Annual Report 2020

ICAR - Agricultural Technology Application Research Institute Kolkata
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ICAR - Agricultural Technology Application Research Institute Kolkata- Zone V
Indian Council of Agricultural Research
Salt Lake, Kolkata- 700 097

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PREFACE

I am delighted to present the Annual Report 2020 of ICAR- Agricultural Technology Application Research Institute, Kolkata depicting the various activities through the year 2020. This report highlights achievement of set target of 59 KVKs spread across the Union Territory of Andaman & Nicobar Islands and the states of Odisha and West Bengal run under the administrative control of State Agricultural Universities, Non Government Organizations, Central Universities, Deemed to be Universities, Indian Council of Agricultural Research Institutes and State Departments. It also depicts the efficacy of technical guidance provided at ATARI level, guidance, instruction and technological backstopping rendered by Directorates of Extension of Education of SAUs as per its jurisdiction. The host organizations of ICAR-ATARI Kolkata facilitate in creating adequate infrastructure, staff recruitment and an amicable situation to enable the KVKs to perform to its paramount in improving agricultural situation of the farming community of this zone.

Annual Report 2020 of ICAR-ATARI Kolkata comprises of all the relevant areas of KVK functioning including the detailed account of mandated activities like training, on-farm trial, frontline demonstration, extension activities, soil testing, seed and planting production, livestock and fish fingerling production and others. The widespread KVKs activities described in this reports help us to understand the dissemination of technologies to the farmers/ farm communities.

A number of flagship programmes were initiated by Department of Agriculture Cooperation & Farmers Welfare and ICAR, New Delhi, the KVKs under direct supervision of ICAR-ATARI Kolkata are dealing various farming, non farming, climate, entrepreneurship, Swachh Bharat Abhiyan, tribal development and many more related areas which have been adequately depicted in this Annual Report with specific information and quality photographs to provide the desired clarity. Similarly, in this compilation a considerable importance is given to the contribution of Directorates of Extension Education of SAUs in managing the KVK functioning, ensuring technological backstopping, developing human resources and performance of ATICs.

Events like Swachhta Hi Sewa, Celebration of Vigilance Week and International Yoga Day etc. organized at ICAR-ATARI Kolkata and their pertinent information is provided in this report with special emphasis on digitalization. Number of e-books were published covering the activities during Covid -19 for benefit of the framers. Introduction of TSA system for direct fund transfer to KVKs through RBI has been introduced . Regular uploading of data in various portals and other relevant information have been recorded in the Annual Report 2020.

As a Director ICAR-ATARI Kolkata, I convey my sincere thanks for guidance and constant support received from Indian Council of Agricultural Research, New Delhi and all the scientists, technical, administrative and other staff of our ATARI Kolkata family, farmers, all Host Organizations, Directors of Extension, entire KVK faternity of this zone are acknowledged for their untiring cooperation, coordination, compilation of information and finally bringing out of this document in stipulated time.

Director

कार्यकारी सारांश

कृषि विस्तार प्रभाग, ग्यारह कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थानों की सहायता से सभी राज्यों को कवर करते हुए XI अंचलों में स्थित 720 कृषि विज्ञान केन्द्रों (केवीके) की निगरानी करता है। कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान (अटारी) इन राज्यों में स्थित विभिन्न संस्थानों के साथ निरंतर चर्चा और समन्वय करके किसान विकास केन्द्रों के सामाजिक, आर्थिक और संबंधित पहलुओं को समझने में मदद करते हैं। अटारी उनकी आकांक्षाओं के अनुरूप कार्य योजना तैयार करने में मदद करता है और यह सुनिश्चित करता है कि कृषि विज्ञान केंद्र के सभी प्रयास कृषक समुदाय की आजीविका की बेहतरी की दिशा में हैं। सभी ग्रामीण जिलों में संचालित 33 केवीके केन्द्रों के साथ ओडिशा राज्य 2017-18 से बिहार और झारखंड के स्थान पर भा.कृ.अ.प.-अटारी, कोलकाता (जोन-V) के अधिकार क्षेत्र में आ गया है। तदनुसार, 2019 के दौरान अंडमान और निकोबार द्वीप समूह, ओडिशा और पश्चिम बंगाल के सभी 59 केवीके केन्द्रों की निगरानी, मूल्यांकन और मार्गदर्शन की जिम्मेदारी भा.कृ.अ.प.-अटारी, कोलकाता के पास है।

अटारी मुख्य रूप से कृषि विस्तार अनुसंधान और ज्ञान प्रबंधन को मजबूत करने के साथ-साथ प्रौद्योगिकी अनुप्रयोग और फ्रंटलाइन विस्तार शिक्षा कार्यक्रम के समन्वय और निगरानी पर ध्यान केंद्रित करता है। दूसरी ओर कृषि विज्ञान केंद्र (केवीके) अपने व्यापक अनुप्रयोग और क्षमता निर्माण को बढ़ाने के लिए प्रौद्योगिकी मूल्यांकन और प्रदर्शन पर ध्यान केंद्रित करता है। 2017-20 के दौरान केवीके के लिए मूल अधिदेश 'अनुप्रयोग और क्षमता विकास के लिए प्रौद्योगिकी मूल्यांकन एवं विकास' रहा है। अब केवीके के लिए नया अधिदेश 'एकल खिड़की ज्ञान, संसाधन और क्षमता विकास केंद्र के रूप में कार्य' रहेगा। अधिदेश को प्राप्त करने के लिए केवीके ने छोटे और मध्यम किसानों, ग्रामीण युवाओं और अन्य हितधारकों की आकांक्षाओं को पूरा करने के लिए गतिविधियों को कई गुना बढ़ा दिया है। कृषि विज्ञान केंद्रों (केवीके) की किसानों के दरवाजे पर सूचना और प्रौद्योगिकी सहायता देने की क्षमता ने उन्हें जमीनी स्तर पर अनुसंधान और विस्तार के बीच एक महत्वपूर्ण कड़ी बना दिया है।

वर्ष 2020 के दौरान, जोन-V के केवीके ने प्रशिक्षण, ऑन-फार्म ट्रायल, फ्रंटलाइन प्रदर्शन आदि क्षेत्रों में लगभग सभी अनिवार्य गतिविधियों के लक्ष्यों को हासिल किया है। केवीके ने संपूर्ण जोन में 3538 विभिन्न स्थानों पर किए गए 428 ऑन-फार्म परीक्षणों के माध्यम से फसल प्रबंधन, पशुधन प्रबंधन, मतस्य कृषि, कीट प्रबंधन, अतिश्रम में कमी, भंडारण तकनीक आदि से संबंधित प्रौद्योगिकियों का आकलन किया किया। सफल प्रौद्योगिकियों को प्रौद्योगिकी कैप्सूल के रूप में राज्य विस्तार प्रणाली की मुख्यधारा में लाने से पहले खेतों में कृषि प्रदर्शन के तहत पुनः परीक्षण किया गया। विकसित की गयी प्रौद्योगिकी में जोन की व्यापक कृषि-पारिस्थितिकी स्थिति के अनुरूप आवश्यक सुधार/संशोधन हेतु अनुसंधान प्रणाली को फीडबैक/प्रतिक्रिया भी प्रदान की जाती है।

केवीके ने नई जारी किस्मों के प्रदर्शन के लिए दलहन, तिलहन और अन्य फसलों में फ्रंटलाइन प्रदर्शन आयोजित किए और प्रमुख दलहन तथा तिलहन फसलों की उत्पादकता बढ़ाने एवं फसलों में बीज प्रतिस्थापन में सुधार के लिए प्रथाओं की उत्पादन क्षमता स्थापित की। कृषि विज्ञान केंद्रों (केवीके) ने 10056 किसानों की भागीदारी के साथ 1634.02 हेक्टेयर में इस तरह के प्रदर्शन कार्यक्रम किए। किसानों के खेत में दर्ज प्रदर्शन से उपज और लाभ-लागत अनुपात के मामले में स्थानीय किस्मों की तुलना में नई किस्मों की श्रेष्ठता का संकेत मिले। प्रदर्शन कार्यक्रमों में विस्तार कार्यकर्ताओं की भागीदारी ने कृषक समुदाय के लाभ के लिए इसके बड़े पैमाने पर प्रसार का मार्ग प्रशस्त किया। केवीके द्वारा 8324 इकाइयों में 1396 कार्यक्रमों के माध्यम से पशुधन और मत्स्य पालन पर प्रदर्शन भी किया गया था।

किसानों और खेतिहर महिलाओं, ग्रामीण युवाओं और विस्तार कार्यकर्ताओं के लिए क्षमता विकास में केवीके की मुख्य भूमिका थी। ज्ञान और कौशल प्रदान करने के लिए, केवीके ने फसल उत्पादन, बागवानी, मृदा स्वास्थ्य प्रबंधन, कृषि इंजीनियरिंग, पशुधन और मत्स्य पालन, गृह विज्ञान, कृषि विस्तार और कई अन्य पहलुओं को कवर करते हुए 78613 किसानों और खेत-महिलाओं के लिए 2858 पाठ्यक्रम आयोजित किए। तथापि, ग्रामीण युवाओं के संबंध में क्षमता निर्माण के ऐसे क्षेत्रों का चयन किया गया जो कृषि और गैर-कृषि उद्यमों में स्वरोजगार प्रदान कर सकें। कोविड-19 महामारी की स्थिति के कारण कई कार्यक्रमों को ऑनलाइन माध्यम से आयोजित किया गया है। इस प्रक्रिया में लड़कियों सहित 12008 ग्रामीण युवाओं को 601 पाठ्यक्रमों के माध्यम से प्रशिक्षित किया गया। विस्तार कर्मियों के क्षमता निर्माण के लिए चुने गए क्षेत्र कृषि, पशुपालन और मत्स्य पालन जैसे क्षेत्र थे। केवीके ने 11656 प्रतिभागियों के लिए ऐसे 466 पाठ्यक्रम संचालित किए। इसके अलावा, केवीके ने युवाओं को स्वरोजगार करने के लिए तुलनात्मक रूप से लंबी अवधि के व्यावसायिक प्रशिक्षण कार्यक्रम भी आयोजित किए। इस प्रक्रिया में 2801 युवाओं के लिए 114 पाठ्यक्रम संचालित किए गए। 'क्षमता विकास में केवीके की संभावना कार्यक्रम' सरकार और अन्य संगठनों द्वारा आयोजित किये गये हैं क्योंकि वे कई सरकारी कार्यक्रमों से जुड़े हुए हैं। विभिन्न विस्तार गतिविधियों के माध्यम से किसानों के बीच बड़े पैमाने पर जागरूकता का आयोजन केवीके की एक और उल्लेखनीय उपलब्धि रही। रिपोर्ट की गई अवधि

के दौरान, केवीके ने 7546665 किसानों, विस्तार कार्यकर्ताओं और अन्य लोगों की भागीदारी के साथ 204266 ऐसी विस्तार गतिविधियों का आयोजन किया।

किसानों को गुणवत्तापूर्ण बीज और रोपण सामग्री की आपूर्ति केवीके का सबसे महत्वपूर्ण उद्देश्य है जिसकी पूर्ति या तो केवीके फार्म पर बीच उत्पादन अथवा बीज ग्राम कार्यक्रम के माध्यम से की जाती है। केवीके ने समय पर बीजों की अनुपलब्धता की समस्या को दूर करने करने के लिए उल्लिखित अवधि के दौरान प्रमुख अनाजों एवं फसलों/सब्जियों के अच्छी गुणवत्ता वाले 12878.76 क्विंटल बीजों का उत्पादन किया। केवीके ने गुणवत्तापूर्ण उत्पादन के लिए फल फसलों, सब्जियों, फूलों, वन प्रजातियों आदि की 48.37 लाख रोपण सामग्री/पौधों का भी उत्पादन किया। कृषि क्षेत्र में जैव-उत्पाद का उपयोग पर्यावरण की दृष्टि से तेजी से लोकप्रिय हो रहा है और केवीके ने 8450 किसानों को उपलब्ध कराने के लिए 228016.9 किलोग्राम विभिन्न जैव-सूत्रीकरण (बायो-फॉर्मूलेशन) का उत्पादन किया। केवीके द्वारा 218116 संख्या में उत्पादित ऐसे उत्पादन के माध्यम से गुणवत्तापूर्ण पशुधन नस्ल और शिशु-मतस्य उत्पादन को भी पर्याप्त महत्व दिया गया।

मिट्टी और पानी के विश्लेषण में, केवीके ने किसानों को मृदा स्वास्थ्य कार्ड प्रदान करने के लिए पूरे क्षेत्र में 13947 नमूनों का विश्लेषण किया और ₹ 469744/- रुपये का राजस्व अर्जित किया। मृदा और जल परीक्षण से किसानों को फसलों में रासायनिक उर्वरकों का उपयोग करने में मदद मिली जिससे उत्पादकता में वृद्धि हुई और साथ ही मृदा स्वास्थ्य भी बरकरार रहा। अनिवार्य गतिविधियों के अलावा, केवीके ने कृषक समुदाय के बीच जागरूकता पैदा करने के उपाय के रूप में विश्व मृदा दिवस, पर्यावरण दिवस, राष्ट्रीय विज्ञान दिवस, विश्व पशु चिकित्सा दिवस और अन्य विशेष दिन / सप्ताह भी मनाये। इस तरह के समारोहों ने अच्छी संख्या में प्रतिभागियों को आकर्षित किया और किसानों के बीच इस तरह के कार्यक्रमों के लाभों को बढ़ाने का अवसर प्रदान किया। केवीके ने जिला स्तर पर विभिन्न अभिसरण कार्यक्रमों के माध्यम से ₹ 13.73 करोड़ रुपये का राजस्व भी अर्जित किया। इस तरह के समर्थन से कृषि विज्ञान केंद्रों को मौजूदा कृषि स्थिति में सुधार के लिए जिले के दूर-दराज के क्षेत्रों तक अपनी पहुंच बढ़ाने में मदद मिलती है।

वांछित उद्देश्यों की पूर्ति सुनिश्चित करने के लिए भा.कृ.अ.प.-अटारी के माध्यम से अच्छी संख्या में प्रमुख कार्यक्रमों का कार्यान्वयन पिछले एक वर्ष के दौरान भा.कृ.अ.प.-अटारी, कोलकाता की मुख्य गतिविधि रही है। कार्यक्रमों के निरंतर पर्यवेक्षण से न केवल गुणवत्तापूर्ण उत्पादन हुआ है बल्कि कृषि समुदाय और नीति निर्माताओं के बीच उच्चतम स्तर पर केवीके को एक घरेलू पहचान भी मिली है।

तिलहन और दलहन दोनों फसलों के लिए एनएफएसएम द्वारा प्रायोजित क्लस्टर्ड फ्रंटलाइन डिमॉन्स्ट्रेशन (सीएफएलडी) कार्यक्रम का कार्यान्वयन, परती चावल के उपयोग पर विशेष जोर देते हुए उत्पादकता बढ़ाने के लिए पिछले एक वर्ष के दौरान दर्ज की गई एक और उपलब्धि रही है। तिलहन में, औसत उपज 32-59% के दायरे में दर्ज की गई। दलहनी फसलों में भी खरीफ, रबी और ग्रीष्म तीनों मौसमों में अधिक उपज देखी गई। उपज में औसत वृद्धि 27.5 से 59.7% के बीच थी।

गुणवत्ता वाले दलहन बीजों की आपूर्ति बढ़ाने के लिए 10 चयनित कृषि विज्ञान केन्द्रों (केवीके) में दलहन बीज हब स्थापित किये गये। इस जोन में, ये 10 बीज केंद्र तीन फसली मौसमों को कवर करते हुए वर्ष भर में चयनित गई दलहन फसलों के बीज उत्पादन में लगे हुए हैं। बीज उत्पादन के लिए चयनित की गई फसलें थीं अरहर, हरा चना, काला चना, काबुली चना, मसूर और मटर। वर्ष 2020 के दौरान कुल 955 क्विंटल गुणवत्ता वाले बीज का उत्पादन किया गया।

किसान प्रथम कार्यक्रम (एफएफपी) वर्ष 2015-16 में कृषि विस्तार प्रभाग, आईसीएआर, नई दिल्ली द्वारा केवीके योजना के तहत शुरू किया गया था। इसे सफलतापूर्वक लागू किया गया और लगातार पांच वर्षों तक यानी 2015-16 से 2019-20 तक चलाया गया। परिणामस्वरूप, इस कार्यक्रम को भा.कृ.अ.प.-अटारी कोलकाता के तहत वर्ष 2020-21 के दौरान तीन आईसीएआर संस्थानों (आईसीएआर-एनआरआरआई, कटक; आईसीएआर-सीआईएफए, भुवनेश्वर और आईसीएआर- आईआईडब्ल्यूएम , भुवनेश्वर) और एक राज्य कृषि विश्वविद्यालय (ओयूएटी, भुवनेश्वर) के लिए विस्तारित किया गया। कोविड-19 महामारी की स्थितियों के कारण, क्षेत्र स्तर पर गतिविधियाँ बुरी तरह प्रभावित हुईं। लेकिन, संक्रमण को रोकने के लिए सभी कोविड दिशा-निर्देशों का पालन करते हुए गोद लिए गए गांवों में अपने लक्ष्यों को पूरा करने के लिए कार्यान्वयन केंद्रों के सभी संबंधित वैज्ञानिकों द्वारा अत्यधिक प्रयास किए गए। इस कार्यक्रम का सार यह है कि किसान के खेतों में अनुसंधान समस्या की पहचान करने, प्राथमिकता तय करने, प्रयोग के संचालन और उसके प्रबंधन में किसान महत्वपूर्ण भूमिका निभाते हैं। इस परियोजना के माध्यम से चयनित किसानों/किसान परिवारों की आजीविका में समग्र सुधार के लिए परियोजना क्षेत्र में धान में एकीकृत पोषक तत्व प्रबंधन, नई किस्मों की शुरूआत, मछलियों को पूरक आहार, कुक्कुट नस्लों को लोकप्रिय बनाना, जल प्रबंधन विधियों में सुधार, केला टिशू कल्चर, लघु दाल मिल, संस्थानों/रा.कृ.वि.वि द्वारा किए गए कुछ प्रमुख कार्य हैं। 2019 के दौरान इस जोन में चार परियोजनाएं शुरू की गईं।

ग्रामीण युवाओं को कृषि आधारित व्यवसाय में बनाए रखना देश भर के नीति निर्माताओं के लिए एक चुनौती है। एक उपयुक्त उपाय खोजने के लिए, कृषि में युवाओं को आकर्षित करना और बनाए रखना (आर्या) - भारतीय कृषि अनुसंधान परिषद की एक परियोजना इस जोन के 9 केवीके के माध्यम से भा.कृ.अ.प.-अटारी, कोलकाता द्वारा कार्यान्वित की जाती है। जिलों में व्यावसायिक उद्यम बनाने के अवसर के आधार पर चयनित युवाओं को चरणबद्ध तरीके से वित्तीय और तकनीकी सहायता प्रदान करने के लिए उद्यमों का चयन किया गया है। केवीके के प्रयासों और भा.कृ.अ.प.-अटारी, कोलकाता के पर्यवेक्षण ने 1400 ग्रामीण युवाओं को सतत रूप से वार्षिक आय बढ़ाने के लिए अपने उद्यम

स्थापित करने में सक्षम बनाया है। इस परियोजना की सफलता ने अन्य ग्रामीण युवाओं को भी अपनी आजीविका के लिए कृषितर संबंद्ध उद्यमों को अपनाने के लिए प्रेरित किया है।

अनुसूचित जनजाति घटक (एसटीसी) पूर्व में जनजातीय उप-योजना (टीएसपी) का मुख्य उद्देश्य अनुसूचित जनजातियों के विकास के लिए केंद्रीय मंत्रालयों/विभागों में सामान्य क्षेत्रों से कम से कम उनकी जनसंख्या के अनुपात में, भौतिक और वित्तीय दोनों दृष्टि से, परिव्यय और लाभों के प्रवाह को व्यवस्थित करना था। तदनुसार, जनजातीय मामले मंत्रालय, भारत सरकार ने जनजातीय लोगों को बेहतर गुणवत्तापूर्ण जीवन प्रदान करने के लिए देश भर में आदिवासी बहुल जिलों की पहचान की। वर्ष 2020 के दौरान एसटीसी कार्यक्रम के तहत इस जोन में आदिवासी बहुल दस जिलों, अंडमान और निकोबार द्वीप समूह का एक जिला (निकोबार) और ओडिशा राज्य के नौ जिले (गजपति, कंधमाल, मयूरवंज- I और II, मलकानगिरी, नबरंगपुर , रायगडा , सुंदरगढ़- I और II), की पहचान की गयी। आदिवासी लोगों के लाभ के लिए कृषि, बागवानी, पशुपालन, डेयरी विकास, व्यावसायिक प्रशिक्षण, रसोई बागवानी, मछली उत्पादन और कई अन्य गतिविधियों के संचालन के लिए उन 10 केवीके को ₹ 290.00 लाख की राशि आवंटित की गई थी। किए गए आकलन से पता चलता है कि वर्ष 2020 के दौरान 8700 किसानों के लाभ के लिए 184 आदिवासी गांवों को इस परियोजना के तहत लाया गया है।

जलवायु अनुकूल कृषि में राष्ट्रीय नवोन्वेषण एक ऐसा कार्यक्रम है जो जोन V में भा.कृ.अ.प.-अटारी, कोलकाता द्वारा निगरानी किए जाने वाले 9 कृषि विज्ञान कोन्द्रों (केवीके) के माध्यम से चल रहा है। तकनीकी सहायता, संसाधन विकास और कृषक समुदाय के समग्र सशक्तिकरण के संदर्भ में निश्चित आवश्यकता को आगे लाने के लिए पहचाने गए जिलों की जलवायु भेद्यता का गंभीर रूप से मूल्यांकन किया गया है ताकि वे सूखे, बाढ़, गर्मी की लहर, चक्रवाती तूफान अनियमित वर्षा जैसी जलवायु कमजोरियों से निपटने में सक्षम हो सकें। ग्रीष्म जुताई, हरी खाद, शून्य जुताई, जैविक मल्चिंग, बीबीएफएस, कार्बन सीक्वेस्ट्रेशन के बाद जल बचत सिंचाई विधियों, कृत्रिम भूजल पुनर्भरण, बड़े पैमाने पर जल संचयन संरचनाओं का निर्माण, तालाबों का नवीनीकरण आदि जैसे प्रौद्योगिकी घटकों के सफल कार्यान्वयन ने न केवल निक्रा (NCRA) गांवों में सकारात्मक प्रभाव डाला बल्कि किसानों के लाभ के लिए अन्य जिलों में इसके विस्तार का मार्ग भी प्रशस्त किया। वैकल्पिक फसल पद्धति को लोकप्रिय बनाने, उपयुक्त फसल किस्मों की शुरूआत, सामुदायिक नर्सरी जैसी नवीन विधियों, चारे की खेती पर जोर, वीसीआरएमसी के निर्माण और कस्टम हायरिंग सिस्टम तथा इस कार्यक्रम के माध्यम से किए गए अन्य घटकों ने कमजोर/ संवेदनशील जिलों के किसानों को अत्यधिक लाभान्वित किया है।

जिला कृषि मौसम इकाई (डामू) की स्थापना के माध्यम से ग्रामीण कृषि मौसम सेवा पिछले साल शुरू की गई थी और ओडिशा और पश्चिम बंगाल के 16 चयनित केवीके में से 6 केवीके ने वर्ष 2019 के दौरान काम करना शुरू कर दिया था। महत्वपूर्ण गतिविधि, दूसरों के बीच, मौसम पूर्वानुमान से संबंधित संदेश थी।अभी तक, पश्चिम बंगाल के 6 केवीके और ओडिशा के 8 केवीके ग्रामीण कृषि मौसम सेवा के तहत काम कर रहे हैं। केवीके ने 'मेघदूत' और 'दामिनी' मोबाइल ऐप को लोकप्रिय बनाया और 'अम्फान' से पहले बुलेटिन प्रसारित किया था।

कौशल प्रशिक्षण प्रदान करके उद्यमिता के विकास पर भारतीय कृषि कौशल परिषद (एएससीआई) के साथ एक सहयोगी कार्यक्रम इस क्षेत्र के चयनित केवीके द्वारा चलाया जा रहा है। केवीके स्तर पर बाद में प्रशिक्षण प्रदान करने के लिए प्रशिक्षकों का एक प्रशिक्षण भी आयोजित किया गया था और कुल 746 किसानों/ग्रामीण युवाओं को 33 प्रशिक्षणों द्वारा प्रशिक्षित किया गया था।

प्राकृतिक संसाधन आधार के संरक्षण, खेती की लागत को कम करने, किसानों की आय बढ़ाने और किसानों की बेहतर आजीविका सुनिश्चित करने पर जोर देते हुए अनाज आधारित फसल प्रणाली में सुधार के मद्देनजर, सीएसआईएसए (दक्षिण एशिया में अनाज प्रणाली पहल) परियोजना इस जोन में ओडिशा के 5 कृषि विज्ञान केन्द्रों (कटक, मयूरभंज I, भद्रक, पुरी, बालासोर) में आईसीएआर के सहयोग से चल रही है। इस वर्ष के दौरान ऑन-फार्म मूल्यांकन के रूप में चावल का Zn परीक्षण किया गया।

प्रवासी श्रमिकों हेतु कौशल विकास प्रशिक्षण के लिए गरीब कल्याण रोजगार अभियान (जीकेआरए) का आयोजन 125 दिनों का एक हिस्सा था। अभियान 20 जून 2020 को माननीय प्रधान मंत्री द्वारा शुरू किया गया था। इसका उद्देश्य कोविड -19 के दौरान प्रवासी श्रमिकों की समस्याओं का समाधान करना था। यह कार्यक्रम ओडिशा के 5 जिलों- बालासोर, भद्रक, बोलांगीर, गंजम I और गंजम II में लागू किया गया था। कृषि विज्ञान केन्द्रों ने 2240 प्रवासियों को शामिल करते हुए 64 कार्यक्रमों का आयोजन किया।

भा.कृ.अ.प.-अटारी, कोलकाता द्वारा निगरानी किए गए केवीके नॉलेज पोर्टल ने केवीके के कामकाज के बारे में जानने और बेहतर कृषि और संबद्ध प्रथाओं के लिए सूचना समर्थन मांगने के लिए दूरदराज के क्षेत्रों के किसानों की बड़ी संख्या में मदद की है। केवीके इस पोर्टल पर किसानों को संबंधित घटनाओं के बारे में जानकारी उपलब्ध कराने तथा राष्ट्रीय स्तर पर समीक्षा एवं निगरानी की सुविधा प्रदान करने के लिए, उपलब्ध सुविधाएं, पिछले और आगामी कार्यक्रमों, विविन्न प्रथाओं, कार्यान्वित कार्यक्रमों का विवरण, मासिक प्रदर्शन रिपोर्ट आदि से संबंधित जानकरी डाल रहे हैं। साथ ही, कृषि पोर्टल पर भी नियमित रूप से प्रौद्योगिकी, प्रकाशन, प्रयोगात्मक डेटा, अवलोकन डेटा, सर्वेक्षण डेटा और भू-पोर्टल से संबंधित डाटा अपलोड किया जाता है। यह कोष किसानों, शोधकर्ताओं और योजना निर्माताओं की आसान पहुंच के लिए आईसीएआर संस्थानों/रा.कृ.वि.वि में उपलब्ध है कृषि और संबद्ध क्षेत्रों के बारे में जानकारी की एक मेटाडेटा सूची है।

इसके अलावा, रिपोर्ट की अवधि के दौरान, भा.कृ.अ.प.-अटारी कोलकाता तृतीय-पक्ष मूल्यांकन अध्ययन, एफपीओ के गठन के ऑनलाइन कार्यक्रम, एमएसएमई से मूल्यवर्धन कार्यक्रम और विभिन्न सरकारी कार्यक्रमों की लाइव वेबकास्टिंग आदि में भी शामिल रहा। किसानों के नवाचारों और सफलता की कहानियों के साथ ही इस अवधि के दौरान केवीके द्वारा किसानों द्वारा बड़े पैमाने पर प्रौद्योगिकी अपनाने के कुछ मामले, पीएम किसान योजना का वीडियो अपलोड करने जैसी अन्य प्रगतियां भी दर्ज की गयीं।

राज्य कृषि / पशु और मत्स्य विज्ञान विश्वविद्यालय के विस्तार शिक्षा निदेशालय ने केवीके की गतिविधियों की देखरेख और केवीके कर्मियों के ज्ञान को लगातार अद्यतन करने के लिए विभिन्न कार्यक्रमों के आयोजन में पर्याप्त रूप से सहयोग किया है। किसानों को आईसीएआर संस्थानों और रा.कृ.वि.वि के तहत संचालित एटीआईसी के माध्यम से सूचना और तकनीकी सहायता भी प्रदान की गई है। समग्र रूप से कृषि और ग्रामीण विकास के लिए जिलों के भरोसेमंद ग्रामीण संगठन बनने में सभी संबंधितों के संचयी प्रयास ने कृषि विज्ञान केन्द्रों को और अधिक किसान-हितैसी पहलें जारी रखने लिए विकसित किया है।

भा.कृ.अ.प.-अटारी, कोलकाता एक तरफ अपने अधिदेश को पूरा करने और कृषि समुदाय की बेहतरी के लिए सभी अनिवार्य और अन्य गतिविधियों के लिए कृषि विज्ञान केंद्रों एवं विस्तार शिक्षा निदेशालयों को समर्थन देने में गहन रूप से शामिल रहा है। आवश्यकता आधारित बुनियादी ढांचा और वित्तीय सहायता प्रदान करने के अलावा, भा.कृ.अ.प.-अटारी एवं केवीके दोनों स्तरों पर संपूर्ण वित्तीय प्रबंधन प्रणाली के लिए डिजिटलीकरण किया गया है। केवीके द्वारा किए गए प्रमुख कार्यक्रमों के प्रदर्शन का आकलन करने के लिए सैक(SAC) बैठक में भाग लेने और प्रदर्शन क्षेत्र के दौरे के माध्यम से मौके पर मूल्यांकन भी किया गया है। केवीके कर्मियों के लिए उन्नत कृषि और संबद्ध प्रथाओं के बारे में उनके ज्ञान को बढ़ाने हेतु भा.कृ.अ.प.-अटारी, कोलकाता की ओर से मानव संसाधन विकास एक नियमित विशेषता रही है। केंद्र सरकार की किसान हितैषी योजनाओं का बड़ी संख्या में किसानों के बीच पर्याप्त प्रचार-प्रसार किया गया है ताकि संसाधनहीन किसानों द्वारा अपने स्वयं के विकास के लिए ऐसे कार्यक्रमों का लाभ उठाया जा सके। कई प्रमुख कार्यक्रमों में प्राप्त सफलता को राज्य विस्तार तंत्र द्वारा बड़े पैमाने पर बहिर्वेशन (एक्सट्रपलेशन) के लिए दोहराया गया है। कई राज्यों, केंद्र एवं अन्य संगठनों के साथ प्रभावी अभिसरण और सहयोग से केवीके को उत्पादक, उद्देश्य में उपयोग के लिए अतिरिक्त संसाधन/ राजस्व अर्जित करने में मदद मिली है। भा.कृ.अ.प.-अटारी, कोलकाता के स्तर पर विकसित कार्य योजना और निष्ठापूर्वक इसके क्रियान्वयन ने इस जोन के कृषि विज्ञान केंद्रों को कृषि क्षेत्र में व्यापक बदलाव का एक शक्तिशाली उपकरण बना दिया है।

भा.कृ.अ.प.-अटारी, कोलकाता की अन्य महत्वपूर्ण उपलब्धियों में 2022 तक किसानों की आय को दोगुना करने की दिशा में ओडिशा और पश्चिम बंगाल राज्यों के लिए कार्यान्वयन योग्य कार्य योजना को अंतिम रूप देना शामिल है। कार्य योजना रा.कृ.वि.वि, आईसीएआर संस्थानों, राज्य सरकार के अधिकारियों, केवीके कर्मियों और अन्य हितधारकों के परामर्श से तैयार की गयी थी। किसानों की आय को वास्तिविकता में दोगुना करने के लिए खेती की लागत में कमी, सुनिश्चित न्यूनतम समर्थन मूल्य (एमएसपी), कृषि मशीनीकरण, फसल विविधीकरण, फसल के बाद के नुकसान में कमी और शीत भंडारण, विपणन बुद्धिमत्ता, आईसीटी के उपयोग आदि सहित बुनियादी सुविधाओं की सलाह दी गयी। 2020 के दौरान, संपूर्ण जोन के 59 केवीके के माध्यम से 82 गाँव इस कार्यक्रम में शामिल हुए, जिससे ओडिशा के 1133 किसान और पश्चिम बंगाल के 2247 किसान लाभान्वित हुए। नवीन कृषि अधिनियम 2020 के संबंध में केवीके एवं किसानों को जागरूक किया गया।

EXECUTIVE SUMMARY

Agriculture Extension Division is monitoring 720 KVKs with the help of eleven Agricultural Technology Application Research Institutes located in XI Zones covering all the states. ATARIs help in understanding the social, economic and related aspects of the farmers by continuous discussion and coordinating with different Institutes located in these states. ATARI helps in preparation of action plan to suit their aspiration and ensure that all the efforts of KVKs are directed towards the betterment of livelihood of the farming community. The state of Odisha along with 33 KVKs functioning in all rural districts has come under the jurisdiction of ICAR-ATARI, Kolkata (Zone V) in place of Bihar and Jharkhand since 2017-18. Accordingly, ICAR-ATARI, Kolkata vests with the responsibility to monitor, evaluate and guide 59 KVKs of A&N Islands, Odisha and West Bengal during 2020.

ATARI primarily focus on strengthening agricultural extension research and knowledge management along with coordination and monitoring of technology application and frontline extension education programme. The KVKs on the other hand concentrate on technology assessment and demonstration for its wider application and to enhance capacity building. The basic mandate for the KVKs remain 'Technology Assessment and Development for its Application and Capacity Development 'during 2017-20. Now the new mandate for KVKs will be served as single window knowledge, resource and capacity development centre. To achieve the mandate the KVK has extended activities many-fold in meeting up the aspiration of small and medium farmers, rural youths and other stakeholders. The ability of KVKs to deliver information and technology support at the doorstep of the farmers has made them an important link between research and extension at the grass root level.

