**	**181**	**11.63**	**20**	**5.16**	**30**	**8.52**	**415**	**334.64**
Zone Total	**389**	**580.33**	**422**	**182.7**	**116**	**69.96**	**236**	**98.22**	**1165**	**914.24**

Demonstrations in Farming System Typologies: A total of 1165 demonstrations were implemented in different Farming System Typologies (FST) covering 914.24 ha to build climate resilience in cluster of villages covering 14 climate vulnerability districts. Out of which, 750 demonstrations in 579.6 ha were conducted by NICRA KVKs of Karnataka and 415 demonstrations in 334.64 ha by NICRA KVKs of Kerala. State and NICRA KVK-wise details in each farming system typologies are presented in (Table 2.102). Further, the results of technological interventions implemented to achieve climate resilient typologies in NICRA villages during 2024-25.

Adoption of successful NICRA interventions: The climate resilient technologies were adopted in NICRA village and adjoining villages of NICRA village by seeing the performance of technologies in the NICRA villages. A total of 1755 farmers have adopted climate resilient technology covering 91 villages and 1210.5 ha in Chamarajanagara, Chikkaballapura, Gadag, Chitradurga, Kalaburagi, Haveri, Tumakuru, Alapuzzha, Kannur, Kottayam and Kozhikode districts.

Institutional interventions: As a part of development of institutional mechanisms to take care of overall implementation of NICRA at the village level, activities relating to seed bank, fodder bank, custom hiring centre, climate literacy through a village weather station were implemented which were benefited 957 farmers. As contingency measure, seed/ planting material stored in seed bank centres established in the NICRA villages have been utilised by 245 farmers and covered an area of 194.36 ha in the NICRA villages. Further, for the timely agricultural operations, the agricultural implements/machines from CHC have been utilised by 388 farmers and covered an area of 278.9 ha.

Maize+ pigeon pea intercropping system (Haveri)

Foliar spray using drone (KVK Chamarajanagara)

Husk burial as soil and water conservation measure in coconut garden (KVK, Kannur)

Contour trenching (KVKWaynad)

Contingency measures taken up in NICRA village during dry spells: KVKs have successfully implemented contingency measures to alleviate the effect of dry spells on crops at various growth stages in NICRA villages of drought prone districts in Karnataka and Kerala. Contingency measures adopted to overcome the impact of dry spells in crops such as sunflower, groundnut, and pigeonpea maize, rabi sorghum and coconut in the districts of Chamarajanagara, Chitradurga, Haveri, Gadag, Kalaburagi-I in Karnataka and Wayanad and Palakkad in Kerala state have minimized the impacts of adverse climate during crop growth period and realized better yields over the farmer's practices.

Extension activities: A total of 148 extension activities have been carried out to create an awareness among the community about the climate related impacts on the agriculture and related sectors through various activities with the participation of 5353 farmers which include 4038 male and 1315 female. A total of 250 farmers were taken on exposure visits to various places/intuitions by the NICRA KVKs in order to expose the farmers to on field climate smart technologies with the contention of seeing in believing.

Capacity development programs: KVKs have conducted 141 capacity development programs related to climate resilient agriculture under NICRA covering topics such as crop production, natural resource management, livestock, ICM, INM, IPDM, value addition and dry land technologies they trained 2999 farmers including 770 women.

2.2.5 Skill Development

2.2.5.1 Short Term Training

KVKs of Zone XI viz., Chikkamagaluru, Kalaburgi-I, Kalaburgi-II, Kodagu, Mysuru and Yadgir organized a Short-Term Training (STT) programmes on various job roles such as organic cultivator, mushroom grower and garden keeper/ gardener are showed in table 2.103. Six programmes were organized for a total 150 participants which includes 25 participants each

Table2.103: Skill development programmes organized by KVKs in Zone XI during 2024

Name of the KVK	Name of Job Role	Total Partici-pants	Participants (No.)									Date of Assessment
			General			SC/ST			Grand total			
			M	F	Total	M	F	Total	M	F	Total	
Chikkamagaluru	Organic cultivator	25	25	0	25	0	0	0	25	0	25	To be done
Kalaburagi-I	Small Organic Cultivator	25	14	2	16	8	1	9	22	3	25	23.12.2024
Kalaburagi-II	Organic cultivation	25	14	0	14	11	0	11	25	0	25	22.12.2024
Kodagu	Mushroom Grower	25	18	6	24	0	1	1	18	7	25	21.11.2024
Mysuru	Gardener	25	12	2	14	9	2	11	21	4	25	23.10.2024
Yadgir	Garden Keeper	25	12	11	23	1	1	2	13	12	25	02.05.2024
TOTAL		**150**	**95**	**21**	**116**	**29**	**5**	**34**	**124**	**26**	**150**	

from Chikkamagaluru, Kalaburgi-I, Kalaburgi-II, Kodagu, Mysuru and Yadgir KVKs. Assessment of the participants was done for all the KVKs except Chikkamagaluru. All the participants passed the assessment except in KVK Yadgir (24 out of 25).

2.2.5.2 Recognition of Prior Learning

KVKs of Zone XI viz., Chitradurga, Kalaburgi-I, Kalaburgi-II, Kodagu and Mysuru organized Recognition Prior Learning (RPL) with the support from Agriculture Skill Council of India (ASCI) are presented in table 2.104. The recognition of prior learning was carried out on the job roles like organic growers, bee keeper and quality seed grower. A total of 192 participants took part in the RPL certification process in five KVKs during the year. A total of 120 Organic Growers were assessed for their skills in Chitradurga, Kalaburgi-I and Kalaburgi-II districts. 35 Bee Keepers were assessed in KVK Kodagu. KVK Mysuru assessed 37 Quality Seed Growers during the year.

2.2.6 Attracting and Retaining Youth in Agriculture

Attracting and Retaining Youth in Agriculture (ARYA) program aims to attract and retain youth in agriculture by empowering them with skills and knowledge to establish agricultural and allied enterprises for sustainable livelihoods. KVKs have trained potential youth for establishing enterprises for self-employment. Six KVKs viz., Bengaluru Rural, Uttara Kannada, Shivamogga, Kannur, Pathanamthitta and Malappuram have implemented ARYA program. They conducted 36 training programs and trained 970 youth on various agricultural & allied enterprises (Table 2.105). As a result, 249 units were established on different enterprises viz., bee keeping, processing and value addition, mushroom production, poultry, goat rearing and nursery programs (Table 2.106) and managed by the trained youth.

Table 2.104: Recognition of Prior Learning organized by KVKs in Zone XI during 2024

Name of the KVK	Name of Job Role	Total Partici-pants	Participants (No.)									Date of Assessment
			General			SC/ST			Grand total			
			M	F	Total	M	F	Total	M	F	Total	
Chitradurga	Organic growers	40	17	3	20	20	0	20	37	3	40	To be done
Kalaburagi-I	Organic Grower	40	34	4	38	2	0	2	36	4	40	28.01.25
Kalaburagi-II	Organic grower	40	35	0	35	5	0	5	40	0	40	To be done
Kodagu	Bee Keeper	35	28	5	33	1	1	2	29	6	35	06.11.24
Mysuru	Quality seed grower	37	31	1	32	5	0	5	36	1	37	26.09.24
TOTAL		**192**	**145**	**13**	**158**	**33**	**1**	**34**	**178**	**14**	**192**	

Table 2.105: Center-wise training organized and rural youth trained

KVK	Training organized (No.)	Rural youth trained (No.)
Bengaluru-Rural	2	40
Shivamogga	5	190
Uttara Kannada	10	327
Kannur	16	318
Pathanamthitta	2	45
Malappuram	1	50
Total	**36**	**970**

Table 2.106: Enterprise-wise rural youth trained and units established

Name of enterprises	Rural youth trained (No.)	Units established (No.)
Bee Keeping enterprise	265	69
Mushroom Cultivation	200	137
Nursery	197	17
Processing and value addition	178	19
Goatery	130	7
Total	**970**	**249**

2.2.7 Swachhta Pakhwada

Institute is implementing Swacch Bharat Mission - a nationwide programme for promoting cleanliness of the country since October 02, 2014. Swachhta Pakhwada was observed by the Institute and its KVKs during December 16-31, 2024 and organized day wise activities as per the guidelines provided by the ICAR. KVKs organized various activities with the participation of 12018 participants of different categories like farmers, farm women, rural youth, school children, extension personnel and general public. KVKs of Karnataka conducted Swachhta activities by involving 9379 participants and KVKs of Kerala conducted Swachhta activities by involving 2393 participants and KVK, Lakshadweep conducted Swachhta activities by involving 246 participants.

2.2.8 Mera Gaon-Mera Gaurav

ICAR Institutes viz., ICAR-IIHR, Bengaluru; ICAR-NIANP, Bengaluru; ICAR - NBAIR, Bengaluru; ICAR - NIVEDI, Bengaluru; ICAR - DCR, Puttur in Karnataka, ICAR - CPCRI, Kasaragod; ICAR - CTCRI, Trivandrum; ICAR - IISR, Calicut; ICAR - CMFRI, Cochin; ICAR - CIFT, Cochin in Kerala are implementing Mera Gaon-Mera Gaurav (My Village-My Pride) programme through formation of 126 multi-disciplinary scientist teams by adopting 565 villages. A total of 981 activities were conducted by involving 19850 farmers which included awareness programmes, demonstrations, interface meetings, extension literature, trainings and scientists' visits. Mobile based advisories were extended to 4150 farmers on various technologies. Besides, scientists' teams distributed seeds and planting materials of new varieties, new crops and provided linkages with other agencies to 6250 farmers in adopted villages.

2.2.9 Farmer FIRST Project

Farmer FIRST (Farm, Innovations, Resources, Science, Technology) initiative was launched by ICAR to move beyond production and productivity. FFP was implemented in three institutes viz. ICAR-Central Plantation Crops Research Institute (CPCRI), Kasaragod, ICAR-Indian Institute of Horticultural Research (IIHR), Bengaluru and ICAR - National Institute of Animal Nutrition and Physiology (NIANP), Bengaluru. A total of 11964 farm families covered under this project of which 9020 farm families by ICAR-CPCRI, Reginal station, 2294 farm families by ICAR-IIHR and 650 farm families by ICAR-NIANP.

(a) Technological Interventions under different module

FFP institutes demonstrated technologies under different modules viz., crop, horticulture,

livestock, Natural Resource Management (NRM) and Integrated Farming System (IFS). Details on interventions implemented in each module by the institutes at field level are presented in Table 2.107. A total of 731 demonstrations were conducted by involving 3920 farm families which included NRM module (34 demos with 407 families), crop module (593 demos with 1995 families), horticulture module (52 demos with 488 families), livestock module (25 demos with 832 families having 1366 animals) and IFS module (27 demos with 198 families). Further, enterprise interventions were carried out under FFP in 387.4 ha involving 1684 farmers.

(b) Capacity building programmes

A total of 88 capacity building programes were organized under different thematic areas related to agriculture and allied sector and trained 2055 farmers. ICAR-CPCRI RS conducted 62 capacity building programmes and trained 1592 farmers, ICAR-IIHR conducted 11 capacity building programmes and trained 296 farmers and ICAR-NIANP conducted 15 capacity building programmes and trained 167 farmers.