During the year 2020, the KVKs of Zone-V achieved all the mandated activities almost the entire set of target in the areas of training, on-farm trial, frontline demonstration etc. The KVKs assessed technologies pertaining to crop management, livestock management, fish cultivation, insect-pest management, drudgery reduction, storage technique etc. through 428 number of on farm trials conducted in 3538 different locations across the zone. The successful technologies was again tested as farm demonstration before feeding it to mainstream state extension system in the form of technology capsules. The feedback to research system is also provided for the necessary improvement/modification of the developed technology to suit the wider agro-ecological situation of the zone.

KVKs conducted frontline demonstrations in pulse, oilseed and other crops to demonstrate the newly released varieties and establish the production potentiality alongwith package of practices to enhance the productivity of major pulse and oilseed crops and to improve the seed replacement in the crops. The KVKs brought 1634.02 ha under such demonstration programmes with the involvement of 10056 numbers of farmers. The performance recorded in the farmers' field indicated the superiority of the new varieties over local varieties in terms of yield and benefit-cost ratio. The involvement of extension functionaries in the demonstration programmes paved the way for its large-scale dissemination for the benefit of the farming community. Demonstration on livestock and fishery was also carried out by the KVKs in 8324 units through 1396 numbers of programmes.

Capacity development for the farmers and farm women, rural youth and extension functionaries was main role of KVKs . For imparting knowledge and skill, the KVKs organized 2858 number of courses for 78613 farmers and farm-women covering various aspects of crop production, horticulture, soil health management, agricultural engineering, livestock & fishery, home science, agricultural extension and many more. In respect of rural youths, however, such areas of capacity building was selected that could provide self-employment in farm and off-farm enterprises. Due to Covid -19 pandemic situation many of the programmes has been conducted through on-line mode. In this process, 12008 rural youths including girls were trained through 601 numbers of courses. Areas selected for the capacity building of extension personnel were agriculture,

animal husbandry and fishery field. The KVKs conducted 466 such courses for 11656 participants. In addition, the KVKs also organized vocational training programme of comparatively longer duration to make youths self employed. In the process, 114 courses were conducted for 2801 youths. The potentiality of KVKs in capacity development programme has been recognized by Govt. and other organizations as they are associated with many Govt. programme. For organizing large-scale awareness among farmers through various extension activities was another notable achievement of the KVKs. During the period reported upon, the KVKs conducted 204266 number of such extension activities with the involvement of 7546665 farmers, extension functionaries and others.

Quality seed and planting materials supply to the farmers is most important objective of the KVKs which is met up either producing seeds at KVK farm or through seed village programme. The KVKs during the mentioned period produced 12878.76 q of quality seeds of major cereals and crops/ vegetables for addressing the issue of non-availability of seeds in time. KVKs also produced 48.37 lakh planting materials/seedlings of fruit crops, vegetables, flower, forest sp. etc. for quality production. Use of bio-product in agricultural field is becoming fast popular from environmental point of view and the KVKs produced 228016.9 kg of different bio-formulation to make available to 8450 number of farmers. Quality livestock strain and fish fingerling production was also given adequate importance by the KVKs through production of 218116 number of such produce.

In soil and water analysis, the KVKs analyzed 13947 number of samples across the zone to provide soil health card to the farmers and earned revenue of Rs. 469744/-. The soil and water testing enabled the farmers to utilize chemical fertilizer in crops thus increasing productivity as well as sustained soil health. Apart from the mandated activities, the KVKs also celebrated special day/week as a means to create awareness among farming community world soil day, environmental day, national science day, world veterinary day and others. Such celebrations attracted good number of participants and provides the opportunity to elaborate the benefit of such programmes among the farmers. The KVKs also generated revenue worth Rs.13.73 crore through various convergence programme at the district level. Such support helps the KVKs in extending its reach to the far-flung areas of the district to improve the existing agricultural situation.

Implementation of a good number of flagship programme through ICAR-ATARI to ensure the fulfillment of the desired objectives has been the core activity on the part of ICAR-ATARI, Kolkata during last one year. Continuous supervision of the programmes has not only brought quality output but also made KVKs a household name among the farming community and policy makers at the highest level.

Implementation of Clustered Frontline Demonstration (CFLD) programme sponsored by NFSM both for oilseed and pulse crops to enhance the productivity with particular emphasis on to utilize rice fallow has been another achievement recorded during last one year. In oilseed, average yield recorded was in the range of 32-59%. Higher yield was also observed in pulse crops during all three seasons, viz. kharif, rabi and summer. The average increase in yield was in range of 27.5 to 59.1%.

Pulse seed hub was established in 10 selected KVKs Step to increase the supply of quality pulse seeds. In this zone, these 10 seed hubs are engaged in producing seeds of identified pulse crops throughout the year covering three cropping seasons. The crops identified for seed production were pigeon pea, green gram, black gram, chick pea, lentil and field pea. During 2020, a total of 955 q of quality seed was produced.

Farmer FIRST Programme(FFP) was launched in the year 2015-16 by Agricultural Extension Division, ICAR, New Delhi under KVK scheme. It was successfully implemented and run for consecutive five years i.e. from 2015-16 to 2019-20. As a result, the programme was extended during the year 2020-21 for three ICAR Institutes (ICAR-NRRI, Cuttack; ICAR-CIFA, Bhubaneswarand ICAR-IIWM, Bhubaneswar) and one StateAgricultural University (OUAT, Bhubaneswar) under ICAR-ATARI Kolkata. Due to COVID-19 Pandemic situations, the activities at the field level were severely affected. But, utmost efforts were made by all the concerned scientists of implementing centers to fulfill their targets in the adopted villages by following all COVID protocols to prevent infection. The essence of this programme is that farmers play the key role in research problem identification, prioritization, conduct of experiment and its management in farmer's fields. Integrated nutrient management in paddy, introduction of

newer varieties, supplementary feeding to fish, popularization of poultry breeds, improved water management methods, tissue culture banana, mini dal mill in the project area are some of the interventions executed by the institutes/SAU to bring overall improvement in livelihood of the selected farmers/ farm families through this project. Four projects were undertaken in this Zone during 2019.

Retaining rural youths in farm-led vocation is one of the challenges for policy makers across the country. To find a suitable measure, Attracting and Retaining Youth in Agriculture (ARYA) – a project of Indian Council of Agricultural Research is implemented by ICAR-ATARI, Kolkata through 9 KVKs of this zone. Based on the opportunity to create commercial venture in the districts, enterprises have been selected to provide financial and technical support to the identified youths in a phased manner. The efforts of KVK and supervision of ICAR-ATARI, Kolkata has enabled 1400 rural youths to establish their enterprises for enhanced annual income in a sustained manner. The success of this project has motivated other rural youths also to take off-farm enterprises for their livelihood.

The main objectives of Scheduled Tribe Component (STC) erstwhile Tribal Sub-Plan (TSP) was to channelize the flow of outlays and benefits from the general sectors in the Central Ministries/ Departments for the development of Schedules Tribes at least in proportion to their population, both in physical and financial terms. Accordingly, Ministry of Tribal Affairs, GoI identified tribal dominated districts across the country to provide the tribal people a better quality of life. Ten tribal dominated districts i.e. one district (Nicobar) from Andaman & Nicobar Islands and nine (Gajapati, Kandhamal, Mayurvanj-I and II, Malkangiri, Nabarangapur, Raygada, Sundergarh-I and II) from Odisha state were identified from this Zone under STC programe during the year 2020. An amount of Rs. 290.00 lakh fund was allotted to those 10 KVKs to conduct different activities like agricultural farming, horticulture, animal husbandry, dairy development, vocational training, kitchen gardening, fish production, and many others towards the benefit of tribal people. The assessment done indicates that 184 tribal villages have been brought under this project for the benefit of 8700 farmers during 2020.

National Innovations in Climate Resilient Agriculture is one such programme in operation in Zone V through 9 KVKs monitored by ICAR-ATARI, Kolkata. Climatic vulnerability of the identified districts has been critically assessed to bring forward definite requirement in terms of technological support, resource development and overall empowerment of farming community to enable them to cope up with climatic vulnerabilities like droughts, flood, heat wave, cyclonic storm erratic rainfall etc. Successful implementation of technology components like summer ploughing, green manuring, zero tillage, organic mulching, BBFS, carbon sequestration followed by water saving irrigation methods, artificial ground water recharge, creation of large scale water harvesting structures, renovation of ponds etc. have not only created positive impact in the NICRA villages but also paved the way for its outscaling in other districts for the benefit of the farmers. Popularization of alternate cropping pattern, introduction of suitable crop varieties, innovative methods like community nursery, emphasis on fodder cultivation, creation of VCRMC and custom hiring system and other components carried out through this programme have immensely benefitted the farmers of vulnerable districts.

Gramin Krishi Mausam Sewa through establishment of District AgroMet Unit (DAMU) was initiated during last year and out of 16 selected KVKs of Odisha and West Bengal, 6 KVKs started functioning during the year 2019. The significant activity, among others, was weather forecast related messaging. As of now 6 KVKs of West Bengal and 8 KVKs of Odisha is functioning under Gramin Krishi Mausam Sewa. KVK popularized 'Meghdoot'and 'Damini' mobile app and circulated bulletin before 'AMPHAN'.

A collaborative programme with Agriculture Skill Council of India (ASCI) on development of entrepreneurship through imparting skill training is being carried out by selected KVKs of this zone. A Training of Trainers was also organized for providing subsequent training at KVK level and a total of 746 farmers/ rural youth were trained by 33 training.

In view of improving cereal based cropping system with emphasis on conserving natural resource base, reducing cost of cultivation, augmenting farmer income and ensuring better livelihood of the farmers, CSISA (Cereal System Initiative in South Asia) project in collaboration with ICAR is under operation in 5 KVKs of Odisha (Cuttack, Mayurbhanj I, Bhadrak, Puri, Balsore) of this zone. During this year Zn trial

on Rice was conducted as an on – farm evaluation.

Garib Kalyan Rojgar Abhiyan (GKRA) was organized for skill development training for migrant labour was a part of 125 days. Abhiyan launched by Hon'ble Prime Minister of 20th June 2020. Objective was to address the issues of migrant labour during Covid-19. The programme was implemented 5 districts of Odisha- Balasore, Bhadrak, Bolangir, Ganjam I and Ganjam II. The KVKs organized 64 programmes covering 2240migrants.

KVK Knowledge Portal monitored by ICAR-ATARI, Kolkata has helped a large number of farmers from remote areas to know about KVK functioning and solicit information support for improved agriculture and allied practices. The KVKs are putting up information related to facilities available, past and upcoming events, package of practices, details of programmes implemented, monthly performance report etc. in this portal for the farmers to know about such events and to facilitate the review and monitoring at the national level. Alongside, KRISHI Portal is also regularly uploaded with technology, publication, experimental data, observational data, survey data and geo-portal. This repository is a metadata inventory of information regarding agriculture and allied sectors which is available at ICAR Institutes/SAUs for its easy access by the farmers, researchers and planners.

Besides, during the period under report, ICAR-ATARI Kolkata was also involved in conducting third party evaluation study, online programme of the formation of FPO, Value addition programme from MSME and Live Webcasting of various Govt. programmes etc. Some cases of large scale technology adoption by the farmers, uploading video of PM Kisan yogona and other progress were recorded by KVKs during this period alongwith the farmers' innovations and success stories.

Directorates of Extension Education of State Agricultural/Animal & Fishery Science University have adequately extended supporting hands in overseeing the activities of KVKs and organizing various programmes to continuously update the knowledge of KVK personnel. Information and technological support have also been provided through the ATICs operating under ICAR Institutes and SAU to the farmers. The cumulative endeavour of all concerned has developed the KVKs to take up more number of farmer-friendly initiatives to become the trustworthy rural organization of the districts for the overall agricultural and rural development.

ICAR-ATARI, Kolkata has been intensely involved in carrying out its mandate in one hand and extending support to KVKs and Directorates of Extension Education for taking up all the mandated and other activities for the betterment of farming community. Apart from providing need based infrastructure and financial support, digitization has been done for entire financial management system both at ICAR-ATARI level and KVK as well. On the spot evaluation has also been carried out through attending SAC meeting and visit to demonstration field to assess the performance of flagship programmes carried out by KVKs. Human resource development has been a regular feature on the part of ICAR-ATARI, Kolkata for the KVK personnel to sharpen their knowledge about advanced agricultural and allied practices. Farmer-friendly schemes of central Govt. have been given adequate publicity among large number of farmers to take the benefit of such programmes by the resource poor farmers for their own development. The success achieved in a number of flagship programme has been replicated by the state extension mechanism for its large-scale extrapolation. Effective convergence and collaboration with a number of State, Central and other organizations have also helped KVKs earn additional resources/revenue for its use in productive, purpose. The plan of work developed at the level of ICAR-ATARI, Kolkata and its execution with utmost sincerely have made the KVKs of this zone a powerful tool to transform the agriculture.

Other significant achievements of ICAR-ATARI, Kolkata include finalization of implementable action plan for the states of Odisha and West Bengal towards doubling farmer's income by 2022. The plan of action was prepared in consultation with SAUs, ICAR Institutes, State Govt. officials, KVK personnel and other stakeholders. Measures like reduction in cost of cultivation, ensured MSP, farm mechanization, crop diversification, reduction in post harvest loss, infrastructure facility including cold storage, marketing intelligence, use of ICT etc. were suggested to make doubling farmers income a reality. During 2020, 82 villages through 59 KVKs across the zone were involved in this programme benefitting 1133 farmers of Odisha and 2247 farmers of West Bengal. Imitative was taken to aware KVKs and farmers regarding New Farm Act 2020.

1.0 INTRODUCTION

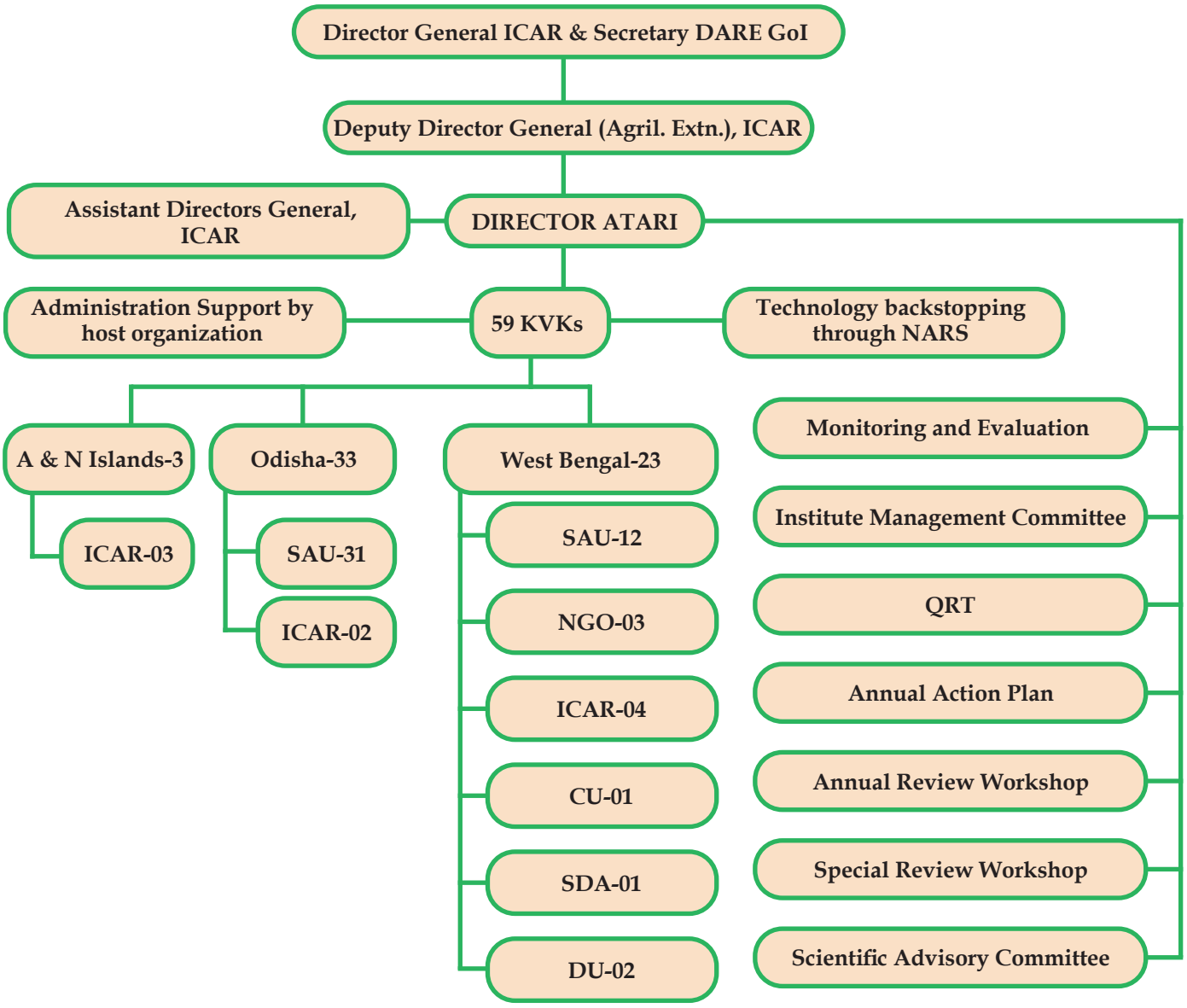
Indian Council of Agricultural Research has approved 11 Agricultural Technology Application Research Institutes to guide and monitor the activities of 720 KVKs functioning in almost all the rural districts of the country. In a few larger districts, additional KVK has also been established in the state of West Bengal by ICAR to meet up the technological and information support to all the households. In the process, ICAR-ATARI, Kolkata has been entrusted with the responsibility of monitoring 59 KVKs spread across A&N Islands, Odisha and West Bengal.

1.1 Profile of ATARI Kolkata:

- The Zonal Project Directorate (erstwhile Zonal Coordinating Unit), Zone-II was established in the year 1979 with the specific objective to monitor and evaluate the Lab-to-Land Programme of ICAR.
- Alongside, it was entrusted with the responsibility to monitor and guide the activities of KVKs which were being established as District Level First Line Agricultural Institutions.
- Initially, the operational jurisdiction of the Unit was spread over West Bengal, Orissa and A & N Islands. In 1991, Bihar was brought under the fold of Zone-II and Orissa was shifted to Zone-VII.
- After its initial migratory stints at the campuses of IVRI-ERS Kolkata, BCKV Mohanpur and CRIJAF Barrackpore, the Unit was shifted to NBSS&LUP, Kolkata Campus, in the year 1996.
- The jurisdiction of the Unit was further extended to include the newly created state of Jharkhand in the year 2000. The Unit was upgraded to Zonal Project Directorate in the year 2009. The Directorate moved to its new administrative building in Salt Lake, Kolkata in 2013. Since July 2015, this Directorate has been renamed as **ICAR-Agricultural Technology Application Research Institute Kolkata.**
- In April, 2017, ICAR restructured and extended the existing 8 zones into 11 ATARIs by redistributing the states among them. Consequent upon this, the states of Bihar and Jharkhand, which were under the fold on erstwhile Zone II, formed a separate ATARI with its headquarter at Patna while the states of West Bengal, Orissa and Andaman and Nicobar islands were again taken together, to form ATARI Kolkata with its headquarter at Salt lake, Kolkata.

  ICAR-ATARI, Kolkata like all other ten ATARIs is functioning as an integral part of Division of Agricultural Extension, New Delhi headed by the Deputy Director General (AE).All the SMDs in ICAR including Division of Agricultural Extension come under the office of Secretary (DARE) and Director General (ICAR). The organizational structure of ICAR-ATARI, Kolkata is depicted below through a concise chart.

1.2 Organizational Structure:



Organizational Structure of ATARI

1.3 Budget Provision:

During the period under report, it was always ensured that KVKs receive fund in time throughout the year for the mandated activities and to meet up other requirements. Thus, providing need based fund to the KVKs of this zone is of utmost importance in running the KVKs. Accordingly, assessment of budget requirement, placing demand for fund and releasing fund are carried out by this Institute on a regular basis. The process helped 59 KVKs and 4 Directorates of Extension Education of the SAUs of this zone to receive a sum of Rs.8164.27 lakh during 2019-20 from ICAR-ATARI, Kolkata. Head-wise details are as follows:

BUDGET PROVISION

Table : Budget in respect of ICAR-Agricultural Technology Application Research Institute & KVKs under Zone- V during 2020-21

(Rs. in lakh)

ZPD/KVK	Recurring							Non-Recurring					Revol. Fund	Grand total
	P & A	T.A.	H.R.D	Cont.	TSP Cont.	SCSP Cont.	Total	Equip.& furn	Works	Lib.	Vehi-cle	Total		
ICAR-ATARI, Kolkata	296.96	7.00	0.00	68.00	0.00	0.00	371.96	0.00	0.00	0.00	0.00	0.00	0.00	371.96
State Agricultural University														
OUAT, Bhubaneswar (31)	2657.00	30.75	8.70	327.00	125.00	72.00	3220.45	0.00	291.00	3.10	8.00	302.10	0.00	3522.55
UBKV, Coochbehar, West Bengal (5)	756.00	4.80	1.35	24.50	0.00	66.85	853.50	0.00	11.26	0.50	0.00	11.76	0.00	865.26
BCKV, Nadia, West Bengal (4)	584.00	2.60	0.90	29.00	0.00	58.00	674.50	0.00	0.00	0.40	8.00	8.40	0.00	682.90
WBUA&FS, Kolkata (3)	368.00	3.00	0.90	11.00	0.00	42.00	424.90	0.00	4.89	0.30	0.00	5.19	0.00	430.09
ICAR														
ICAR-CIARI, A&N Islands (3)	378.00	6.50	0.90	35.50	14.00	2.00	436.90	0.00	120.00	0.30	0.00	120.30	0.00	557.20
ICAR-CRRI, Cuttack, Orissa (1)	80.00	1.30	0.30	13.00	0.00	3.00	97.60	0.00	0.00	0.10	0.00	0.10	0.00	97.70
ICAR-CIFA, Bhubaneswar, Orissa (1)	163.00	1.20	0.30	16.00	0.00	4.00	184.50	0.00	0.00	0.10	0.00	0.10	0.00	184.60
CRIJAF, West Bengal (2)	200.00	1.90	0.30	7.50	0.00	24.00	233.70	0.00	101.94	0.20	0.00	102.14	0.00	335.84
ICAR-CISH, Lucknow (1)	2.00	0.60	0.30	3.00	0.00	11.00	16.90	0.00	7.91	0.10	0.00	8.01	0.00	24.91
ICAR-NDRI, Karnal (1)	0.00	0.50	0.30	2.00	0.00	10.85	13.65	0.00	0.00	0.10	0.00	0.10	0.00	13.75
Central Univerisity, Visva Bharati, West Bengal (1)	140.00	0.45	0.00	11.00	0.00	15.00	166.45	0.00	0.00	0.10	0.00	0.10	0.00	166.55
Deemed Univerisity, RKMVERI, West Bengal (2)	265.00	1.30	0.60	12.00	0.00	30.00	308.90	0.00	46.41	0.20	0.00	46.61	0.00	355.51
State Govt. Undertaking														
WBCADC, Kolkata (1)	50.00	0.75	0.30	0.00	0.00	8.80	59.85	0.00	0.00	0.10	0.00	0.10	0.00	59.95
NGO														
West Bengal (3)	382.00	2.30	0.90	6.00	0.00	42.50	433.70	0.00	0.00	0.30	0.00	0.30	0.00	434.00
Strengthening of DEEs														
DEE,OUAT, Bhubaneswar	0.00	2.50	5.00	17.00	0.00	0.00	24.50	0.00	0.00	0.00	0.00	0.00	0.00	24.50
ATIC, Bhubaneswar	0.00	0.50	0.50	3.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00
DEE, UBKV, Coochbehar, WB	0.00	1.00	2.00	8.50	0.00	0.00	11.50	0.00	0.00	0.00	0.00	0.00	0.00	11.50
DEE, BCKV, Nadia, WB	0.00	1.00	2.00	6.50	0.00	0.00	9.50	0.00	0.00	0.00	0.00	0.00	0.00	9.50
DEE, WBUA&FS, Kolkata, WB	0.00	1.00	2.50	8.00	0.00	0.00	11.50	0.00	0.00	0.00	0.00	0.00	0.00	11.50
Principal, Palli Siksha Bhavan	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.50
GRAND TOTAL	**6321.96**	**70.95**	**28.05**	**609.00**	**139.00**	**390.00**	**7558.96**	**0.00**	**583.41**	**5.90**	**16.00**	**605.31**	**0.00**	**8164.27**

2.0 Krishi Vigyan Kendras

Agricultural extension in India used to be effectual primarily through the state departments of agriculture and allied subjects, agriculture being a state subject, while Indian Council of Agricultural Research (ICAR), the apex agricultural research body in the country, had its own mechanisms of technology transfer through national demonstration projects, operation research projects, lab to land programmes, etc. To bring synergy between the functioning of state extension mechanism and its own programmes, ICAR integrated its extension approaches to form Krishi Vigyan Kendras (KVKs) since 1974 with an eye for science and technology-led growth which may lead to enhanced productivity, profitability and sustainability of agriculture. Thus, KVKs, in harmonization with state functionaries, are attaining the focal point for front line transfer of technologies for all developmental activities related to agriculture and allied aspects in India.

To cater to the technology and information needs of the farmers, Krishi Vigyan Kendra is working as the link between National Agricultural Research System (NARS) and Transfer of Technology System (TOT) through effective convergence with state and other organs. Apart from the set mandated activities, the KVKs are also involved in a number of flagship programmes of state/central government to achieve the desired objectives.

2.1 Genesis of KVK:

The journey of KVK started in the form of polytechnique for providing vocational training. Later on objectives of other programmes like Lab to Land, National Demonstration etc. were merged into an institutional shape in the form of Krishi Vigyan Kendra. The first KVK was established in 1974 at Puducherry under Tamilnadu Agricultural University followed by the second KVK in West Midnapore district of West Bengal of this zone. During the same plan period another two KVKs were also established, one at South 24 Pgs of West Bengal (Nimpith) and Khorda, Odisha. During VI Five Year Plan, 7 KVKs were established of which six in Odisha and one in West Bengal followed by 6 KVKs during Annual Plan of 1090-92. The process of establishment of KVKs continued in each Five Year Plan and another 4 KVKs were established during VIII Five Year Plan. In IX Five year plan, this zone was approved only one KVK but 26 KVKs were established during X Five year plan. In the next two Five Year Plan period, 6 KVK each were established in this zone. However, in XII Five year plan, 5 additional KVKs were established in 5 larger districts of West Bengal namely, Murshidabad, Nadia, North 24 Pgs, South 24 Pgs and Malda.

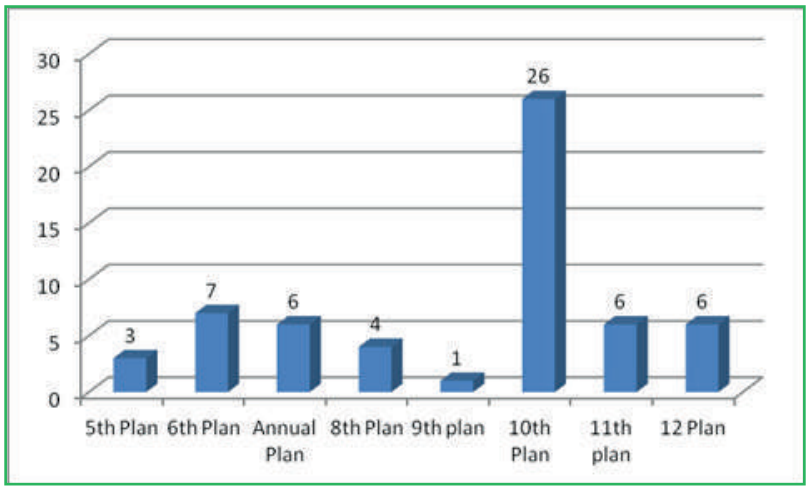


Figure : No of KVKs opened in Zone V

2.2 Mandate:

The mandate of KVK has been changed many a time as per the need of stakeholders for better application of policy initiatives in agricultural development. The present mandate of KVK is Technology Assessment and Demonstration for its wider Application and to enhance Capacity Development (TADA-CD). For accomplishment of the existing mandate the following activities are entrusted with the functioning of KVKs.

- Conduct on-farm trials to identify the location specificity of agricultural technologies under various farming systems.
- Organize frontline demonstrations to establish production potential of various crops and enterprises on the farmers' fields.
- Organize need based training for farmers to update their knowledge and skills on modern agricultural technologies and provide training to extension personnel to orient them in the frontier areas of technology development.
- Create awareness about improved agricultural technologies among various clientele groups through appropriate extension programmes.
- Produce quality seeds, planting materials, livestock breeds, animal products, bio-products etc. as per the demand and supply the same to different clienteles.
- Work as knowledge and resource centre of agricultural technologies to support the initiatives of public, private and voluntary sectors for improving the agricultural economy of the district.

2.3 State-wise distribution of KVK:

State/Union Territory-wise distribution of KVKs under ICAR-ATARI, Kolkata indicates that in Odisha 33 KVKs are working in all 33 districts, 23 KVKs are functioning in West Bengal and 3 KVKs are in operation in A&N Islands. The details of state-wise and host organization-wise distribution of KVKs are given below.

Table: State wise status of Krishi Vigyan Kendras

Name of the State	No. of Districts	No. of KVKs under						TOTAL
		SAU	ICAR	DU	CU	NGO	SDA	
A&N Islands	3	-	3	-	-	-	-	3
Odisha	33	31	2	-	-	-	-	33
West Bengal	23	12	4	1	1	4	1	23
Total	**59**	**43**	**9**	**1**	**1**	**4**	**1**	**59**

ICAR – Indian Council of Agricultural Research, SAU – State Agricultural University, CU- Central University, NGO – Non-Governmental Organization, SDA- State Department of Agriculture, DU - Deemed University.

Table: Host organization wise status of KrishiVigyanKendras

Sl. No.	State/UT	Host Institution	Total
1.	**A & N Islands (3)**	Central Agricultural Research Institute (ICAR), Port Blair	3
2.	**Odisha (33)**	Orissa University of Agriculture & Technology, Bhubaneswar	31
		ICAR-National Rice Research Institute, Cuttack	1
		ICAR-Central Institute of Fresh Water Aquaculture, Bhubaneswar	1
3.	**West Bengal (23)**	Bidhan Chandra KrishiViswavidyalaya, Nadia (SAU)	4
		Uttar BangaKrishiViswavidyalaya, Coochbehar (SAU)	5
		West Bengal University of Animal & Fishery Sciences, Kolakta (SAU)	3
		VisvaBharati, Bolpur, Santiniketan (CU)	1
		ICAR- Central Research Institute of Jute and Allied Fibres, (ICAR) Barrackpore	2
		W.B. Comprehensive Area Development Corporation (SDA)	1
		Kalyan, Purulia (NGO)	1

Sl. No.	State/UT	Host Institution	Total
		SevaBharati, Jhargram (NGO)	1
		Rama Krishna Ashram, South 24 Parganas (NGO)	1
		Ram Krishna Mission Vivekananda University, Belur Math (DU)	2
		ICAR-ERS NDRI Kalyani, Nadia (ICAR)	1
		ICAR-CISH Regional Station, Malda (ICAR)	1
Total			59

2.4 Manpower:

The achievement of KVKs in both mandated and associated activities greatly depends on deployed manpower. All the host organizations having KVK in this zone are constantly pursued to fill up the vacant posts on priority. In non-ICAR run KVKs, there has been recruitment but the ICAR-run KVKs are still suffering due to skeleton staff strength. The summary of staff position is given below.

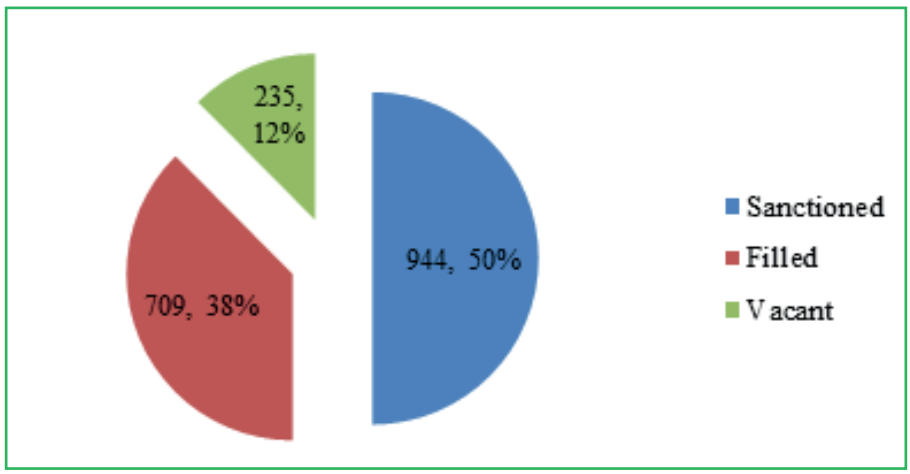
Table: State-wise staff position at KVKs under ICAR-ATARI, Kolkata
Scientific and technical

Name of the State	Sr. Scientist and Head			Subject Matter Specialist/T-6			Farm Manager/T-4			Program Assistant (computer)/T-4			Program Assistant (lab technican)/ T-4		
	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V
A&N Islands	3	1	2	18	11	7	3	2	1	3	1	2	3	1	2
Odisha	33	28	5	198	148	50	33	27	6	33	31	2	33	23	10
West Bengal	23	18	5	138	108	30	23	15	8	23	17	6	23	17	6
TOTAL	**59**	**47**	**12**	**354**	**267**	**87**	**59**	**44**	**15**	**59**	**49**	**10**	**59**	**41**	**18**

Administrative staff and total staff

Name of the State	Assistant			Stenographer grade III			Driver/T-1			Skilled Support Staff			Total		
	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V
A&N Islands	3	1	2	3	2	1	6	5	1	6	2	4	48	26	22
Odisha	33	0	33	33	28	5	66	65	1	66	58	8	528	408	120
West Bengal	23	16	7	23	12	11	46	36	10	46	36	10	368	275	93
TOTAL	**59**	**17**	**42**	**59**	**42**	**17**	**118**	**106**	**12**	**118**	**96**	**22**	**944**	**709**	**235**

Percentage wise filled and vacant staff position in Zone V 2020



2.5 Infrastructure facilities:

In order that KVKs be showcased as resource, technology and knowledge hub in the districts, creation of all round infrastructural facility is a *sine qua non*. Apart from keeping administrative building and training hostel in sound shape, KVKs must maintain suitable demonstration units in fully functional mode which not only would increase its visibility and amplify farmers foot fall in the KVK but is instrumental in enhancing farmers perception and confidence upon the KVK and inculcating enthuse in them to adopt the profitable technologies to the cause of enhancing their livelihood and income.