(c) Extension activities

A total of 486 extension programmes were organized by FFP institutes with the

Table 2.107: Institute wise interventions implemented under FFP

Institute	NRM module		Crop module		Horticulture module		Livestock module			IFS module		Extension activities	
	Demos (No.)	Families (No.)	Demos (No.)	Families (No.)	Demos (No.)	Families (No.)	Demos (No.)	Families (No.)	Animals (No.)	Demos (No.)	Families (No.)	Pgms (No.)	Families (No.)
ICAR-CPCRI Regional Station, Kayamkulam (ICAR-CPCRI, Kasaragod)	4	393	8	1436	6	397	3	176	90	1	182	349	3279
ICAR-IIHR,	40	24	620	427	58	40	04	256	68	55	790	802	
Bengaluru	30	14	580	420	40	14	04	56	428	25	10	29	522
ICAR-NIANP, Bengaluru	0	0	5	139	6	77	18	600	848	1	6	108	723
Total	**34**	**407**	**593**	**1995**	**52**	**488**	**25**	**832**	**1366**	**27**	**198**	**486**	**4524**

Groundnut demonstrationICAR-CPCRI, RS Kayamkulam

Chilli Arka Haritha demonstrationICAR-IIHR, Bengaluru

participation of 4524 farmers. 349 programmes organised with 3279 farmers by ICAR-CPCRI RS. Organized 29 programes benefitted 522 farmers by ICAR-IIHR and 108 programes with 723 farmers by ICAR - NIANP.

2.2.10 Scheduled Caste Sub-Plan

Scheduled Caste Sub-Plan (SCSP) was implemented by 47 KVKs, comprising 33 KVKs from Karnataka and 14 KVKs from Kerala and the details are given below:

(a) Technology assessment and demonstrations:

Data presented in Table 2.108 indicated that a total of 30 OFTs were conducted by KVKs wherein 276 SC farmers benefited. Out of which 24 and 6 OFTs were conducted with 220 and 56 beneficiaries by KVKs of Karnataka and Kerala, respectively. Further data in same Table shows that a total of 191 FLDs were conducted by KVKs wherein 1917 SC farmers benefitted. Out of which, 171 and 20 FLDs were conducted with 1811 and 106 beneficiaries by KVKs of Karnataka and Kerala, respectively.

(b) Capacity building:

Data depicted in Table 2.109 reveals that a total of 284 capacity building courses were conducted by KVKs wherein trained 7138 SC farmers comprises of 4103 males and 3035 females. Out of which, 141 courses were conducted by KVKs of Karnataka with the participation of 4160 SC farmers and 143 courses by KVKs of Kerala with the participation of 2978 SC farmers.

(c) Critical inputs:

Data presented in Table 2.110 shows that the KVKs provided critical inputs under SCSP such as seeds (99 q), Bio fertilizers (39.89 q), Micronutrients (5.60 q), Plant protection chemicals (15.36 q), Animal feed (27.85 q), Nursery plants (180737), Honeybee colonies (362), Poultry chicks (8810), Equipment (949), Mushroom spawn (0.71 q), Pheromone traps (1250), Animal medicine (589 doses) to 8747 beneficiaries.

(d) Extension activities:

Data presented in Table 2.111 reveal that a total of 675 extension activities were organized by KVKs with the participation of 9477 SC farmers comprises of 5550 males and 3831 females. Out of which, 595 extension activities were organized by KVKs of Karnataka with the participation of 7569 SC farmers and 80 extension activities by KVKs of Kerala with the participation of 1908 SC farmers.

Table 2.108: OFTs and FLDs conducted by KVKs under SCSP

State	Technology Assessment (OFTs)		Technology demonstrations (FLDs)	
	Number	Beneficiaries (No.)	Number	Beneficiaries (No.)
Karnataka	24	220	171	1811
Kerala	6	56	20	106
Total	**30**	**276**	**191**	**1917**

Table 2.109: Capacity building courses conducted by KVKs under SCSP

State	Capacity building courses (No.)	SCSP participants		
		Male	Female	Total
Karnataka	141	2815	1345	4160
Kerala	143	1288	1690	2978
Total	**284**	**4103**	**3035**	**7138**

Table 2.110: Critical inputs provided by KVKs under SCSP

Name of critical input	Unit	Karnataka		Kerala		Zone total	
		Quantity	Beneficia-ries (No.)	Quantity	Beneficia-ries (No.)	Quantity	Beneficia-ries (No.)
Seeds	Quintal	88.55	1028	10.45	536	99	1564
Bio fertilizers	Quintal	20.9	552	18.99	401	39.89	953
Micronutrients	Quintal	3.80	357	1.8	324	5.6	681
Plant protection chemicals	Quintal	13.96	508	1.4	156	15.36	664
Animal feed	Quintal	27.75	202	0.1	10	27.85	212
Nursery plants	Number	120054	1546	60683	715	180737	2261
Honeybee colonies	Number	60.00	30	302	208	362	238
Poultry chicks	Number	7071	526	1739	215	8810	741
Equipment	Number	715	561	234	196	949	757
Mushroom spawn	Quintal	0.32	122	0.39	199	0.71	321
Pheromone traps	Number	1250	145	0	0	1250	145
Animal medicine	Dose	543	190	46	20	589	210
Total							**8747**

Table 2.111: Extension activities organized by KVKs under SCSP

State and name of activity	Extension activities (No.)	SCSP participants		
		Male	Female	Total
(A) Karnataka				
Animal health camps	8	288	219	507
Awareness camps	50	1124	464	1588
Soil, water and plant sample analysis	508	438	70	508
Distribution of literatures	29	3021	1949	4966
Total (A)	**595**	**4871**	**2702**	**7569**
(B) Kerala				
Awareness camps	8	123	146	369
Soil, water and plant sample analysis	65	31	34	65
Distribution of literatures	7	525	949	1474
Total (B)	**80**	**679**	**1129**	**1908**
Grand total (A+B)	**675**	**5550**	**3831**	**9477**

FLD on groundnut (KVK, Haveri)

Distribution of Sprayers under SCSP (KVK, Chitradurga)

Distribution of Planting materials under SCSP (KVK, Kozhikode)

Distribution of implementsunder SCSP (KVK, Bellary)

2.2.11 Tribal Sub-Plan

The Government of India has adopted a multi-pronged approach for the socio-economic development of the Scheduled Castes with an aim to improve the livelihood of Scheduled Caste farmers as well as landless Scheduled Caste families through improved technology interventions in crops, livestock, poultry and fisheries.

Tribal Sub-Plan (TSP) was effectively implemented by 18 KVKs comprising 9 KVKs from Karnataka, 8 KVKs from Kerala and one KVK from Lakshadweep and the details are given below:

(a) Technology assessment and demonstrations:

Data presented in Table 2.112 indicated that a total of 22 OFTs were conducted by KVKs and 132 Tribal farmers benefited. Out of which 18, 2 and 2 OFTs were conducted with 106, 10 and 16 beneficiaries by KVKs of Karnataka, Kerala and Lakshadweep, respectively. Further data in same Table shows that a total of 56 FLDs were conducted by KVKs wherein 206 Tribal farmers benefitted. Out of which, 38, 15 and 3 FLDs were conducted

Table 2.112: OFTs and FLDs conducted by KVKs under TSP

State	Technology Assessment (OFTs)		Technology demonstrations (FLDs)	
	Number	Beneficiaries (No.)	Number	Beneficiaries (No.)
Karnataka	18	106	38	361
Kerala	2	10	15	120
Lakshadweep	2	16	3	25
Total	**22**	**132**	**56**	**206**

with 361, 120 and 25 beneficiaries by KVKs of Karnataka and Kerala, respectively.

(b) Capacity building: Data depicted in Table 2.113 reveal that a total of 118 capacity building courses were conducted by KVKs wherein trained 3542 Tribal farmers comprises of 1639 males and 1903 females. Out of which, 45 courses were conducted by KVKs of Karnataka with the participation of 1260 Tribal farmers, 48 courses by KVKs of Kerala with the participation of 1632 Tribal farmers and 25 courses by Lakshadweep KVK with the participation of 650 Tribal farmers.

(c) Critical inputs: Data presented in Table 2.114 shows that the KVKs provided critical inputs under TSP such as seeds (40.02 q), Bio fertilizers (23.28 q), Micronutrients (7.80 q), Mushroom spawn (0.50 q), Animal feed (5.90 q), Nursery plants (25219), Honeybee colonies (171), Poultry chicks (2926), Equipment (194), Animal medicine (6216 doses) to 4497 beneficiaries.

(d) Extension activities : Data presented in Table 2.115 reveals that a total of 186 extension activities were organized by KVKs with the participation of 3058 Tribal farmers comprises of 1891 males and 1167 females. Out of which, 49 extension activities were organized by KVKs of Karnataka with the participation of 1783 Tribal farmers, 41 extension activities by KVKs of Kerala with the participation of 1030 Tribal farmers and 96 extension activities by Lakshadweep KVK with the participation

Table 2.113: Capacity building courses conducted by KVKs under TSP

State	Capacity building courses (No.)	TSP participants		
		Male	Female	Total
Karnataka	45	715	545	1260
Kerala	48	724	908	1632
Lakshadweep	25	200	450	650
Total	**118**	**1639**	**1903**	**3542**

Table 2.114: Critical inputs provided by KVKs under TSP

Name of critical input	Karnataka		Kerala		Lakshadweep		Zone total	
	Quantity	Beneficiaries (No.)	Quantity	Beneficiaries (No.)	Quantity	Beneficiaries (No.)	Quantity	Beneficiaries (No.)
Seeds (Qt)	17.31	174	19.51	253	3.20	310	40.02	737
Bio-fertilisers(Qt)	8.76	67	14.52	551	0	0	23.28	618
Micro-nutrients (Qt)	3.60	151	4.20	94	0	0	7.80	245
Mushroom spawn (Qt)	0	0	0.5	45	0	0	0.50	45
Animal feed (Qt)	2.20	65	3.6	70	0.1	10	5.90	145
Nursery plants (No.)	19409	193	5680	229	130	100	25219	522
Honeybee colonies (No.)	66	42	105	105	0	0	171	147
Poultry chicks (No.)	930	73	475	60	1521	60	2926	193
Equipment (No.)	60	83	130	141	4	2	194	226
Animal medicine (dose)	312	60	18	49	5886	1510	6216	1619
Total								**4497**

of 245 Tribal farmers. Further, it is worthy to note that KVK Lakshadweep organized Coconut Festival with both Technical Sessions and Agricultural Exhibition wherein more than 50000 Tribal farmers and 65 Scientists were participated.

Table 2.115: Extension activities organized by KVKs under TSP

State and name of activity	Extension activities (No.)	SCSP participants		
		Male	Female	Total
(A) Karnataka				
Animal health camps	5	116	212	328
Soil, water and plant sample analysis	25	17	8	25
Awareness camps	10	225	110	335
Distribution of literatures	9	773	322	1095
Total (A)	**49**	**1131**	**652**	**1783**
(B) Kerala				
Animal health camps	1	4	31	35
Soil, water and plant sample analysis	20	12	8	20
Awareness camps	11	201	169	370
Distribution of literatures	9	375	230	605
Total (B)	**41**	**592**	**438**	**1030**
(C) Lakshadweep				
Animal health camps	3	67	12	79
Soil, water and plant sample analysis	90	65	25	90
Awareness camps	3	36	40	76
Total (C)	**96**	**168**	**77**	**245**
Grand total (A+B+C)	**186**	**1891**	**1167**	**3058**

Distribution of critical inputs under TSP (KVK, Idukki)

Distribution of Planting materials under TSP (KVK, Lakshadweep)

Distribution of Seedlings under TSP (KVK, Pathanamthitta)

Distribution of critical inputs under TSP (KVK, Vijayapura-I)

Capacity development program on vermicompost enterprise (KVK, Bengaluru Rural)

Processing & value addition unit ((KVK, Pathanamthitta)

Chapter - 3

Research Projects

The institute is undertaking research work besides coordination and monitoring of KVKs.

This chapter consists of following heads:

3.1 Institute Projects

3.2 Network Projects

3.3 External Projects

3. Research Projects

3.1 Institute projects

3.1.1 Project code: AGEXATARI-XISIL202100500010

Title : Development and operationalisation of online portal 'Kisan Samruddi' for marketing products of KVKs and its farmers in Karnataka, Kerala and UT of Lakshadweep Islands.

Duration : January, 2021 – December, 2025

PI : V. Venkatasubramanian

Co PIs : M.J. Chandre Gowda, D.V. Srinivasa Reddy, B.T. Rayudu, Thimmappa K, D.V. Kolekar

Progress: Project was under taken to develop and operationalise online portal for marketing products of KVKs and its farmers in Karnataka, Kerala and UT of Lakshadweep Islands. The Kisankart online portal is currently operational in Karnataka, Kerala and Lakshadweep, connecting KVKs, farmers, agri-entrepreneurs, and consumers. The portal enables direct online sales of seeds, planting materials, bio-products, value-added products, and technological items produced by KVKs, supported FPOs, entrepreneurs, and SHGs. It promotes wider reach, transparency, market access, and fair pricing. It fosters entrepreneurship and expands market access. Institute has obtained the Kisan Samriddhi trademark registration in five classes covering about 150 products and services.

3.1.2 Project code: AGEXATARI-XICIL202100300008

Title : Impact assessment of Arka technological products implemented by Krishi Vigyan Kendras of Karnataka and Kerala.

PI : Thimmappa K

Co-PIs : N. Loganandhan, V. Venkatasubramanian

Duration : January, 2020 – December, 2024

Progress: Project was under taken to assess the effectiveness of technological interventions and constraints faced by farmers. Results indicated that Arka varieties demonstrated higher productivity gains than local varieties, with increase in productivity ranged from 18% to 29%. This suggests that Arka varieties, can lead to significant improvements in crop yields. Technology index ranged between 0.12 to 0.46 indicating significant scope for improvement in the adoption of technology. Performances of technological interventions on input use indicated that 85% of farmers have started using ICAR-IIHR technology inputs as compared to before interventions (15%). Farmers obtained higher net returns ranged from 10.58% to 58.04% due to technology adoption.

Procurement of Arka technology products by farmers from ICAR-IIHR revealed that 50% of farmers used two channels for procurement of seeds followed by one channel (40%). About 10% of farmers used three channels for procurement of seeds from ICAR-IIHR. Constraints faced by KVKs in the procurement of Arka variety seeds from ICAR-IIHR indicated that 41% of KVKs have faced the problem of non-availability of required quantity and variety of seeds followed by timely non-availability of seeds (25%) and non-availability of newly released variety seeds for OFT (12%). Constraints faced by KVK district farmers for getting Arka variety seeds from ICAR-IIHR suggested that Arka varieties are not available in local agro-input shops is a major constraints in the adoption of Arka varieties followed by non-availability of required quantity and variety of seeds, lack of awareness regarding Arka varieties and seed portal, farmers has to travel a long distance to ICAR-IIHR for

purchasing small quantities of seeds which costs more than seed materials cost, farmers facing difficult to book seeds or plants through website and timely non-availability of seeds. The other problems faced by farmers with Arka varieties are germination problem in some varieties and performance of private hybrids in some crops better than Arka varieties. Therefore, KVKs and farmers have suggested that technological products to farmers may be supplied through FPOs, KVKs and agro-input dealers.

3.1.3 Project code: AGEXATARI-XISIL202100400009

Title : Identification and development of farm leaders through KVKs for up-scaling agricultural technologies in Karnataka, Kerala and Lakshadweep.

PI : B.T. Rayudu

Co-PIs : M.J. Chandre Gowda, D.V. S Reddy, Thimmappa K, D.V. Kolekar, V. Venkatasubramanian

Duration : January 2019 - December 2024

Progress: Project was carried out to identify and develop farm leaders through KVKs for up-scaling agricultural technologies. A total of 7500 farm leaders were identified by KVKs in the Zone. Karnataka KVKs identified 5247 farm leaders, Kerala KVKs identified 2226 farm leaders and KVK Lakshadweep identified 27 farm leaders. Capacity development needs among selected farm leaders were identified through structured questionnaire. Results indicated that the majority of farm leaders expressed their training need for the topics like crop production, soil health and fertility management, plant protection, horticulture, livestock production and management, fisheries, agro forestry, agriculture engineering, women empowerment, production of inputs at site, capacity building and group dynamics moderately to high. Accordingly, KVKs have formulated the training courses to build the capacity of farm leaders in their respective districts.

3.1.4 Project code: AGEXATARI-XISIL202100100006

Title : Analysis of Integrated Farming Systems in different agro-climatic situations in the state of Karnataka for need based technology application and capacity development.

PI : D.V. Srinivasa Reddy

Co-PIs : V. Venkatasubramanian, M.J. Chandre Gowda, B.T. Rayudu

Duration : January, 2021 - December, 2024

Progress: Project was undertaken to study the Integrated Farming Systems in different agro-climatic situations in the state of Karnataka for need based technology application and capacity development. Study of five agro-climatic zones data revealed that the major farming system found in Central dry zone is agri + horti + animal – dairy component with benefit-cost ratio of 2.5. In Eastern dry zone, the most prominent IFS model observed was agri + livestock + fisheries. In Southern dry zone, more diversified IFS models were adopted by the farmers with maximum being the agri+horti+ livestock combination. The north transition zone was dominated by the agri + horti + dairy and Hilly zone was dominated by agri + horti. The employment generation in IFS models varied from 250 to 826 man-days per annum as compared to 150 to 320 man-days per annum in the mono-cropping systems. The net income also varied from 5.85 lakh to 6.56 lakh in Northern dry zone, 4.0 lakh to 5.9 lakh in Eastern

dry zone, 2.29 lakh to 6.58 lakh in Southern dry zone, 2.5 lakh to 24.6 lakh in Northern transition zone and 13.16 lakh to 40.61 lakh in Hilly zone. The major reasons for adopting the IFS were found to be shield against climate change, better recycling of farm resources and less dependent on external inputs. The major constraints reported by the adopters of IFS were lack of technical skill, inadequate electricity supply, climate change related issues, and social factors. Non availability of improved varieties, incidence of pest and diseases and loss of marketable produce at field level are the problems reported by the farmers in adopting the IFS models. Lack of new varieties, lack of scientific management practices, non-availability of quality inputs, lack of suitable crop combinations for various climatic conditions are some of the research gaps perceived by the researchers in the adoption of IFS models. Conduct of capacity building program on integrated crop production practices, post-harvest handling of produce and value addition till its marketing, diagnostic field visit by extension scientist and dissemination of practices to be followed through different ICT are the extension strategies suggested by the researchers for the adoption of IFS models.

3.2 Network projects

Title : Measuring tangible and intangible benefits and costs of interventions under Farmer FIRST project.

Duration : October, 2024 - March, 2027

PI : M.J. Chandre Gowda

Co-PIs : D.V. Kolekar, R. Burman, ICAR Agricultural Extension Division, New Delhi; P. Venkatesan, ICAR-NAARM, Hyderabad; N Sivaramane, ICAR-NAARM, Hyderabad; PI/Nodal Officer, FFP, IIHR, Bengaluru; PI/Nodal Officer, FFP, ICAR-CPCRI Regional Station, Kayangulam, Kerala; PI/Nodal Officer, FFP, ICAR-IIOPR, Andhra Pradesh; PI/Nodal Officer, FFP, ICAR-IIMR, Hyderabad; PI/Nodal Officer, FFP, TANVASU, Chennai, Tamil Nadu.

Progress: The project was approved in third RAC meeting for ICAR-ATARIs held during November 19-20, 2024. In consultation with ATARIs, implementing Centres and their host institutes Co-PIs for the network project were finalized. As per the suggestions given in RAC meeting, the title was simplified as "Measuring tangible and intangible benefits and costs of interventions under Farmer-FIRST project". It was suggested to study the spill-over effects, before-after and with-without situation. As suggested, intangibles like awareness about technology options, and achievement motivations that drive better performances would be carefully and systematically measured. Besides household as unit, farm will also be taken as sample unit as it is likely that on a given farm, there could be series of interventions leading to complementary effects. Discontinuation of any of the interventions need to be studied for reasons and constraints analysis. RAC recommended that, since the measurement of intangibles have not been attempted systematically so far, this research project is important. The outputs and outcome of the project could emerge as contribution to the extension discipline and to the impact assessment methodologies.

3.3 External projects

Title : Development and demonstration of AI enabled weather and market information-based Decision Support System (FARWM-DS) for sustainable farm productivity and profitability and evolve profitable cropping pattern.

Duration : May, 2023 - May, 2026

CCPI : M.J. Chandre Gowda

Progress: The NASF funded research project is undertaken by University of Agricultural Sciences, Dharwad as lead centre and ICAR-ATARI, Bengaluru as one of the cooperating centres. During the period, 23 years (2010-23) data on weather information and market prices were collected from NASA power and AGMARKET (based on nearby and frequently visited markets), respectively. The collected data was compiled as per the format provided by the cooperating centre TNAU, Coimbatore. Based on the area under cultivation the districts with higher area were identified and primary data on farming experience and crop economics for the project crops [Groundnut (54), Cotton (51), Pigeon pea (50) and Tomato (43)] were collected. Statistical analysis and forecasting of project crops and their cropping pattern is being computed. To support the development of the DSS, good quality photographs of various diseases, insect pests and weeds of the project crops in the farmers' fields, experimental fields and research institutes were attempted and provided to the project team. Kannada translation of names of project crops diseases, pests and their management practices were made. Preliminary testing of DSS software developed by Indian Institute of Technology, Dharwad was carried out and the feedback was provided to the project team.

Chapter - 4

Publications

Research articles published during the reporting period is presented in this chapter.

4.1 Publications by the Institute

Chandre Gowda M.J., Srinivasa Reddy D.V., Rayudu B.T., Thimmappa K., Kolekar D.V. and Mallikarjun B Hanji. (2024). Annual Report 2023, ICAR-ATARI, Zone XI, Bengaluru, India:161p.

Chandre Gowda M. J., Venkatasubramanian, V., Rajesh Kumar Rana, Randhir Singh, Ranjay K. Singh and Udham Singh Gautam. (2024). Technology application driven farmers' income enhancement: Evidences for spatial, sectoral and social inclusiveness. *Indian Journal of Agricultural Sciences*, 94 (3-SI): 124-131.

Chandre Gowda M. J., Rana K. R, Dubey S. K, Meena M. S, Raut A. A, Pal P. P, Bhaskaran A, Amrendra Kumar, Bordoloi R, and Rajesh T. (2024). Drivers of functioning or discontinuation of small-scale agri entrepreneurship in rural India. *International Journal of Small Business Entrepreneurship Research*, 12(2): 25-58.