The matter of providing adequate infrastructure to the KVKs of this zone has been given priority to help KVKs discharge their responsibilities in a better way. Barring a few KVKs, rest are having administrative building, farmers' hostel, staff quarter and demonstration unit. A few KVKs are also having other facilities. The summary of infrastructure facilities available with KVKs is given below.

Table: Status of Infrastructure facilities

Name of the State/ UT	Admn. Bldg.	Farmers Hostel	Staff Qtrs,	Demons. Unit	Soil and Water Testing Laboratory	Rain Water harvesting structure	Integrated Farming System	Minimal processing facility	e-Connectivity (ERNET)	Carp hatchery	Solar Panel	Technology Information Unit	Micronutient Facility	Tractor	Four Wheeler	Two Wheeler
A & N Islands	2	1	1	2	1	1	0	0	3	1	0	0	0	1	2	6
Odisha	32	28	19	116	27	0	14	4	8	10	0	3	3	30	31	49
West Bengal	23	23	16	54	13	9	10	8	4	7	1	5	5	22	23	38
Total	**57**	**52**	**36**	**172**	**41**	**10**	**24**	**12**	**15**	**18**	**1**	**8**	**8**	**53**	**55**	**93**

3.0 Thrust Area

3.1 Thrust Area:

In a bid to formulate effective and implementable plan of action, the KVKs have identified the major thrust areas of the district in agriculture, horticulture, animal husbandry, fishery, drudgery reduction, nutritional requirement, entrepreneurship development and others. Based on available expertise, the KVKs address the issues in a sustained manner. The identified thrust areas are:

- Varietal substitution of field crops
- Enhancement of water use efficiency through micro-irrigation system
- Crop diversification
- Promotion of IFS
- Improvement of livestock sector with feed and other management practices
- Soil health management
- Economic improvement of farm women
- Drudgery reduction
- Value addition and minimization of postharvest loss
- Popularization of fodder production technology
- Management practices in fishery
- Application of RCT
- Application of ICT towards agricultural development
- Entrepreneurship development among rural youths
- Development of suitable strategy to combat climatic vulnerability towards crops and livestock production

4.1 Technology Assessment:

4.1.1 On-farm Trials:

On farm trials were conducted to assess the suitability of technology for specific farming situation and refine them for large scale adoption in varied thematic areas pertaining to field crops, livestock, value addition, drudgery reduction and others. On farm trails were conducted as a part of mandated activities of Krishi Vigyan Kemdras spread over the states of Odisha, West Bengal and Andaman and Nicobar Islands. The various technologies evolved by the research institutions/ universities are tested in farmers field. These on-farm trails cover all the disciplines addressing the local problems and issues. The issues addressed were the productivity enhancement, plant protection measure, value addition, integrated nutrient management, livestock management and different enterprises.

4.1.2 Area-wise Trials Conducted:

A number of thematic areas were chosen to conduct on-farm trial by the KVKs of Zone V during 2020. Most favoured thematic areas in which on-farm trials were conducted was varietal evaluation. It was followed by integrated nutrient management. The assessed technologies also included integrated pest management, integrated crop management, evaluation of animal breed and nutrition, processing and value addition, post harvest technology and value addition. About 35 thematic areas were chosen for assessment of technology as depicted below:

4.1.3 Thematic area-wise Trials Conducted:

Technologies related to crop, livestock enterprise, integrated farming system. Storage techniques, integrated nutrient management, integrated disease management was assessed in the farmers field. During 2020, about 428 OFTs were conducted by 59 KVKs and 3538 trials were laid down to conduct these OFTs.

As observed in other years, maximum number of trails was conducted in the areas of varietal evaluation (60 OFTs) in 441 trials. Integrated nutrient management was also an important area for evaluation where 59 OFTs were laid out in 404 trials. In the thematic area of integrated pest 46 OFTs were conducted in 286 trials, while integrated crop management was taken up trails in 18 OFTs. Weed management (20 OFTs), integrated disease management (30 OFTs). In livestock sector, production and management of livestock (33 OFTs) and feed and fodder management (18 OFTs) were mostly conducted OFTs. In other areas like processing value addition (20 OFTs) drudgery reduction (70 OFTs), small scale income generation (8 OFTs), mechanization (12 OFTs), mushroom cultivation (10) were conducted to assess the technologies in these areas. The details of On-farm trial conducted are given in below table:

In the state of Odisha conducted 234 OFTs through 1767 trials. Trials are mainly in the areas of integrated nutrient management (31 OFTs), varietal evaluation (45 OFTs), integrated pest management (24 OFTs), production and management of livestock (9).

Table: State wise details of on-farm trials conducted by KVKs

Thematic areas	Number of OFT	No. of trials	Number of OFT	No. of trials	Number of OFT	No. of trials	Number of OFT	No. of trials
	A & N Islands		Odisha		West Bengal		Total Zone	
Crop production and management								
Integrated Nutrient Management	2	9	31	239	26	156	59	404
Varietal Evaluation	2	14	45	332	13	95	60	441
Integrated Pest Management	4	16	24	175	18	95	46	286
Integrated Crop Management	0	0	5	34	13	106	18	140
Integrated Disease Management	0	0	19	129	11	82	30	211
Small Scale Income Generation Enterprises	0	0	5	50	0	0	5	50

Thematic areas	Number of OFT	No. of trials	Number of OFT	No. of trials	Number of OFT	No. of trials	Number of OFT	No. of trials
	A & N Islands		Odisha		West Bengal		Total Zone	
Weed Management	0	0	12	83	8	58	20	141
Resource Conservation Technology	2	7	5	38	3	19	10	64
Farm Machineries	0	0	7	41	2	20	9	61
Integrated Farming System	0	0	2	14	1	7	3	21
Seed / Plant production	0	0	1	6	15	134	16	140
Post Harvest Technology / Value addition	2	0	3	24	0	0	5	24
Drudgery Reduction	0	0	2	17	1	0	3	17
Storage Technique	0	0	1	10	1	10	2	20
Others (Pl. specify)	5	7	9	83	17	104	31	194
Total	**17**	**53**	**171**	**1275**	**129**	**886**	**317**	**2214**
Live stock production and management								
Disease Management	0	0	4	36	2	58	6	94
Evaluation of Breeds	0	0	5	37	4	21	9	58
Feed and Fodder management	1	0	9	68	8	124	18	192
Nutrition Management	0	0	2	19	0	0	2	19
Production and Management	3	14	8	52	22	465	33	531
Processing and value addition	0	0	4	31	0	0	4	31
Others (Pl. specify)	0	0	1	10	0	0	1	10
Total	**4**	**14**	**33**	**253**	**36**	**668**	**73**	**935**
Others								
Drudgery reduction			1	7	0	0	1	7
Health and nutrition	1	10			0	0	1	10
Processing and value addition			1	13	0	0	1	13
Small-scale income generation			1	7	0	0	1	7
Household food security					2	10	2	10
Agroforestry management			2	14	0	0	2	14
Mechanization			12	91	0	0	12	91
Processing and value addition			1	7			1	7
Mushroom cultivation			10	73			10	73
Group Dynamics					2	40	2	40
Gender Dimension					1	30	1	30
Any other			2	27	2	60	4	87
Total	**1**	**10**	**30**	**239**	**7**	**140**	**38**	**389**
Garnd Total	**22**	**77**	**234**	**1767**	**172**	**1694**	**428**	**3538**

4.1.4 Details of selected on-farm trials:

Andaman and Nicobar Islands

Port Blair KVK

Thematic area: **Nutrient Management**

Effect of enriched organic manure on growth and yield of rice

OFT on effect of organic nutrient management on growth and yield of rice was conducted at farmer's field of South Andaman. On farm trial consisted five treatments *viz* enriched FYM, vermicompost, goat manure and neem manure. Based on the equal Nitrogen required quantity of organic manure was incorporated in the soil one week before transplanting. The result revealed that significantly higher no of panicles/m^2 was registered in application of enriched goat manure which was 11.2 and 7.3 % higher than enriched neem cake and enriched vermicompost, respectively. Enriched goat manure recorded higher grain and straw yield of 12.5, 32.3 and 18.6, 40.7 % higher than application enriched farm yard manure and farmers practice, respectively. Higher nutrient use efficiency was recorded under application of enriched goat manure followed by enriched vermicompost.

Table: Effect of enriched organic manure on yield attributes, yield, nutrient use efficiency and economics of rice

Technology option	No. of trials	Yield component			Nutrient Use efficiency (%)	Yield (q/ha)	Cost of cultivation(Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of productive tillers/m^2	No. of grains per panicle	Test wt. (1000 grain wt.)						
Technology option-0 (FP)- No organic manure	4	173	82.3	20.7	-	31.4	41590	64200	22610	1.54
Technical Option-1- Enriched FYM		189	92.9	21.0	15.6	36.9	47560	74270	26710	1.56
Technical Option –2: Enriched neem cake		223	99.4	21.4	20.3	38.3	51400	77762	26362	1.51
Technical Option –3: Enriched vermicompost		231	108.8	21.9	23.3	39.4	57910	79820	21910	1.38
Technical Option –4: Enriched goat manure		248	112.5	22.2	30.9	41.5	47050	83976	36926	1.78

Nimbudera KVK

Thematic area: Home Science

Formulation of Instant Soup Mix powder using locally available ingredients

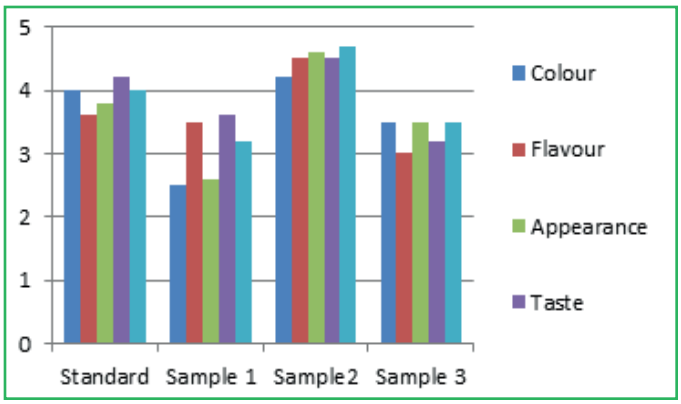
Increase in population and accumulation of industries in a particular area made more people to stay alone after education for employment. Less time is available for them to prepare food. Most of them consume what is available or food that requires less preparation time without considering the health benefits derived out of the food they consume. Hence, an attempt is made by KVK, N & M Andaman to prepare and evaluate soups using locally available ingredients without compromising on the health benefits. The following ingredients were used to prepare the soup.

Ingredients	Sample 1 (gms)	Sample 2 (gms)	Sample 3(gms)
Ragi	30	-	-
Chick pea	-	30	-
Soya bean powder	-	-	30
Onion powder	5	5	5
Beetroot powder	10	10	10
Dehydrated Cabbage	10	10	10
Poi Bhaji Powder (Basella alba)	15	-	-
Marsa Bhaji Powder (Amaranthus blitum)	-	15	-
Medak bhaji Powder (Centella asiatica)	-	-	15
Potato Powder	15	15	15
Spice powder	5	5	5
Brown sugar	5	5	5
Milk powder	5	5	5

The soup mix samples along with control were given to the panel members for organoleptic evaluation. Ten panel members assessed the acceptability of the soup mix. The soup mix after addition of hot water was evaluated for their colour, flavor, appearance, taste, overall acceptability. Sensory attributes were scored on a 5- point hedonic scale (Excellent 5, Very good 4, Good 3, Average 2 and Poor 1). The judges were required to fill up the score card sheet, giving a maximum of 5 marks for each attribute, thus making a total score of 25.

Mean Score of Sensory Evaluation of Instant Soup Mix

Sensory Attributes	Standard	Sample 1	Sample 2	Sample 3
Colour	4.0	2.5	4.2	3.5
Flavour	3.6	3.5	4.5	3.0
Appearance	3.8	2.6	4.6	3.5
Taste	4.2	3.6	4.5	3.2
Overall acceptability	4.0	3.2	4.7	3.5



Overall acceptability of Instant Soup Mix

The organoleptic test shows sample 2 which was prepared with chick pea powder and marsa bhaji scored maximum in all sensory attributes followed by standard, followed by sample 3 and then sample 1.

Formulation of Instant Soup Mix

Malda KVK

Thematic area: Plant Protection

Need based and proper use of fungicides along with appropriate cultural practice

Die-back and Anthracnose disease of mango is most common in Malda district of West Bengal. To develop a management practice against the disease one on-farm trial was conducted by KVK Malda involving different cultural and chemical management practices. From the present study, it can be concluded that Fungal disease management by pruning of dead woods up to 5-10 cm green portion and with Copper oxychloride @ 4g/L (2 times) and Sulphur @ 2g/L showed 39.79% yield increase over control with B:C ratio of 3.18 than 1.15 of traditional one, Net return from the treatment was Rs 721398/-

Table :Performance of fungicides and cultural practice against Die-back and Anthracnose disease of Mango

Technology option	No. of trials	Disease incidence (%)	Yield (q/ha)	% yield increase over control	Avoid-able yield loss (%)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
Farmers' practice: Indiscriminate and improper spraying of inappropriate fungicides	07	26.40	288.90	--	--	206610	443429	236819	1.15
Technology option (1): Fungal disease management by pruning of dead woods up to 5-10 cm green portion and with Copper oxychloride @ 4g/L (2 times) and Sulphur @ 2g/L	07	5.23	369.30	30.98	21.80	184480	658531	474052	2.57
Technology option (2): Fungal disease management with Carbendazim + Mancozeb @ 1g/L (2 times)	07	2.47	393.70	39.79	25.73	174144	721398	547254	3.18

Anthracnose on leaf, inflorescence and fruit in FP

Inflorescence without disease symptom in TO1 and TO2

Spraying of fungicides

Application of copper oxychloride on cut end of dead branch of mango

Malda KVK

Thematic area: **Enterprise**

Oyster mushroom cultivation in sugarcane substrate

On-farm trial was conducted to study the efficacy of the sugarcane substarte for mushroom production compared to paddy straw and other substrate. Results showed that Technology Option III i.e. Oyster mushroom cultivation using sugarcane straw substrate along with lime and bleaching powder is more profitable and technically viable among small and marginal farmers.. The mushroom yield was 17.6 q/unit while netreturn was Rs 1320/unit with BC ratio of 3.0

Table: Mushroom cultivation with sugarcane substrate

Technology option	No. of trials	Disease/ insect pest incidence (%)	Yield (Kg/unit)	Cost of cultivation (Rs./unit)	Gross return (Rs/ unit)	Net return (Rs./unit)	BC ratio
Farmers' practice: Spawn + Paddy straw substrate + Lime + Bleaching powder	7	15%	11.30	460.00	1130.00	670.00	1.45
Tech. Opt I: Spawn + Black-gram straw substrate + Lime + Bleaching powder	7	4%	15.75	435.00	1575.00	1140.00	2.62
Tech. Opt. II: Spawn + Wheat straw substrate + Lime + Bleaching powder	7	3%	12.70	480.00	1270.00	790.00	1.64
Tech. Opt. III: Spawn + Sugar-cane straw substrate + Lime + Bleaching powder	7	1%	17.60	440.00	1760.00	1320.00	3.00

1 Unit = 10 cylinders (cylinder size: 12″ x 24″) Sale price: Rs 100/kg fresh mushroom

Sasya Shyamala South 24 Parganas (additional) KVK

Thematic area: Seed Production

Varietal assessment through high yielding varieties to increase the productivity of lentil.

Results of on-farm trial on assessment of lentil varieties showed that Technology option-1 (IPL-220) Produced significantly higher grain yield (9.15 q/ha), Number. of branches (7.52), Number. of pods per plant (130) and 100 seed weight (2.99g). Net return of the variety was found to be the highest (Rs. 28,325.00) with high BC ratio(2.29). At par results also recorded by the technology option -2 (L-4717)

Table: Performance of lentil varieties

Technology option	No. of trials	Yield component			Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ ha)	Net return (Rs./ha)	BC ratio
		No. of Branches per Plant	No. of pods per plant	Test wt. (100 grain wt.)					
Moitree	5	6.28	107	2.46	7.50	22,000.00	41,250.00	19,250.00	1.88
IPL-220		7.52	130	2.99	9.15	22,000.00	50,325.00	28,325.00	2.29
L-4717		7.10	125	2.96	9.06	22,000.00	49,830.00	27,830.00	2.27
IPL-526		6.57	115	2.37	8.25	22,000.00	45,375.00	23,375.00	2.06

Purba Medinipur KVK

Thematic area: **Crop management**

Effect of different trellising structure evaluated

Results showed that all the growth and yield parameters as well as economics of ridge gourd significantly improved for different trellising system. Among different trellising system, ridge gourd grown in "Inverted V shaped" system was recorded maximum results for most of the growth parameters like plant height (348 cm), no. of main branch/plant (25.6), no. of leaves /plant (51), no. of

fruits /plant (16.6), average fruit weight (174 gm). Maximum yield (39.82 t/ha) was also recorded in "Inverted V shaped" system followed by in "Vertical netting structure" (34.38 t/ha). Cultivation of ridge gourd in normal field condition i.e. in ground cover recorded lowest values for all the parameters. Table 2 revealed that highest net return of Rs. 510000/ha could be obtained with BC ratio of 3.32 from ridge gourd if grown in "Inverted V shaped" system followed by in "Vertical netting structure" with values of Rs. 440000.00 and 3.20, respectively.

Table: Effect of different trellising structure on growth parameters of ridge gourd

Treatment	No. of trials	Pant popula-tion/ha	Plant height (cm)	No. of main branch/ plant	No. of leaves / plant	No. of fruits / plant	Average fruit weight (gm)	Yield (t/ ha)
TO1-Bower system	5	11540	282	21	42.4	15.8	173	31.65
TO2-Inverted V shaped system		13780	348	25.6	51	16.6	174	39.82
TO3-Vertical netting structure		14680	200	17.8	35.4	13.8	169.8	34.38
TO4-Ground cover		10120	140	12.6	27.4	11.8	160.2	19.13

Table 2: Effect of different trellising structure on economics of ridge gourd

Treatment	No. of trials	Cost of cultiva-tion	Gross return (Rs.)*	Net return (Rs.)	B:C ratio
TO1-Bower system	5	210000	580000	370000	2.76
TO2-Inverted V shaped system		220000	730000	510000	3.32
TO3-Vertical netting structure		200000	640000	440000	3.20
TO4-Ground cover		160000	360000	200000	2.25

*Gross return was calculated by multiplying the average selling price of Rs. 15/kg to good quality fruit (calculated after deduction of 5-10% yield from total yield as observed in different trellising system)

Purba Medinipur KVK

Thematic area: Crop production

Title: Different doses and ways of Zinc fertilization

Results of the on-farm trial showed that there was significant response in growth and yield attributes of zinc fertilization in betelvine. Both the application of soil and foliar application of Zinc i.e. Technology option 3 (RDF+ $ZnSO_4$ @ 0.03% + $ZnSO_4$ @ 15 kg/ha) recorded maximum vine length (422 cm), weight of 100 leaves (841.00 g), number of leaves/vine (47.0) and total marketable leave yield (5640000) followed by Technology option 1 (RDF+ $ZnSO_4$ @ 0.03%). Technology option 3 (RDF+ $ZnSO_4$ @ 0.03% + $ZnSO_4$ @ 15 kg/ha) also recorded highest net return of Rs. 15,33,333.00 and B:C ratio of 2.53.

Table : Growth and yield parameters of Betelvine as influenced by zinc fertilization

Treatment	Vine length (cm) at 12 months period	Number of lateral branch-es/vine	Weight of 100 leaves (g)	Number of leaves/ vine	Number of total leaves/ha	Number of good quality leaves/ha	Number of poor quality leaves/ha
TO_1- RDF+ $ZnSO_4$ @ 0.03%	406.00	14.6	836.00	44.6	5352000	4709760	642240
TO_2- RDF+ $ZnSO_4$ @ 15 kg/ha	375.00	13.2	791.20	39.6	4752000	4086720	665280
TO_3- RDF+ $ZnSO_4$ @ 0.03% + $ZnSO_4$ @ 15 kg/ha	**422.00**	**15.2**	**841.00**	**47.0**	**5640000**	**5076000**	**564000**
TO_4- Farmers' Practice (??)	349.00	11.2	762.00	36.6	4392000	3689280	702720

Table : Economics of 1 ha Betelvine cultivation as influenced by zinc fertilization

Variety	Cost of cultivation	Gross return (Rs.)	Net return (Rs.)	B:C ratio
TO_1- RDF+ ZnSO4 @ 0.03%	933333.33	2333333.00	1400000.00	2.50
TO_2- RDF+ ZnSO4 @ 15 kg/ha	966666.66	2266667.00	1300000.00	2.34
TO_3- RDF+ ZnSO4 @ 0.03% + ZnSO4 @ 15 kg/ha	1000000.00	2533333.00	1533333.00	2.53
TO_4- Farmers' Practice (??)	900000.00	1933333.00	1033333.00	2.14



Odisha

Nuapada KVK

Thematic area: Integrated crop management

Assessment of different planting time for better market price of tomato in rabi season

Tomato price is highly fluctuating in the market of Odisha, mostly when products come from outside in the local area and due to its perishable in nature Owing to the variation in sale price of tomato, staggered planting is highly beneficial to overcome the loss from low sale price . In view of the situation, an on- farm trial was conducted to find out the optimum planting date of tomato to get maximum yield and return of tomato. Results showed that planting of seedling one month after onset of normal planting time recorded maximum net return of Rs 23310/ha with BC ratio of 3.5 with yield of 27.3 q/ha. However, yield was maximum (28.2 q/ha) with planting of seedling one month after onset of normal planting time.

Table: Effect of planting dates of tomato :

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield (q/ ha)	Cost of cultiva-tion (Rs./ha)	Gross return (Rs/ ha)	Net return (Rs./ ha)	BC ratio
		No. of flowers/ plant	No. of fruits/ plant	Fruit wt. (gram)						
Farmers Practice (??)	7	18.0	5.0	54.2	34.3	29.6	73,150	2,36,800	1,63,650	3.22
TO1: Planting of seedling one month before onset of normal planting time		20.0	6.0	56.4	22.1	28.2	85,200	2,82,000	1,96,800	3.3
TO2: Planting of seedling one month after onset of normal planting time:		19.0	5.0	59.9	16.2	27.3	94500	3,27,600	2,33,100	3.5

Bargarh KVK

Thematic area: Farm Mechanisation

Assessment on ridge and furrow method of planting for pigeon pea

Less germination of seed due to water stagnation and drainage problem was observed in many places in Bargarh district of Odisha in pigeonpea crop, The situation resulted in the low production of pigeonpea in kharif, To overcome the problem, ridge and furrow system of cultivation of pigeonpea was studied by the KVK Bargarh. Tractor operated ridger was used to solve water drainage problem. After ridging, sowing was done manually. So a seed drill should be attached with the ridger for reducing cost of production. The germination of seeds for pigeon pea was improved in Kharif season. Results of the planting technique showed that yield was improved to 11 q/ha through adoption of this planting method. Net return increased to Rs 10800/ ha from Rs 6500/ha. The BC ratio was 1.36 in this treatment. Farmers are happy for good germination of seeds.

Table: Performance of planting techniques in kharif pigeonpea

Technology option	No. of trials	Yield component			Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Field capacity (ha/hr)	Labour (mandays/ha)	Cost of operation/ ha					
FP-Ridge and furrow manually	7	0.1	12	3100	7.3	24200	30700	6500	1.27
TO 1-Bullock drawn plough	7	0.3	6	2500	9.7	26100	34000	7900	1.30
TO2-Tractor drawn ridger	7	0.5	2	1800	11.0	30200	41000	10800	1.36

Bargarh KVK

Thematic area: Varietal Evaluation

Assessment of Onion variety for Bargarh district of Odisha

An on-farm trial was carried out by Bargarh KVK , Odisha to find out best onion variety for the district. The farmers use Nasik red which gave poor yield in kharif season in the district . Bhima Shakti: a red onion variety from DOGR has been identified for release for kharif season in Chhattisgarh, Delhi, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan and Tamil Nadu. The variety can also be grown in late kharif. It is reported to have an average yield of 20 - 22 t/ha in kharif and 40 - 45 t/ha in late kharif. Bulbs attain maturity within 100-105 days after transplanting (DAT) in kharif and 110 -120 DAT in late kharif. It produces mostly single centered bulbs. Therefore , the same variety was taken for study by the KVK. - Bhima Red, variety already recommended for rabi season also recommended for release for kharif season. It can also be grown in late kharif. Maturity is 105-110 DAT during kharif and 110-120 DAT during late kharif and rabi seasons. The average marketable yield in kharif season is 19-21 t/ha, in late kharif season is 48-52 t/ha and it is 30-32 t/ha in rabi season. It can be stored up to 3 months in rabi. Thus it was also taken up for study. Results showed that the onion variety Bihima Shakti gave 210 q/ha of onion yield in kharif season which is better than onion variety Bhima Red and Nasik red . Net return was Rs 49400/ha in case of Bhima Shakti with BC ratio of 1.48.

Table: Performance of kharif onion varieties in Bargarh district of Odisha

Technology option	No. of trials	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ ha)	Net return (Rs./ha)	BC ratio
FP- Nasik Red	10	185	98500	133905	35405	1.36
TO_1 - Bhima Shakti: A red onion variety from DOGR	10	210	102600	152000	49400	1.48
TTO_2 - Bhima Red	10	195	102600	141143	38543	1.38

Puri KVK

Thematic area: Integrated pest management

Assessment of stem borer management in summer rice

Low yield of rice was prominent in Puri district of Odisha due to stem borer attack . To solve the problem KVK Puri conducted an on-farm trial involving different plant protection measures. Results showed that nursery treatment with cartap hydrochloride 4G@ 0.8 kg per hactare, + alternate spraying of neem oil 3000ppm and Indoxacarb 18.5SL@1ml/litre at 55DAT + twice release of T. chilonis @ 50,000/ha 7days after spraying recorded least attack of stem borer (3.98% dead heart) . This practice recoded maximum yield of 56.7 q.ha . The net return was also highest (Rs 34615/-/ha) with BC ratio of 1.72

Table: Evaluation of efficacy of new generation chemicals against lepideptoran insect

Technology option	No. of trials	Yield component			Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of white ear head/sq.m	Percentage of dead heart	Test wt. (1000 grain wt.)					
FP: Spraying of triazophos/ propenophos/cypermethrin	7	4.86	13.24	22.3	44.2	42200	64090	21890	1.51
$TO_{1:}$ Nursery treatment with carbofuran 3G@ 1.5 /ha + alternate spraying of fipronil 5EC @ 2ml/ tr and neem oil 3000ppm @ 3ml/ ltr water at 15 days interval 55 DAT+release of T. chilonis@ 50,000/ha twice 7 days after spraying	7	0.82	4.12	22.6	54.8	46710	79460	32750	1.70
$TO_{2:}$ Nursery treatment with cartap hydrochloride 4G@ 0.8 kg per hactare, + alternate spraying of neem oil 3000ppm and Indoxacarb 18.5SL@1ml/litre at 55DAT + twice release of T. chilonis @ 50,000/ha 7days after spraying.	7	0.76	3.98	22.5	56.7	47600	82215	34615	1.72




Kandhamal KVK

Thematic area: Mushroom Production (Enterprise)

Assessment of yield performance of different varieties of oyster mushroom during Rabi season

Pearl oyster mushroom has better aroma, yield and excellent shelf life. Temperature for cultivation is 10-24 degree centigrade with biological efficiency of 70%. In 10-18 degree centigrade biological efficiency is 80%. An on-farm trial was conducted to find out the best Oyster mushroom spices in Khandamal district of Odisha, Results showed that Oyster mushroom *var. Hypsizygus ulmarius* was found to be superior in biological efficiency (105 %), yield (2.2 kg/bed). The species also recorded highest BC ratio of 5.5. Farmers are happy due to more yield & better consumer acceptance and show their interest for adoption of the technology

Table: Performance of oyster mashroom spices

Technology option	No. of trials	Yield component			Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Pin head appearance	Days to 1st harvest	Biological efficiency (%)					
FP- Cultivation of oyster mushroom *var. Pleurotus sajorcaju*	7	20	24	75	1.5	40	160	120	4
TO_{1} - Cultivation of oyster mushroom *var. Pleurotus ostreatus*	7	18	23	80	1.8	40	180	140	4.5
TO_{2} - Cultivation of oyster mushroom *var. Hypsizygus ulmarius*	7	17	24	105	2.2	40	220	180	5.5

Kalahandi KVK

Thematic area: Poultry management

Assessment of multi-enzyme mixture and probiotics on growth of chickens in semi intensive system of rearing

Low body weight gain and feed conversion ratio in backyard poultry is problem in semi intensive system of rearing of poultry in rural areas of Odisha. To overcome the problem, KVK Kalahandi carried out one on-farm trial to assess the affectivity of enzyme mixture and probiotics on growth of chickens. Results of the trial showed that feeding of poultry bird with Multienzyme mixture increase their FCR and cumulative body weight gain. The cumulative body weight of birds increased to 510 gm during 8th week with feeding of back yard chicken with 50 gm of commercial broiler feed (added with probiotic mixture @ 0.05%). Annual gross return increased to Rs 6800/10 birds and B C ratio increased to 2.22 with this treatment. Infection rate was reduced to 2% from 5% .Farmers show interest to feed multienzyme mixture and probioticcs to their poultry birds

Table: Performance of multi-enzyme mixture and probiotics on growth of chickens

Technology option	No. of trials	Yield component			Cost of cultivation/10 birds	Annual Gross Return (Rs.) /10 birds	Annual Net return (Rs.) /10 birds	B:C
		Cumulative BW gain during 8 wk of feeding (gm)	FCR	Incidence of infection				
T01:- Feeding of chickens with only commercial broiler feed	7	351	3.25	5	2480	4430	1950	1.78
T02: Feeding of back yard chicken with 50 gm of commercial broiler feed (added with probiotic mixture @ 0.05%)	7	510	2.8	2	3050	6800	3750	2.22
T03: Feeding of back yard chicken with 50 gm of commercial broiler feed (added with enzyme mixture @ 0.05%)	7	486	2.95	2	3315	6300	2985	1.9




Angul KVK

Assessment of stocking density of *Labeobata* in composite fish culture system

Thematic area: Fishery

Non availability of quality seed of fish in proper time, non adoption of scientific techniques by farmers resulted in poor fish production and economic return. Though species ***Labeobata*** is compatible for culture with IMC, it reached to marketable size within 5-6 months. So it should be included with major carps for increasing income. With the view to find out optimum stocking density for the species , an on-farm trial was conducted by KVK Angul in Odisha. Results showed that incorporation of *Labeobata* @ 30 % or 3000 no./ha in the major carp system i.e. (C:R:M) @ 10000 no. /ha and culture for 6 months increases yield by 66.6 % over farmers practice leading to maximization of profit. The net return from this practice was Rs 368100/ha and benefit cost ratio was 4.97. Many farmers are interested in practising this type of mixed carp culture system along with diversified fish species like minor carps in place of conventional single carp culture.

Table : Performance of stocking density of *Labeobata* in composite fish culture system

Technology option	No. of trials	Yield component	Change in parameter (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Avg. fish growth after 6 months of observation (Fish wt. in gm)						
FP: Conventional single Carp culture	3	482 gm (IMC)	-	19.2	81,000	2,68,800	1,87,800	3.31
TO1: Incorporation of *Labeobata*@ 15 % or 1500 no./ha in the Major Carp system i.e. (Catla:Rohu :Mrigal) @ 10000 no. /ha and culture for 6 months	3	443 gm (IMC) + 310 gm (*Labeobata*)	56.22	31.4	90,000	4,39,600	3,49,600	4.88
TO2: Incorporation of *Labeobata*@ 30 % or 3000 no./ha in the Major Carp system i.e. (Catla:Rohu :Mrigal) @ 10000 no. /ha and culture for 6 months	3	458 gm (IMC) + 345 gm (*Labeobata*)	66.59	32.9	92,500	4,60,600	3,68,100	4.97


Kandhamal KVK

Thematic area: Farm Machinery & Power

Assessment of Bullock drawn seed cum fertilizer drill in maize during Rabi

An on- farm trial was carried out to assess OUAT single row seed cum fertilizer drill which has inclined plate type metering mechanism and 5 row seed cum fertilizer drill- row to row adjustable, available with 7 sets of roller which is suitable for small to bold seeds, working width – up to 1.5 m, vertical roller type metering mechanism, These two type of drills were evaluated against the farmers practice of sowing behind the plough. Results of the trial showed that use of 5 row seed cum fertilizer drill has given highest BC ratio of 4.78 with an yield of 55120 cobs/ha . The sowing with this drill found to be superior over other technologies tested in rabi maize in Kndhamal district. The labour requirement was also reduced to 3 from 8 in this method. Farmers are happy due to saving in time and less drudgery involved and show their interest for adoption of the technology

Table: Performance of seed drill in rabi maize

Technology option	No. of trials	Performance indicators		No. of cobs/ ha	Cost of cultiva-tion (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Field capacity (ha/ hr)	Labour required (MD/ha)					
FP- Sowing behind the plough	7	0.016	8	51280	39820	170933	131113	4.29
TO_1. Single row seed cum fertilizer drill	7	0.031	4	53890	38700	179633	140933	4.64
TO_2 5 row seed cum fertilizer drill	7	0.16	3	55120	38420	183733	145313	4.78

4.2 Technology Demonstration

Frontline demonstration is very convenient to make farmers realize the benefit of improved variety/ technology and subsequent adoption by them for increasing upon the productivity and profitability of their crops. FLDs when done in cluster mode is further effective since the showcasing of the technology/ improved variety is done in large number of field in an area which increases the visibility spectrum by other farmers. Demonstration on latest technologies available in crops particularly in pulses, oilseeds, cereals, vegetables are demonstrated to the farmers through frontline demonstration programme of the KVK. The concept was popularized by the Indian Council of Agricultural Research (ICAR). The demonstrations are taken up in the direct supervision of NARS scientists. The concept is very much popular among the farmers as they are able to know about the latest varieties, plant protection measures, fertilizer use and other practices. Thus new technologies are spread to the village level through the demonstration. The concept was later

on extended to livestock, farm implements and other areas to update the latest technologies. In the year 2020, the KVKs of Zone-V took up theprogramme of frontline demonstration on 1634.02 ha covering 10056 farmers.

Table: State-wise frontline demonstration in oilseeds pulses and other crops

State	Oilseeds		Pulses		Other crops		Total	
	No. of farmers	Area (ha)	No. of farmers	Area (ha)	No. of farmers	Area (ha)	No. of farmers	Area (ha)
A&N Islands	-	-	-	-	20	7.9	20	7.9
Odisha	290	72.0	380	75.0	2143	373.94	2813	520.94
West Bengal	3148	578.77	880	143.0	2195	383.41	7223	1105.18
TOTAL	**3438**	**650.77**	**1260**	**218.0**	**5358**	**765.25**	**10056**	**1634.02**

The coverage was 650.77 ha in oilseeds, 218.0 ha in pulses and 765.25 ha un field crops. The crop-wise details and farmers' coverage has been provided in the table.

4.2.1 Oilseeds

In oilseeds, demonstration was conducted in 650.0 ha covering 3438 farmers in 2020. Out of the total coverage, oilseed was demonstrated in 72.0 ha in Odisha and 578.77 ha in West Bengal. The farmers covered in West Bengal was 3148 and Odisha it was 290. Demonstrated yield of mustard was recorded 13.62 q/ha about 28% increase over local machie West Bengal. However, in Odisha demonstrated yield was 8.50 q/ha which was 84% increase over local check. Ground nut crop showed demonstrated yield of 34.6 q/ha in West Bengal which was 21.5% higher than local check.

In Odisha, groundnut yield was 18.75 q/ha. In Odisha crop like sunflower, toria, niger, linseed showed 37%, 26%, 38.5% and 24.9% increase in yield, respectively. Sesame was demonstrated in West Bengal which showed 10.5 q/ha yield which was 26.5% more over local check yield. State-wise results are given in below table.

Sl. No.	Crop	State	No. of KVKs	No. of Farmer	Area (ha)	Yield (q/ha)		% Increase
						Demo	Check	
1	Mustard	Odisha	1	10	1	8.50	4.60	84.78
		West Bengal	11	1424	305.05	13.62	10.65	27.99
		Total	**12**	**1434**	**306.05**			
2	Groundnut	Odisha	12	210	61	18.75	14.82	28.19
		West Bengal	6	1389	212.72	34.56	29.57	21.46
		Total	**18**	**1599**	**273.72**			
3	Sesame	West Bengal	3	193	49	10.51	8.48	26.48
		Total	**3**	**193**	**49**			
4	Sunflower	Odisha	2	30	4	18.79	13.69	37.29
		West Bengal	2	142	12	17.56	13.67	28.59
		Total	**4**	**172**	**16**			
5	Toria	Odisha	2	20	3	7.00	5.55	26.22
		Total	**2**	**20**	**3**			
6	Niger	Odisha	1	10	1	5.40	3.90	38.46
		Total	**1**	**10**	**1**			
7	Linseed	Odisha	1	10	2	4.12	3.30	24.85
		Total	**1**	**10**	**2**			
Grand Total			**41**	**3438**	**650.77**			

Table: Frontline demonstration on toria , Deoghar, Odsha

Crop demonstrated	Existing (Farmer's) variety name	Existing yield (q/ha)	Name of Variety + Technology demonstrated	Number of farmers	Area in ha	Yield obtained (q/ha)			Yield gap minimized (%)		
						Max.	Min.	Av.	D	S	P
Rape seed and Mustard (Toria)	M-27	5.3	Variety Uttara +seed treatment +soil test based fertiliser, Micronutrient recommendation, WSF foliar nutrient application , application of Thiomethoxam to control Aphids and application of Emamectin Benzoate to control pod borer	325	130	6.6	5.5	6.05	75	65	14.5

4..2.2 Pulses

Six pulse crops were demonstrated by the KVKs in 2020 in 218 ha covering 1260 farmers. Demonstration was made in blackgram in 383 ha and 265 ha in greengram. Demonstrated yield was 10.95 q/ha in blackgram in West Bengal (29% increase) and 6.15 q/ha in Odisha (32% increase). Similarly in greengram the average yield was 9.91 q/ha in West Bengal and 6.77 q/ha in Odisha. Both the cases recorded increase around 38%. Lentil in rabi was demonstrated in 56.16 ha with average yield of 12.19 q/ha (32% increase). In chickpea, pigeonpea and cowpea enchancement was 43-89%, 29-86% and 160%, respectively. State-wise results are given in table below.

Table : Front line demonstration on pulses

Sl. No.	Crop	State	No. of KVKs	No. of Farmer	Area (ha)	Yield (q/ha)		% Increase
						Demo	Check	
1	Black Gram	Odisha	7	129	28	6.15	4.73	32.23
		West Bengal	6	254	31.74	10.95	8.67	29.06
		Total	**13**	**383**	**59.74**			
2	Green Gram	Odisha	10	130	25	6.77	5.18	38.13
		West Bengal	4	135	25.1	9.91	7.22	37.98
		Total	**14**	**265**	**50.1**			
3	Lentil	West Bengal	8	339	56.16	12.19	9.50	32.22
		Total	**8**	**339**	**56.16**			
4	Chick Pea	Odisha	2	20	10	9.00	4.75	89.47
		West Bengal	2	113	20.4	13.16	9.17	43.23
		Total	**4**	**133**	**30.4**			

Sl. No.	Crop	State	No. of KVKs	No. of Farmer	Area (ha)	Yield (q/ha)		% Increase
						Demo	Check	
5	Pigeon Pea	Odisha	6	63	12	11.94	9.28	29.66
		West Bengal	1	39	6.2	9.90	5.30	86.79
		Total	**7**	**102**	**18.2**			
6	Cowpea	Odisha	3	38	3.4	114.70	59.63	160.94
		Total	**3**	**38**	**3.4**			
Grand Total			**49**	**1260**	**218**			

Table : Frontline demonstration on greengram , Puri

Name of the technology demonstrated	No. of Farmers	Area (ha)	Yield (q/ha)		% In-crease	*Economics of demonstration (Rs./ha)	
			Demo	Check		Net Return	** BCR
Integrated management of YMV in green gram in Rabi Seed treatment with Imidacloprid 600 FS @ 5 ml / kg seed + Yellow sticky trap @ 50/ha + Neem oil 5 @5ml/lit spray on appearance of white fly on YST + Spraying of Diafenthiuron 50 WP @ 312.5 g a.i./ha	10	2	7.6	5.8	66.37	13500	1.82

4.2.3 Other crops

Frontline demonstration on paddy, wheat, maize, jute, ragi, finger millet; vegetables like potato, brinjal, broccoli, capsicum; fruits like banana, litchi etc. were demonstrated in 765.25 ha covering 5338 farmers.

The average yield of demonstration in paddy was 49.8 q/ha in A&N Islands, 43.9 q/ha in Odisha and 45.8 q/ha in West Bengal. Yield increase was 58.9% in A&N Islands and 13-17% in Odisha and West Bengal. Paddy varieties like IET 7029, Hasanta, Gotra Bidhan-3 was demonstrated in these demonstration. The crop was covered in 110.4 ha in Odisha, 97.80 ha in West Bengal and 2.5 ha in A&N Islands. Maize was demonstrated in 12.0 ha in Odisha and 9.0 ha in West Bengal and 3.0 ha in A&N Islands. The average yield was 45.5 q/ha in A&N Islands, 54.4 q/ha in Odisha and 49.2 q/ha in West Bengal. Increase in yield was 22 to 44% in these demonstration. In jute demonstration yield was 23-30 q/ha and increase was 9-18%.

In vegetable, improvement in yield was 27-50% in broccoli, 39% in capsicum, 26-37% in cabbage, 23-28% in tomato, 21-32% in brinjal. Litchi yield in demonstration was 384 q/ha which was 28% higher than check yield. Mango was also demonstrated by the KVKs, the crop recorded 252 q/ha in West Bengal and 103 q/ha in Odisha. Improvement was 20-28% over local check. Ragi and finger millets were also demonstrated. Ragi recorded 14.2 q/ha yield in Odisha and finger millet recorded 13.5 q/ha also in Odisha. Improvement was 33% in ragi and 48.6% in finger millet. Flower marigold was demonstrated

where yield was 115-170 q/ha, an improvement of 19-24% than these local practices. The details crop-wise demonstration is given in the below table.

Table : Frontline demonstration on other crops

Sl. No.	Crop	State	No. of KVKs	No. of Farmer	Area (ha)	Yield (q/ha)		% Increase
						Demo	Check	
1	Paddy	A & N Islands	2	12	2.5	49.81	31.16	58.89
		Odisha	21	491	110.4	43.98	38.90	13.37
		West Bengal	19	1151	200.42	45.82	39.21	16.98
		Total	**42**	**1654**	**313.32**			
2	Maize	A & N Islands	1	1	3	45.50	31.50	44.44
		Odisha	6	60	12	56.40	45.88	22.08
		West Bengal	4	51	9	49.23	37.01	33.67
		Total	**11**	**112**	**24**			
10	Wheat	West Bengal	3	74	10	36.19	28.24	28.15
		Total	**3**	**74**	**10**			
5	Jute	Odisha	1	10	2	23.40	21.40	9.35
		West Bengal	5	192	44.83	30.67	26.02	18.09
		Total	**6**	**202**	**46.83**			
2	Onion	Odisha	10	102	12.32	235.69	184.14	32.19
		West Bengal	4	71	6	168.54	126.89	29.07
		Total	**14**	**173**	**18.32**			
3	Cucumber	West Bengal	6	226	26.46	323.39	263.01	22.19
		Total	**6**	**226**	**26.46**			
4	Brinjal	Odisha	16	157	26.475	294.78	227.74	32.63
		West Bengal	5	59	4.26	380.66	314.24	21.71
		Total	**21**	**216**	**30.735**			
7	Potato	Odisha	2	15	1.4	230.42	196.07	19.76
		West Bengal	3	36	2.51	314.97	273.87	16.31
		Total	**5**	**51**	**3.913**			
8	Tomato	Odisha	19	233	21.5	403.14	317.64	28.21
		West Bengal	9	193	7.89	362.02	297.24	23.63
		Total	**28**	**426**	**29.39**			
9	Elepnt Foot Yam	West Bengal	7	145	3.97	416.99	321.56	28.88
		Total	**7**	**145**	**3.97**			
12	Broccoli	Odisha	1	10	1	243.00	162.00	50.00
		West Bengal	4	82	3.80	239.03	187.65	27.90
		Total	**5**	**92**	**4.80**			
13	Marigold	Odisha	6	60	5	115.08	92.77	24.52
		West Bengal	2	38	1.386	170.50	143.00	19.18
		Total	**8**	**98**	**6.39**			
14	Capsicum	West Bengal	4	46	2.53	202.55	144.65	39.39
		Total	**4**	**46**	**2.53**			
15	Turmeric	Odisha	1	10	0.4	218.40	150.50	45.12
		West Bengal	3	94	4.04	269.03	207.40	28.48
		Total	**4**	**104**	**4.44**			

Sl. No.	Crop	State	No. of KVKs	No. of Farmer	Area (ha)	Yield (q/ha)		% Increase
						Demo	Check	
16	Cabbage	A & N Islands	1	3	0.9	13.00	9.00	44.44
		Odisha	2	32	3.5	309.25	230.05	37.70
		West Bengal	3	28	8.16	255.58	203.00	26.02
		Total	**6**	**63**	**12.56**			
18	Chilli	Odisha	7	70	8.4	184.48	145.58	27.02
		West Bengal	4	45	9.75	69.30	55.10	30.54
		Total	**11**	**115**	**18.15**			
19	Bitter gourd	Odisha	6	69	4.92	149.07	121.18	24.82
		West Bengal	4	86	7.213	185.35	134.23	38.74
		Total	**10**	**155**	**12.13**			
25	Pointed Gourd	Odisha	3	20	2.8	137.43	111.87	23.21
		West Bengal	1	22	2	166.60	148.30	12.34
		Total	**4**	**42**	**4.8**			
26	Watermelon	Odisha	5	41	3.92	306.04	233.44	29.38
		Total	**5**	**41**	**3.92**			
20	Mango	Odisha	4	30	8	103.73	80.43	28.09
		West Bengal	2	83	16	252.93	220.31	20.51
		Total	**6**	**113**	**24**			
21	Cauliflower	Odisha	10	130	15.4	241.06	189.00	29.98
		West Bengal	3	51	2.13	249.57	202.14	29.00
		Total	**13**	**181**	**17.53**			
22	Okra	Odisha	10	105	15	155.53	129.15	22.88
		Total	**10**	**105**	**15**			
23	Litchi	Odisha	3	25	4	38.39	30.30	28.44
		Total	**3**	**25**	**4**			
24	Cashew	Odisha	2	15	3	12.28	8.32	45.50
		Total	**2**	**15**	**3**			
6	Banana	Odisha	5	48	8.4	433.86	362.64	24.24
		West Bengal	3	29	3.26	471.00	384.00	18.21
		Total	**8**	**77**	**11.66**			
27	Ragi	Odisha	6	70	17	14.18	10.76	33.26
		Total	**6**	**70**	**17**			
28	Sweetcorn	Odisha	2	16	2	128.10	101.20	28.12
		Total	**2**	**16**	**2**			
29	Fingermillet	Odisha	4	40	5	13.50	9.10	48.68
		Total	**4**	**40**	**5**			
30	Colocasia	A & N Islands	2	10	1.7	102.63	70.43	49.43
		West Bengal	1	41	1	315.00	241.00	30.71
		Total	**3**	**51**	**2.7**			
31	Others	A & N Islands	1	4	1.5	191.00	155.00	23.23
		Odisha	12	200	38.4	132.82	100.38	58.55
		West Bengal	10	426	46.81	131.69	106.41	27.24
		Total	**23**	**630**	**86.71**			
Grand Total			**280**	**5358**	**765.25**			

Table: Frontline demonstration on paddy, Bolangir, Odsha

Crop	Name of the technology demonstrated	No. of Farmer	Area (ha)	Yield (q/ha)		% change in yield	*Economics of demonstration (Rs./ha)				*Economics of check (Rs./ha)			
				Demonstration	Check		Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
Paddy	Rice Var. CR Dhan 310 (120-125 days , protein content 10%)	10	2	41.1	38.5	6.4	44500	76775	32275	1.73	44500	71918	27418	1.62

Table: Frontline demonstration on ragi , Bolangir, Odsha

Crop	Name of the technology demonstrated	No. of Farmer	Area (ha)	Yield (q/ha)		% change in yield	*Economics of demonstration (Rs./ha)				*Economics of check (Rs./ha)			
				Demonstration	Check		Gross Cost	Gross Return	Net Return	** BCR	Gross Cost	Gross Return	Net Return	** BCR
Finger Millet	Growing of Finger Millet Var. Arjun (duration 100-105 days) Resistance to blast and stem borer.	10	2	18.5	10.7	42.2	14750	58275	43525	3.95	11800	33705	21905	2.86

4.2.4 Livestock

Demonstration on livestock and fishery was organized by the KVKs of Zone-V. Different units of livestock were developed on poultry, sheep and goat, dairy and duckery. 8324 such units were developed in 2020 involving 1396 beneficiaries.

Table : Frontline demonstration on livestock

Sl. No.	Category	State	No. of KVKs	No. of Farmer	No. of Units/ No.
1	Poultry	A & N Islands	3	10	1030
		Odisha	16	627	2652
		West Bengal	8	147	2663
		Total	**27**	**784**	**6345**
2	Sheep and goat	Odisha	5	57	410
		West Bengal	5	39	64
		Total	**10**	**96**	**474**
3	Dairy	Odisha	10	115	96
		West Bengal	1	26	26
		Total	**11**	**141**	**122**
4	Duckery	Odisha	4	50	140
		West Bengal	4	81	621
		Total	**8**	**131**	**761**
5	Cow	Odisha	3	41	386
		West Bengal	4	90	110
		Total	**7**	**131**	**496**
6	Others	A & N Islands	2	5	3
		Odisha	3	55	55
		West Bengal	3	53	68
		Total	**8**	**113**	**126**
Grand Total			**71**	**1396**	**8324**

4.2.5 Fishery

In fishery 400 such units were developed on common carp, composite fish, ornamental fish and others, 565 farmers were benefitted from the programme.

Table : Frontline demonstration on fishery

Sl. No.	Category	State	No. of KVKs	No. of Farmer	No. of Units/No.
1	Common Carps	Odisha	13	248	161
		West Bengal	7	106	106
		Total	**20**	**354**	**267**
2	Composite fish	A & N Islands	1	3	3
		West Bengal	4	104	70
		Total	**5**	**107**	**73**
3	Ornamental fishes	West Bengal	2	11	22
		Total	**2**	**11**	**22**
4	Others	Odisha	2	13	13
		West Bengal	4	80	26
		Total	**6**	**93**	**39**
Grand Total			**33**	**565**	**400**

Table: Frontline demonstration on poultry, Mayurbhanj II, Odisha

Sl. No	Name of the Technology	Brief Details of Technology (3- 5 bullet points)	Net Return to the farmer (Rs.) per ha per year due to adoption of the technology	No. of farmers adopted the technology in the district	Year of estt.	Area (Sq. mt)	Details of production			Amount (Rs.)	
							Variety/ breed	Produce	Qty.	Cost of inputs	Gross income
1	Poultry Rainbow Rooster breed	Brooder unit by SHGs linkage with Mission Shakti	6350	65	2015	18	Rainbow Rooster	21 days chicks	1180	67387	82600

Table: Frontline demonstration on fishery, Puri, Odisha

Name of the technology demonstrated	No. of Farmer	No. of units	Major parameters		% change in major parameter	Other parameter		*Economics of demonstration (Rs.)			
			Demonstration	Check		Demonstration	Check	Gross Cost	Gross Return	Net Return	** BCR
Demonstration on artificial brooding management in chicks. Brooding management for 21 days with floor space of 0.3 sqft/bird with help of chick guards, artificial heat @ 1-3 watt per chick , feeders and drinkers @ 1 each per 50 chicks, vaccination with against RD on 7th day, 28 day, IBD on 14th day	10	2 (200 RIR Chicks /Unit)	Avg. Body Wt/21 days-160g/ bird	Avg. Body Wt/21 days-135g/ bird	30.37	Chick mortality rate during brooding period-4%	Chick mortality rate during brooding period-18%	8800 /Unit	10800 /Unit	2000 /Unit	1.22

4.2.6 Enterprise

During the year 2020, KVKs of Zone-V, developed 1310 units of mushroom, vermicompost, Azolla, apiculture, nutritional garden etc. benefitting 1376 farmers.

Table : Frontline demonstration on enterprise

Sl. No.	Category	State	No. of KVKs	No. of Farmer	No. of Units/No.
1	Oyster mushroom	A & N Islands	1	3	3
		Odisha	10	163	145
		West Bengal	6	180	180
		Total	**17**	**346**	**328**
2	Azolla	West Bengal	3	85	85
		Total	**3**	**85**	**85**
3	Paddy straw mushroom	Odisha	11	125	316
		Total	**11**	**125**	**316**
4	Vermicompost	A & N Islands	2	24	24
		Odisha	2	12	12
		West Bengal	8	119	71
		Total	**12**	**155**	**107**
5	Apiculture	A & N Islands	1	20	20
		Odisha	5	29	27
		West Bengal	5	31	48
		Total	**11**	**80**	**95**
6	Nutritional Garden	A & N Islands	1	5	5
		Odisha	6	95	95
		Total	**7**	**100**	**100**
7	Value addition	Odisha	3	30	30
		West Bengal	2	30	4
		Total	**5**	**60**	**34**
8	Others (pl.specify)	A & N Islands	1	20	20
		Odisha	10	150	140
		West Bengal	5	255	85
		Total	**16**	**425**	**245**
Total Enterprise			**82**	**1376**	**1310**

Table: Frontline demonstration on value addition, Darjeeling, West Bengal

Category	Name of the technology demonstrated	No. of Farmer	Major parameters		*Economics of demonstration (Rs.) or Rs./ unit			
			Demonstration	Check	Gross Cost	Gross Return	Net Return	** BCR
Value addition	**Preservation techniques along with usage of natural preservatives**	**10**	Value added products	Value added products	10000	16000	6000	0.6:1

4.2.7 Implements

Table: Front line demonstration on implements

Sl. No.	Category	State	No. of KVKs	No. of Farmer	No. of Units/No.
1	**Implement**	Odisha	8	200	39
		West Bengal	4	101	37
		Total	**12**	**301**	**75**

4.3 Training

Capacity building of stakeholders is instrumental in bringing about the necessary changes in individual attitudes. Learning by doing is always beneficial so far as adoption of the technology is concerned. Though, the acquisition of skills is a time consuming exercise, skills once acquired could be retained much longer than the knowledge component. Continuous updating of knowledge and skill of the farmers are required in the field of agriculture and allied sectors to maintain sustainability in agricultural development. Various organizations come forward with their proposal of training programme to update skills of their farmers/ rural youths. KVKs took the lead role to train the farmers at district level with their expertise on different fields of agriculture and allied vocations. The farmers approach to the KVKs to get trained in the area of crop production, horticulture, water management, off-season vegetable cultivation, soil health and fertility management, post-harvest technology, plant protection, fishery and value addition etc.

4.3.1 Consolidated achievement

The KVKs of Zone V organized 2858 training courses for the benefit of 78613 farmers and farm women during 2020. Out of total beneficiaries, 51395 was male (65.4%) and 27218 (34.6%) was female. A good number (38227) of SC/ST farmers were also trained in the programme which constituted 48.6% of total trainees. The details are given in the table below.

Table: State-wise training programme conducted for farmers and farmwomen in Zone V

State/UT	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
A & N Islands	35	191	238	429	0	0	0	212	113	325	403	351	754
Odisha	1438	12840	7646	20486	2952	2207	5159	6634	4680	11314	22426	14533	36959
West Bengal	1385	14781	4690	19471	11587	5494	17081	2198	2150	4348	28566	12334	40900
Total	**2858**	**27812**	**12574**	**40386**	**14539**	**7701**	**22240**	**9044**	**6943**	**15987**	**51395**	**27218**	**78613**

The KVKs of Zone V organized 601 training courses for the benefit of 12008 rural youth during 2020. Out of total rural youth, 8324 was male (69.3%) and 3684 (30.7%) was female. A good number (6480) of SC/ST farmers were also trained in the programme which constituted 54% of total trainees. The details are given in the table below.

Table: State-wise training programme conducted for rural youth and girls in Zone V

State/UT	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
A & N Islands	22	80	225	305	0	0	0	67	76	143	147	301	448
Odisha	346	2194	643	2837	652	244	896	1209	567	1776	4055	1454	5509
West Bengal	233	1679	707	2386	2125	1058	3183	318	164	482	4122	1929	6051
Total	**601**	**3953**	**1575**	**5528**	**2777**	**1302**	**4079**	**1594**	**807**	**2401**	**8324**	**3684**	**12008**

The KVKs of Zone V organized 466 training courses for the benefit of 11656 extension functionaries during 2020. Out of total beneficiaries, 9252 was male (79.4%) and 2404 (20.6%) was female. A good number (3423) of SC/ST farmers were also trained in the programme which constituted 29.4% total trainees. The details are given in the table below.

Table: State-wise training programme conducted for extension functionaries in Zone V

State/UT	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
A & N Islands	5	36	51	87	0	0	0	0	27	27	36	78	114
Odisha	169	1067	707	1774	207	160	367	223	164	387	1497	1031	2528
West Bengal	292	5515	857	6372	2025	309	2334	179	129	308	7719	1295	9014
Total	**466**	**6618**	**1615**	**8233**	**2232**	**469**	**2701**	**402**	**320**	**722**	**9252**	**2404**	**11656**

State-wise analysis of training for farmers and farmwomen showed that Union Territory of A&N Islands conducted 35 courses for 754 participants. In Odisha, 1438 courses were conducted for 36959 beneficiaries while in West Bengal 1385 courses were taken up for training of 40900 beneficiaries.

Skill development through training of rural youth was one of the most important objectives of the KVKs to generate rural employment. Mushroom production, bee keeping, seed production, value addition, dairy farming, poultry farming, fish seed production, repair and maintenance of farm machines were the most preferred areas for rural youth training. The KVKs conducted those training programme generally on on-campus mode. Farmers got trained in the latest technologies in those programmes.

State-wise analysis of the rural youth trained showed that West Bengal trained maximum rural girls 1929 which constitute about 31.9% of total trainees. The

percentage of the rural girls was 67.9% in the Union Territory of A&N Islands and 26.4% in the state of Odisha. A significant number of training programme was organized by the states for rural youth and girls. Union territory of A&N Islands organized 22 courses for 448 beneficiaries. Odisha organized 346 courses for 5509 beneficiaries and West Bengal organized 233 courses for 6051 beneficiaries.

The extension functionaries in state level were interested in obtaining training from the Krishi Vigyan Kendras. Those extension functionaries were mainly VLWs, Krishi Prayokti Sahayak and other block level workers of the state government. State-wise analysis of the programmes showed that West Bengal organized maximum number of training programme of 292 courses involving 9014 extension functionaries while Odisha organized 169 courses for 2528 extension functionaries and A&N Islands organized 5 courses for 114 beneficiaries. Respective state government sent their employees in groups to get training from KVKs.

4.3.1.1 On- and Off-Campus training

The training programmes conducted by the KVKs of Zone V were in both on-campus and in off-campus mode. Out of total training programmes (3925) conducted in all categories, around 39.7% was in on-campus mode and 60.3% in off-campus mode. While 38760 participants received training on on-campus mode (37.9%) and 63517 (62.1%) received training on off-campus mode.

Farmers and Farm Women

State/UT	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
ON	798	8655	3190	11845	4769	2669	7438	2055	1389	3444	15479	7248	22727
OFF	2060	19157	9384	28541	9770	5032	14802	6989	5554	12543	35916	19970	55886
Total	**2858**	**27812**	**12574**	**40386**	**14539**	**7701**	**22240**	**9044**	**6943**	**15987**	**51395**	**27218**	**78613**

Rural Youth and Girls

State/UT	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
ON	392	2236	809	3045	1595	878	2473	1137	459	1596	4968	2146	7114
OFF	209	1717	766	2483	1182	424	1606	457	348	805	3356	1538	4894
Total	**601**	**3953**	**1575**	**5528**	**2777**	**1302**	**4079**	**1594**	**807**	**2401**	**8324**	**3684**	**12008**

Extension Functionaries

State/UT	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
ON	368	5415	1228	6643	1479	334	1813	307	156	463	7201	1718	8919
OFF	98	1203	387	1590	753	135	888	95	164	259	2051	686	2737
Total	**466**	**6618**	**1615**	**8233**	**2232**	**469**	**2701**	**402**	**320**	**722**	**9252**	**2404**	**11656**

4.3.1.2 Thematic area-wise training programme

Further classification of training programme on thematic area basis showed that under crop production category, training on integrated crop management was conducted for 117 courses involving 3481 participants while in resource conservation technologies, 35 courses were organized for 850 beneficiaries. In Horticulture, important areas of training included off-season vegetable cultivation in which 36 trainings were organized for 1058 beneficiaries. In fruits cultivation, 83 trainings were organized for

2281 beneficiaries. Trainings were also organized on ornamental plants cultivation (26), plantation crops (24), tuber crops (22), spices (22), medicinal and aromatic plants (5). In soil health and fertility management, a large number (281) of training programmes were organized involving 7647 beneficiaries to address the issues of efficient fertilizer use and integrated nutrient management. In Livestock Production and Management, 258 courses were organized for 7387 beneficiaries which included dairy management, poultry management, piggery management etc. It showed the importance of those issues for the farmers in the districts. In Home Science, 290 courses were organized for 7580 beneficiaries which included courses like value addition of fruits and vegetables. In Agricultural Engineering, 114 courses were organized for 2799 beneficiaries. In plant protection, 442 courses were organized for 12098 beneficiaries in the areas of IPM, IDM and bio-control. Other important areas of training for the farmers were fishery, production of input, capacity building, agro-forestry to create alternative evenness of employment generation. In Fisheries, 186 courses were conducted involving 5651 farmers. In production of input, 66 courses were organized for 1715 farmers. In capacity building, 89 courses involving 2417 farmers and in agro-forestry, 51 courses for 1369 farmers were organized. A total of 2858 courses were organized in different thematic areas covering 78613 beneficiaries in Zone V in the year 2020.

Table: Thematic area wise training programme for farmers and farm women

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop Production													
Weed Management	77	889	288	1177	325	145	470	298	168	466	1512	601	2113
Resource Conservation Technologies	35	297	88	385	230	62	292	140	33	173	667	183	850
Cropping Systems	24	200	32	232	132	48	180	189	75	264	521	155	676
Crop Diversification	54	678	151	829	433	115	548	100	51	151	1211	317	1528
Integrated Farming	40	177	91	268	209	151	360	56	55	111	442	297	739
Water management	20	208	38	246	150	34	184	46	54	100	404	126	530
Seed production	65	969	273	1242	364	78	442	125	79	204	1458	430	1888
Nursery management	15	127	41	168	129	16	145	45	33	78	301	90	391
Integrated Crop Management	117	1490	308	1798	639	193	832	596	255	851	2725	756	3481
Fodder production	13	152	36	188	66	52	118	13	18	31	231	106	337
Production of organic inputs	39	394	165	559	183	101	284	91	45	136	668	311	979
Others, (cultivation of crops)	59	644	289	933	184	88	272	169	107	276	997	484	1481
Total	**558**	**6225**	**1800**	**8025**	**3044**	**1083**	**4127**	**1868**	**973**	**2841**	**11137**	**3856**	**14993**
Horticulture													
a) Vegetable Crops													
Integrated nutrient management	44	499	171	670	186	111	297	153	84	237	838	366	1204

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Water management	9	125	26	151	36	26	62	15	7	22	176	59	235
Enterprise development	7	63	12	75	23	14	37	42	11	53	128	37	165
Skill development	6	78	15	93	30	9	39	17	13	30	125	37	162
Yield increment	28	325	50	375	223	45	268	118	60	178	666	155	821
Production of low volume and high value crops	35	363	96	459	312	64	376	64	80	144	739	240	979
Off-season vegetables	36	332	89	421	219	204	423	136	78	214	687	371	1058
Nursery raising	30	289	96	385	134	66	200	109	87	196	532	249	781
Export potential vegetables	12	116	82	198	62	26	88	42	8	50	220	116	336
Grading and standardization	8	68	37	105	49	21	70	29	13	42	146	71	217
Protective cultivation (Green Houses, Shade Net etc.)	21	203	69	272	136	50	186	103	88	191	442	207	649
Others, if any (Cultivation of Vegetable)	61	569	248	817	391	235	626	108	220	328	1068	703	1771
Training and Pruning	20	106	83	189	87	107	194	116	82	198	309	272	581
Total (a)	**317**	**3136**	**1074**	**4210**	**1888**	**978**	**2866**	**1052**	**831**	**1883**	**6076**	**2883**	**8959**
b) Fruits													
Layout and Management of Orchards	16	233	42	275	159	44	203	18	21	39	410	107	517
Cultivation of Fruit	27	240	73	313	242	112	354	69	54	123	551	239	790
Management of young plants/ orchards	8	62	21	83	22	35	57	16	14	30	100	70	170
Rejuvenation of old orchards	3	30	3	33	20	4	24	11	7	18	61	14	75
Export potential fruits	4	24	8	32	46	20	66	6	0	6	76	28	104
Micro irrigation systems of orchards	7	78	30	108	20	38	58	8	8	16	106	76	182
Plant propagation techniques	11	80	40	120	65	37	102	28	33	61	173	110	283
Others, if any(INM)	7	53	43	96	36	19	55	7	2	9	96	64	160
Total (b)	**83**	**800**	**260**	**1060**	**610**	**309**	**919**	**163**	**139**	**302**	**1573**	**708**	**2281**

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
c) Ornamental Plants													
Nursery Management	5	96	13	109	30	11	41	12	0	12	138	24	162
Management of potted plants	3	60	8	68	10	2	12	18	7	25	88	17	105
Export potential of ornamental plants	4	44	5	49	15	9	24	18	9	27	77	23	100
Propagation techniques of Ornamental Plants	6	59	19	78	26	8	34	25	7	32	110	34	144
Others, if any	8	105	47	152	20	7	27	23	9	32	148	63	211
Total (c)	**26**	**364**	**92**	**456**	**101**	**37**	**138**	**96**	**32**	**128**	**561**	**161**	**722**
d) Plantation crops													
Production and Management technology	21	272	63	335	148	68	216	35	45	80	455	176	631
Processing and value addition	3	57	10	67	10	2	12	1	0	1	68	12	80
Others, if any	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (d)	**24**	**329**	**73**	**402**	**158**	**70**	**228**	**36**	**45**	**81**	**523**	**188**	**711**
e) Tuber crops													
Production and Management technology	17	207	37	244	43	47	90	46	91	137	296	175	471
Processing and value addition	1	2	3	5	9	11	20	0	0	0	11	14	25
Others, if any	4	54	1	55	36	15	51	7	6	13	97	22	119
Total (e)	**22**	**263**	**41**	**304**	**88**	**73**	**161**	**53**	**97**	**150**	**404**	**211**	**615**
f) Spices													
Production and Management technology	18	206	37	243	86	58	144	121	26	147	413	121	534
Processing and value addition	2	20	4	24	2	3	5	7	4	11	29	11	40
Others, if any	2	0	0	0	8	9	17	30	13	43	38	22	60
Total (f)	**22**	**226**	**41**	**267**	**96**	**70**	**166**	**158**	**43**	**201**	**480**	**154**	**634**
g) Medicinal and Aromatic Plants													
Nursery management	0	0	0	0	0	0	0	0	0	0	0	0	0
Production and management technology	4	68	11	79	27	8	35	5	4	9	100	23	123
Post harvest technology and value addition	1	12	10	22	0	0	0	3	0	3	15	10	25
Others, if any	0	0	0	0	0	0	0	0	0	0	0	0	0