Chandre Gowda M. J., Bindu, H. A. (2024). Augmenting farmers income in North Karnataka through technology application for productivity enhancement and diversification. *Journal of Farm Sciences*, 37(2): 182-187.

Chandre Gowda M. J., Bindu, H.A. (2024). Impact of technological interventions on farmers income through enhanced productivity, intensification and diversification in Southern Karnataka. *Mysore Journal of Agricultural Sciences*, 58(3): 92-101.

Chandre Gowda M. J. (2024). Landholding, Irrigation Sources and Area under Organic Farming: Insights from Practicing Farmers in Karnataka. *International Journal of Extension education*, 20(1): 07-12.

Chandre Gowda M. J. (2024). Entrepreneurial competencies drive successful entrepreneurship in rural areas: Experiences of ARYA. *International Journal of Extension education*, 20(2): 01-05.

Rajesh K Rana, Chandre Gowda M. J., Ranjay K Singh, Sarang M, T.Kaur, P.Sheoran, S.K.Dubey, M.S.Meena, P.P.Pal, Amrendrakumar, R.Bordoloi, A.Bhskaran, S.R.K.singh, M.Shirur, R.R.Burman, Randhir ingh, Rajbir Singh, A.K. Singh, Keshava, U.S.Gautam. (2024). Strengthening the agricultural entrepreneurship: Insights on transformative influence. *Indian Journal of Agricultural Sciences*, 94 (3-SI): 72-80.

Sunilkumar N. M, Jyothi Kamthane, ingadalli Mallikarjun, Gnyandev Bulla, S. B, Goudappa, B. T. Rayudu and V. Venkatasubramanian (2024) Transplanting in redgram for resource effective crop production to unleash the potential yield. Indian Farming 74 (03): 80-84.

Sudhakar Soundarajan, Preethu K. Paul, Ashiba A1, R. Marimuthu, S. N Sushil, G. Sivakumar, T. Venkatesan, M. Nagesh, V. Venkatasubramanian and B. T. Rayudu (2024) Eco-friendly management of pests and diseases in small cardamom. Indian Farming 74 (03): 74-79.

4.2 Publications by KVKs

KVK staff of Karnataka published 127 research papers, 95 technical reports, 52 technical bulletins, 329 popular articles and 210 extension literature, and Kerala published 50 research papers, 13 technical reports, 11 technical bulletins, 121 popular articles and 66 extension literatures on various technological aspects of agriculture and its allied enterprise.

Adarsh, J.K., Baswaraj., Rajesh, N.L., Chethan, T. and Mahantesh, M.T. (2024). Effect of Sulphur, Zinc and Boron on Growth, Yield and Economics of Watermelon in Vertisol of Northern Karnataka., *Biological Forum-An International Journal.,* 16(2): 1-4.

Anandkumar, V., Hemalatha, K. J. and Guruprasad, H. (2024). Seasonal incidence of tea mosquito bug, Helopeltis spp. In Guava, cv L-49 at ARS-Hari, Ballari, Karnataka., *Journal of Advances in Biology & Biotechnology.*, 27(11), 1459-1468.

Anil Kumar, S., Manjunatha Reddy, T. B. and Shashidhar, K, R. (2024). Impact of KVK activities on the adoption of improved horticultural technologies in Kolar district., *International Journal of Agriculture Extension and Social Development.,* 7(11): 235-239.

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Atheefa Munawery., Ramkrishna Parama., Ashok, K.R., Srinivasamurthy, C. A., Arpitha, S. N. and Gowda, R.C. (2024). Revalidation of potassium requirement for maize in Eastern dry zone of Karnataka., *International Journal of Research Agronomy.,* 7(7):523-530.

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Basavanagowda, M.G. and Devaraja, T.N. (2024). Study on performance of Bhima Super variety Onion in Davanagere district., *International Journal of Creative Research Thought.,* 12(9): 316-321.

Basavanagowda, M.G., Devaraja, T.N., Avinash, T.G. and Supriya, P. Patil. (2024). A study on assessing the perception of girl students of horticulture discipline towards agricultural education and functioning of Krishi Vigyan Kendras., *International Journal of Innovative Researching Technology.,* 11(5): 2395-2400.

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Basavaraj, D., Palthe Vasudev Naik., Ningdalli Mallikarjun., Muniswamy, S. B. and Jayaprakash Narayan R. P. (2024). Performance of Tomato (Solanum lycopersicum L.) Genotypes for Growth, Yield and Quality Traits under North Eastern Dry Zone of Karnataka, India., *International Journal of Environment and Climate Change.,* 14(7): 868-875.

Bharat Singh., Archana, U. Singh., Neetu Singh., Gaurav Papnai., Sudhakar.S.M. and Raghavendra Pratap Singh. (2024). Studies on the effect of Abiotic factors on the Larval population of Diamondback moth (*Plutella xylostella*) on Califlower., *Journal of Advances in Biology and Biotechnology*., 27(9): 1411-1419.

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Chapter - 5

Human Resource Development

Human resource development activities organised by the institute is presented in this chapter.

5.1 Lecture cum visits during KVKs Zonal Workshop 2024

KVKs Zonal Workshop 2024 on "Strengthening KVKs as Resource Centers through Seeds, Planting Materials and Bio-Products Production" organized by the institute in collaboration with ICAR-Indian Institute of Spices Research, Kozhikode during September 02-04, 2024 at ICAR-Indian Institute of Spices Research, Kozhikode. All KVK Heads have participated in the three days' workshop which involved lecture cum exposure visit. The subject matter experts were invited to give lectures on planting materials production and plantation crops management production and use of bio-products in spice crops, use of bio-products in plantation crops, optimising crop productivity and vegetable seed production. Participants visited Hydrology and Climatology Research Group units, KVK, Kozhikode and ICAR-IISR, experimental farm at Peruvannamuzhi.

Inaugural address by the Chief Guest

Release of publications during Zonal Workshop

Visit to KVK, Kozhikode

Zonal Workshop participants attending lectures

5.2 Management Development Programme

Management Development Program for newly recruited Heads of KVKs was organised by the institute during July 25-30, 2024. The Head, KVK, Kolar participated in the program. Similarly, Institute Organized III phase of the Management Development Programme (MDP) for the newly-recruited Heads of KVKs from December 27-31, 2024. Heads of KVK Mysuru and KVK Belagavi-II participated in programme. The participants were oriented on base line survey and diagnosis of field problems, prioritization of thrust areas, identifying training needs of farmers and extension personnel, compilation of inventory of technologies, preparation of annual action plan, documenting impact of KVK activities, success stories and accounts procedures related to KVKs. The participant opined that the program was useful for managing KVK activities. Participants visited KVK, Bengaluru Rural, KVK, Tumakuru-II and KVK, Davanagere during the program to get the field level experiences of FLD, OFT, general administration, register maintenance, production and demo units.

MDP certificate distribution

MDP certificate distribution

5.3 Orientation Training Program

Orientation Training Program for Newly Recruited Assistants was organized during October 15-18, 2024. A total of seven Newly Recruited Assistants attended the program. During the training program, participants visited KVK, Tumakuru-I, KVK, Bengaluru Rural and KVK, Mysuru to get the first-hand experiences on different organization's administrative and financial governance. The training program covered various administrative, financial and governance structure of ICAR system. They have undergone training on providing assistance in dealing with service matters of the staff of the institute, maintenance of personal files of the staff, processing different types of information asked by the ICAR and other higher authorities, processing the cases for procurement of different items and looking after the stores and performing the duties of cashiers & store keepers. They have also learnt proper maintenance of books, records, and registers. The training program was concluded on October 18, 2024 with the distribution of certificates.

Orientation training program participants with ICAR-ATARI staff

Certificate distribution to Orientation training program participants

Chapter - 6

Workshops / Meetings / Conferences

Director/scientists/officers of the institute conducted/participated in the meetings/ workshops/ conferences/ seminars/ capacity development programs are presented in this chapter

Director/scientists/officers of the institute conducted/participated in the meetings/ workshops/ conferences/ seminars/ capacity development programs held during reporting period are given below.

Dr. V. Venkatasubramanian

- Attended the inauguration program of "Zonal Women Agripreneur Conclave 2024" which was inaugurated by Hon'ble MoSA at Thrissur on January 20, 2024.
- Inaugurated farmers hostel of KVK Kottayam and Palghat on January 20, 2024 and delivered key note address and released the publication.
- Organized and attended the technical sessions and chaired the valedictory session of "Zonal Women Agripreneur Conclave 2024" and delivered the valedictory address on January 21, 2024.
- Addressed the delegates and farmers and flagged off the Kisan Bharat Yatra for South India as Chief Guest at Codissia Trade Fair Complex, Coimbatore on January 01, 2024.
- Attended the group discussion on medicinal plant cultivation in association with KVKs of the zone, ICAR Institutes and ICAR-Directorate of Medicinal and Aromatic Plants Research (DMAPR), Anand on February 02, 2024 at Horticulture College, TNAU, Coimbatore.
- Attended International Conference on Reviving Ancient Grains: Millets on the Global Stage' at ICRAG-2023 at Tamaka, Kolar (KVK Kolar) as Chief Guest and inaugurated the programme on February 08, 2025 and delivered the key note address.
- Attended the Krishi Vichara Sankirana (Agriculture Seminar) as Chief Guest and delivered the valedictory lecture at Suttur Jatra Mahotsava, Mysore on February 09, 2025.
- Attended ICAR Regional Committee for Zone VIII comprising Karnataka, Tamil Nadu, Kerala and UTs of Puducherry and Lakshadweep on February 16, 2024 at Chennai.
- Inaugurated demonstration unit on Wild Animal Management implemented with ICAR-ATARI, Bengaluru support at KVK Pathanamthitta on February 24, 2025.
- Attended the Annual Conference of Vice Chancellors & Directors Conference. Made a 20 minutes presentation in the afternoon of February 26-27, 2024 in the given subject 'e-commerce for promoting agri-products' at Delhi.
- Attended the inauguration of farmers hostel of KVK Vijayapura I on March 13, 2024 by Sushri Shobha Karandlaje, Honourable Minister of State Agriculture & Farmers Welfare, Government of India. Shri Ramesh Jigajivangi, MP Vijayapura and other dignitaries were present.
- Attended the meeting Revision of MoU/ MoA and Revision of Administrative and Financial Guidelines for operation of KVKs' Committee meeting at Delhi on March 12, 2024.
- Attended the curtain raising ceremony of Golden Jubilee Celebrations of KVKs at Puducherry on March 21, 2024.
- Attended Inception Workshop on "Nutri-Gardens and Bio-fortified Crop Varieties: Changes in Nutritionally Rich Food Production and Consumption Diversity (A Collaborative Project)" on April 9, 2024 at NAAS, New Delhi
- Organized and attended the Annual Review Meeting and Action Plan Meeting 2024-25 of 16 KVKs of Karnataka at UAS, Raichur on April 17, 2024. Chaired a session deliv-

ered the key note address during valedictory function.

- Attended the Swarna Samrudhhi 2024 event on April 23, 2024 and distributed certificate of Fellow Farmers Award to the achievers as well as those who doubled their income with the KVK Pathanamthitta intervention.
- Addressed the RAWE students and also DESI Trainees at KVK Thrissur on April 20, 2024.
- Attended World IP Day at Seminar Hall of the NASC, Delhi and delivered the key note address as Guest of Honour on April 26, 2024. Certificate of registration of year-round Jamun was received by the farmer Sri K.N.Kumar from Tumkur along with Dr.Trivedi and the Director, ICAR ATARI, Bengaluru.
- Participated in the group discussion for organizing South Indian Asian Forum with Dr.V.V.Sadamathe and team on May 06, 2024.
- Attended the Regional Consultation on Science of Natural Farming scheduled at Yashwantrao Chavan Academy of Development Administration (YASHADA), Pune on May 16, 2024.
- Attended the Annual Review (2023-24) and Annual Action Plan (2024-25) Meeting of KVKs in Kerala and Lakshadweep at Kerala Agricultural University, Thrissur during May 13-15, 2024.
- Felicitated Padmashree Awardee Farmer Sri Cheruvayal Raman for the dedicated conservation of exotica traditional rice variety through natural farming practices on May 24, 2024 at Waynad.
- Attended NICRA Annual Review cum Action Plan workshop was on May 23, 2024 at KVK and opening remarks were made.
- Attended the Selection Committee Meeting of KVK Mysore for the selection of Sr. Scientist & Head and Subject Matter Specialist (Home Science) and Assistant positions at JSS Office, Mysore on May 28, 2024.
- Attended the Guidelines Committee Meeting on May 30, 2024 at ICAR, New Delhi.
- Attended SMD Review Meeting at Agrl. Extension SMD, ICAR, New Delhi July 12, 2024.
- Attended 7th Extension Education Council meeting of UAS Dharwad on June 10, 2024.
- Attended the Memorial Lecture of Prof. M.K.Sethu Rao on "Global Challenges in Agricultural Extension Landscape – A way forward by Prof. Sarvareddy Venku Reddy, President, PRIDS and Consultant, World Bank on June 10, 2024 at Dharwad.
- Coordinated the programme - Webcasting event of 17th instalment of PM Kisan Samman Nidhi Yojan by Hon'ble Prime Minister at Namakkal District on June 18, 2024. and delivered felicitation address during the programme.
- Attended the meeting with farmers at the residence of Sri Reghu M, Puthanveedu, Mathur for discussion on registration of "Njavara' rice variety with PPVFRA, New Delhi on June 24, 2024.
- Addressed the meeting organized by Self Help Group, women entrepreneurs and bankers from Malappuram District and collected the application for brand registration from Susha's Food Products, Tirur which is one of the action points for PM 100 days also on July 06, 2024.
- Attended the Collaborative Meeting between PPVFRA and Agriculture Extension

Division, ICAR, New Delhi at Committee Room, Plant Authority Bhawan, PPVFRA on July 16, 2024.

- Attended inaugural programme of 96th ICAR Foundation and Technology Day Ceremony on July 06, 2024 at Delhi.
- Attended the interaction meeting convened by the SMDs with the Directors of ICAR ATARIs regarding 100 days Action Plan, Five Year Plan, Financial and Administrative Issues etc. on July 15, 2024.
- Attended the Inter-Zonal Workshop on operationalization of online marketing platform "Kisan Samriddhi" at KVK Kolhapur II on July 20, 2024.
- Attended the inaugural function of VII Post Graduate Research Conference-2024 on July 25-26, 2024 at Farmers Knowledge Centre, University of Agricultural Sciences, Dharwad as Chief Guest and delivered the lecture on July 25, 2024.
- Participated as Chief Guest in the inaugural programme of training programme on "Induction Training to Newly Recruited KVK Staff" from August 6-7, 2024 jointly organized by Directorate of Extension, UAS, Dharwad and ICAR-ATARI, Bengaluru on August 6, 2024.
- Delivered a lecture on 'Technology application, demonstration and other important monitoring activities' to the newly recruited Subject Matter Specialists of KVKs on August 6, 2024 at UAS, Dharwad.
- Delivered a lecture on 'Methodologies in Farming System, Planning and Knowledge Management Tools and Methods" at UAS, Dharwad on August 6, 2024.
- Inaugurated district level Farmers Group Meeting 2024-25 and conference on Sustainable Agriculture and Climate Resilience in Spice Crops at Thookupalam jointly organized by Akshayasree District Federation & Malanadan Farmers Producer Co. Ltd at AYN Event Hub, Thookupalam, Idukki District on August 18, 2024. Delivered a lecture to the participants about the functioning of FPO, marketing and trademark registration etc.
- Conducted and supervised the written test for Skilled Supporting Staff and Programme Assistant (Farm Manager) and Subject Matter Specialist (Horticulture) on August 16, 2024 at KVK Idukki.
- Conducted the interview for the post Subject Matter Specialist (Horticulture) at KVK Idukki on August 17, 2024. Declared the results.
- Coordinated and conducted written examination and interview for the post of Subject Matter Specialist (Animal Science) in KVK, Mattikoppa, Belagavi II on August22, 2024.
- Attended the Krishi Sakhi valedictory programme and delivered valedictory address at KVK Belagavi II on August 23, 2024.
- Attended agri-preneurs interface meeting and capacity development programme for PM 100 Days as Chief Guest on August 01, 2024 at KVK Bengaluru Rural.
- Visited the State Resource Centre for Jackfruit, KVK, Pathanamthitta and inaugurated the activities of PM 100 Day Programme on August 09, 2024.
- Inaugurated KVKs Drone Project by conducting First Flight Launch Ceremony Sowing of seeds through drone was done at KVK Pathanamthitta on August 09, 2024.
- Attended the inaugural function of 31st Foundation Day and Kisan Mela of

ICAR – National Research Centre for Banana, Tiruchirappalli on theme "Banana Diversity and Wealth from Waste" on August 21, 2024. Chaired Panel Discussion on the "Banana Production and Protection Technologies" and Co-chaired Panel Discussion on "Wealth from Banana Waste: Creation of Sustainable Business Ecosystem"

- Conducted the interview for the selection of Senior Scientist & Head post in KVK, Belagavi II on August 23, 2024.
- Attended the joint meeting on hybrid mode under the joint Chairmanship of Dr.M.R.Dinesh, Former Director, ICAR-IIHR, Bengaluru and Dr.S. Prabhu Kumar, Former Director, ICAR-ATARI, Ludhiana at KVK Thrissur on August 28-29, 2024 to finalize the operational guidelines of Kisan Samriddhi Online Marketing System for KVKs and KVK associated FPOs, Agripreneurs and SHGs in Karnataka, Kerala and Lakshadweep.
- Attended Tree Plantation programme from KVK Pathanamthitta farm on August 29, 2024.
- Attended the inauguration programme of Annual Zonal Review Workshop of KVKs of Karnataka, Kerala and Lakshadweep at ICAR-IISR, Calicut on September 03, 2024. Kisan Samriddhi Award 2024 and Best Women Entrepreneur Award 2024 were presented.
- Attended two input distribution programmes organized in the Panchayat Community Hall located in Kandalur Panchayat, Idukki District on September 26, 2024.
- Delivered the Expert Advice in a meeting to discuss inter-institutional project titled "Development of Sensor-Based Automatic Community Chaff Cutter for Potential Adoption by Rural Dairy Farmers" in collaboration with ICAR-CIAE Regional Station, Coimbatore; ICAR-ATARI, Bengaluru & ICAR-NIANP, Bengaluru at ICAR-CIAE, RS, Coimbatore on September 23, 2024.
- Attended the Brainstorming Session on Enhancing Efficiency and Effectiveness of NGO KVKs under the Chairmanship of Secretary, DARE and DG, ICAR at the Conference Hall (Kapila), NASC, New Delhi on September 17, 2024. Attended Divisional Review Meeting in the afternoon.
- Attended as Chief Guest during the World Food Day Celebration organized by KVK Pathanamthitta on October 17, 2024 and inaugurated the exhibition.
- Attended the "Sasya Santhe for Kisan Samriddhi" organized by KVK, Davanagere in collaboration with ICAR-ATARI, Bengaluru and Department of Horticulture, Davanagere on October 01-02, 2024 at its instructional farm Kadalivana, Davanagere and inaugurated the sales and exhibition.
- Attended as Guest of Honour during 113th Foundation Day Celebration of ICAR SBI, Coimbatore on October 25, 2024.
- Inaugurated the Unipole in the KVK Kollam premises on November 23, 2024.
- Attended the COCO Fest 2024 jointly organized by KVK Lakshadweep, ICAR-CMFRI, ATARI, Bengaluru, Kavaratti Island Coconut Producer Cooperative Society and Department of Agriculture, UT Administration of Lakshadweep during November 20-22, 2024.
- Delivered orientation lecture to the newly recruited SMS of KVK Lakshadwep on the KVK mandated activities on November 18, 2024.

- Attended the workshop on coconut-based enterprises in Lakshadweep: status and strategies for sustainable development jointly organized by ICAR-CPCRI, Kasaragod and KVK Lakshadweep on November 19, 2024 as s guest of honour and delivered keynote address.
- Visited and inaugurated the Unipole and SCSP Equipment Utility Centre in the KVK at KVK Malappuram on November 28, 2024.
- Organized written test and skill test for driver post in KVK Belagavi I and finalized the appointment of Driver.
- Delivered a lecture on "Translating Social Research into Practical Application" for "X MDP for Newly Recruited Heads of KVKs" at ICAR NAARM, Hyderabad on December 11, 2024. Participated in the valedictory programme of Training on "Reads to Revelations: Transcriptome Data Decoded" as Chief Guest.
- Participated in the meeting organized for the Entrepreneur Start Ups of NIFTEM-T as Chief Guest and addressed the participants regarding branding of various products required for successful entrepreneurship through value addition, post harvesting technology and marketing on December 16, 2024 at NIFTEM Thanjavur.

Dr. M. J. Chandre Gowda

- Participated RAC Meeting organized by ICAR ATARI Hyderabad, November 19-20, 2014 at NAARM campus
- Participated DBT, GOI, Project Steering and Monitoring Committee (PSMC) meeting on February 22-23, 2024
- Participated Extension Education Council Meeting of UAS Bangalore on May 25, 2024
- Coordinated Action Plan Meeting of KVKs at KVK Kodagu during April 17-19, 2024
- Acted as a Member, Selection Committee in the Recruitment of Subject Matter Specialists of KVKs under UAS Dharwad during 30 January to 07 February, 2024
- Participated Academic Committee Meeting of MANAGE on February 28, 2024
- Participated District level Coconut Seminar organized by KVK Tumakuru I on March 12, 2024
- Participated Felicitation programme organized by KVK Hassan for the Honorary Doctorate awardee farmer on March 14, 2024
- Participated CAR NIANP SCSP launching event at Kolar district on December 23, 2024
- Participated SAC of KVK Dakshina Kannada on January 06, 2024
- Participated SAC of KVK Hassan on January 09, 2024 (online)
- Participated SAC of KVK B Rural on January 18, 2024
- Participated SAC of KVK Thiruvananthapuram on January 24, 2024
- Participated SAC of KVK Hassan on February 09, 2024
- Participated SAC of KVK Kozhikode on February 13, 2024
- Participated SAC of KVK Pathanamthitta on February 26, 2024
- Conducted Nodal Officer's Review Meeting (Virtual) on March 18, 2024, May 27, 2024, July 03, 2024, November 05, 2024, November 07, 2024, December 09, 2024,

December 12, 2024, December 13, 2024 and December 17, 2024.