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total (g)	**5**	**80**	**21**	**101**	**27**	**8**	**35**	**8**	**4**	**12**	**115**	**33**	**148**
Total(a-g)	**499**	**5198**	**1602**	**6800**	**2968**	**1545**	**4513**	**1566**	**1191**	**2757**	**9732**	**4338**	**14070**
Soil Health and Fertility Management													
Soil fertility management	55	780	277	1057	244	115	359	111	85	196	1135	477	1612
Soil and Water Conservation	3	18	8	26	4	1	5	6	32	38	28	41	69
Integrated Nutrient Management	76	885	252	1137	242	107	349	301	226	527	1428	585	2013
Production and use of organic inputs	44	592	94	686	246	64	310	46	15	61	884	173	1057
Management of Problematic soils	12	162	38	200	70	24	94	23	15	38	255	77	332
Micro nutrient deficiency in crops	27	472	82	554	119	17	136	62	19	81	653	118	771
Nutrient Use Efficiency	17	131	23	154	59	11	70	164	44	208	354	78	432
Soil and Water Testing	25	390	67	457	89	16	105	77	87	164	556	170	726
Others, if any	22	297	53	350	83	10	93	108	84	192	488	147	635
Total	**281**	**3727**	**894**	**4621**	**1156**	**365**	**1521**	**898**	**607**	**1505**	**5781**	**1866**	**7647**
Livestock Production and Management													
Dairy Management	43	334	192	526	319	248	567	62	69	131	715	509	1224
Poultry Management	68	357	406	763	346	287	633	115	296	411	818	989	1807
Piggery Management	6	53	65	118	31	28	59	6	11	17	90	104	194
Rabbit Management	3	27	28	55	1	9	10	8	2	10	36	39	75
Disease Management	52	317	286	603	302	408	710	84	90	174	703	784	1487
Feed management	43	324	173	497	386	275	661	121	94	215	831	542	1373
Production of quality animal products	13	94	107	201	68	60	128	18	11	29	180	178	358
Others, if any Goat farming	30	164	182	346	121	165	286	62	175	237	347	522	869
Total	**258**	**1670**	**1439**	**3109**	**1574**	**1480**	**3054**	**476**	**748**	**1224**	**3720**	**3667**	**7387**
Home Science/Women empowerment													
Household food security by kitchen gardening and nutrition gardening	58	49	690	739	65	463	528	10	357	367	124	1510	1634

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Design and development of low/minimum cost diet	10	14	173	187	4	36	40	6	38	44	24	247	271
Designing and development for high nutrient efficiency diet	3	0	58	58	0	13	13	0	4	4	0	75	75
Minimization of nutrient loss in processing	5	8	95	103	1	7	8	10	2	12	19	104	123
Gender mainstreaming through SHGs	4	0	61	61	20	16	36	0	8	8	20	85	105
Storage loss minimization techniques	12	10	160	170	3	16	19	38	83	121	51	259	310
Enterprise development	19	10	247	257	32	53	85	40	94	134	82	394	476
Value addition	57	80	771	851	17	234	251	24	357	381	121	1362	1483
Income generation activities for empowerment of rural Women	47	29	644	673	17	211	228	9	239	248	55	1094	1149
Location specific drudgery reduction technologies	13	0	218	218	20	39	59	0	63	63	20	320	340
Rural Crafts	3	0	65	65	0	5	5	0	5	5	0	75	75
Capacity building	21	17	263	280	44	104	148	32	77	109	93	444	537
Women and child care	8	3	83	86	5	47	52	6	59	65	14	189	203
Others, if any	30	115	313	428	116	129	245	14	112	126	245	554	799
Total	**290**	**335**	**3841**	**4176**	**344**	**1373**	**1717**	**189**	**1498**	**1687**	**868**	**6712**	**7580**
Agril. Engineering													
Installation and maintenance of micro irrigation systems	13	155	51	206	15	11	26	69	21	90	239	83	322
Use of Plastics in farming practices	6	95	11	106	10	2	12	19	3	22	124	16	140
Production of small tools and implements	15	154	8	162	19	3	22	74	122	196	247	133	380
Repair and maintenance of farm machinery and implements	36	412	58	470	95	19	114	163	47	210	670	124	794

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Small scale processing and value addition	9	60	89	149	11	9	20	23	24	47	94	122	216
Post Harvest Technology	12	61	23	84	36	18	54	61	115	176	158	156	314
Others, if any	23	213	106	319	92	21	113	109	92	201	414	219	633
Total	**114**	**1150**	**346**	**1496**	**278**	**83**	**361**	**518**	**424**	**942**	**1946**	**853**	**2799**
Plant Protection													
Integrated Pest Management	228	2371	647	3018	1134	284	1418	1069	536	1605	4574	1467	6041
Integrated Disease Management	130	1309	341	1650	720	166	886	663	220	883	2692	727	3419
Bio-control of pests and diseases	23	232	45	277	162	63	225	82	36	118	476	144	620
Production of bio control agents and bio pesticides	24	230	66	296	173	78	251	64	39	103	467	183	650
Others, if any	37	608	222	830	188	57	245	211	82	293	1007	361	1368
Total	**442**	**4750**	**1321**	**6071**	**2377**	**648**	**3025**	**2089**	**913**	**3002**	**9216**	**2882**	**12098**
Fisheries													
Integrated fish farming	21	227	55	282	100	66	166	31	25	56	358	146	504
Carp breeding and hatchery management	7	98	0	98	65	0	65	16	1	17	179	1	180
Carp fry and fingerling rearing	18	236	23	259	83	53	136	64	45	109	383	121	504
Composite fish culture & fish disease	60	829	185	1014	511	98	609	193	32	225	1533	315	1848
Fish feed preparation & its application to fish pond, like nursery, rearing & stocking pond	21	150	23	173	236	93	329	111	46	157	497	162	659
Hatchery management and culture of freshwater prawn	4	74	12	86	35	7	42	2	1	3	111	20	131
Breeding and culture of ornamental fishes	9	49	50	99	84	62	146	13	12	25	146	124	270
Portable plastic carp hatchery	6	39	30	69	77	0	77	20	1	21	136	31	167
Pen culture of fish and prawn	4	10	15	25	60	33	93	0	10	10	70	58	128

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Shrimp farming	3	15	10	25	65	15	80	10	5	15	90	30	120
Edible oyster farming	1	18	0	18	12	0	12	0	0	0	30	0	30
Pearl culture	4	19	1	20	41	6	47	28	5	33	88	12	100
Fish processing and value addition	9	76	24	100	164	67	231	18	8	26	258	99	357
Others, if any	19	236	41	277	152	52	204	138	34	172	526	127	653
Total	**186**	**2076**	**469**	**2545**	**1685**	**552**	**2237**	**644**	**225**	**869**	**4405**	**1246**	**5651**
Production of Input at site													
Seed Production	28	338	48	386	272	105	377	23	12	35	633	165	798
Planting material production	2	15	2	17	24	7	31	3	0	3	42	9	51
Bio-agents production	1	5	0	5	17	6	23	0	0	0	22	6	28
Bio-pesticides production	0	0	0	0	0	0	0	0	0	0	0	0	0
Bio-fertilizer production	2	22	24	46	10	0	10	6	0	6	38	24	62
Vermi-compost production	10	159	58	217	34	15	49	3	0	3	196	73	269
Organic manures production	9	110	43	153	44	6	50	3	2	5	157	51	208
Production of fry and fingerlings	0	0	0	0	0	0	0	0	0	0	0	0	0
Production of Bee-colonies and wax sheets	0	0	0	0	0	0	0	0	0	0	0	0	0
Small tools and implements	0	0	0	0	0	0	0	0	0	0	0	0	0
Production of livestock feed and fodder	2	56	4	60	7	0	7	3	0	3	66	4	70
Production of Fish feed	0	0	0	0	0	0	0	0	0	0	0	0	0
Others, if any	12	105	67	172	25	30	55	0	2	2	130	99	229
Total	**66**	**810**	**246**	**1056**	**433**	**169**	**602**	**41**	**16**	**57**	**1284**	**431**	**1715**
Capacity Building and Group Dynamics													
Leadership development	20	142	47	189	55	50	105	195	70	265	392	167	559
Group dynamics	17	199	66	265	107	37	144	31	12	43	337	115	452
Formation and Management of SHGs	9	57	80	137	7	50	57	40	28	68	104	158	262
Mobilization of social capital	7	68	7	75	54	31	85	27	16	43	149	54	203
Entrepreneurial development of farmers/youths	18	206	36	242	123	30	153	48	21	69	377	87	464

Thematic Area	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
WTO and IPR issues	6	57	13	70	8	3	11	59	15	74	124	31	155
Others, if any	12	146	15	161	29	7	36	93	32	125	268	54	322
Total	**89**	**875**	**264**	**1139**	**383**	**208**	**591**	**493**	**194**	**687**	**1751**	**666**	**2417**
Agro forestry													
Production technologies	38	455	169	624	126	68	194	154	68	222	735	305	1040
Nursery management	10	70	106	176	10	35	45	3	25	28	83	166	249
Integrated Farming Systems	3	62	8	70	3	7	10	0	0	0	65	15	80
Total	**51**	**587**	**283**	**870**	**139**	**110**	**249**	**157**	**93**	**250**	**883**	**486**	**1369**
Others (Pl. specify)	**24**	**409**	**69**	**478**	**158**	**85**	**243**	**105**	**61**	**166**	**672**	**215**	**887**
Grand Total	**2858**	**27812**	**12574**	**40386**	**14539**	**7701**	**22240**	**9044**	**6943**	**15987**	**51395**	**27218**	**78613**

4.3.2 Rural Youth

Ours is a young country comprising of 41% rural youths whose youthful energy when properly channelized can do miracle for a country with their innovative mind. Rural youths too want all comforts of life like their urban counterparts and if profession of agriculture makes them capable enough to satisfy their basic needs and other genuine luxuries of life then attraction of rural youths towards agriculture is natural. Considering the employment generation of the rural youth and girls in the rural areas, training progammes for rural youth and girls were organized by the KVKs of this Zone during 2020. The KVKs of Zone V conducted 601 courses for 12008 beneficiaries for rural youth and girls in A&N Islands, West Bengal and Odisha. Trainings were organized both on- and off-campus mode. In mushroom production 63 courses were organized for 1211 beneficiaries while in nursery management 17 courses were organized for 350 youths. Other courses organized were for planting material production (19), bee keeping (35), vermiculture (22), sericulture (20), diary (8), piggery (3), poultry production (17), para vet (12), ornamental fisheries (6), enterprise development (17) and others. The details are given in the following table.

Table: Thematic area wise training programme for rural youth and girls

Area of training	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Mushroom Production	63	209	265	474	196	307	503	95	139	234	500	711	1211
Bee-keeping	35	281	64	345	155	18	173	118	22	140	554	104	658
Integrated farming	24	151	87	238	59	44	103	89	36	125	299	167	466
Seed production	28	150	92	242	105	105	210	73	25	98	328	222	550
Production of organic inputs	53	300	111	411	174	45	219	170	43	213	644	199	843
Planting material production	19	207	48	255	88	16	104	55	16	71	350	80	430

Area of training	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Vermi-culture	22	176	35	211	78	61	139	56	28	84	310	124	434
Sericulture	20	58	34	92	104	38	142	78	26	104	240	98	338
Protected cultivation of vegetable crops	16	137	32	169	107	22	129	40	10	50	284	64	348
Commercial fruit production	14	128	39	167	69	11	80	27	7	34	224	57	281
Repair and maintenance of farm machinery and implements	19	134	39	173	44	11	55	75	28	103	253	78	331
Nursery Management of Horticulture crops	17	128	13	141	94	16	110	70	29	99	292	58	350
Training and pruning of orchards	11	88	29	117	50	8	58	29	10	39	167	47	214
Value addition	16	47	55	102	32	70	102	49	43	92	128	168	296
Production of quality animal products	22	57	69	126	57	37	94	37	65	102	151	171	322
Dairying	8	48	34	82	34	29	63	23	14	37	105	77	182
Sheep and goat rearing	28	215	85	300	206	71	277	53	38	91	474	194	668
Quail farming	5	16	15	31	23	22	45	27	32	59	66	69	135
Piggery	3	23	11	34	20	4	24	2	0	2	45	15	60
Rabbit farming	0	0	0	0	0	0	0	0	0	0	0	0	0
Poultry production	17	137	35	172	57	82	139	52	33	85	246	150	396
Ornamental fisheries	6	50	6	56	18	3	21	20	10	30	88	19	107
Para vets	12	70	35	105	49	45	94	24	9	33	143	89	232
Para extension workers	4	25	5	30	4	2	6	22	7	29	51	14	65
Composite fish culture	10	130	10	140	43	8	51	8	4	12	181	22	203
Fresh water prawn culture	7	39	12	51	9	0	9	57	13	70	105	25	130
Shrimp farming	0	0	0	0	0	0	0	0	0	0	0	0	0

Area of training	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Pearl culture	0	0	0	0	0	0	0	0	0	0	0	0	0
Cold water fisheries	3	1	19	20	30	12	42	0	6	6	31	37	68
Fish harvest and processing technology	5	53	4	57	18	2	20	13	5	18	84	11	95
Fry and fingerling rearing	8	77	15	92	132	32	164	14	2	16	223	49	272
Small scale processing	2	16	0	16	21	0	21	6	0	6	43	0	43
Post Harvest Technology	5	63	13	76	34	11	45	12	5	17	109	29	138
Tailoring and Stitching	6	28	12	40	77	8	85	10	5	15	115	25	140
Rural Crafts	23	170	91	261	164	47	211	35	23	58	369	161	530
Enterprise development	17	176	23	199	84	11	95	64	22	86	324	56	380
Others if any (ICT application in agriculture)	53	365	138	503	342	104	446	91	52	143	798	294	1092
TOTAL	**601**	**3953**	**1575**	**5528**	**2777**	**1302**	**4079**	**1594**	**807**	**2401**	**8324**	**3684**	**12008**

4.3.3 Extension Functionaries

Extension functionaries of state department of agriculture and veterinary and extension workers of other government departments approached KVKs for updating of their knowledge and skills. In this area, KVK played an important role in updating knowledge of the state departments officials. Sometimes, NGO people also approached for training of their staffs. In the year 2020, a total of 466 courses were organized for 11656 extension functionaries under Zone V. The areas of training were productivity enhancement in field crop (100), integrated nutrient management (39), Integrated Pest Management (35), protected cultivation (29), management of farm animals (21), formation of SHGs (6), capacity building of ICT (16), gender mainstreaming through SHGs (16) etc. To extend the benefit to large number of extension workers, apart from line department staffs, teachers, NGO staffs, agricultural workers of the districts, were also included in the training programmes.

Table: Thematic area wise training programme for extension functionaries

Area of training	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Productivity enhancement in field crops	100	1691	350	2041	362	116	478	40	32	72	2093	498	2591
Integrated Pest Management	35	397	56	453	177	9	186	24	6	30	598	71	669

Area of training	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Integrated Nutrient management	39	506	149	655	145	16	161	41	6	47	692	171	863
Rejuvenation of old orchards	16	265	27	292	131	10	141	13	5	18	409	42	451
Value addition	20	315	65	380	127	19	146	8	10	18	450	94	544
Protected cultivation technology	29	493	94	587	145	17	162	11	2	13	649	113	762
Formation and Management of SHGs	6	62	20	82	16	6	22	5	3	8	83	29	112
Group Dynamics and farmers organization	14	184	53	237	50	23	73	10	7	17	244	83	327
Information networking among farmers	8	97	33	130	68	7	75	6	6	12	171	46	217
Capacity building for ICT application	16	212	53	265	28	12	40	23	5	28	263	70	333
Care and maintenance of farm machinery and implements	8	110	41	151	15	2	17	25	21	46	150	64	214
WTO and IPR issues	5	26	45	71	7	14	21	16	10	26	49	69	118
Management in farm animals	21	258	44	302	201	31	232	16	46	62	475	121	596
Livestock feed and fodder production	12	136	42	178	58	18	76	3	3	6	197	63	260
Household food security	18	132	173	305	17	40	57	0	68	68	149	281	430
Women and Child care	5	79	9	88	26	3	29	0	3	3	105	15	120
Low cost and nutrient efficient diet designing	6	68	29	97	10	4	14	0	0	0	78	33	111
Production and use of organic inputs	18	144	66	210	97	40	137	7	56	63	248	162	410
Gender mainstreaming through SHGs	16	219	66	285	81	18	99	11	10	21	311	94	405
Crop intensification	20	290	112	402	94	19	113	12	10	22	396	141	537
Others if any	54	934	88	1022	377	45	422	131	11	142	1442	144	1586
TOTAL	**466**	**6618**	**1615**	**8233**	**2232**	**469**	**2701**	**402**	**320**	**722**	**9252**	**2404**	**11656**

4.3.4 Sponsored Training Programme

During the period under report, KVKs of this Zone trained farmers on various aspects of agriculture and allied sectors using their own resources as well as the resources received from the different organizations. A number of government and other non-government organizations were associated to conduct different kinds of trainings for different clienteles. Even different state governments, central government boarders, NABARD, ATMA were working in collaboration with the KVKs to reach the farmers at district level. In those programmes, experts were provided by the KVKs. In the year 2020, the KVKs conducted sponsored 529 training programmes for 8930 beneficiaries with the fund support from different organizations. Out of these 8930, 71.8% were male and 28.2% were female beneficiaries. The composition of SC/ST in those training programme was 38.9%.

The major courses covered in these programme were crop production (58) for 1945 participants, Production and value addition (41) for 1237 participants, livestock management (22) for 1005 participants, fishery management (32) for 1262 participants, and capacity building (137) for 1344 participants. State-wise analysis showed that Union Territory of A&N Islands organized 11 courses for 319 participants, while West Bengal organized 325 courses for 5528 participants and Odisha organized 193 courses for 3083 participants. It indicated that sponsoring organization preferred KVKs for getting their clientele trained for

Table: Sponsored training programmes conducted by KVKs of Zone V

State/UT	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
A & N Islands	11	189	130	319	0	0	0	189	130	319
Odisha	193	1309	697	2006	510	567	1077	1819	1264	3083
West Bengal	325	2682	452	3134	1719	675	2394	4401	1127	5528
Total	**529**	**4180**	**1279**	**5459**	**2229**	**1242**	**3471**	**6409**	**2521**	**8930**

Table: Thematic area-wise sponsored training program conducted by KVKs of Zone V

Area of training	No. of courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Increasing production and productivity of crops	32	763	45	808	198	51	249	961	96	1057
Commercial production of vegetables	26	460	69	529	285	74	359	745	143	888
Total	**58**	**1223**	**114**	**1337**	**483**	**125**	**608**	**1706**	**239**	**1945**
Production and value addition										
Fruit Plants	9	173	18	191	69	22	91	242	40	282
Ornamental plants	0	0	0	0	0	0	0	0	0	0
Spices crops	0	0	0	0	0	0	0	0	0	0
Soil health and fertility management	5	94	7	101	37	25	62	131	32	163
Production of Inputs at site	0	0	0	0	0	0	0	0	0	0
Methods of protective cultivation	1	33	1	34	4	0	4	37	1	38
Others (pl. specify)	26	346	101	447	237	70	307	583	171	754
Total	**41**	**646**	**127**	**773**	**347**	**117**	**464**	**993**	**244**	**1237**
Post harvest technology and value addition										
Processing and value addition	16	81	21	102	4	5	9	85	26	111

Area of training	No. of courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Others (pl. specify)	1	30	1	31	4	0	4	34	1	35
Total	**17**	**111**	**22**	**133**	**8**	**5**	**13**	**119**	**27**	**146**
Farm machinery										
Farm machinery, tools and implements	0	0	0	0	0	0	0	0	0	0
Others (pl. specify)	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Livestock and fisheries										
Livestock production and management	22	285	196	481	189	335	524	474	531	1005
Animal Nutrition Management	1	0	14	14	0	12	12	0	26	26
Animal Disease Management	0	0	0	0	0	0	0	0	0	0
Fisheries Nutrition	1	0	0	0	25	0	25	25	0	25
Fisheries Management	32	495	108	603	481	178	659	976	286	1262
Others (pl. specify)	6	111	17	128	13	3	16	124	20	144
Total	**62**	**891**	**335**	**1226**	**708**	**528**	**1236**	**1599**	**863**	**2462**
Home Science										
Household nutritional security	51	0	46	46	0	30	30	0	76	76
Economic empowerment of women	0	0	0	0	0	0	0	0	0	0
Drudgery reduction of women	0	0	0	0	0	0	0	0	0	0
Others (pl. specify)	27	106	47	153	26	30	56	132	77	209
Total	**78**	**106**	**93**	**199**	**26**	**60**	**86**	**132**	**153**	**285**
Agricultural Extension										
Capacity Building and Group Dynamics	137	581	356	937	198	209	407	779	565	1344
Others (pl. specify)	136	622	232	854	459	198	657	1081	430	1511
Total	**273**	**1203**	**588**	**1791**	**657**	**407**	**1064**	**1860**	**995**	**2855**
GRAND TOTAL	**529**	**4180**	**1279**	**5459**	**2229**	**1242**	**3471**	**6409**	**2521**	**8930**

4.3.5 Vocational Training Programme

Vocational trainings are the much needed endeavour at KVK level as these programmes are preordained for employment generation and much focus is given on rural based employment generation techniques like repair of maintenance of farm machines, commercial floriculture, commercial fruit production, value addition, tailoring & stitching, dairy farming, composite fish culture, rural craft, etc.. After obtaining training in these areas rural youth/farm women can take up self employment in their field. Vocational training being a longer duration course farmers enriched by knowledge and skill both and reach in a position to took up self employment.

In the year 2020, 744 vocational training programmes were conducted by the KVKs of Zone V for benefit of 2801 beneficiaries. Among these, West Bengal organized 459 courses for 940 beneficiaries and Odisha conducted 285 courses for 1861 beneficiaries. Among the courses composite fish culture was most sought by the beneficiaries. A total of 49 such courses were organized for 227 beneficiaries out of which 97 farmers were employed. Mushroom cultivation was also popular. A total of 129 courses were organized for 347 beneficiaries in these training. Other courses gained popularity were Sheep and goat rearing (264 participants), Commercial vegetable production (244 participants), Organic farming (227 participants), Poultry farming (183 participants), Commercial fruit production (125 participants) and Vermicomposting (135 participants). In these training programmes a good number (826) of SC/ST got trained which constitute 29.5% of the total beneficiaries.

Table: Vocational training conducted by KVKs of Zone V

State/UT	No. of courses	General			SC/ST			Grand Total			Self employed after training			No. of persons employed else where
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Type of units	No. of units	No. of persons employed	
A & N Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Odisha	285	958	356	1314	401	146	547	1359	502	1861	95	242	455	78
West Bengal	459	503	158	661	213	66	279	716	224	940	39	246	267	44
Total	**744**	**1461**	**514**	**1975**	**614**	**212**	**826**	**2075**	**726**	**2801**	**134**	**488**	**722**	**122**

Table: Thematic area-wise Vocational training program conducted by KVKs of Zone V

Area of Training	No. of courses	General			SC/ST			Grand Total			Self employed after training			No. of persons employed else where
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Type of units	No. of units	No. of persons employed	
Crop production and management	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial floriculture	6	37	12	49	16	5	21	53	17	70	2	0	0	0
Commercial fruit production	46	74	15	89	30	6	36	104	21	125	7	23	28	0
Commercial vegetable production	59	134	39	173	55	16	71	189	55	244	15	36	38	0
Total	**111**	**245**	**66**	**311**	**101**	**27**	**128**	**346**	**93**	**439**	**24**	**59**	**66**	**0**
Integrated crop management	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Organic farming	44	111	48	159	47	21	68	158	69	227	8	33	35	8
Others (pl. specify)	47	94	14	108	39	5	44	133	19	152	7	20	36	0
Total	**91**	**205**	**62**	**267**	**86**	**26**	**112**	**291**	**88**	**379**	**15**	**53**	**71**	**8**
Post harvest technology and value addition	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Value addition	20	19	25	44	8	10	18	27	35	62	4	3	6	0
Others (pl. specify)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**20**	**19**	**25**	**44**	**8**	**10**	**18**	**27**	**35**	**62**	**4**	**3**	**6**	**0**
Livestock and fisheries	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dairy farming	3	0	22	22	0	8	8	0	30	30	2	9	0	9

Area of Training	No. of courses	General			SC/ST			Grand Total			Self employed after training			No. of persons employed else where
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Type of units	No. of units	No. of persons employed	
Composite fish culture	49	152	8	160	63	4	67	215	12	227	12	64	97	24
Sheep and goat rearing	36	139	47	186	57	21	78	196	68	264	10	41	32	17
Piggery	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poultry farming	38	93	36	129	40	14	54	133	50	183	7	19	21	5
Others (pl. specify)	5	21	0	21	9	0	9	30	0	30	1	14	14	2
Total	**131**	**405**	**113**	**518**	**169**	**47**	**216**	**574**	**160**	**734**	**32**	**147**	**164**	**57**
Income generation activities	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vermicomposting	75	65	32	97	26	12	38	91	44	135	8	32	55	7
Production of bio-agents, bio-pesticides, bio-fertilizers etc.	2	11	0	11	4	0	4	15	0	15	1	3	10	24
Repair and maintenance of farm machinery and implements	63	59	4	63	26	1	27	85	5	90	5	16	21	2
Rural Crafts	7	0	14	14	0	6	6	0	20	20	1	0	0	0
Seed production	12	55	19	74	24	7	31	79	26	105	5	3	8	1
Sericulture	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mushroom cultivation	129	153	90	243	66	38	104	219	128	347	16	132	253	17
Nursery, grafting etc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tailoring, stitching, embroidery, dying etc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agril. Paraworkers, para-vet training	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others (pl. specify)	95	230	87	317	98	37	135	328	124	452	21	32	48	6
Total	**383**	**573**	**246**	**819**	**244**	**101**	**345**	**817**	**347**	**1164**	**57**	**218**	**395**	**57**
Agricultural Extension	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Area of Training	No. of courses	General			SC/ST			Grand Total			Self employed after training			No. of persons employed else where
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Type of units	No. of units	No. of persons employed	
Capacity building and group dynamics	3	9	0	9	4	0	4	13	0	13	1	8	20	0
Others (pl. specify)	5	5	2	7	2	1	3	7	3	10	1	0	0	0
Total	**8**	**14**	**2**	**16**	**6**	**1**	**7**	**20**	**3**	**23**	**2**	**8**	**20**	**0**
Grand Total	**744**	**1461**	**514**	**1975**	**614**	**212**	**826**	**2075**	**726**	**2801**	**134**	**488**	**722**	**122**

4.4 Extension Programmes

Technology refined through different programmes of assessment, refinement and demonstration are taken to the doorstep of the farmers through the extension activities like field day, exhibition, group meetings, exposure visit, farmers club meeting and through organizing different celebration of days in the KVK campus. In creating awareness of the latest technologies in crop production, livestock farming, horticultural production, fishery, production and other allied technologies, the KVKs of Zone-V organized 204266 number of activities involving 7546665 farmers and extension officials in the state of West Bengal, Odisha and A&N Islands. Among these beneficiaries 7523981 were farmers and 22684 were extension officials. A large number of extension officials (22684) paid visit to the KVKs and interacted with them regarding the latest technologies. Farmers in large number (40111) visited the KVKs and sought knowledge about the latest technologies available in the KVK farm and nearby villages. Scientists of the KVK also regularly visited the farmers field. A total of 9508 visit were made by the scientists and during the course of visit 65878 farmers consulted the scientists. KVKs conducted Kisan Goshties for creating awareness of the different technologies and 174 such Kisan Goshties were organized for 4165 beneficiaries.

KVKs also participated in 97 Kisan Melas and 537 Exhibitions which benefited about 51160 and 30045 beneficiaries, respectively. Different technologies and successful cases were also exhibited through arranging film show for 12506 participants. Farmers seminar, workshop are also organized for creating awareness about different programmes and government schemes. In the year 2020, 228 seminars and 248 workshops were organized to cover 5733 and 5463 farmers, respectively. Advisory services are one of the most popular items sought by the farmers. During the year 155585 such services were offered by the KVK staff for the interest of 7014477 beneficiaries. Camps and clinics were also organized to show the farmers about the latest technologies, about 66 soil health camps, 1402 animal health camps and 105 agricultural clinics were organized to benefit 3475, 67460 and 2330 beneficiaries, respectively. Farm Service Club Group Meeting, Self help group meeting and Mahila Mandals meetings were organized to make contact of large numbers of farmers, rural youth to the KVKs, 743 of such meetings were organized for benefits of 6597 rural people. Involving farmers and rural people with the KVKs by observation of different celebration of days, mahila divas, swachhta seva, sankalp se siddhi programme were the objective of the KVK to create awareness regarding the government programmes. 635 mela were organized involving 21185 beneficiaries for the stated purpose.

The KVKs of Zone V also gave extensive coverage of their programme through social network and print media. A total of 666 news coverage in newspaper, 228 radio talks and 188 TV talks were provided to highlight the KVK programme and on-going projects. About 5848 extension literature were distributed among the farmers and visitors.

4.4.1 State-wise details of Extension Activities conducted

State-wise analysis of the extension activities showed that the KVKs of A&N Islands conducted activities for the benefit of 13328 participants. Maximum number of participants (5121) benefitted from Advisory services, kisan gosthies attended by 409 participants, diagnostic units attended by 150 participants, soil health camp attended by 39 participants, ex-trainee sammelan attended by 32 participants and farmers seminar attended by 103 participants. About 1326 farmers interacted with the scientists during their field visit.

West Bengal with 23 KVKs organized extension activities for benefit of 6660375 farmers, farm women, rural youth and extension functionaries. Major extension activities that benefitted the farmers include scientist visit to farmers field (27718), advisory service (6426588), farmers visit to KVK (17458), group meeting (3920), Soil test campaign (1621), diagnostic visit (4983) exposure visit (5127), workshop (3859) and field days (9453).

Odisha KVKs carried out extension activities involving 872962 farmers and extension officials. Out of which 250698 were female and 622264 were male. KVKs organized field days to show the activities and demonstrations which benefitted 9428 farmers and beneficiaries, exhibition (22184), film show (8197), method demonstration (4297), seminar and workshop (3521), group meeting (6980), lecture (20258), advisory service (582768), scientist visit (38974), farmers visit to KVK (24237), diagnostic visit (13636) and exposure visit (2619). Different camps were also organized for the benefit of the farmers like soil health camp (1722), animal health camp (1511) and soil testing camp (96930).

Table: Extension activities organised by KVKs of Zone-V

Nature of Extension Activity	No. of activities	Farmers				Extension Officials			Total		
		Male	Female	Total	SC/ ST (% of total)	Male	Female	Total	Male	Female	Total
Field Day	616	13340	5324	18664	35.23	411	189	600	13751	5513	19264
Kisan Mela	97	33110	17441	50551	14.60	441	168	609	33551	17609	51160
Kisan Ghosthi	174	2741	1307	4048	21.11	70	47	117	2811	1354	4165
Exhibition	537	20671	8556	29227	13.21	563	255	818	21234	8811	30045
Film Show	548	8278	3681	11959	15.71	393	154	547	8671	3835	12506
Method Demonstrations	567	5389	2733	8122	25.22	464	112	576	5853	2845	8698
Farmers Seminar	228	4019	1714	5733	7.84	119	43	162	4138	1757	5895
Workshop	248	3486	1977	5463	8.34	445	143	588	3931	2120	6051
Group meetings	2179	7074	2349	9423	13.57	1232	314	1546	8306	2663	10969
Lectures delivered as resource persons	1612	20869	9999	30868	28.11	1375	395	1770	22244	10394	32638
Advisory Services	155585	4677191	2333922	7011113	164.51	2498	866	3364	4679689	2334788	7014477
Scientific visit to farmers field	9508	49050	16828	65878	43.40	1735	405	2140	50785	17233	68018
Farmers visit to KVK	23705	29968	10143	40111	39.28	1876	330	2206	31844	10473	42317
Diagnostic visits	4992	13913	4245	18158	40.83	470	141	611	14383	4386	18769
Exposure visits	354	5309	2477	7786	23.98	181	99	280	5490	2576	8066
Ex-trainees Sammelan	48	1692	621	2313	5.14	82	20	102	1774	641	2415
Soil health Camp	66	2556	801	3357	23.35	82	36	118	2638	837	3475
Animal Health Camp	1402	50249	16102	66351	20.55	766	343	1109	51015	16445	67460

Nature of Extension Activity	No. of activities	Farmers				Extension Officials			Total		
		Male	Female	Total	SC/ ST (% of total)	Male	Female	Total	Male	Female	Total
Agri mobile clinic	105	1640	611	2251	6.56	59	20	79	1699	631	2330
Soil test campaigns	150	52211	45520	97731	8.15	567	279	846	52778	45799	98577
Farm Science Club Conveners meet	198	1507	637	2144	5.43	100	133	233	1607	770	2377
Self Help Group Conveners meetings	505	1174	1351	2525	17.73	133	59	192	1307	1410	2717
Mahila Mandals Conveners meetings	40	708	727	1435	3.98	49	19	68	757	746	1503
Celebration of important days (specify)	302	6372	3798	10170	24.93	405	208	613	6777	4006	10783
Sankalp Se Siddhi	38	985	578	1563	5.59	86	43	129	1071	621	1692
Swatchta Hi Sewa	239	3158	2163	5321	22.33	296	105	401	3454	2268	5722
Mahila Kisan Divas	56	986	1822	2808	26.97	124	56	180	1110	1878	2988
Any Other (Specify)	167	5191	3717	8908	18.90	2089	591	2680	7280	4308	11588
Total	**204266**	**5022837**	**2501144**	**7523981**	**24.45**	**17111**	**5573**	**22684**	**5039948**	**2506717**	**7546665**

Table: Extension activities organised by KVKs of Zone-V

Nature of Extension Activity	A & N Islands			Odisha			West Bengal			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Field Day	185	198	383	6832	2596	9428	6734	2719	9453	13751	5513	19264
Kisan Mela	66	52	118	5342	2290	7632	28143	15267	43410	33551	17609	51160
Kisan Ghosthi	221	188	409	1335	616	1951	1255	550	1805	2811	1354	4165
Exhibition	311	494	805	15801	6383	22184	5122	1934	7056	21234	8811	30045
Film Show	14	6	20	5663	2534	8197	2994	1295	4289	8671	3835	12506
Method Demonstrations	137	128	265	3026	1271	4297	2690	1446	4136	5853	2845	8698
Farmers Seminar	39	64	103	922	515	1437	3177	1178	4355	4138	1757	5895
Workshop	37	71	108	982	1102	2084	2912	947	3859	3931	2120	6051
Group meetings	47	22	69	5453	1527	6980	2806	1114	3920	8306	2663	10969
Lectures delivered as resource persons	982	721	1703	13493	6765	20258	7769	2908	10677	22244	10394	32638
Advisory Services	2590	2531	5121	433659	149109	582768	4243440	2183148	6426588	4679689	2334788	7014477
Scientific visit to farmers field	741	585	1326	29991	8983	38974	20053	7665	27718	50785	17233	68018
Farmers visit to KVK	300	322	622	17618	6619	24237	13926	3532	17458	31844	10473	42317
Diagnostic visits	87	63	150	10919	2717	13636	3377	1606	4983	14383	4386	18769
Exposure visits	94	226	320	1730	889	2619	3666	1461	5127	5490	2576	8066
Ex-trainees Sammelan	32	0	32	1002	303	1305	740	338	1078	1774	641	2415
Soil health Camp	9	30	39	1277	445	1722	1352	362	1714	2638	837	3475
Animal Health Camp	24	24	48	1086	425	1511	49905	15996	65901	51015	16445	67460

Nature of Extension Activity	A & N Islands			Odisha			West Bengal			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agri mobile clinic	0	37	37	825	342	1167	874	252	1126	1699	631	2330
Soil test campaigns	15	11	26	51482	45448	96930	1281	340	1621	52778	45799	98577
Farm Science Club Conveners meet	0	0	0	1165	550	1715	442	220	662	1607	770	2377
Self Help Group Conveners meetings	4	293	297	1119	1014	2133	184	103	287	1307	1410	2717
Mahila Mandals Conveners meetings	50	40	90	534	563	1097	173	143	316	757	746	1503
Celebration of important days (specify)	167	439	606	3780	1971	5751	2830	1596	4426	6777	4006	10783
Sankalp Se Siddhi	0	0	0	961	568	1529	110	53	163	1071	621	1692
Swatchta Hi Sewa	84	97	181	1414	1220	2634	1956	951	2907	3454	2268	5722
Mahila Kisan Divas	4	21	25	811	1102	1913	295	755	1050	1110	1878	2988
Any Other (Specify)	27	398	425	4042	2831	6873	3211	1079	4290	7280	4308	11588
Total	**6267**	**7061**	**13328**	**622264**	**250698**	**872962**	**4411417**	**2248958**	**6660375**	**5039948**	**2506717**	**7546665**

4.4.2 Other Extension Activities

Besides all these activities coverage through media newspaper (666), radio (228), TV (188) and etc. were also made to create awareness of the technologies.