- Acted as a resource person for a program 'Application of LRI approach for crops selection, nutrient management and agro advisories under REWARD Program' at Centre of Excellence, Watershed Management, GKVK, UAS on August 21, 2024, August 28, 2024, September 04, 2024 and September 26, 2024.
- Acted as a resource person for a program 'The Role of ICT in Agricultural and Allied Sectors' at Karnataka Science and technology Academy (KSTA), Bengaluru on June 27, 2024
- Acted as a resource person for a program 'Agri Start Ups and Agri Business Opportunities for Women Entrepreneurs' at Department of Agricultural Extension, GKVK, UAS Bangalore on December 04, 2024

Dr. D.V. Srinivasa Reddy

- Participated and co-ordinate the exposure cum study visit of SMSs of KVKs under ATARI to ICAR- NBAIM, Mau, UP. Attended the National seminar on Expanding the Horizons of Microbial Research in Agriculture along with SMSs of KVKs of Karnataka and Kerala during June 10-11, 2024 jointly organized by Association for Conservation of Microbes and Application (ACMA) and ICAR-NBAIM, Mau at NBAIM, Mau.
- Coordinated the conduct of Annual review cum Action Plan 2024-25 for 15 KVKs of Kerala and Lakshadweep Islands at KAU, Thrissur during May 13-15, 2024 as a coordinator from ATARI, Bengaluru.
- Organized NICRA Annual review cum Action plan 2024-25 of 15 NICRA KVKs involving ICAR-CRIDA during May 23-24, 2024 at Sultan Batherry, Waynad under KVK Waynad, Kerala.
- Conducted NICRA-ZMC monitoring visits to KVKs Chikkaballapur, Chamarajanagar, in Karnataka and Waynad in Kerala during October 21-23, 2024 under the Chairmanship of Dr DM Hegde, Former Director, DOR, Hyderabad.
- Attended a meeting at Vikas Soudha, GOK, at 11 AM to discuss procurement of minor millets in the state of Karnataka and its inclusion in the PDS programme for enhancing its consumption under Chairmanship of the Secretary, Food, Civil supplies, Consumer affairs and Legal metrology Department, GOK.
- Visited KVK Udupi on October 26, 2024 and participated in the Krishi Mela 2024 at ZARS, Bramhavara as guest of Honor.
- Visited KVK Kottayam on September 18-20, 2024 and viewed the NICRA activities besides field visits and interaction with BSFc students of
- Visited KVK Lakshadweep from November 18-20, 2024 and participated in the Stakeholder meeting of CPCRI-CDB workshop, Coco fest 2024 and reviewed the NICRA action plan for the 2024-25.
- Participated in the Interaction meeting of NGO KVKs committee at ATARI, Pune during November 10–12, 2024 under the Chairmanship of Dr P Das, Former DDG (AE)

Dr. B. T. Rayudu

- Attended online interaction meeting with ICAR Scientists by DG, ICAR on January 05, 2024.
- Attended online meeting on Parliamentary Committee for Estimates conducted by Division of Agricultural Extension, ICAR on January 16, 2024.

- Attended online meeting on KVK National Conference and Golden Jubilee Celebrations conducted by Division of Agricultural Extension, ICAR on January 22, 2024.
- Attended in virtual meeting on Social Sciences and Policy in Agriculture conducted by NASF on February 02, 2024.
- Attended online meeting on Bank Account opening at KVK level for CFLDs on pulses and oilseeds conducted by Division of Agricultural Extension, ICAR on February 08, 2024.
- Participated in SAC meeting of KVK Chikkamagalur held on February 09, 2024.
- Participated in SAC meeting of KVK Shivamogga held on February 10, 2024.
- Participated in SAC meeting of KVK Raichur held on March 04, 2024.
- Participated in SAC meeting of KVK Yadgir held on March 05, 2024.
- Attended online meeting on revision of project proposal on CFLDs conducted by Division of Agricultural Extension, ICAR on March 08, 2024.
- Participated in the Discussion cum Demonstration Meeting on Sugarcane Jaggery under SCSP organized by KVK Ernakulam on March 11, 2024.
- Participated in SAC meeting of KVK Idukki held on March 12, 2024.
- Attended online meeting on Agri-start up: ICAR-KVK Support organized by Division of Agricultural Extension, ICAR on March 26, 2024.
- Attended online meeting on Seed Replacement Rate through Seed Hubs and KVK Golden Jubilee activities organized by Division of Agricultural Extension, ICAR on April 01, 2024.
- Attended online meeting on Comprehensive guidelines for the foreign visits of the Scientists/Officers of ICAR organized by ICAR-DARE on April 03, 2024.
- Participated in SAC meeting of KVK Belagavi-II held on April 05, 2024.
- Attended online meeting by Division of Agricultural Extension, to review Golden Jubilee Activities held on April 10, 2024.
- Attended online meeting on NARI for promoting nutritional security through agriculture and Viksit Bharat Yatra organized by Division of Agricultural Extension, ICAR on April 15, 2024.
- Attended online interaction meeting on ARMS 2.0 organized by ICAR-IASRI, New Delhi on April 24, 2024.
- Attended online meeting on Model Oilseed Villages Project organized by ICAR-ATARI, Jabalpur on May 06, 2024.
- Attended online Interface Meeting on CFLDs and Krishi Mapper App organized jointly by Division of Agricultural Extension (ICAR) and DA & FW, GOI on May 15, 2024.
- Participated in Annual Review & Annual Action Plan workshop organized by ICAR-ATARI, Bengaluru at Kerala Agricultural University, Thrissur for KVKs of Kerala & Lakshadweep during May 13-15, 2024.
- Attended online review meeting of ICAR Institutes organized by ICAR-DARE on June 13, 2024.
- Attended online meeting on Hon'ble PM Program for 17th instalment release of PM

Kisan organized by Division of Agricultural Extension, ICAR on June 14, 2024.

- Attended online meeting for the preparations for Hon'ble PM Program for 17th instalment release of PM Kisan organized by Division of Agricultural Extension, ICAR on June 14, 2024.
- Attended online review meeting on preparations for the Hon'ble PM Program for 17th instalment release of PM Kisan organized by ICAR-DARE on June 18, 2024.
- Attended PM Kisan Samman Nidhi program held at KVK, Kottayam on June 18, 2024.
- Attended online meeting on preparation and execution of activities under Model Villages on pulses and oilseeds organized by Division of Agricultural Extension, ICAR on June 21, 2024.
- Attended online meeting on 100 days action plan and 5 years target organized by ICAR-DARE on July 01, 2024.
- Attended online meeting on developing action plan for 100 days and 5 year targets organized by Division of Agricultural Extension, ICAR on July 03, 2024.
- Attended online meeting on progress of 100 days program organized by Division of Agricultural Extension, ICAR on July 15, 2024
- Attended online ICAR's Foundation Day Ceremony held on July 16, 2024.
- Attended Committee Meeting on formulating guidelines for operationalization of Kisan Samriddhi and Kisan Cart held at ICAR-ATARI, Bengaluru on July 22, 2024.
- Attended Committee Meeting on review and finalization of guidelines for operationalization of Kisan Samriddhi and Kisan Cart held at ICAR-ATARI, Bengaluru during July 30-31, 2024.
- Attended online meeting on submission of AUCs of different projects and Visit of ICAR Scientist Team to KVKs organized by Division of Agricultural Extension, ICAR on August 01, 2024
- Attended online meeting on fund flow mechanism for different projects from DA & FW, GOI organized by DA & FW, GOI and Division of Agricultural Extension, ICAR on August 06, 2024.
- Attended online meeting on enhancing the effectiveness of 100 days programme: impactful reporting organized by Division of Agricultural Extension, ICAR on August 13, 2024
- Attended Committee Meeting on progress of Kisan Samriddhi online portal held at ICAR-ATARI, Bengaluru during August 13-14, 2024.
- Attended online meeting on increasing job opportunities for students through vocational and higher agricultural education organized by ICAR-DARE on August 17, 2024.
- Attended online meeting on mainstreaming database for skilling youth under 100 days action plan organized by Division of Agricultural Extension, ICAR on August 23, 2024
- Attended online meeting on stakeholders' consultation on transforming agriculture research-enhancing role of private sector organized by ICAR-DARE on September 03, 2024.
- Attended online meeting on fund related to CFLDs on pulses and oilseeds conducted by Division of Agricultural Extension, ICAR on September 09, 2024.

- Attended online meeting on EFC and visibility of KVKs conducted by Division of Agricultural Extension, ICAR on September 10, 2024.
- Attended online discussion meeting on arrangements of brainstorming session on NGO KVKs scheduled at ICAR-ATARI, Pune conducted by Division of Agricultural Extension, ICAR on September 11, 2024.
- Attended online meeting on various issues related to ATRIs and KVKs conducted by Division of Agricultural Extension, ICAR on October 03, 2024.
- Attended online meeting on inter-institutional research projects conducted by ICAR-NIANP, Bengaluru on October 04, 2024.
- Attended online meeting on issues of KVKs related to implementation of CFLDs conducted by Division of Agricultural Extension, ICAR on October 08, 2024.
- Attended online meeting on PFMS issues related to CFLDs conducted by Division of Agricultural Extension, ICAR on October 15, 2024.
- Attended online meeting on issues of PFMS at KVK level and their solution conducted by DA & FW, GOI and Division of Agricultural Extension, ICAR on October 18, 2024.
- Participated in inaugural session of Certificate Course on Integrated Nutrient Management for fertilizers dealers held at ICAR-KVK, Shivamogga on November 05, 2024.
- Attended online meeting on farmers feedback on fertilizers conducted by Division of Agricultural Extension, ICAR on November 06, 2024.
- Participated in the Stakeholder meeting of CPCRI-CDB workshop held on November 19, 2024.
- Participated in Coco fest 2024 Exhibition as well as Technical Sessions organised by KVK, Lakshadweep during November 19-20, 2024.
- Participated in virtual-cum-physical meeting on review of Kisan Samriddhi online portal held at ICAR-ATARI, Bengaluru on December 09, 2024.
- Attended Interaction meeting of NGO KVKs committee at ICAR-ATARI, Pune held during November December 10, 2024.
- Attended online meeting on discussion about on-boarding of all employees of ICAR institutes/HQs on i-GOT Karmayogi platform conducted by Division of Education, ICAR on December 12, 2024.
- Participated online meeting on Natural Farming organized by Natural Farming Cell, INM Division, DA&FW, GOI, New Delhi on December 13, 2024.
- Participated in SAC meeting of KVK Raichur held on December 18, 2024.
- Participated in SAC meeting of KVK Koppal held on December 19, 2024.
- Participated in SAC meeting of KVK Yadgir held on December 20, 2024.
- Participated in IRC Meeting of ICAR-ATARI, Bengaluru held on December 27, 2025.

Dr. Thimmappa K

- Participated in the online Review Meeting of SMDs (Extension and Animal Science Divisions) chaired by DG, ICAR on April 05, 2024.

- Participated in the meeting organized on April 10, 2024 by SMD to review Golden Jubilee Activities and presentation on SMD review.
- Organized a meeting with KVKs of the Zone XI on April 10, 2024 to guide KVKs regarding Front Line Demonstration implementation during 2024-25.
- Participated in the selection of Senior Research Fellow and Data Entry Operator on April 22, 2024 under Cluster Front Line Demonstration Scheme as Selection Committee Member.
- Participated in the ARMS 2.0 interaction meeting on April 24, 2024 organized by ICAR-IASRI, New Delhi.
- Participated in the meeting on May 03, 2024 organized by ICAR-ATARI, Bengaluru regarding BE and AUC submission issues of Karnataka KVKs.
- Organized, coordinated and participated in Annual Review & Annual Action workshop organized by ICAR-ATARI, Bengaluru at Kerala Agricultural University, Thrissur for Kerala & Lakshadweep KVKs during May 13-15, 2024.
- Participated in the Kissan Samman Program on June 18, 2024 organized by KVK Kottayam.
- Participated in the online meeting on June 28, 2024 and July 01, 2024 to discuss one year and five years plan of different Divisions organized by DG, ICAR, New Delhi.
- Participated in the online meeting on July 03, 2024 to discuss one year and five years plan of different Divisions organized by DDG, ICAR, New Delhi.
- Participated in the RAC meeting of National Network Project on July 24, 2024 held at ICAR-ATARI, Hyderabad.
- Participated in the meeting under the Chairmanship of the Joint Secretary (NRM), DA&FW on August 28, 2024 regarding organization of plantation event on August 28, 2024 as the part of global campaign 'Ek Ped Maa Ke Naam'.
- Participated through virtual mode in the KVKs Zonal Workshop-2024 of ICAR-ATARI, Zone XI, Bengaluru held during September 03, 2024 at ICAR-IISR, Kozhikode.
- Participated in the DDG (AE) meeting through virtual mode on September 10, 2024 regarding discussion of EFC and visibility of KVKs.
- Participated in the CPGRAM Online meeting regarding review of the pending grievances at ICAR Institutes on September 24, 2024 organized by Institute Administration Division, ICAR, New Delhi.
- Participated in HRD meeting on iGOT Karmayogi portal on September 26, 2024 organized by HRM Division, ICAR, New Delhi.
- Participated in the Webinar on API SETU: Enabling Seamless Digital Integration" on November 12, 2024 organized by Ministry of Electronics and Information Technology (MeitY).
- Participated in the IRC Meeting held at ICAR-ATARI, Hyderabad through online mode during November 19-20, 2025.
- Participated in a round table meeting on farmer perspective and capacity building on November 22, 2024 organized by GIZ, New Delhi.
- Participated in the Workshop on Accelerating AgriPV Innovations held on November 27, 2024 organized by GIZ India.
- Participated in the Meeting regarding iGOT held on December 12, 2024 by Agricultural Education Division, ICAR, New Delhi.

- Participated in the meeting regarding Natural Farming on December 13, 2024 organized by Natural Farming Cell INM Division D/o Agriculture & Farmers' Welfare, Government of India, Krishi Bhawan, New Delhi.
- Participated in the lecture on Best Practices for Project Formulation delivered by Director General, ICAR, New Delhi on December 16, 2024.
- Participated in the conference on "Sustainable Agriculture & Food Processing Summit & Expo 2025" held during January 17-18, 2025 at Kerala Agricultural University, Thrissur.
- Participated in the Scientific Advisory Committee meeting of KVK Gadag held on January 09, 2025 at KVK Gadag.
- Organized, coordinated and participated in Annual Review & Annual Action meeting organized by ICAR-ATARI, Bengaluru at Kerala Agricultural University, Thrissur for Kerala & Lakshadweep KVKs during February 18-20, 2025.
- Participated in the Scientific Advisory Committee meeting held on February 25, 2025 at KVK Chamarajanagara.
- Participated in the Scientific Advisory Committee meeting of KVK, Uttara Kannada held on February 7, 2025 at KVK, Uttara Kannada.
- Participated in the Scientific Advisory Committee meeting of KVK, Palakkad held on February 13, 2025 at KVK, Palakkad.
- Participated in the Scientific Advisory Committee meeting of KVK, Malappuram held on February 14, 2025 at KVK, Malappuram.
- Participated in the *Kisan Samman Samaroh* program organized by KVK Mandya held on February 24, 2025 at KVK Mandya.
- Coordinated the participation of KVKs in the exhibition and mobilizing farmers for ICAR-IIHR, National Horticulture Mela-2025 held on March 5-6, 2025.
- Participated in the "Orientation Workshop on Mission Karmayogi" held on February 27, 2025 at A.P. Shinde Symposium Hall, Pusa, New Delhi.

Dr. D. V. Kolekar

- Participated in a National Seminar on Agricultural Education and Research Empowerment for Climate Resilient Production Systems to Enhance Bio-economy during January 03-05, 2024 which was organized by University of Agricultural Sciences, Dharwad in collaboration with Indian Council of Agricultural Research, New Delhi.
- Associated in organization of International Conference on Reviving Ancient Grains: Millets on the Global Stage 2023 during February 8-9, 2024 at KVK Kolar. Krishi Vigyan Kendra, Kolar, Sri Devaraj Urs Academy of Higher Education and Research, Kolar, College of Horticulture, Kolar and ICAR-Agricultural Technology Application Research Institute, Bengaluru jointly organized it. Coordinated the exhibition by 10 KVKs of Karnataka during conference.
- Participated in a National Conference on Nurturing Agricultural Advancement and Sustainability 2024 during February 10-11, 2024 which was organized by Society of Agriculture Research and Social Development, New Delhi and Sampoorna International Institute of Agri. Science & Horticultural Technology, Maddur in association with the University of Mysore, Mysuru.
- Participated in a World Veterinary Poultry Association (India) Conference 2024 on 'Avian Health: Challenges and Opportunities' orga-

nized at the ICAR-NIANP, Bengaluru during February 15-16, 2024.

- Attended three day online collaborative training program of MANAGE, Hyderabad and ICAR-Central Institute for Research on Cattle, Meerut on 'Optimising Dairy Cattle Production Under Changing Climate' during March 18-20, 2024.
- Coordinated the participation of scientists from KVKs of Karnataka and Kerala in an interactive meeting on "Leveraging together: Animal feed Industry and Researchers towards doubling farmers income" on March 22, 2024 and participated.
- Participated in the SAC meeting of the KVK Kolar on January 24, 2024
- Participated in the SAC meeting of the KVK Tumakuru-I on January 31, 2024.
- Participated in the SAC meeting of the KVK Bidar on March 12, 2024.
- Participated in the SAC meeting of the KVK Mandya on March 13, 2024.
- Associated in organization and coordination of action plan cum review meeting of KVKs under jurisdiction of Directorate of Extension of UAS Dharwad, UAS Raichur, and UHS Bagalkot at UAS Raichur during April 15 - 17, 2024.
- Associated in organization and coordination of an Inter Zonal Workshop for operationalization of 'Kisan Samriddhi' an Online Marketing Platform on July 20, 2024 at KVK Kolhapur-II. ICAR-ATARI, Bengaluru, ICAR-ATARI, Pune & ICAR-Shri Siddhagiri Krishi Vigyan Kendra, Kolhapur jointly organized this workshop.
- Virtually participated in ICAR's 95th Foundation Day Ceremony-2023 on July 16, 2024.
- Participated in a Regional Consultation on Science of Natural Farming on May 16, 2024 at YASHADA Pune.
- Attended meeting on Fisheries Extension under Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY) on October 25, 2025.
- Attended meeting on creating awareness on the new sub-scheme- Pradhan Mantri Matsya Kisan Samridhi Sah Yojana (PM-MKSSY) under PMMSY on August 12, 2024.
- Participated in the National Workshop on "How to Write a Research Paper" jointly organized by Training and Education Centre, ICAR-Indian Veterinary Research Institute, Pune and the Indian Society for Veterinary Surgery (ISVS) held on October 18, 2024, via virtual mode.
- Completed Karmayogi training on Cybersecurity provided by UpGrad on October 21, 2024.
- Completed Karmayogi training on Swashta Jesvan Kaise Jiye provided by Sashastra Seema Bal on October 21, 2024.
- Completed Karmayogi training on Viksit Bharat 2047 provided by Karmayogi Bharat on October 21, 2024.
- Completed Karmayogi training on Yoga Break at Workplaces provided by MDNIY on October 21, 2024.
- Participated in the Online Collaborative Training Program by MANAGE and ICAR-Indian Veterinary Research Institute (IVRI) on Innovations in Digital Extension during September 23 - 27, 2024.
- Completed International Agriculture Certificate Course-Cum-Training Program on Prime Minister &Ministry of Agriculture & Farmers' Welfare Sponsored Agriculture

Scheme & Indian Agriculture Vision- 2050 during April 1-30, 2024 jointly organized by Gujarat Natural Farming Science University, Anand, Gujarat; GBPUAT, Pantnagar; Bihar Animal Sciences University, Patna; ICAR Indian Institute of Rice Research, Hyderabad; ICAR-Indian Institute of Millets Research, Hyderabad; ICAR- Central Institute for Research on Goats, Mathura; ICAR- Indian Institute of Maize Research, Punjab; ICAR-Indian Institute of Wheat and Barley Research, Karnal; D. Y. Patil Agriculture and Technical University, Talsande & Hindustan Agricultural Research Welfare Society.

- Completed the training programme on "Developing Core Competence for Strengthening the Veterinary Extension Services" organized by Training and Education Centre, ICAR-Indian Veterinary Research Institute, Pune during May 01 – 03, 2024.

Chapter - 7

Feedback

Farmers feedback on performance of technologies are presented in this chapter.

7.1 Feedback

Krishi Vigyan Kendras assessed crop technologies in farmer's field by considering various traits like yield, profitability, product quality, consumer preferences, disease resistance, crop duration, intercropping suitability and climate adaptation. The farmer's feedback on performance of crop varieties (Table 7.1), agronomic practices (Table 7.2), pest and disease management (Table 7.3), farm machineries (Table 7.4), and livestock and fisheries technologies (Table 7.5) are given below.

Table 7.1: Feedback on performance of crop varieties

Crop	Feedback
Paddy	GNV-1109 is a short duration and high yielding variety, resistant to blast, high recovery of puffed and flaked rice. RNR-15048 is high yielding and short duration variety suited for Direct Seeded Rice, good quality of rice with low glycemic index. Sahyadri Kempumukthi is high yielding variety and tolerant to blast and BPH. Gandhasale is resistant to the blast and having good fragrance. Goa dhan-4 is highly suitable for salt affected situations during Kharif season and suitable for late sowing in Kharif season. Sahyadri Megha is high yielding variety suitable for late sowing and good market acceptability. SahydriPanchamukhi is medium duration variety and resistance to blast. Pournami performs well in lowland conditions during the second crop season.
Finger millet	Ml-365 is drought tolerant and medium duration variety with good fodder quality. It is suitable for late sowing in kharif and summer, good fodder quality. KMR 630 is a short duration variety suited for late sowing. KMR-316 is a short duration variety and suited for late sowing and resistance to blast disease.
Ridge Gourd	Arka Prasan variety has medium fruit length, tender fruits with light green colour, recorded higher yield and has consumer preference in the market. COH-1 is high yielding variety with high market demand and resistance to fruit fly.
Bengalgram	JG-11 is recorded higher yield and resistant to wilt. NBeG-47 is drought tolerant and medium duration variety suited for the mechanical harvesting.
Blackgram	LBG 791 is resistant to yellow mosaic disease.
Cassava	Sree Swarna is susceptible to cassava mosaic disease.Sree Reksha and Sree Suvarna were fully resistant to CMD and Sree Rekshais also tolerant to post harvest physiological deterioration.
Castor	ICH-66 is a higher yielding variety and tolerant to botrytis and semilooper incidence.