Table: Other extension activities organised by KVKs of Zone-V

Nature of Extension Activity	No. of activities
Newspaper coverage	666
Radio talks	228
TV talks	188
Popular articles	211
Extension Literature	5848
Other, if any	397
TOTAL	**7538**

5.0 Production of seeds, planting materials and bio products

5.1 Seed Production:

Seed is the most critical input to the farmers. KVKs of Zone V took the initiatives to produce quality seeds of the major crops to meet the local needs. New varieties were used in this programme which are summarized in below table. Major crops under the seed production programme were maize, paddy, wheat, mustard, blackgram. In the year 2020, KVKs

of Zone-V produced 12878 q of seeds having value of Rs.5.08 crore in the KVK farm and village seed production programme. These seeds were supplied to 22745 farmers during the period of reporting. State-wise analysis showed that Union Territory of A&N Islands produced 14.65 q of seed worth Rs. 28096/- and supplied to 128 farmers. In the state of Odisha, 3334.22 q of seeds were produced by the KVKs in their KVK farm and villages with worth of Rs. 8124187/- and distributed to 1729 farmers. In the state of West Bengal KVK produced 9829.89 q of seeds in KVK farm worth of Rs. 42642973/- and distributed among 20888 farmers. The state-wise production of seeds are provided in below table.

Seed Production:

Table: State-wise total Seed production by KVKs

Sl. No.	State	Village Seed			KVK seed			Total		
		Quantity of Seed(q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value(Rs)	No. of farmers	Quantity of seed (q)	Value(Rs)	No. of farmers
1	A & N Islands	0	0	0	14.65	28096	128	14.65	28096	128
2	Odisha	14.3	430000	54	3319.92	7694187	1675	3334.22	8124187	1729
3	West Bengal	6076.4	31374245	8428	3453.49	11268728	12460	9529.89	42642973	20888
	Total	**6090.7**	**31804245**	**8482**	**6788.06**	**18991011**	**14263**	**12878.76**	**50795256**	**22745**

Table: Varieties of major crop used for seed production

Varieties			
Crop	**A & N Islands**	**Odisha**	**West Bengal**
Paddy	Gayatri, Rice TFL (Raw) CARI-8,9	Bina dhan-11, Lalat, Sarala, Pooja, Kalamalliphula (TL), Debanna (TL) 2266, Kalabati (TL), Nua Acharamati, Poornabhog (TL), Sugandha Dhan (NS), Satyabhama (TL), CR 1009, Swarna sub-1, MTU 1001,	MTU- 1156. Rani Dhan, IET 4786, DRR-47, Ajit, Chiarang Sub-I, MTU-1010, Sabita, Pratikhya, Dhiren, Stabdi, Sahabhagi, GB-3, SS-1, GB-`, MTU-7029, Lalat, Super Shymoli, Sampriti, Swarna Sub-I, R. Bhagawati
Maize			Kaveri
Grengram		IPM-02-14 ,IPU-02-14, IPU-02-43,IPM -02-03	IPM-02-03, IMP-205-7, IPM-02-14, IMP-205-7, SML-668
Lentil		WBL-77, HUL-57	IPL-316, IPL 220, IPL-526, IPL-406, PL-8, WBL-77, HUL-57
Blackgram		PU 31	Sarada, PU-35,Uttara, Goutam
Chickpea		Ujjwal	Anuradha, Bidisha, RVG-202, RVG-203, CR-204
Mustard		Sushree, Anuradha, Parbati	Pusa Mustad-25, Pusa Mustard-30, YSH 0401, Shivani, B-9, NRCHB-101, PM-30, Pusa Jagannath, NRCHB – 101, NRCYS 05-02, B9, Pitambori, PM-30, 31; JD 6
Sesame		TKG308 Shubra Smarak Amriti Sabitri	YSH-0401, G-2, CUMS-17 Sabitri, Suprava
Groundnit		Dharani ,Devi (ICGV91114), TAG 24	Devi (ICGV91114), TAG 24
Redgram		RRG-176, BRD-5	ICPL 87129, RRG-176, PA-29
Jute		JRO 2407	JRO 2407
Ragi		Arjun	

Table: Crop-wise seed production in Zone-V

Crop	Name of the crop	Village Seed			KVK seed			Total		
		Quantity of Seed(q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value(Rs)	No. of farmers	Quantity of seed (q)	Value(Rs)	No. of farmers
Cereals	Paddy	1770	4125000	2234	4682.01	12139917	8434	6452.01	16264917	10668
	Wheat	100	1600000	50	3	5400	11	103	1605400	61
	Maize	0	0	0	0	0	0	0	0	0
	Total	**1870**	**5725000**	**2284**	**4685.01**	**12145317**	**8445**	**6555.01**	**17870317**	**10729**
Oilseeds	Mustard	32	284000	231	441.46	967000	999	473.46	1251000	1230
	Toria	0	0	0	5.8	40120	0	5.8	40120	0
	Linseed	3.1	23000	27	0	0	0	3.1	23000	27
	Niger	0	0	0	7.35	63494	37	7.35	63494	37
	Sesame	410	3975000	843	93.27	88773	273	503.27	4063773	1116
	Groundnut	365.65	2834225	740	5.84	56141	49	371.49	2890366	789
	Soybean	0	0	0	0	0	0	0	0	0
	Rai	0	0	0	0	0	0	0	0	0
	Sun Flower	0	0	0	0	0	0	0	0	0
	Toria	0	0	0	0	0	0	0	0	0
	Total	**810.75**	**7116225**	**1841**	**553.72**	**1215528**	**1358**	**1364.47**	**8331753**	**3199**
Pulses	Redgram	14	85300	100	29.5	243066	91	43.5	328366	191
	Chickpea	5.1	40000	45	23.1	277200	152	28.2	317200	197
	Lentil	424.1	4462500	844	271.16	2293940	1446	695.26	6756440	2290
	Greengram	492.45	5063100	2113	255.8	451768	491	748.25	5514868	2604
	Blackgram	754	8882120	1180	126.4	281208	493	880.4	9163328	1673
	Pea	0	0	0	5.13	20390	66	5.13	20390	66
	Cowpea	0	0	0	0.39	5985	0	0.39	5985	0
	Rajmash	0	0	0	0	0	0	0	0	0
	Total	**1689.65**	**18533020**	**4282**	**711.48**	**3573557**	**2739**	**2401.13**	**22106577**	**7021**
Commercial crops	Potato	1710	0	51	0	22500	23	1710	22500	74
	Sugarcane	0	0	0	67	16750	20	67	16750	20
	Total	**1710**	**0**	**51**	**67**	**39250**	**43**	**1777**	**39250**	**94**
Vegetables	Okra	0	0	0	1.12	25350	5	1.12	25350	5
	Tomato	0	0	0	0.08	252933	0	0.08	252933	0
	Palak	0	0	0	0.5	4750	0	0.5	4750	0
	Radish	0	0	0	0.5	13500	0	0.5	13500	0
	Onion	0	0	0	0.15	11250	0	0.15	11250	0
	chilli	0	0	0	1.18	68595	0	1.18	68595	0
	Brinjal	0	0	0	3.64	44550	0	3.64	44550	0
	Lobia	0	0	0	3.1	16300	17	3.1	16300	17
	Total	**0**	**0**	**0**	**10.27**	**437228**	**22**	**10.27**	**437228**	**22**
Spices	Coriander	0	0	0	7.63	53410	123	7.63	53410	123
	Ginger	0	0	0	20.16	205350	592	20.16	205350	592
	Methi	0	0	0	0.45	7425	0	0.45	7425	0
	Turmeric	0	0	0	80.19	272374	254	80.19	272374	254

Crop	Name of the crop	Village Seed			KVK seed			Total		
		Quantity of Seed(q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value(Rs)	No. of farmers	Quantity of seed (q)	Value(Rs)	No. of farmers
	Fenugrick	0	0	0	0	0	0	0	0	0
	Total	**0**	**0**	**0**	**108.43**	**538559**	**969**	**108.43**	**538559**	**969**
Fodder crop seeds	Rice Bean	10.3	430000	24	11.67	89170	136	21.97	519170	160
	Barseem	0	0	0	153.2	64849	2	153.2	64849	2
	Total	**10.3**	**430000**	**24**	**164.87**	**154019**	**138**	**175.17**	**584019**	**162**
Fiber crops	Jute	0	0	0	6	4556	182	6	4556	182
	Sunhemp	0	0	0	12.33	70281	56	12.33	70281	56
	Total	**0**	**0**	**0**	**18.33**	**74837**	**238**	**18.33**	**74837**	**238**
Forest Species		0	0	0	263.83	477256	159	263.83	477256	159
	Total	**0**	**0**	**0**	**263.83**	**477256**	**159**	**263.83**	**477256**	**159**
Others	Dhaincha	0	0	0	9.38	42000	54	9.38	42000	54
	Broom Stick	0	0	0	0.09	27060	0	0.09	27060	0
	Elephant Footyam	0	0	0	194.8	256500	98	194.8	256500	98
	Sisbania	0	0	0	0.85	9900	0	0.85	9900	0
	Total	**0**	**0**	**0**	**205.12**	**335460**	**152**	**205.12**	**335460**	**152**
Grand Total		**6090.7**	**31804245**	**8482**	**6788.06**	**18991011**	**14263**	**12878.76**	**50795256**	**22745**

Table: State-wise seed production

Crop	Name of the crop	A & N Islands			Odisha			West Bengal			Total		
		Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers
Cereals	Paddy	14.65	28096	128	3069.75	6995596	1042	3367.61	9241225	9498	6452.01	16264917	10668
	Wheat	0	0	0	0	0	0	103	1605400	61	103	1605400	61
	Maize	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**14.65**	**28096**	**128**	**3069.75**	**6995596**	**1042**	**3470.61**	**10846625**	**9559**	**6555.01**	**17870317**	**10729**
Oil-seeds	Mustard	0	0	0	0	0	0	473.46	1251000	1230	473.46	1251000	1230
	Toria	0	0	0	5.8	40120	0	0	0	0	5.8	40120	0
	Linseed	0	0	0	0	0	0	3.1	23000	27	3.1	23000	27
	Niger	0	0	0	7.35	63494	37	0	0	0	7.35	63494	37
	Sesame	0	0	0	86	4230	17	417.27	4059543	1099	503.27	4063773	1116
	Ground-nut	0	0	0	1.14	6791	27	370.35	2883575	762	371.49	2890366	789
	Total	**0**	**0**	**0**	**100.29**	**114635**	**81**	**1264.18**	**8217118**	**3118**	**1364.47**	**8331753**	**3199**
Pulses	Redgram	0	0	0	27.5	195066	106	16	133300	85	43.5	328366	191
	Chickpea	0	0	0	0	0	0	28.2	317200	197	28.2	317200	197
	Lentil	0	0	0	0	0	0	695.26	6756440	2290	695.26	6756440	2290
	Green-gram	0	0	0	7.4	65418	72	740.85	5449450	2532	748.25	5514868	2604

Crop	Name of the crop	A & N Islands			Odisha			West Bengal			Total		
		Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers
	Black-gram	0	0	0	15.48	125000	239	864.92	9038328	1434	880.4	9163328	1673
	Pea	0	0	0	0	0	0	5.13	20390	66	5.13	20390	66
	Cowpea	0	0	0	0	0	0	0.39	5985	0	0.39	5985	0
	Rajmash	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**0**	**0**	**0**	**50.38**	**385484**	**417**	**2350.75**	**21721093**	**6604**	**2401.13**	**22106577**	**7021**
Commercial crops	Potato	0	0	0	0	0	0	1710	22500	74	1710	22500	74
	Sugarcane	0	0	0	67	16750	20	0	0	0	67	16750	20
	Total	**0**	**0**	**0**	**67**	**16750**	**20**	**1710**	**22500**	**74**	**1777**	**39250**	**94**
Vegetables	Okra	0	0	0	0	0	0	1.12	25350	5	1.12	25350	5
	Tomato	0	0	0	0	0	0	0.08	252933	0	0.08	252933	0
	Palak	0	0	0	0	0	0	0.5	4750	0	0.5	4750	0
	Radish	0	0	0	0	0	0	0.5	13500	0	0.5	13500	0
	Onion	0	0	0	0	0	0	0.15	11250	0	0.15	11250	0
	chilli	0	0	0	0	0	0	1.18	68595	0	1.18	68595	0
	Brinjal	0	0	0	0	0	0	3.64	44550	0	3.64	44550	0
	Lobia	0	0	0	0	0	0	3.1	16300	17	3.1	16300	17
	Total	**0**	**0**	**0**	**0**	**0**	**0**	**10.27**	**437228**	**22**	**10.27**	**437228**	**22**
Spices	Coriander	0	0	0	0	0	0	7.63	53410	123	7.63	53410	123
	Ginger	0	0	0	0	0	0	20.16	205350	592	20.16	205350	592
	Methi	0	0	0	0	0	0	0.45	7425	0	0.45	7425	0
	Turmeric	0	0	0	13.77	61850	80	66.42	210524	174	80.19	272374	254
	Fenugrick	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**0**	**0**	**0**	**13.77**	**61850**	**80**	**94.66**	**476709**	**889**	**108.43**	**538559**	**969**
Fodder crop seeds	Rice Bean	0	0	0	10.3	430000	24	11.67	89170	136	21.97	519170	160
	Barseem	0	0	0	5.9	32391	0	147.3	32458	2	153.2	64849	2
	Total	**0**	**0**	**0**	**16.2**	**462391**	**24**	**158.97**	**121628**	**138**	**175.17**	**584019**	**162**
Fiber crops	Jute	0	0	0	0	0	0	6	4556	182	6	4556	182
	Sunhemp	0	0	0	12.33	70281	56	0	0	0	12.33	70281	56
	Total	**0**	**0**	**0**	**12.33**	**70281**	**56**	**6**	**4556**	**182**	**18.33**	**74837**	**238**
Forest Species		0	0	0	0	0	0	263.83	477256	159	263.83	477256	159
	Total	**0**	**0**	**0**	**0**	**0**	**0**	**263.83**	**477256**	**159**	**263.83**	**477256**	**159**
Others	Dhaincha	0	0	0	4.5	17200	9	4.88	24800	45	9.38	42000	54
	Broom Stick	0	0	0	0	0	0	0.09	27060	0	0.09	27060	0
	Elephant Footyam	0	0	0	0	0	0	194.8	256500	98	194.8	256500	98

Crop	Name of the crop	A & N Islands			Odisha			West Bengal			Total		
		Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers	Quantity of seed (q)	Value (Rs)	No. of farmers
	Sisbania	0	0	0	0	0	0	0.85	9900	0	0.85	9900	0
	Total	**0**	**0**	**0**	**4.5**	**17200**	**9**	**200.62**	**318260**	**143**	**205.12**	**335460**	**152**
Grand Total		**14.65**	**28096**	**128**	**3334.22**	**8124187**	**1729**	**9529.89**	**42642973**	**20888**	**12878.76**	**50795256**	**22745**

5.2 Planting Material Production

Supply of planting materials to the farmers by KVK is one of the important functions of the KVKs for many years. KVKs act as source to supply good quality planting materials of new varieties of vegetables, fruits, forest sapling, ornamental plants, spices, plantation crops etc. During the year 2020, efforts of the KVKs made it possible to produce a large number of plating materials of about 48.37 lakh in number. Out of these planting materials, A&N Islands produced about 3468 planting materials, Odisha KVKs produced 28.81 lakh and West Bengal KVKs produced 19.52 lakh. It helps the KVKs of the zone to earn about Rs. 121.22 lakh income during the year. The materials are sold to the farmers and 29868 farmers were benefitted from these planting materials. The statewise planting materials produces in 2020 in the zone are provided in below table.

Table: Planting materials production by KVKs

Category	Name of Crop	Number	Value (Rs.)	Distributed to No. of farmers	Number	Value (Rs.)	Distributed to No. of farmers	Number	Value (Rs.)	Distributed to No. of farmers	Number	Value (Rs.)	Distributed to No. of farmers
		A & N Islands			Odisha			West Bengal			Total		
Vegetable Seedling	Cauliflower	0	0	0	383898	267655.5	1604	159218	240548	1641	543116	508203.5	3245
	Cabbage	0	0	0	72767	105771.25	802	172765	246275	973	245532	352046.25	1775
	Tomato	0	0	0	400496	690158.75	2721	200480	571215	1685	600976	1261373.8	4406
	Brinjal	1565	1365	220	266081	459317.25	1695	229355	514425	736	497001	975107.25	2651
	Chilli	385	385	11	297544	473336.5	1645	203305	117205	527	501234	590926.5	2183
	Onion	0	0	0	672631	206056	1575	260791	126090	352	933422	332146	1927
	Others	22	660	15	538951	605864.25	1393	486494	183450	1110	1025467	789974.25	2518
	Total	**1972**	**2410**	**246**	**2632369**	**2808159.5**	**11435**	**1712408**	**1999208**	**7024**	**4346749**	**4809778**	**18705**
Fruits	Mango	28	840	7	1262	51280	141	23728	1002150	909	25018	1054270	1057
	Guava	30	1500	7	1888	182605	155	11566	629630	602	13484	813735	764
	Lime	20	400	10	2317	46255	77	30849	1240120	635	33186	1286775	722
	Papaya	0	0	0	49839	1073030	1801	7858	83380	314	57697	1156410	2115
	Banana	0	0	0	1797	62790	144	10455	77275	17	12252	140065	161
	Others	0	0	0	28400	258860	1128	22650	612800	886	51050	871660	2014
	Total	**78**	**2740**	**24**	**85503**	**1674820**	**3446**	**107106**	**3645355**	**3363**	**192687**	**5322915**	**6833**
Ornamental plants	**Ornamental plants**	0	0	0	26810	47967	75	32455	98665	899	59265	146632	974
	Total	**0**	**0**	**0**	**26810**	**47967**	**75**	**32455**	**98665**	**899**	**59265**	**146632**	**974**

Category	Name of Crop	Number	Value (Rs.)	Distributed to No. of farmers	Number	Value (Rs.)	Distributed to No. of farmers	Number	Value (Rs.)	Distributed to No. of farmers	Number	Value (Rs.)	Distributed to No. of farmers
		A & N Islands			Odisha			West Bengal			Total		
Medicinal and Aromatic	Medicinal and Aromatic	0	0	0	4248	44980	357	19450	124250	38	23698	169230	395
	Total	**0**	**0**	**0**	**4248**	**44980**	**357**	**19450**	**124250**	**38**	**23698**	**169230**	**395**
Plantation	Plantation	1418	27058	34	800	17280	42	14380	413500	859	16598	457838	935
	Total	**1418**	**27058**	**34**	**800**	**17280**	**42**	**14380**	**413500**	**859**	**16598**	**457838**	**935**
Spices	Turmeric	0	0	0	194.5	228250	72	37282	162005	111	37476.5	390255	183
	Others	0	0	0	0	0	0	1050	30000	23	1050	30000	23
	Total	**0**	**0**	**0**	**194.5**	**228250**	**72**	**38332**	**192005**	**134**	**38526.5**	**420255**	**206**
Tuber	Elephant yams	0	0	0	63320	17600	38	4419.5	469000	509	67739.5	486600	547
	Total	**0**	**0**	**0**	**63320**	**17600**	**38**	**4419.5**	**469000**	**509**	**67739.5**	**486600**	**547**
Fodder crop saplings	Fodder crop saplings	0	0	0	2000	600	0	5519.5	13800	2	7519.5	14400	2
	Total	**0**	**0**	**0**	**2000**	**600**	**0**	**5519.5**	**13800**	**2**	**7519.5**	**14400**	**2**
Forest Species	Forest Species	0	0	0	9684	46705	584	1450	3250	113	11134	49955	697
	Total	**0**	**0**	**0**	**9684**	**46705**	**584**	**1450**	**3250**	**113**	**11134**	**49955**	**697**
Others, pl.specify	Others	0	0	0	56505	198843	297	16136	45922	277	72641	244765	574
	Total	**0**	**0**	**0**	**56505**	**198843**	**297**	**16136**	**45922**	**277**	**72641**	**244765**	**574**
Grand Total		**3468**	**32208**	**304**	**2881433**	**5085204.5**	**16346**	**1951656**	**7004955**	**13218**	**4836557**	**12122368**	**29868**

5.3 Production of Bio-product:

Bio products like bio-fertilizers, earthworks, azolla, rhizobium are in demand in rural areas. Besides that neem extract, trichoderma, mushroom spawn etc were produced in KVKs of Zone V. The total bio product production was 127697 units. which amount to about 2281 q having value of 38.05 lakh. From the said programme 8450 farmers were benefitted in 2020. The state-wise and item-wise bio product productions are given in below table.

Table: Production of bio-product by KVKs

Bio Product	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Number of farmers	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Number of farmers	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Number of farmers
	Odisha				West Bengal				Total			
Bio Fertilisers												
Non Symbiotic Azotobacter	0	0	0	0	0	0	0	0	0	0	0	0
Vermi compost	2	78804	783435	926	169	120067	1474975	1016	171	198871	2258410	1942
Azolla	1	792	4875	219	8	3019	102580	307	9	3811	107455	526
Earth worms	2	264.2	55700	97	70012	68.5	120650	448	70014	332.7	176350	545

Bio Product	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Number of farmers	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Number of farmers	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Number of farmers
	Odisha				West Bengal				Total			
Compost	0	700	10500	2	0	5500	16500	0	0	6200	27000	2
Worms	0	24.25	4750	15	0	0	0	0	0	24.25	4750	15
Blue green algae	0	0	0	0	0	0	0	0	0	0	0	0
NADEP	0	1800	3600	60	0	0	0	0	0	1800	3600	60
Azolla culture	0	60	0	24	0	150	15000	145	0	210	15000	169
Total	**5**	**82444.45**	**862860**	**1343**	**70189**	**128804.5**	**1729705**	**1916**	**70194**	**211249**	**2592565**	**3259**
Bio-Pestisides												
Neem extract	0	0	0	0	6080	120	15040	9	6080	120	15040	9
Tobacco extract	0	0	0	0	0	45	4500	5	0	45	4500	5
Trichoder- maviride	100	0	10000	0	0	465	77250	129	100	465	87250	129
Panchagavya	0	0	0	0	0	300	21000	20	0	300	21000	20
Trichoderma	0	0	0	0	0	625	43750	42	0	625	43750	42
Total	**100**	**0**	**10000**	**0**	**6080**	**1555**	**161540**	**205**	**6180**	**1555**	**171540**	**205**
Worms												
Eudriluseuniae	0	5	2500	5	0	50	88800	11	0	55	91300	16
Total	**0**	**5**	**2500**	**5**	**0**	**50**	**88800**	**11**	**0**	**55**	**91300**	**16**
Earth Worm												
Eiseniafoetida	0	21.7	14700	70	0	22	22000	35	0	43.7	36700	105
Total	**0**	**21.7**	**14700**	**70**	**0**	**22**	**22000**	**35**	**0**	**43.7**	**36700**	**105**
Bio-Fungicides												
Trichodermaviridae	0	0	0	0	0	5680	0	1840	0	5680	0	1840
Total	**0**	**0**	**0**	**0**	**0**	**5680**	**0**	**1840**	**0**	**5680**	**0**	**1840**
Others												
Vermiculture	0	0	0	0	0	0	0	0	0	0	0	0
Mush-room-spawn	46799	1557.75	653150	1836	1	1150	113500	294	46800	2707.75	766650	2130
Cuelure	4105	326.5	102685	495	0	0	0	0	4105	326.5	102685	495
Mineral mix-ture	0	0	0	0	400	400	40000	400	400	400	40000	400
Cow dung(dry)	0	0	0	0	0	6000	3000	0	0	6000	3000	0
Total	**50904**	**1884.25**	**755835**	**2331**	**401**	**7550**	**156500**	**694**	**51305**	**9434.25**	**912335**	**3025**
Grand Total	**51009**	**84355.4**	**1645895**	**3749**	**76670**	**143661.5**	**2158545**	**4701**	**127679**	**228016.9**	**3804440**	**8450**

5.4 Livestock and Fishery

Livestock materials like poultry chicks, Japanese quail, ducklings, turkey, eggs, breeds of cow, sheep, goat, piglets, fish fingerlings were produced. Total livestock materials produced by KVKs of Zone –V was 73. 24 lakh which helped in earning of Rs. 13993788/-. These inputs were supplied/sold to 6199 farmers.

In Odisha, 14 livestock breed fetched Rs.51000 /-, 77933 poultry breeds fetched Rs.5203379/-, 51621 Japanese quail earned Rs. 3667561, J. Quail eggs earned Rs. 62055/-. 8673 ducklings earned Rs. 554714/- Thus from poultry resulted in earning of Rs. 5203379/- in Odisha. There also earning from fish fingerlings of 156890 was about Rs. 196800/-.

In West Bengal, 62 breeds of livestock helped to earn Rs 952000/-, 470 goat breed helped to earn Rs. 974100/-, 64 sheep breed helped to earn Rs. 205000/- while in poultry earning was Rs. 1857657/- for 41324 birds, Japanese quail helped to earn Rs. 497752/- from 1716 birds, 6536 duck gave a value of Rs. 166445/-,. From fish and fish fingerlings KVKs of West Bengal earned Rs. 3182001/-. Total earning by West Bengal KVKs from livestock was about Rs.75.68 lakh. In the Union Territory of A&N Islands, 620 poultry birds, 1170 fish fingerlings was produced which helped the KVKs to earn Rs.10371/-.

Table: Production of livestock and fishery by KVKs

Particulars of livestock	Number	Value (Rs)	No. of farmers	Number	Value (Rs)	No. of farmers	Number	Value (Rs)	No. of farmers	Number	Value (Rs)	No. of farmers
	A & N Islands			Odisha			West Bengal			Zone Total		
Dairy animals	0	0	0	0	0	0	0	0	0	0	0	0
Cows	0	0	0	8	51000	5	30	605000	0	38	656000	5
Buffaloes	0	0	0	6	0	0	23	265000	0	29	265000	0
Calves	0	0	0	0	0	0	9	82000	2	9	82000	2
Others (Pl. specify)	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**14**	**51000**	**5**	**62**	**952000**	**2**	**76**	**1003000**	**7**
Small ruminants	0	0	0	0	0	0	0	0	0	0	0	0
Sheep	0	0	0	0	0	0	64	205000	0	64	205000	0
Goat	0	0	0	23	70000	6	470	974100	143	493	1044100	149
Other, please specify	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**23**	**70000**	**6**	**534**	**1179100**	**143**	**557**	**1249100**	**149**
Poultry	0	0	0	0	0	0	0	0	0	0	0	0
Broilers	0	0	0	6907	355405	682	2950	133050	545	9857	488455	1227
Layers	0	0	0	4648.9	302984	142	14726	755010	660	19374.9	1057994	802
Duals (broiler and layer)	0	0	0	51621	3667561	1568	5577	497752	125	57198	4165313	1693
Japanese Quail	0	0	0	976	62055	30	50	2500	2	1026	64555	32
Turkey	0	0	0	329	100900	12	500	0	0	829	100900	12
Emu	0	0	0	0	0	0	0	0	0	0	0	0
Ducks	0	0	0	8673	554714	48	6536	166445	180	15209	721159	228
Others (Pl. specify)	620	2838	41	4779	159760	240	10985	302900	102	16384	465498	383
Total	**620**	**2838**	**41**	**77933.9**	**5203379**	**2722**	**41324**	**1857657**	**1614**	**119877.9**	**7063874**	**4377**
Piggery	0	0	0	0	0	0	0	0	0	0	0	0
Piglet	0	0	0	0	0	0	118	397280	6	118	397280	6
Hog	0	0	0	0	0	0	0	0	0	0	0	0
Others (Pl. specify)	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**118**	**397280**	**6**	**118**	**397280**	**6**
Fisheries	0	0	0	0	0	0	0	0	0	0	0	0
Indian carp	0	0	0	134369	194020	72	626218	907247	264	760587	1101267	336

Particulars of livestock	Number	Value (Rs)	No. of farmers	Number	Value (Rs)	No. of farmers	Number	Value (Rs)	No. of farmers	Number	Value (Rs)	No. of farmers
	A & N Islands			Odisha			West Bengal			Zone Total		
Exotic carp	0	0	0	300000	60000	18	570001.3	65600	14	870001.3	125600	32
Mixed carp	0	0	0	50332.5	57900	370	100235.8	308500	200	150568.3	366400	570
Fish fingerlings	1170	3510	5	156890	196800	227	60056.2	220120	51	218116.2	420430	283
Spawn	0	0	0	151100	125000	38	9050000	57200	61	9201100	182200	99
Others (Pl. specify)	30	4023	6	1538690	457280	27	2420340.7	1623334	307	3959060.7	2084637	340
Total	**1200**	**7533**	**11**	**2331381.5**	**1091000**	**752**	**12826852**	**3182001**	**897**	**15159433**	**4280534**	**1660**
Grand Total	**1820**	**10371**	**52**	**2409352**	**6415379**	**3485**	**12868890**	**7568038**	**2662**	**15280062**	**13993788**	**6199**

6.0 Soil, water and plant sample analysis

Soil, water and plant sample analysis is one of the major areas where KVKs provide assistance to farming community keeping in mind the fact that our soils are being continuously mined off essential nutrients and as a result soil quality is on the wane. Soil testing is encouraged among the farmers, fertilizer recommendation is made based on the soil water analysis. KVKs tested a large number of soil and water samples in their laboratories. A total of 13947 samples were tested during 2020 benefitting 25686 farmers. These samples were collected from 948 villages. The KVKs realized Rs.46974 for the analysis of the samples.

Table :Soil and water analysis by the KVKs of Zone V

State	Name of Sample	No. of Samples	No. of Farmers	No. of Villages	Amount realized (Rs.)
A&N Islands	Soil	173	120	8	0
	Sub-Total	**173**	**120**	**8**	**0**
Odisha	Soil	5869	15670	500	8825
	Water	104	91	29	1040
	Sub-Total	**5973**	**15761**	**529**	**9865**
West Bengal	Soil	7801	9805	411	459879
	Sub-Total	**7801**	**9805**	**411**	**459879**
Total of Zone	Soil	13843	25595	919	468704
	Water	104	91	29	1040
Grand Total		**13947**	**25686**	**948**	**469744**

7.0 Publication

Scientists of KVKs are engaged in different types of publication – research papers, technical bulletins, newsletter, CD/DVD highlighting the achievement and success stories of the work done by the KVKs. These publications are made available to different departments like SAU, NABARD, ATMA, State Department, ICAR Institute etc. During 2020, 793 publications were made which include 159 extension literature, 53 electronic media, 42 newsletter, seminar/conference 35 publication, 202 technical report, 28 booklets etc.

Table : publication by the KVKs under ICAR-ATARI

Sl. No.	Particulars	State	Number	No. of KVKs
1	Book/ Booklet	A&N Islands	4	2
		Odisha	14	4
		West Bengal	10	8
		Total	**28**	**14**
2	Electronic Media (CD./DVD)	A&N Islands	1	1
		Odisha	29	12
		West Bengal	23	8
		Total	**53**	**21**
3	Extension Literature	A & N Islands	7	3
		Odisha	67	20
		West Bengal	85	16
		Total	**159**	**39**
4	Newsletters	Odisha	33	22
		West Bengal	9	6
		Total	**42**	**28**
5	Popular articles	A & N Islands	5	2
		Odisha	26	9
		West Bengal	68	14
		Total	**99**	**25**
6	Research papers	A & N Islands	12	3
		Odisha	38	12
		West Bengal	66	14
		Total	**116**	**29**
7	Seminar/conference/symposia papers	A & N Islands	2	2
		Odisha	15	5
		West Bengal	18	10
		Total	**35**	**17**
8	Technical bulletins	A & N Islands	1	1
		Odisha	10	5
		West Bengal	4	2
		Total	**15**	**8**

Sl. No.	Particulars	State	Number	No. of KVKs
9	Technical report	A & N Islands	1	1
		Odisha	93	13
		West Bengal	108	10
		Total	**202**	**24**
10	Training material	Odisha	0	0
		Total		
11	Others	A & N Islands	14	1
		Odisha	15	6
		West Bengal	15	6
		Total	**44**	**13**
	Grand Total		**793**	**218**

8.0 Scientific Advisory Committee Meeting

Scientific Advisory Committee Meeting (SAC) is organized by the KVKs to review the achieved targets and to finalize the action plan for the coming year. The committee is chaired by the Vice-Chancellor/ head of the organization with participation from ICAR-ATARI scientists, SAC members and line departments. During 2020, ICAR-ATARI conducted 55 SAC meeting, out of which 33 SAC meeting was conducted in Odisha, 19 in West Bengal and 3 in A&N Islands. The total participants were 1553.

Table :Scientific Advisory Committee Meeting (SAC)

Sl.No.	State/UT	No. of SAC meeting	No. of participants
1	A & N Islands	3	117
2	Odisha	33	1031
3	West Bengal	19	405
	Total	**55**	**1553**

9.0 Revenue Generation

KVKs erneded revenue through different projects from NABARD, ATMA, MANAGE, IFFCO, State Govt., RKVY etc. The amount of revenue generation was Rs.13700187, out of which KVKs in Odisha earned Rs.3091545 and West Bengal earned Rs.134208642 through different projects.