Chilli	Arka Yashasvi is resistant to chilli CV and fruits are thick, long and light green in colour and fetches less price.Arka Tanvi is resistant to chilli CV and fruits are thick, long and dark green in colour and more consumer acceptability.Rudra is a high yielding variety and tolerant to pest and disease incidence. Arka Gagan is a high yielding variety with good consumer acceptability, fruits are high pungent. Arka Nihira has got high pungency with good market price, whereas CO-1 hybrid has got market acceptability. Arka Tejasvi has good market acceptability and tolerant to leaf curl disease.
Elephant Foot Yam	Gajendra is high yielding variety with less acrid taste.
Field bean	HA - 5 is a short duration variety with higher number of secondary branches with higher number of pods and good aroma.
Foxtail millet	HN-46 is a high yielding variety, tolerant to moisture stress, recorded long ear head and higher number of tillers with synchronized maturity.
French bean	Arka Sharat recorded higher yield, uniformly green, slender and attractive fruits.
Garden peas	Among the peas varieties assessed Kashi Ageti is short duration variety with good yield and fetched good price in the market.
Garlic	DWD-G1 is recorded higher yield and it is short duration variety.
Groundnut	Dh-256 is high yielding variety and tolerant to foliar diseases. GPBD-4 is high yielding and early maturing variety and resistant to powdery mildew, rust and late leaf spot. DGGV-2 is high yielding variety with taller canopy suitable for mechanical harvesting.
Maize	RCRMH 2 is heat tolerant variety with good quality fodder and less disease incidence.
Marigold	Arka Abhi is high yielding variety withgood consumer acceptability, better vase life, early flowering and tolerates water stress.
Okra	Arka Nikita is early yielding hybrid with good consumer acceptability and more number of pickings compared to other hybrids. CO-4 is a high yielding variety with good market preference and resistant to yellow mosaic disease. Anjitha is high yielding variety with good market preference. Phule Vimuktha is resistant to yellow mosaic disease, recorded higher yield with bigger fruits and good shelf life.
Onion	Bhima Shweta performed better compared to local variety with uniform bulb size. Bhima Red has big bulb size with red skin colour and has good market demand. Bheema Super have big bulb size with pink skin colour.

Pigeon Pea	TS-3R is a medium duration variety, best suited for intercropping in maize and resistant to wilt. GRG-152 recorded higher yield compared to other varieties and resistant to mid early wilt disease. BRG-5 is resistant to fusarium wilt and pigeon pea sterility mosaic virus disease.
Safflower	PBNS - 12 is suitable for mechanical harvest due to more plant height.
Sorghum	Phule Mudhu is high yielding variety with higher demand in market.
Soybean	Dsb-34, KDS-726, are resistant to rust and RVS-24 is resistant to Yellow Mosaic Virus and rust, it recorded higher yield compare to local varieties.
Turmeric	IISR Prathibha is a high yielding variety and tolerant to rhizome rot.
Wheat	UAS - 304 is dwarf variety recorded larger ear head diameter compared to DWR -162 and tolerant to rust.
Yard Long Bean	Arka Mangala is high yielding variety with lengthy, shiny, high-quality pods (light green) and resistant to diseases.

Table 7.2: Feedback on performance of agronomic practices

Agronomic Practices	Feedback
Groundnut + Pigeon pea (3:1)	Recorded higher yield and income compared to mono cropping of groundnut.
Bed method in cultivation in turmeric.	This method helps in performing interculture operations, intercropping, enhance rhizome & finger penetration, helps to drain out the excess water during rainy season.
Cabbage + Sugarcane intercropping	Cabbage + Sugarcane intercropping helps to get additional income from cabbage and remained plants residue is great manure for main crop during its grand growth stage (3 to 5-month stage).
Vegetable special as all-in-one micro nutrient solution.	Foliar spray of Vegetable special helps to quick absorption of micro nutrient and supplies adequate required micronutrient which helps to increase the yield. It also reduces cost of production.
Seed treatment with Azospirillum	It helps in better germination and reduce the application of zinc, borax and other nutrients and helped to improve yield parameters and crop yield.
Use of Mango special in Mango	It helps toreduce the flower and fruit drop. It iscost effective than the soil application of micronutrients.
Use of Pulse magic in pulses	Spray of pulse magic in pulses has reduced the flower drop and enhanced the fruit set.

Plastic mulching in black pepper	Mulching reduces wilt incidence.
Maize + Pigeon pea (8:1)	Intercropping system (8:1) is suited for rainfed farmers, spacing of 60 cm x 30 cm will give higher yield than closer row spacing.
Seed treatment with Bio fertilizers: Azosprillium, Rhizobium and PSB in Maize, Paddy, Foxtail millet and Finger millet	Seed treatment with bio fertilizers had reduced the usage of inorganic fertilizers (urea) and helps to increase seed vigour and reduce diseases.
Green manuring	Use of in-situ green manuring crops in paddy enhances the soil fertility and also reduces the weed intensity, meanwhile crustation of soil is resolved.
Adoption of border crop and trap crops	Maize as border crop and Marigold as trap crop resulted in less incidence of sucking pest and fruit borer respectivelyin Byadagi Chilli.
Arka Vegetable Special	Application of Arka Vegetable Special resulted in better crop growth without much micronutrient deficiency in Red Onion and Red Chilli
Broad bed furrow cultivation	Helps to conserve moisture during drought period.
Raised bed technology	Helps during excess rainfall and dry spell.
Nipping in Pigeon pea	This method recorded higher yield with quality produce.
Foliar nutrition spray in Cotton	Foliar nutrition spray reduces leaf reddening and helped to increase the yields.
Aerial spray of Nano urea using UAV in paddy	Easy to apply and reduce cost of cultivation which resulted in increased income.
Trash mulching in sugarcane	Weeding cost decreased.

Table 7.3: Feedback on control of pest and disease management technologies

Pest and disease management	Feedback
IPDM in Groundnut	Use of *Trichoderma* as soil application reduced the stem rot disease and necrosis disease in groundnut.
Management of pink bollworm	SPLAT technology, refugee crop and installation of pheromone traps effectively managed pink boll wormin Bt.Cotton

Management of white grub in Sugarcane	Application of *Metarhizium* and combo trap helped in reduction of white grub infestation.
Management of Panama wilt in Banana through	Application of *Trichoderma, Pseudomonas* and *Paecilomyces* helps to reduce disease.
Management of leaf minor in tomato	Use of pheromone traps in tomato reduced fruit damage.
Management of wilt incidence in black pepper	Use of bio agent Arka Microbial Consortium reduced wilt incidence to 8%.
Management of leaf spot in arecanut	Foliar application of *propiconazole* @ 1 ml per liter of water and Propineb @ 2 gram per liter of water helps in controlling the leaf spot disease as well as inflorescences die back and also helps in better yield.
Management of ear head bug in paddy	Application of *imidacloprid + lambda cyhalothrin* @ 0.6 ml per litre of water helps in reducing ear head bug population and obtained good quality crop.
Management of spindle bug in arecanut	Spot application of *Thiamethoxam* @ 2 gram per plant helps in reducing spindle bug infestation and better growth of the plant.
Seed treatment	Seed treatment of *Trichoderma viride* and *Imidacloprid* in Byadagi Chilli helped to reduce seedling rot and incidence of sucking pests at early vegetative growth stage.
Management of fruit fly and wilt	Use of pheromone traps and prophylactic application of pesticides at specific time reduced the incidence of fruit fly and decreased wilt incidence in Guava.
Eco friendly management of fusarium wilt in banana using	ICAR FUSICONT (Bio fungicide) helps to reduce the incidence of fusarium wilt in banana, but the ICAR FUSICONT is not available in rural areas

Table 7.4: Feedback on performance of farm machinery technologies

Farm Machinery Technology	Feedback
Battery operated Onion de-topper	Use of battery-operated onion de-topper reduced drudgery of operation involved in manual detopping of onions and saved time.
Improved turmeric boiler	Time and labour efficient and reduced labour cost.
Mechanical harvester	Use of mechanical harvesting of Bengalgram reduced labour cost and time.
Seed drill for sowing onion	Easy sowing and labour management.
Use of slasher	It helps in controlling weeds in Arecanutplantation, since it cut the weeds on the above surface of the ground, which helps as mulching as well as moisture retention in Arecanut plantation.

Mechanized paddy transplanter	It is suited for area where there is a labour problem for transplanting paddy. Its saves time andlabour cost.
Seed cum fertilizer drill (DSR)	Use of seed cum fertilizer drill has saved the time and seeds along with fertilizer. Maintains recommended spacing and plant population.
Tractor operated compartmental bund former	Tractor operated compartmental bund former helps in conservation of soil moisture for getting higher yield.
Coconut palm climbing through machine	Coconut palm climbing machine helps the farmers forclimbing the coconut palm with easy and safely, earning monthly income from this machine.
Portable multipurpose dryer	It is portable, fast and uniform heating andsaves energy.
Drone technology	Use of drone in spraying nutrients covered larger area in a short period and reduced labour requirement.
Paddy power weeders	Power weeders reduce labour costs and enhances number of tillers.

Table 7.5: Feedback on performance of livestock and fisheries technologies

Livestock/fisheries technologies	Feedback
Fodder crops	Fodder crops increase in milk yield up to 20% by feeding fodder grown. COFS-31 will yield more quality fodder, than cowpea and Hedge Lucerne.
Mineral mixture in semi stall fed sheep	Mineral mixture helps to improve in feed consumption and helps to increase growth.
Silage drums for silage production for stall fed goat units.	Good and easy method for off season feeding, high fodder feed intake and increases body weight.
Deworming	Deworming technology is useful in avoiding nutritional deficiencies in livestock and helpful in better feed conversion efficiency.
Use of Probeads-EC	Use of probead-EC has decreased the chick mortality by 72% and more economical than feeding plain probiotic.
Management of anestrous by PRID protocol in dairy animals	Useful to induce estrus induction irrespective of estrus cycle. Skilled person required.
Azolla as dietary supplement for backyard poultry birds	Feeding of fresh Azolla increased body weight of birds and increased number of eggs.

Management of MMA (Metritis Mastitis Agalactia) disease in Sows during Post partum stage	MMA disease drastically reduced due to increased Litter size and increased body weight gain.
Integrated reproduction management for anestrous in cattle	Hormonal therapy was found to be beneficial for increasing the conception rate in the cattle.
Tilapia Fish	Tilapia fishes are suitable for small ponds, vigorous growth, early harvesting (6 months) and good market preferences.
Management of mastitis	Dry cow therapy is useful to cure mastitis.
Management of ticks	Vitex negundo and Neem leaves are used to control ticks.
Control of flies in dairy cattle shed	Kairomone trap for control of flies in dairy cattle shed have good effect for trapping the flies and mosquitoes and also reduces the incidence of skin diseases.
Effective microorganism (EM) composting method	Farmers currently practicing EM composting method for powdering of Goat manure. This method reducing the degradation time of goat manure from 6 months to 30 days
Integrated Fish-Duck farming for utilization of homestead pond	Integrated Fish-Duck farming was found very effective to improve growth rate as well as weight of birds.

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