Revenue Generation

Sl. No.	State	Fund received (Rs)	Name of organization
1	A & N Islands	Nil	OUAT, INM, IPM, ARYA, DAESI, ATMA, RKVY RAFFTAR, ATMA, MGNREGS etc.
2	Odisha	3,091,545	
3	West Bengal	134,208,642	
Total		**137300187**	

10. Revolving fund status

(In Rupees)

Sl. No.	State	Opening balance as on 1st April	Income during the year	Expenditure during the year	Net balance in hand as on 1st April of each year (Kind + cash)
1	A & N Islands	0	0	0	0
2	Odisha	4409554.38	21718408	17511184.84	5959670.51
3	West Bengal	84779237.17	128264420	98191052	107559872.2
Total		**89188791.55**	**149982828**	**115702236.8**	**113519542.7**

11.Technological Backstopping by Directorates of Extension Education

The Directors/ Dean, Extension Education (DEEs) of concerned State Agricultural Universities (SAUs) under ATARI Kolkata Zone had significant role in transferring updated agricultural technologies available at various Research Institutes/ SAUs for agricultural farmers during the year 2020. They conducted on-farm trials (OFTs), front line demonstrations (FLDs), training programmes, hands-on-trainings and other related activities through their KVKs. All fifty nine KVKs of this zone have been distributed under the jurisdiction of four DEEs irrespective of any host organizations for transferring technologies in a better way. The Extension Directorate of Odisha University of Agriculture and Technology (OUAT), Bhubaneswar has been allotted with 33 KVKs; Bidhan Chandra Krishi Viswavidyalaya (BCKV), Mohanpur with 17 KVKs; Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari with 6 KVKs and West Bengal University of Animal and Fishery Sciences (WBUAFS), Belgachhia with 3 KVKs.

During the year 2020, all the Directorates conducted HRD programmes, meetings, workshops, exposure visits and interface meetings to fulfil the demands of their KVK personnel for enhancing working skills with KVK system. A total of 36 HRD programmes were conducted during the period under report for 2152 KVK personnel involving total 472 KVKs were participated. The area of training programmes were-technologies on Doubling Farmers' Income (DFI)/ resource conservations, bio-flock management in fisheries, seed production, documentation, eco-system analysis for participatory planning, PPV&FRA, agro-met advisories, aquaculture, preparedness of KVKs for Post Covid-19 situation, dissemination of agr-advisories, integrated farming system, development of communication skill, resource and revenue generation, adopting organic farming practices, entrepreneurship development and so on. Maximum programme (23) was conducted by OUAT, Bhubaneswar followed by WBUAFS, Kolkata (7 programmes), UBKV, Pundibari (4 programmes) and BCKV (1 programme).

The DEEs and/ or their officials visited their KVKs for 224 occasions to attend different programmes like SAC meetings, field days, technology week, inaugurating training programmes/ workshop, '*World Soil Day*' celebration, '*Swatchh Bharat*' programme, '*World Women Day*' celebration, DAESI programme, '*Rabi*' campaign, '*Kharif*' campaign organized at their KVKs. Due to COVID-19 Pandemic situation in the country, visits were restricted from all aspects. However, the officials from DEE, OUAT visited their KVKs for 59 times, from BCKV for 54 times, from UBKV for 28 times and from WBUAFS for 47 times). A total of 121 KVKs involved in those programmes during the year 2020.

The frequent visits of OFT and FLD experimental fields of KVKs/ farmers' were made by DEE officials to oversee KVK field activities, to provide technical advices and to enrich knowledge and skill of KVK personnel. The Directorate officials from BCKV, Mohanpur visited OFT fields for 14 occasions and FLD for 31 occasions to check the performance of different crop varieties under various cropping systems/ seed replacement rates, to assess various new technologies etc. Similarly, UBKV officials visited OFT and FLD fields for 5 and 15 times, respectively to see crop's performance under different nutrient applications, to check new technology adoption by farmers, to collect farmers' feedback and many others. The respective numbers of field visits by the officials of WBUAFS, Belgachhia were noted to be 10 and 9 to know the disease/ pest incidences of field crops, to note farmers' feedback and so on. In addition, 2 visits were also made to see the performance of low-cost mini fish hatchery for IMC and to assess field demonstration sponsored by ATMA. A large number of field visits i.e. 45 for OFTs and 66 for FLDs were conducted by the Dean, Extension Education and/ or other officials of OUAT, Bhubaneswar for overseeing KVK activities e.g. to check data collection of different experiments and maintaining records, to maintain experimental fields with proper display boards, to discuss various issues with concerned Line Departments of the districts, to check the performance of various adopted technologies and many more. Not only that, OUAT officials visited a substantial number of times (15) to monitor different activities related to NICRA, ARYA etc.

From January to December, 2020, the Extension Directorate of BCKV, Mohanpur evaluated 29 technologies involving 29 KVKs. Out of those technologies, bio-fertilizer assessment on disease management and yield of groundnut, lentil seed priming on yield, performance assessment of different group sizes of Farmers' Interest Groups, performance of various new varieties seeds, performance evaluation of different biological and organic inputs for improving soil health and productivity of crops, performance evaluation of improved varieties tuberose, impact of zinc application in betelvine, onion seed production, performance evaluation of some micronutrients on mustard quality etc. were important. The UBKV, Pundibari implemented 27 technologies in 27 KVKs viz. effect of planting dates on the performance of onion, assessment of integrated plant nutrient supply system (IPNS) in *Aman* rice using different organic sources, use of ITKs to control brinjal fruit and shoot borer, organic fish farming for sustainability, use of probiotics on survival and growth of IMC under polyculture system, improved parboiling technology for quality enhancement of scented and non-scented rice, effect of integrated pest management of fruit fly in cucurbitaceous crops, performance of multi-storied cropping by planting arecanuts, black pepper and turmeric on same piece of land, commercial honey bee rearing (*A. mellifera*) and so on. Similarly, OUAT, Bhubaneswar Directorate implemented 25 technologies involving 428 KVKs. Important technologies were performance of various drought/ BPH tolerant paddy varieties, disease management in rice, weed management in rice/cotton/groundnut, micronutrient application in vegetables, low cost poly tunnel off-season seedling raising, vegetable cultivation, trellis system of vegetables production, performance of drudgery reducing equipments, pest management of stored grains, economic mushroom cultivation, scientific pisciculture, feeding management of cattle, sustainable rearing of backyard poultry etc. Ten technologies e.g. developing area specific integrated farming system models, seasonal fodder cultivation technology, scientific management of AH & Fishery sector for DFI, brooding management of poultry chicks and brood fish management for augmenting productivity, climate smart animal husbandry practices with special emphasis on area specific mineral mixture, selective breeding programme for small animals to avoid inbreeding depression, restoration of soil health and mass production of vermicompost, scientific management of Ghoongroo pig breed, ornamental fish rearing in pond eco system were implemented by WBUAFS, Begachhia at 31 KVKs.

All the Extension Directorates of this Zone published and updated total 40 technology inventories. In addition, they published a large number of literatures e.g. newsletter, magazine, booklet, diary,

bulletin etc. in English and local languages related to agriculture for the farmers.The Directorate of BCKV, Mohanpur published maximum (21) technology inventory during the period followed by WBUAFS (13 inventories), OUAT (4 inventories) and UBKV (2 inventories).

Supply of updated technologies and technological products viz. seeds, planting materials, bio-products, livestock/ poultry breeds, mineral mixture for animals, fish spawn/ fingerlings, mushroom spawn etc. to the KVKs were also the part of activities of all theExtension Directorates of this Zone. A total of 207 KVKs received various technological products from their Directorates. Considering the individual Directorate, OUAT supplied their products to 144 KVKs, BCKV to 28 KVKs, WBUAFS to 20 KVKs and UBKV to 15 KVKs during the year 2020.

12.Agricultural Technology Information Centre (ATIC)

The objectives of establishing Agricultural Technology Information Centre (ATIC) in Research Institutes/ State Agricultural Universities are to provide solution to the location specific problems, to make available all updated technological information along with technology inputs and products on agriculture, livestock and fishery sciences, and to help the farmers including other stakeholders at one place. It is usually established at the entrance of the institute. The centre enables a better interaction between researcher and technology users, and serves as a '*Single Window*' delivery system for services and products of research. In ICAR-ATARI Kolkata Zone, ATICs are being operated in the Union Territory of Andaman and Nicobar Islands under ICAR-Central Island Agricultural Research Institute (ICAR-CIARI), Port Blair; in Odisha state under ICAR-Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar and Odisha University of Agriculture and Technology (OUAT), Bhubaneswar; and in West Bengal state, under Bidhan Chandra Krishi Viswavidyalaya (BCKV), Mohanpur and Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari. The centre provides the facility of reception counter, exhibition/ technology museum, touch screen kiosk, sales counter, farmers' feedback register, video conferencing facility, library, cafeteria etc. A total of 15208 farmers from different corners of this Zone visited ATICs during January 2020 to December 2020 to get technology information (7481 persons), technology products (890 persons), technology services (2587 persons) and other purposes (4250 persons).

A total of 7014 farmers got benefit from receiving various technology information viz. varieties/ hybrids (1317), pest management (1014), disease management (863), agro-techniques (2130), soil and water conservation (404), post-harvest technology and value addition (480) and animal husbandry (806) from ATICs. The Kisan Call Centre was used by maximum (3695) farmers to get the information mainly on (1080), pest management (634), disease management (544), agro-techniques (662), soil and water conservation (198), post-harvest technology and value addition (285) and animal husbandry (292) including fisheries during the year 2020. Twelve farmers were benefitted from video showing and 37 farmers from writing letters to the concerned persons of ATICs. A number of need based training programmes were also organized in the ATICs for 2034 persons. Among total trainee participants, maximum (1262) persons took training on agricultural techniques followed by pest management (238), disease management (180), animal husbandry (120), varietal trial (83), soil and water conservation (78) and post-harvest technology including value addition (73). In addition, 1199 persons got benefit from attending various other programmes. The celebration of field days benefitted to 351 farmers, field demonstrations to 110 farmers, awareness camps to 356 farmers, interaction meets to 150 farmers, exposure visits to 151 farmers, students and professionals and radio/ TV talks to 81 farmers.

Various types of printed materials and electronic

media on agriculture, livestock and fishery sciences were provided to the farmers and other stakeholders. Sometimes, beneficiaries were charged nominal prices for getting the publications and sometimes, it was free of cost. During 2020, 631 books, 1500 technical bulletins, 100 technology inventory and 40 video films were supplied from different ATICs of this Zone which benefitted 1427 farmers for improving scientific agricultural knowledge. Around Rs. 14600/- revenue was generated from the sale of those publications. Due to COVD-19 Pandemic situation across the country/ globe, the farmers' visit to ATICs was restricted during 2020 for a substantial period of time.

The sales counter of different ATICs were stored with various technological products viz. seeds, planting materials, table fishes, arecanut, aromatic rice, green coconuts, pulses, vegetables, fruits, neem cake, rhizomes, mushroom spawns etc. for sale. During the year 2020, 747.08 q seeds, 48537 planting materials, 124 livestock, 2283 poultry birds, 300 fish fingerlings, 6627.624 kg table fishes, 1000 kg neem cake, 172 packets mushroom spawn, 2200 kg rhizomes, 10 q aromatic rice, 50 kg arecanut, 375 pieces green coconut, 50 kg capsicum, 1000 lemons, 30 kg banana etc. were supplied to the farmers through ATICs. From the sale of those technology products, 15462 farmers were benefitted and Rs. 44.80 lakh revenue was generated during the year 2020.

The ATICs were also facilitated to analyse soil and water samples, to diagnose plant diseases, to provide livestock vaccines/ treatment of animal diseases and to provide information on facility available with line departments about various campaigning programmes launched by state governments etc. During the period, 211 soil/ water samples were analysed which benefitted 221 farmers, and 712 plant samples were diagnosed for diseases which benefitted 575 farmers. Technology services were also provided to the Line Departments of State/ UT for 45 different cases to solve the problems of 10 agricultural farmers. About 170 farmers got service for treating diseased animals including vaccinating animals through those centres.

13.0 Flagship Programme (Projects)

A number of flagship programmes funded by DAC&FW, other Institution Organization, Indian Metrology Department (IMD), ICAR-CRIDA were organized through KVKs in 2020. The achievement of the programme are summarized below:

13.1 Clustered Frontline Demonstration in Pulses (NFSM)

Nodal Officer: Dr. S.K. Roy

The project on frontline demonstration on pulses were funded by NFSM, New Delhi. An area of 1080 ha was covered under frontline demonstrations on pulses covering 2700 demonstrations/farmers. Demonstrations was organized in rabi and summer season in the state of A&N Islands, Odisha ad West Bengal. Area coverage was 700 ha with 1750 farmers in rabi season with lentil, chickpea, fieldpea, horsegram, greengram and blackgram. In summer coverage was 380 ha with 950 farmers.

In lentil, average yield was 10.5 q/ha in West Bengal against check yield of 7.6 q/ha, an increase of 37.4% over local practices. The area covered in lentil was 210 ha in West Bengal with 525 farmers.

Chickpea demonstration was conducted in 60 ha in Odisha and 70 ha in West Bengal. The demonstration yield was 11.0 q/ha in Odisha and 13.4 q/ha in West Bengal. Fieldpea crop was demonstrated in Odisha in 40 ha and 10 ha in West Bengal. The average yield was 14.2 q/ha in Odisha and 12.5 q/ha in West Bengal. Improvement in yield was 27-36%. Horesegram, greengram and blackgram was demonstrated in rabi season in Odisha. The average yield was 6.5 q/ha in greengram, 5.4 q/ha in blackgram. Increase in yield was 30-40%.

In summer, greengram was demonstrated in all 3 states covering 300 ha. Blackgram was demonstrated in West Bengal in 50 ha and A&N Islands in 30 ha.

The average yield of greengram was 5.33 q/ha in Odisha. 8.1 q/ha in West Bengal and 5.98 q/ha in A&N Islands.. It showed 37 to 59 % increase in yield. Blackgram showed 56% increase in yield in West Bengal and 44 % increase in yield in A&N Islands.

The results of demonstrations are summarized in the below table:

Table: Frontline demonstration conducted by NFSM

Sl No	Crop	State	Target of FLDs		Achievements of FLDs		Average yield (q/ha)	Yield (q/ha)	Yield increase %	Difference between demon and local (q/ha)
			No. of Demos	Area (ha)	No. of Demos	Area (ha)				
1	Lentil	West Bengal	525	210	525	210	10.5	7.6	37.4	2.9
2	Chick pea	Odisha	150	60	150	60	11.00	6.7	64.1	4.3
		West Bengal	175	70	175	70	13.4	9.43	42.3	4.0
3	Field pea	Odisha	100	40	100	40	14.2	10.4	36.5	3.8
		West Bengal	25	10	25	10	12.5	9.82	27.5	2.7
4	Horse gram	Odisha	25	10	25	10	6.2	4.8	29.2	1.4
5	Green gram	Odisha	525	210	525	210	6.5	4.6	40.7	1.9
6	Black gram	Odisha	225	90	225	90	5.4	3.7	30.7	1.7
	Total Rabi crops		**1750**	**700**	**1750**	**700**				
7	Green gram	Odisha	225	90	225	90	7.05	5.33	40.1	2.19
		West Bengal	375	150	375	150	11.3	8.21	37.4	3.16
		A&N Islands	150	60	150	60	9.6	5.98	59.1	3.53
8	Black gram	West Bengal	125	50	125	50	10.3	6.8	56.4	3.22
		A&N Islands	75	30	75	30	8.4	5.4	44.2	2.62
	Total summer crop		**950**	**380**	**950**	**380**				
		Grand total	**2700**	**1080**	**2700**	**1080**				

Table : Result of CFLD on Pulses during 2020-21 (Rabi)

S. No.	Crop/ Season	Variety	Technology demonstrated	Area (ha)	No. of farmers	Farmer Practice (q/ha)	Yield		Economics of Demo (Rs./ha)			
							Demo (q/ha)	% increase	Gross Cost	Gross return	Net Return	BC ratio
Rabi season												
1	Lentil	WBL 77 (Moitree)	Seed treatment with Rhizobium @5 g / kg of seed / application of B @2g/L of water at 35 days & at 42 to 45 days after sowing/Zinc sulphate @ 20 Kg/ha and Borax @ 10kg/ha	130	501	7.60	11.10	46.00	23763	59961	36198	2.52
		HUL 57	Seed Treatment with Trichoderma @ 4 gm/kg seed,/Seed Priming (Rhizobium inculation) @ 20 gm/kg of seed through Jaggery mixture/ Basal application of PSB and Azotobector @ 2 kg/acre	20	87	8.10	10.10	25.84	23075	51695	28620	2.24
		PL-08	Line sowing/Seed treatment- Trichodarma viridae- 4g/kg/ Soil application- Azotobactor + PSB@ 200g each, and foliar application of B@ 2g/lt of water and soil application 7.5 kg/ha	30	148	8.50	10.00	17.64	24465	56260	31795	2.30

S. No.	Crop/ Season	Variety	Technology demonstrated	Area (ha)	No. of farmers	Farmer Practice (q/ha)	Yield		Economics of Demo (Rs./ha)			
							Demo (q/ha)	% increase	Gross Cost	Gross return	Net Return	BC ratio
		L 4717	Line sowing (20 cm × 8-10cm) / weed management Pendimethalin @ 0.75 l/ ha &Propaquizafop @ 0.1 kg/ha at 15-20 DAS/ 2. Foliar application of boron @ 0.2% for twice Yellow sticky trap @ 16/ha, Pheromone trap with lure @ 20/ ha	20	52	7.10	9.60	35.44	19748	45396	25648	2.30
		Pusa Agati-4717/WBL-77/KL-320	Seed treatment / Soil Treatment + PSB spray / Micronutrient spray / Insect Management / Disease Management	10	30	8.14	12.86	57.80	18022	70703	52681	3.94
2	Chick pea	NBeG-47	Improved variety- NBEG-47/ Line sowing (30x10cm)and seed treatment with carbendazim @3 gm /kg of seed/. Foliar spray of multi-micronutrient Eurostar 2 ml/lit once at preflowering stage and allwin top plus 2ml/lit at flowering stage.	50	82	6.68	11.95	81.10	24700	77500	50800	3.13
		NBeG-49	Seed Treatment with Carboxin 37.5% + Thiram 37.5%/ Basal application of Zypmite Plus as Soil conditioner/ Vermicompost under INM and use of Neem Oil,/Thiamethoxam 25% EC/ Yellow Sticky Trap and Blue Sticky Trap under IPM.	10	25	6.80	9.10	34.81	23800	42042	18242	1.76
		JAKI-9218	Variety-Jaki-9218, Introduction of Improved variety Jaki-9218	10	33	12	13.69	14.1	30095	73926	43831	2.46
		Anuradha	Herbicide Whip Super (Fenoxaprop-P-ethyl) as early post emergence @ 0.5 lt / ha / Micronutrient spray Boron-20 @ 2 g/lt water in 25 and 45 DAS and need based fungicide spray Carbendazim+ Mancozeb 2 g/lt of water for control of wilt	10	84	8.20	14.90	81.5	17900	74500	56600	4.20
		NBeG 45	Application of Sulfur and micronutrient nutrition	10	35	8.10	10.55	30.25	19500	42440	22940	2.18
		NBeG-49	Variety- NBEG-49 @ 75kg./ha, Seed Treatment-Trichoderma viride @200gm/ha & Pseudomonas 200g/ ha/Fertilizer-30kg N &100kg P2O5/ ha, Seed Rate: 75 Kg/ha/ Bio-Fertilizer: Rhizobium @ 2 kg/ha & PSB @ 2 Kg/ ha, micro-nutrient: Zn @25 Kg/ha./ Plant Protection: Gram Pod Borer (Helicoperva armigera)-Indoxacarb:0.5 ml/lt,	30	137	10.32	14.92	47.20	30744	77467	46590	2.48
		RVG202	Variety/ Seed treatment with Rhizobium and application of Bio-fertilizer, PSB	10	47	8.78	13.59	54.70	23763	59961	36198	2.52
3	Field pea	Aman	Seed treatment with Vitavax power @ 2 gm per kg seed /Line sowing (30x10 cm), Seed inoculation with Rhizobium @ 20g/kg seed, /Application of Boron @1kg/ha and Wettable Sulphur @ 1.5 kg/ ha,/Soil test based fertilizer application (based on the recommended dose of 25:50:25 kg NPK / ha),	40	125	8.80	12.95	47.16	29850	66505	36655	2.23
		Vikash	Variety –Vikash Seed treatment Rhizobium @25g/kg seed N:P:K @20:40:40 and Soil application of Boron @ 2 kg/ ha .	10	50	9.82	12.52	27.49	33430	62600	29170	1.87

S. No.	Crop/ Season	Variety	Technology demonstrated	Area (ha)	No. of farmers	Farmer Practice (q/ha)	Yield		Economics of Demo (Rs./ha)			
							Demo (q/ha)	% increase	Gross Cost	Gross return	Net Return	BC ratio
4	Horse gram	Chakapada Kolatha	Seed treatment with Vitavax power @ 2 gm per kg seed, Line sowing (with spacing 30x10 cm), Seed inoculation with Rhizobium @ 20g/kg seed and soil application of PSB @ 6 kg/ha,	10	32	4.80	6.20	29.17	13300	30015	16715	2.30
5	Black gram	Vallab Urd1	Seed rate of 20 kg per ha/Seed treatment with Rhizobium sp.@ 20g/kg 3. Post emergence application of Quizalofop Ethyl 5% EC @ 1.5 ml/l 4. Plant Protection to control pod borer application of Emamectin Benzoate 5 % SG @ 0.4 g/	20	50	4.35	6.18	29.55	24165	43225	19061	1.79
		PU 1	Seed Treatment with Carboxin 37.5% + Thiram 37.5%, Basal application of Zypmite Plus as Soil conditioner & Vermicompost under INM and use of Neem Oil, Thiamethoxam 25% EC, Yellow Sticky Trap and Blue Sticky Trap under IPM.	10	25	3.88	2.50	55.20	13835	21728	7893	1.57
		IPU 2-43	seed treatment with chemicals , soil test based fertilizer application, application of chemical for weed management and need based plant protection measures	60	172	3.78	5.40	30.00	7950	27900	19950	3.51
6	Green gram	IPM-205-7(Virat)	Var.IPM-205-7(Virat) - Line sowing 25 cm x 10 cm,/Seed treatment with Carbendazim @1gm/kg & Rhizobium culture @ 20 gm/kg seed, STBF,/ Application of Phospho - Gypsum @ 2.5 q/Ha., Sulphur 80WP @ 5 gm. /ltr of water	10	33	5.60	9.15	63.39	28600	47000	18400	1.64
		IPM-02-14	Soil test based fertilizer application, seed treatment with chemicals and inoculation with Rhizobium, Soil application of biofertiliser, foliar spray of Boron & nutrient at 30 DAS and 45 DAS , Use of neem based pesticides	200	517	4.54	6.265	40.77	18614	38880	20266	2.24
Total (Rabi)				700	2265							

Table : Clustered Front line Demonstration on chickpea in Nabrangpur, Odisha

Variety demonstrated & Technology demonstrated	Number of farmers	Area in ha	Yield obtained (q/ha)			Demonstration plot			
			Max.	Min.	Av.	Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio
Chickpea, Improved variety-NBEG-47	50	20	9.6	8.4	9.0	24000	65600	37,600	2.73

13.2 Creation of seed hub for increasing indigenous pulse production in yield

Nodal Officer: Dr. S.K. Roy

The project on creation of seed hub was implemented with the collaboration of ICAR-IIPR, Kanpur. The fund was provided amounting Rs.150 lakh to each seed hub under Zone-V. At present 10 seed hubs are operational in KVKs. Each KVK allotted Rs.100 lakh as revolving fund and Rs.50 lakh for creating seed processing and infrastructure. The project was monitored by IIPR, Kanpur. Out of total 10 seed hub, 7 seed hubs are in Odisha. These are Baragarh, Bhadrak, Cuttack, Deoghar Kalahandi, Keonjhar and Mayurbhanj I. In West Bengal 3 seed hubs are under CISH, Malda, S-24 Parganas (Additional), Narendrapur and Uttar Dinajpur. In the year 2020, the seed production was 3020 q, out of which 417 q has already procured by the farmer.

Table: Performance of seed hub in KVKs during 2020

Sl. No.	State	Crop	Seed available (q)
1	Odisha	**Black gram** **Green gram** **Red gram** **Chick pea**	**Crop standing** **Crop standing** **305.44** **Crop standing**
2	West Bengal	**Black gram** **Lentil** **Green gram**	**21.8** **132.6** **500.0**

13.3 Clustered frontline demonstration in oilseeds

Nodal Officer: Dr. P.P. Pal

Clustered frontline, demonstration on oilseeds (groundnut, rapeseed, mustard and sunflower) was organized through KVKs in 722.8 ha in rabi season. An area of 462.8 ha was covered with 1157 farmers in Odisha. Groundnut was covered in 212.8 ha through 532 demonstrations. Demonstration yield was 22.94 q/ha in groundnut, increase in yield was 32.1%. Rapeseed & mustard was covered in 210 ha benefitting 525 farmers. The average yield in demonstration 7.16 q/ha in Odisha which showed 58.8% yield increase. Sunflower was also covered in 40 ha. The average yield was 14.3 q/ha in sunflower. Thus it was 55.4% increase in yield. In West Bengal, 260 ha was covered by oil seeds in rabi season. Groundnut was covered in 225 ha which showed yield potential of 28.98 q/ha (39% increase over local check). Rapeseed and mustard was covered in 170 ha with 425 farmers. The average yield of rapeseed & mustard was 13.7 q/ha which was 38.1% higher than local check.

In summer season, the coverage of oilseed was 1240 ha through 3100 demonstrations. The results are awaited for these demonstrations.

Table: State and crop wise performance of CFLD Oilseeds during 2020-21 (Rabi Season)

State	Crop	Target of FLD approved		Achievements of FLD		Yield (q/ha)		% In-crease	Difference in yield (qt/ha)
		No. of Demo	Area (ha)	No. of Demo	Area (ha)	Demo	Local		
Odisha	Groundnut	532	212.8	532	212.8	22.94	17.36	32.14	5.58
	Rapeseed & Mustard	525	210	525	210	7.16	4.51	58.76	2.65
	Sunflower	100	40	100	40	14.30	9.20	55.43	5.10
West Bengal	Groundnut	225	90	225	90	28.98	20.71	39.93	8.27
	Rapeseed & Mustard	425	170	425	170	13.65	9.88	38.16	3.77
Total		**1807**	**722.8**	**1807**	**722.8**				

Table: State and crop wise performance of CFLD Oilseeds under NFSM during 2020-21: (Summer Season)

State	Crop	Target of FLD approved		Achievements of FLD	
		No. of Demo	Area (ha)	No. of Demo	Area (ha)
Odisha	Groundnut	225	90	225	90
	Sesame	625	250	625	250
	Sunflower	175	70	175	70
West Bengal	Groundnut	525	210	525	210
	Sesame	1175	470	1175	470
	Sunflower	375	150	375	150
Total		**3100**	**1240**	**3100**	**1240**

Table : Clustered Front line demonstration on groundnut at Nabarngpur, Odisha

Name of Variety + Technology demonstrated	Number of farmers	Area in ha	Yield obtained (q/ha)			Yield gap minimized (%)			Demonstration plot			
			Max.	Min.	Av.	D	S	P	Gross Cost (Rs/ha)	Gross return (Rs/ha)	Net Return (Rs/ha)	B:C ratio
Improved variety ICGV91114(Devi) ,Line sowing (30x10cm),	20	10	17.2	15.4	16.3	29.77	2.16	18.5	66500	131500	65000	1.97

13.4 Farmer FIRST Programme

Nodal Scientist: Dr. K.S. Das

Farmer FIRST Programme (FFP) was launched in the year 2015-16 by Agricultural ExtensionDivision, ICAR, New Delhi under KVK scheme. It was successfully implemented and run for consecutive five years i.e. from 2015-16 to 2019-20. As a result, the programme was extended during the year 2020-21for three ICAR Institutes (ICAR-NRRI, Cuttack; ICAR-CIFA, Bhubaneswarand ICAR-IIWM, Bhubaneswar) and one StateAgricultural University (OUAT, Bhubaneswar) under ICAR-ATARI Kolkata. Due to COVID-19 Pandemic situations, the activities at the field level were severely affected. But, utmost efforts were made by all the concerned scientists of implementing centres to fulfil their targets in the adopted villages by following all COVID protocols to prevent infection. The details of budgetary allocation and salient achievements of FFP have been given as under.

Table: Details of Farmer FIRST Programme under ICAR-ATARI Kolkata during 2020-21

Sl. No.	Name of the project (Institute/ University)	Name of the PI/ Nodal Scientist of the Programme	Fund allotted during 2020-21 (Rs. in lakh)	Fund utilized during 2020-21 (Rs. in lakh)
1.	Promoting Improved Agriculture & Allied Sector Technologiesin Khordha District (*ICAR-Central Institute Freshwater Aquaculture,Bhubaneswar*)	Dr. H. K. De Pr. Scientist	16.50	13.55
2.	Increasing Productivity and Sustainable the Rice based ProductionSystem through Farner First approach (*ICARNationalRice Research Institute, Cuttack*)	Dr. S. K. Mishra Pr. Scientist	16.00	15.58
3.	Enhancing water & livelihoods security (*ICAR-Indian Institute of WaterManagement, Bhubaneswar*)	Dr. P. Nanda Pr. Scientist	11.00	8.58
4.	Enhancing Farm Productivity & Profitability with 'Farmer-First' focusin Khordha district of Odisha (*OUAT. Bhubaneswar*)	Dr. R. K.Paikaray Professor	15.25	14.00
5.	ICAR-Agricultural Technology Application Research Institute (ATARI) Kolkata	Dr. K. S. Das Pr. Scientist	2.10	1.96
Total			**60.85**	**53.67**

Salient achievements of projects:

ICAR-NRRI,Cuttack: The project was implemented in 4 adopted villages i.e. Laxminarayanpur, Satyabhamapur, Ganeswarpur andBiswanathpur of Salipur Block, Cuttack, Odisha.

Crop-based module (Rice)-Varietal demonstrations of 4 most promising varieties of ricenamely, '*Maudamani*' (*CR Dhan 307*, 420kg),'*Pradhandhan*'(*CR Dhan 409*, 420kg), '*Rajalaxmi*' (Hybrid, 200kg), '*SwarnaSub-1*' (210kg) with complete package of practices during Kharif 2020 covering over 40 ha area in four adopted villages were conducted. As critical inputs, 10-15 kg seed minikits for HYVs and 3kg minikits for hybrid '*Rajalaxmi*' with partial amount of need based pesticides were provided to each 130 farmers. About 400 kg seeds ofgreen manuring crop- Dhanicha(Sesbania) to 50 farmers were distributed in order to reduce application of chemical fertilizers (Urea/ DAP) and to improve soil health. Under mechanization, battery-operated power sprayers (5 nos.) to five farmers' groupsin four adopted village were demonstrated which were commonly used to apply liquid pesticides and fertilizers in a yard. Need based applications of pesticides under IPM and paddy seed treatment with the culture of *Trichodermaviridae* for suppression/ control of various diseases were also demonstrated. Demonstration on weed management in rice though application of post emergence herbicides'*Nominee Gold*' in 20 farmers' fieldswas done. Need based IPM in rice for pest control and surveillance through pheromone trapsthat uses pheromones to lure insects were demonstrated. Farmers were trained/ demonstrated to use *Tricho* cards (200 Nos.) and *Bracon* cards (50 Nos.) in order to control various rice pests.

Tricho and Bracon card demonstration in farmers' field *Demonstration on paddy seed treatment with Trichodermaviride*

Horticulture-based module (Vegetables)-Varietal demonstrations of vegetables viz. tomato (*var. Rohit* and *Noble 333*), okra (*var. Radhika*), ridge gourd(*var. NHRG 1001*)and pointed gourd (*var. Swarna Alaukik*) were conducted in collaboration with 44 farmers and farmwomen.

Animal husbandry-based module (Poultry/Duckery/ Fishery)-Pond-based aquaculture production was demonstrated to 21 fish farmers by providing 50,000 fingerlings of Rohu and Catlafishesprocured from ICAR-CIFA, Bhubaneswar. To promote backyard poultry rearing in the villages, a total of 1200 dual purpose chicksnamely, *Vanaraja*, *RIR* and *Kadaknath* were provided to 22 farmers and farm women.

Enterprise-based module (Mushroom/ Vermi-composting)- Demonstration of paddy straw mushroomproduction along with technical backstopping by experts was arranged for 87 farmers/farmwomen. About 2000 bottles mushroom spawn and 198 kg of polythene tube were also provided to the farmers.

Capacity building andextension activities-Training-cum-demonstrationonpaddystraw mushroom cultivation for ensuring nutrition andincome for 87 farmers, on *Tricho* cards and *Bracon* cards for management of insect pests in rice for 21 farmers, on improved vegetable production technologies for 46 farmers and on production management of livestock andpoultry for 64 farmers were organized under this programme.

Honour/Awards - Smt. N. Pradhan of Satyabhama purand Smt. P. Paniof Ganeswarpur village were awarded with ***'Best Woman Farmer Award'***by the Director, ICAR-NRRI, Cuttack during *'RashtriyaMahilaKishanDiwas'* celebration at the Institute on 8th March, 2021.

SriR. K. Behera of Biswanathpur and Sri Shiba Narayan Samal of Satyabhamapur were awarded with ***'IARI Innovative Farmer-2020-2021 Award'*** organized by ICAR-IARI, New Delhiat Pusa Krushi Vigyan Mela held on 25-27th Feb., 2021.

Dr. S.K. Mishra (Principal Scientist & PI, ICAR-NRRI, Cuttack) and his team received ***'Best Poster Award'***(2nd Prize) based on the topic *'Enhancing crop productivity and farmers' profit in rice based production system: A successful case study of NRRI Farmer FIRST programme'* during National Rice Workshop organized by Association of Rice Research Workers (ARRW) at ICAR-NRRI, Cuttack.

Training programme on livestock/ poultry management Training programme on 'Improved vegetable production technologies'

ICAR-CIFA, Bhubaneswar: The project was implemented in 3 villages viz.Jagannathpur, Dorbanga and Balabhadrapur of Khurda district.

During the year 2020-21, seven field days, four capacity building programmes and one scientists-farmers interface were organised involving 143, 107 and 120 farmers, respectively. Modules on improved technologies of paddy, green gram, black gram, carp culture, horticulture and integrated farming system were demonstrated in 90.35 ha area during 2020-21. Integrated nutrient management in paddy was demonstrated in 29.2 ha involving 73 beneficiaries. An average yield of 45 q/ha was recorded in *'Pooja'* variety whereas *'Swarna sub-1'* (CR 2539-1) cultivar yielded up-to 48 q/ha in the demonstration plots. Green manuring, micronutrient supplement and balanced use of RDF enhanced the productivity and profitability of the beneficiaries (B:C ratio was 1.50). Thermo insensitive variety of cauliflower var. *'Fujiyama'* was demonstrated in 1.5 ha area involving 28 beneficiaries of 3 villages. An average yield of 17 t/ha was recorded in the demonstration plots.

Three fish based integrated farming systems having an area of 2.35 ha were developed and one of the IFS was developed with fish seed rearing as main enterprise and other enterprises like horticulture, dairy, poultry,vermi composting etc. were also integrated for profit maximization.

Under FFP, ICAR-CIFA promoted BhargabiFish Farmers Producers Company Limited [CIN no-U01100OR2019PTC030755] in Balipatna block for better marketing of fishes. The office room was inaugurated on 21stNovember 2020 which was attended by 70 farmers and representatives from NFDB, OUAT, bank and other stakeholders. During reporting period, one research article and two popular articles in English and Hindi were published. A brochure on '*Farmer FIRST project-Significant achievements*' was also prepared and distributed among the beneficiaries.

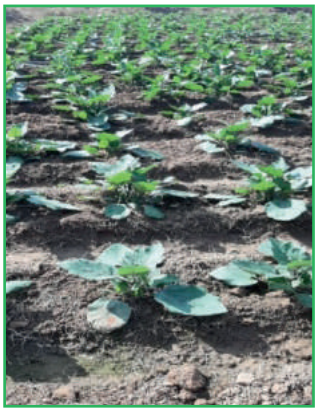
Harvested thermo insensitive variety of cauliflower'Fujiyama'Fish farming by women beneficiaries in Balabhadrapur village

ICAR-IIWM, Bhubaneswar: The project was implemented in Khuntapingu, Jamda and Malharpada village of Saharapada block under Keonjhar district of Odisha.

During the period under report, a number of interventions e.g. increasing water use efficiency in different crops and cropping sequences, increasing farmers income through poultry rearing and use of farm machineries, vegetable cultivation in uplands during *Kharif* and irrigated medium lands in *Rabi*, use of community ponds for pisciculture were undertaken. Providing irrigation through piped conveyance, practicing line transplanting andadopting SRI increased water use efficiency in transplanted rice. Three training programmes each in three project villages were taken for about 300 farmers.

Under livestock module, poultry rearing in 145 farmers were assisted through supplying'*Kadaknath*' and '*Aseel*'chicks. The average income from sale of '*Kadaknath*' and '*Aseel*' was estimated to be Rs.2500/- to Rs. 3500/- per farmer.Under content mobilization, *WhatsApp* group with scientists, farmers and line department personnel was created for farmer problem solving, propagation of farmer FIRST activities through print media, group meetings among the farmer beneficiaries under the project. Timely meteorological forecasting was disseminated to the farmers. The impact evaluation of farmers FIRST project indicated that during 2017-20, different interventions increased the average on- farm income from Rs. 31900/- to Rs. 68700/- in Malharpada, from Rs. 274322/- to Rs. 93467/- in Jamda and Rs. 40289/- to Rs. 102556/- in Khuntapingu in comparison to 2016-17 for the beneficiary farmers after adoption of improved technologies under the project. The improvement in cropping intensity was analysed during the same period and was found to be from 125% to 170%, 125% to 170% and 130% to 177% in three villages, respectively during the same period. The land use index was calculated to be improved from 0.46 to 0.65 for Malharpada, 0.46 to 0.66 for Jamda and 0.48 to 0.68 for Khuntapingu. The achievements with respect to two successful lady farmers were analysed and the analysis of income from farm enterprise indicated that Mrs. MeenaMahanta of Khuntapingu

village earned a net income of Rs. 3.40 lakh during the year 2020 as against Rs.1.65 lakh during 2016-17 and Ms RanjitaMahanta of same village earned a net income of Rs. 1.96 lakh against Rs. 2 lakh in the same period of 2016-17 to 2020-21.


***OUAT, Bhubaneswar*:** The project was implemented in 4 adopted villages viz. Gobindapur, Gopalpur, Brahmapura and Brahmapurapatna of Begunia block under Khorda district of Odisha.

Crop based module-High yielding rice varieties viz. *CR 1009 Sub-1* (in 50 ha), *Swarna Sub-1* (in 30 ha), *Hasant* (in 0.4 ha), *Pradhan Dhan* (in 2 ha), *Lalat* (in 4 ha) and Black rice var. *Debarnna* (in 2.4 ha) were introduced covering 222 households to provide appropriate sowing window to green gram in rice fallow.

Horticulture based module- To intensify summer season vegetable crops, raising of different vegetable seedlings e.g. pumpkin, cucumber, tomato, cauliflower, cabbage etc. in portrays under protected structure were demonstrated in 5 ha area which benefitted 100 households in different adopted villages.



Livestock based module-Rearing of crossbred dairy cows was promoted involving 50 animals for enhancing milk production through providing scientific package of practices. Fiftylivestock farmers got benefit fromthe demonstrations. Four breeding bucks were used to demonstrate 25 farmers to improve performance of goats through scientific package of practices.Rearing of improved poultry birds under backyard farming system was demonstrated in 75 households with supplying 750 chicks and providing technical know-how for supplementary income and improving family nutrition status.


Enterprise based module- Straw and oyster mushrooms were introduced involving 75 household to produce mushroomspawn, to demonstrate production technology of straw and oystermushrooms, to provide knowledge on post-harvest handling and processing ofmushrooms,and to prepare value added products. The farmers were trained in such a way that one farmer could produce 100 spawn bottles per batch and one batch/ day i.e. 3000 bottles/ month.

Resource based module- Three sets of drip fertigation systems for 0.1 ha vegetable fields and one multipurpose grinding mill with 20 kg/ h capacity were also established under the programmefor different farmergroups in the adopted villages.

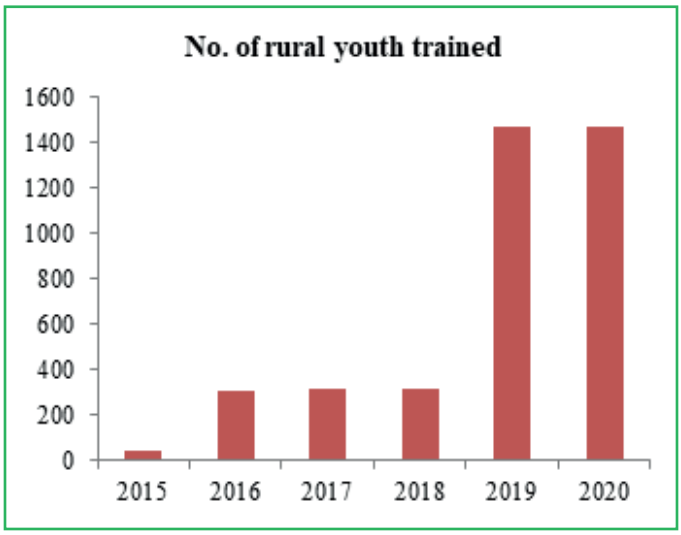
13.5 Attracting Rural Youth in Agriculture (ARYA)

Nodal scientist: Dr P.P. Pal

As per the UN World health organisation, by 2030 six out of every 10 people will leave in a city and by 2050 this proportion will increase to 7 out of 10 people meaning that more young people than ever before are moving to cities and towns to find jobs. In this situation, engaging rural youth in agriculture has been prominent topic recently and has risen of the development agenda as there is growing concern on the said issues. In a country like India where most young people are living in rural areas, youth force must be involved in agriculture for the betterment of the country, generate employment and equilibrate population density in rural and urban areas.

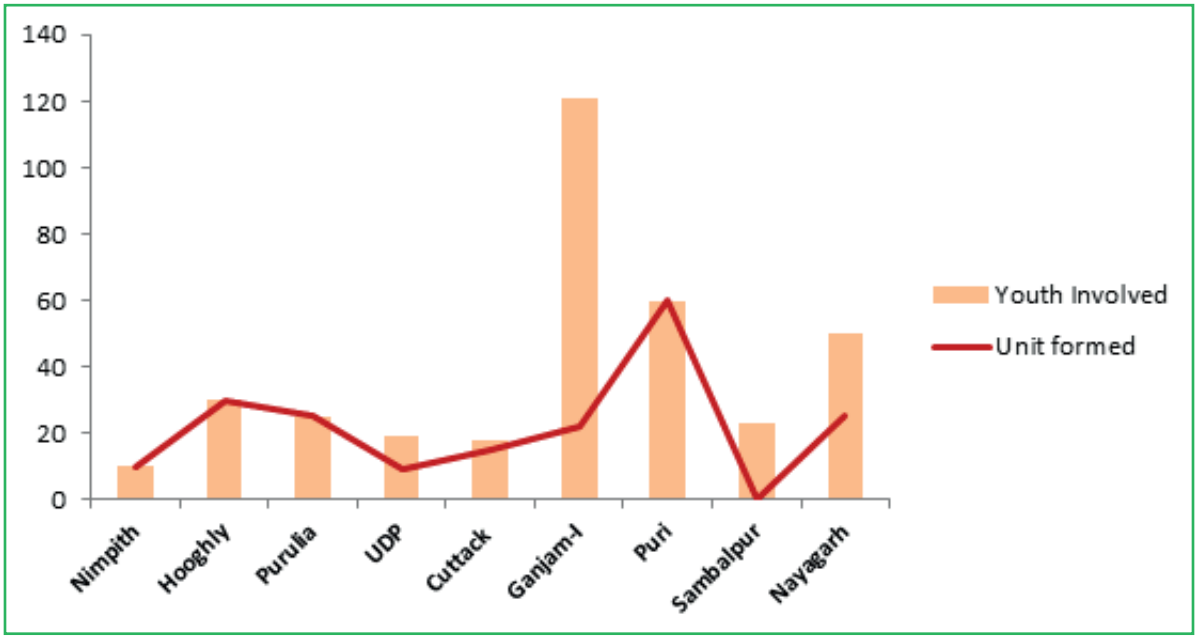
In that regard, challenging the mind-set of youth that agriculture is not at all a life of toil, hardship and poverty, but a noble profession to secure our future food security and generate employment, has become necessary. By identifying young people and showing them the potential of agriculture as a challenging but reordering process we can bring a new generation to the farms. Attracting and retaining youth in agriculture is a flagship programme of Indian Council of Agricultural Research New Delhi to promote and empower the rural youth in various agriculture and allied sector enterprises in the entire country. This project was launched with the objective to attract and retain the rural youths to take up various enterprises from agriculture and allied sectors is also aimed to establish network groups to take up capital and resource intensive activities like processing and value addition. Establishing functional linkage with different institutions and stakeholders is also a fundamental purpose of this project.

In this zone, during 2020-21 altogether 9 KVKs including Nimpith, Hooghly, Uttar Dinajpur and Purulia from West Bengal and Nayagarh, Sambalpur, Ganjam-1, Puri and Cuttack from Odisha are carrying out this project under this institute. The outcome of this project can be identified through different parameters. There was a huge increase in total number of trainings conducted during this year; as a result the number of benefitted youths was also increased. The data shows that increasing number of implementing KVKs directly influence the number of benefitted youths.



Moreover, the impact of this initiative was clear from the improvement in their livelihood, in most of the beneficiaries it was seen that the youth were able to earn more than their past conditions.

This benefit to the youth was made possible through the regular training, fund support and other activities from the concerned KVKs. These results are also accompanied by formation of new units of enterprises through which the youth could earn more.



KVK Nimpith promoted enterprises like fishery unit, horticulture nursery under ARYA project, they have trained more than 100 youths through several trainings. KVK Nayagarh involved about 50 rural youth this year to set up enterprises on poultry, mushroom, fingerling production etc. Hooghly KVK selected nursery, backyard poultry mushroom and vermicompost production. A KVK from North Bengal, Uttar Dinajpur KVK is working on mushroom production, fingerling production and very innovatively value addition to pineapple.

Vermicompost Production

Nursery Raising of Vegetable Seedlings

Goatery

Lac cultivation

Skill oriented interactive training on fisheries

Nandira river

13.6 Scheduled Tribe Component (STC) erstwhile Tribal Sub-Plan (TSP)

Nodal Scientist: Dr. K. S. Das

The main objectives of Scheduled Tribe Component (STC) erstwhile Tribal Sub-Plan (TSP) was to channelize the flow of outlays and benefits from the general sectors in the Central Ministries/ Departments for the development of Schedules Tribes at least in proportion to their population, both in physical and financial terms. Accordingly, Ministry of Tribal Affairs, GoI identified tribal dominated districts across the country to provide the tribal people a better quality of life. Ten tribal dominated districts i.e. one district (Nicobar) from Andaman & Nicobar Islands and nine (Gajapati, Kandhamal, Mayurvanj-I and II, Malkangiri, Nabarangapur, Raygada, Sundergarh-I and II) from Odisha state were identified from this Zone under STC programe during the year 2020. An amount of Rs. 290.00 lakh fund was allotted to those 10 KVKs to conduct different activities like agricultural farming, horticulture, animal husbandry, dairy development, vocational training, kitchen gardening, fish production, and many others towards the benefit of tribal people. The achievements of physical output and outcome under STC by the KVKs of ATARI Kolkata during 2020 have been presented in the following table. Although the time has passed through COVID-19 Pandemic situations, each KVK of this Zone performed their best with available facilities for tribal farmers. Alarge number (1638) of assets in the form of sprayer, ridge maker, pump set, weeder, store bins, drip irrigation set, poultry feeder/ drinker etc. were created during the period. The KVKs of tribal districts conducted 73 OFTs and 1535 FLDs for overall agricultural development in the districts. About 8700 farmers were trained

and more than 30000 farmers took participation in various extension activities conducted by the KVKs. The KVKs produced 125.68tonnes seed, 7.9lakh planting materials and about 63000 livestock strains and fish fingerlings. Not only that, ten KVKs under ATARI Kolkata conducted 519 programmes on '*Awareness camp on COVID-19*', '*Swachha Bharat Abhiyaan*', '*Agriculture knowledge in rural school*', '*Planting materials distribution*', '*Vaccination camp*', '*Animal health camp*' etc. More than 12 lakh farmers got mobile agro-advisory services through 10 KVKs.

Achievements of physical output/outcome under TSP during 2020

Sl. No.	Achievements of physical output		Achievements of physical outcome	
1.	Asset creation (in number; Sprayer, ridge maker, pump set, weeder etc.)	1638	Number of technologies identified after assessment	11
2.	On-farm trials (in number)	73	Upgraded skills and knowledge of farmers (in number)	9562
3.	Frontline demonstrations (in number)	1535	Oriented extension personnel in frontier areas of agricultural technology (in number)	692
4.	Farmers training (in lakh)	0.0863	Increased availability of quality seed (in quintal)	1828.42
5.	Extension personnel training (in lakh)	0.00639	Increased availability of quality planting material (in number)	773153
6.	Participants in extension activities (in lakh)	0.30201	Increased availability of live-stock strains and fingerlings (in number)	28045
7.	Seed production (in tonnes)	125.68	Testing of soil & water samples for balance fertilizer use (in number)	1539
8.	Planting material production (in lakh)	7.86939		
9.	Livestock strains and fingerlings production (in lakh)	0.62974		
10.	Soil, water, plant, manures samples testing (in lakh)	0.022		
11.	Provision of mobile agro – advisory to farmers (in lakh)	12.51371		
12.	No. of other programmes (Swachha Bharat Abhiyaan, agriculture knowledge in rural school, planting material distribution, vaccination camp, animal health camp etc.)	519		

During the period, about9562 farmers upgraded their knowledge and skills, and 1539 farmers were benefitted from testing soil and water samples to use balanced fertilizer in their fields. Through this programme, there were increased availability of quality seed (1828 q), planting materials (7.73 lakh), livestock strains and fish fingerlings (>28000) in the tribal districts. The district and village-wise beneficiary details have been shown in the following table. A total of 14953 tribal farmers from 196 villages under ATARI Kolkata got benefit from TSP during the year 2020.

Location and beneficiary details during 2019-20

Name of KVK/ state	*District*	*Sub-district*	*No. of Villages*	*Village-wise total amount spent (Rs.)*	*ST population benefitted (No.)*	*Description of activity*
A & N Islands	1	1	12	529100	1007	Conducting OFT/ FLD/ trainings, supplying planting materials/inputs/livestock strains, analysis of soil samples, providing mobile agro-advisory services etc.
Odisha	9	39	184	6302302	13946	
Total	**10**	**40**	**196**	**6831402**	**14953**	

13.7 National Innovations on Climate Resilient Agriculture - technology demonstration component (NICRA-TDC)

Nodal Officer: Dr F H Rahman

The National Agricultural Research System has developed an array of practices and technologies to foster stability in agriculture production against the onslaught of seasonal variations. A nation-wide project, National Innovations on Climate Resilient Agriculture (NICRA), has been operational since 2011 to address this challenge by application of science and technology. This project of ICAR aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration. Technology Demonstration Component (TDC) of NICRA offers great opportunity to work with farmers and apply such technologies under field conditions to address current climate variability. This will enhance the pace of adoption of these resilient technologies. On-farm participatory demonstrations for climate resilience are being implemented in village clusters through KVKs in 151 climatically vulnerable districts across the country. The emphasis has been on capturing and improving the understanding on performance of technologies in different agro-ecologies and farming systems. This also facilitates identification of what constitutes climate resilience in different bio-physical and socio-economic contexts. NICRA KVKs prepared and implemented village level contingency crop plans and measures. Technology Demonstration Component (TDC) of NICRA offers a great opportunity to work with farmers to address current climate variability with matching responses. Getting existing technologies into the hands of small and marginal farmers and developing new technologies like drought or flood tolerant crops to meet the demands of a changing climate also come under the purview of NICRA programme.

Climatic vulnerability of selected nine KVK districts of West Bengal, Odisha and Union Territory of A & N Islands at district level regionally coordinated by ICAR-Agricultural Technology Application Research Institute Kolkata (ATARIs) forward definite requirement in terms of technological support, human resource development and overall empowerment of farming community to enable them to cope up with climate vulnerabilities like droughts, erratic rainfall, heat wave, flood, cyclonic storm. Enhancing the adaptive capacity and building resilience of the farming communities is important in the context of climate variability and to cope with these extreme events effectively. The NICRA village was selected based on vulnerability of agriculture to climatic variability. The multidisciplinary team of KVK analyzed the constraints related to climatic variability based on secondary weather data, resource situation, farming systems and agricultural yields in the past few years. Thus the interventions executed in NICRA villages by the NICRA-KVKs through the intervention like Natural Resource Management, Crop Production, Livestock, Institutional Intervention, Capacity Building and Extension Activities have not only enabled the farmers to cope up climatic vulnerability as well as it plays a key role in farmers' adaptive capacity along with sustainable agricultural production.

NATURAL RESOURCE MANAGEMENT

Total 754 numbers of farmers were benefited covering 145 ha land from this module. Different demonstration like summer ploughing, green manuring, zero tillage, organic mulching *etc.* under In-situ moisture conservation technologies have been demonstrated in 9 NICRA adopted villages covering 53.2 ha among 54 no. of farmers. The technologies followed mainly by zero tillage operation. More than 15 ha have been brought under Broad Bed and Furrow intervention with significant impact among the farmers in A&N Island. Ridge and furrow method sowing of maize to increase water use efficiency and to avoid water logging. *Water harvesting and recycling for supplemental irrigation* through renovation of pond, well and canal, sand check dam, making bund, 5% model *etc.* were demonstrated in adopted villages by the different KVKs involving 102 numbers of farmers. *Zero tillage technology* successfully implemented in more than 35 ha area of 94 numbers of farmers under wheat, lentil and chickpea as Resource Conservation means. Water saving irrigation methods like sprinkler irrigation, LEWA in rice, RBF in brinjal, micro-lift irrigation in rice demonstrated in NICRA adopted

villages covering an area of 18 ha in 72 farmers fields. There were 15 new rainwater harvesting structures have been developed and 19 numbers renovated which could store 159565 cu m of water having protective irrigation potential 178 ha. This intervention increased the cropping intensity to the maximum extent upto 250%. Around 154 q compost prepared from solid wastes was added to the soil through which 19 thousand carbon sequestrations was done during 2020-21. Artificial ground water recharge done by field bunding, water management and through SRI by sub soiler in rice covering 17.1 ha area in 27 farmers' fields. Ground water recharge through SRI by sub-soiler recorded highest rice yield (53.5 q/ha) and benefit: cost ratio (2.25). Land shaping with *ail* cultivation and rain water harvesting structure have been constructed covering 2.54 ha area during post *kharif* to mitigate the scarcity of irrigation water, increase in soil carbon and reduce soil salinity.




CROP PRODUCTION

Under Crop Production module different area specific intervention were taken by *viz;* demonstration of drought, salt and flood tolerant/ resistant varieties, advancement of planting dates of *rabi* crops to avoid terminal heat stress, water saving paddy cultivation methods like SRI, aerobic, direct seedling, community nurseries for delayed monsoon, location specific intercropping systems with high sustainable yield index, introduction of new crops/ crop diversification, custom hiring centres for timely planting, low temperature tolerance, promotion of pulses utilizing post-monsoon rainfall, integrated crop/pest/disease management, growing vegetables as contingency crop, integrated crop management, integrated disease management, contingency crop, were covered which benefitted 1467 farmers. Drought tolerant rice varieties like *Sahbhagi*, *Anjali, Naveen*, *Abhishek* were demonstrated in 67.5 ha areas of 407 number of farmers' field. Salt tolerant varieties of rice like *Gosaba 5*, *CARI Dhan-5, Usar Dhan-5, Jarava, Geetanjali, SR-26B, Amalmona* were demonstrated in 9.3 ha area in 87 farmers' fields. *Javarva, Geetanjali and Amalmona* varieties proved maximum salt tolerant potential by giving highest yield of 32.5 q/ha and more economic return (BC ratio of 2.23). Flood tolerent varieties of rice like *Swarna sub 1, sabita, dudheswar* were demonstrated in 14 ha area in 71 farmers' field by giving yield of 36.0 q/ha with an economic return 2.33. To avoid terminal heat stress in crops like rice, wheat, lentil, mustard, potato, *etc.* were sown in 12 days advance during *rabi* season. These demonstrations were carried out in adopted villages involving 114 number of farmers' fields with an area of 26.3 ha land. An area of 26.3 ha was covered for staggered community nurseries of rice, brinjal, cauliflower, tomato which benefitted 175 numbers farmers. Introducing different crops like Ol (var. *HYV Gajendra*); Cauliflower (var. *MSN-16*) Rice (var. *Pusa Bold, Pusa 362*); Tomato (var. *Param F1*); *etc* in Kendrapara, Jharsaguda as less water requiring crop as contingent crop planning during deficit rainfall in *kharif*. An area of 138.2 ha was covered for crop diversification of rice, brinjal, cauliflower, lentil, cabbage which benefitted 657 numbers of farmers. In Jharsuguda, Sonepur and Ganjam ridge and furrow practice is followed in large scale. Cabbage, cauliflower, brinjal, tomato, chili, cowpea, bottle gourd in total areas around 50 ha with an high average annual income. Crop diversification by hybrid maize is carried out. Near about 64 farmers have adopted in those districts. Various intercropping systems were demonstrated in regions which are prone to drought. Intercropping systems are considered as one of the important adaptation mechanism for variable rainfall situations. Intervention on location specific intercropping was demonstrated in almost all adopted villages. Total 1467 numbers of farmers






were benefitted covering 251.8 ha of land.

LIVESTOCK AND FISHERIES

Livestock and Fisheries module comprising various livestock centric interventions were carried out which include use of community lands for fodder production during drought/flood, improved fodder/feed storage methods, improved shelters for reducing heat stress in livestock, management of fish ponds/tanks during water scarcity and excess water, breed up-gradation, balanced feed and fodder management through mineral mixture, feed blocks and silage making, azolla feeding, breed animal health management through deworming and vaccination, fish pond cleaning and fish farming, pig farming, clean milk and fodder production. These interventions benefitted 312 livestock owner with 2665 animals in vaccination programme. Adequate supply of fodder, either green or dry, is crucial to the livelihoods of livestock in rainfed areas. Delayed onset and deficit rainfall conditions were experienced in several states. There was reduction in area under millets and pulses, which are important to meet the fodder requirements in the rainfed areas. Short and medium duration fodder cultivars of several crops and fodder species both in *kharif* and *rabi* seasons were demonstrated in farmers' fields under rainfed and limited irrigation conditions to support income and cash flow from animal husbandry Improved fodder of rice bean and silage making were demonstrated in farmers fields. *Community lands* of an area of 112.3 ha involving 210 number of farmers utilized for different fodder production were demonstrated in different adopted villages. Berseem, oat, sudan chari, maize, hybrid napier were the major fodder produced in the programme. Of all these demonstration legume Sudan grass showed maximum benefit return (B: C: 5.59). Silage making for 157 numbers and 7 ha of units showed very promising results. Vaccination camps were organized against FMD of cattle, PPR against goat, Ranikhet of poultry, BQ vaccine, deworming *etc.* in adopted villages. Mortality rate reduce up to the extent of 90% and average increase in cattle milk yield up to 40% have been recorded after the vaccination camps organized. Demonstration of rural backyard poultry (*kuroiler, Nicobari fowl*), *vanraja, kadaknath*, *khaki Campbell* duck, T X D breed of pig, mineral mixture and *azolla* as cattle feed were carried out. Improved ornamental bird was introduced through this intervention which also showed very promising results. *Improved Poultry shed* recorded low mortality rate and in shady area reduced heat stress. Standard spacing in improved

shed resulted better performance in poultry and dairy animals. Interventions to reduce heat stress for higher survivability of backyard poultry and dairy animals were demonstrated of improved shelter.




INSTITUTIONAL INTERVENTION

Institutional interventions including seed bank, fodder bank, commodity groups, custom hiring for timely operations, community nursery raising, irrigation, collective marketing climate literacy through a village level weather station and awareness developed in almost all NICRA villages. A total of 31 units have been developed covering of 154 ha area of 1288 number of farmers. Custom Hiring Centre has the provision of various farm implements like Power tiller, Thresher, Reaper, Water pump, Zero-till Drill, Raised bed planter, Sprayer, Weeder *etc*. There is a provision of Mini Automatic Weather Station (AWS) through which farmers are provided weather forecasting data.



VILLAGE CLIMATE RISK MANAGEMENT COMMITTEE (VCRMC)

Village Climate Risk Management Committee (VCRMC) was constituted after in-depth discussion with the villagers about the mitigation of the climatic vulnerabilities of the villages and the strategies to be adopted under this programme. VCRMC became operational with opening of a bank account in their name being jointly handled by the President of VCRMC and the Head of the KVK concerned. VCRMC manages the custom hiring centre for farm implements and micro-irrigation systems, seed and fodder bank, community nurseries, collection of farmers share in planting material and inputs, establishment of small weather station in the village, participation of farmers in capacity development programs and exposure visits to learning sites. Institutional interventions including

seed bank, fodder bank, commodity groups, custom hiring for timely operations, community nursery raising, irrigation, collective marketing climate literacy through a village level weather station and awareness developed among the farmers in the Zone.

CUSTOM HIRING OF FARM IMPLEMENTS AND MACHINERY AT NICRA ADOPTED VILLAGES

The custom hiring of various farm tools and implements was being supervised by VCRMC apart from taking important decisions on the technological interventions to be implemented at the village in consultation with the KVK have now become immensely popular among the farmers and substantial amount has also been generated. Timeliness of agricultural operations is crucial to cope with climate variability, especially in case of sowing and intercultural operations. Access to implements for planting in ridge-furrow, broad bed furrow and raised beds is essential for widespread adoption of resilient practices for *in situ* soil moisture conservation and drainage of excess water in heavy soils. In rainfed areas, availability of such farm implements to small and marginal farmers is important. Similarly in irrigated areas, residue management of *kharif* crops through zero till cultivation of *rabi* crops reduces the problem of burning of residues and adds to the improvement of soil health and increases water use efficiency. The rates for hiring the machines /implements are decided by the members of VCRMC. This committee also uses the revenue generated from hiring charges and deposits in a bank account opened in the name of VCRMC. The revenue is used for repair and maintenance of the implements and 25% share is earmarked as a sustainability fund. Different types of farm machinery are stocked in the CHCs, the most popular being Zero till drill, Happy seeder, BBF planter, drum seeder, multi crop planter, power weeder, mechanical weeder, chaff cutter, conoweeder, duster, sprayer, laveler, FIRB planter, sub-soiler, zero-till frti-seed, disc harrow, bucket laveler, reaper, threser, cultivator, rotavator, pumpset *etc.*

CAPACITY BUILDING

A total 124 courses were conducted under Capacity Building on various thematic areas benefitting 2854 farmers and farmwomen (2596 males and 258 females) during 2020-21. Thematic areas cover on crop management, natural resource management, nutrient management, integrated crop management, crop diversification, resource conservation technology, pest and disease management, livestock and fishery management, nursery raising, employment generation, nutrient garden, repair and maintenance of farm machineries and implements, integrated farming system, fodder and feed management, lac cultivation drudgery reduction with farm implements for woman, value addition, human nutrition and child care, rodent control *etc.*






EXTENSION ACTIVITIES

A total of 165 Extension Activities on various thematic areas benefiting 7548 practicing farmers (3525 males and 4023 females) during the reporting period. The extension activities were conducted on method demonstrations, agro advisory services, awareness animal health camp, Kishan Chaupal, Kishan Gosthi, resource conservation technologies, celebration field and farmers' days, diagnostic visits, school student visit, group discussion, World Earth Day, technology week, kishan mela *etc*. December 5, 2020 was observed as World Soil Day in the respective KVK and distributed a total of 425 soil health cards among the farmers of NICRA villages.



CONVERGENCE BY NICRA WITH ONGOING DEVELOPMENT PROGRAMMES

Resource Generation through Convergence with ongoing other development schemes is one of the most significant activities achieved by all the NICRA KVKs since the inception of the project. A good number number of convergence programmes was carried out by each of the NICRA implementing KVK with ongoing development schemes. The prominent development schemes are MGNREGA, National Micro and Minor Irrigation Scheme, Pradhan Mantri Gram Sadak Yojana, Backward Rural Grant Fund, Sunderban Development Board, NFSM, IWMP, IVRI, ICAR-DWR, Forest Department *etc*. NICRA KVKs being a part of the different convergence programmes during the period of 2020-21.

13.8 Gramin Krishi Mausam Seva (GKMS) Through District Agromet Unit (DAMU)

Nodal Officer: Dr. F H Rahman

Agrometeorology is an important multidisciplinary subject. Hence, ICAR maintains Agromet observatories as well as Automated Weather Stations (AWS) and record Agromet observations at its Institutions, National Research Centres, Project Directorates, Krishi Vigyan Kendras (KVKs) etc. to generate agrometeorological information for use in studies of crops, pests and diseases, soil, agroforestry, livestock, horticulture, Agricultural Physics, Soil Science etc. Such data will help ICAR Institutes to study crop-weather relationship, relationship between crop-weather and pest/ disease and to develop region/location specific agromet predictive models. In view of that, 24 KVKs of this Zone, 10 from Odisha and 14 from West Bengal, have been selected in two phases to establish DAMU i.e. Phase-I having 16 KVKs and Phase-II having eight KVKs. The main activity of a District AgroMet Unit (DAMU) is aimed at lending support to the farm planers and farmers by disseminating advance information related to weather condition through block level agromet advisory bulletin for day to day agricultural operations, minimizing crop loss and proper utilization of land and natural resources. As of now, DAMU at six KVKs of West Bengal and eight KVKs of Odisha have been functioning. These KVKs are providing

weather forecast bulletins to the farmers since the inception of the Project. Weather forecast bulletins and special bulletins are generated in English and local languages by DAMUs and communicated to the farmers well in advance. Agromet Advisory Bulletins are prepared twice a week by each DAMU and circulated among all the farmers of the district. West Bengal KVKs having DAMU prepared Special Bulletins in English and regional languages as per the forecast issued by India Meteorological Department (IMD) and Regional Meteorological Centre (RMC) Kolkata and circulated to the farmers of the district well in advance of the devastating cyclone AMPHAN during May 16-21, 2020. This has tremendously helped the farmers to a great extent in minimizing the loss during the severe cyclonic storm. KVKs took initiatives in popularizing of 'Meghdoot' and 'Damini' mobile Apps for outreach of Agromet Advisories and help individuals keep updated about thunderstorm/lightning likely to strike in their locations. The KVKs are enhancing outreach and dissemination of Agromet advisories using new and effective means of communication i.e. Emails, WhatsApp, KVK facebook page and SMS (in m-Kisan portal) are being used to deliver Agromet advisory bulletins to registered members of different farmers clubs, FPOs, line departments and ultimately to reach the farmers. With the help of RMC/MCs, DAMUs are also using social media and whatsapp groups consisting of AMFUs (Nodal Officer, Technical Officer), DAMUs (Nodal officer, SMS-Agromet) and concerned officials viz. DAOs etc. for quick dissemination of weather forecast, nowcasts, alerts & warnings, and agromet content to farmers at village level. They are utilizing this channel effectively for sending information on very high impact weather events like thunderstorm & lightening to farmers to reduce the casualties and other losses. To acquaint the farmers with the importance of the weather based agro advisories, DAMUs organize several Farmers Awareness Programme (FAP) and trainings are also conducted to cover all the blocks and Farmers and Farmwomen of the district.

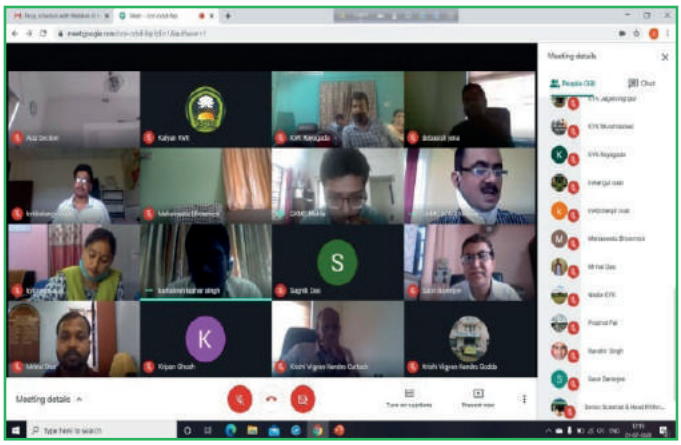
SMS (Agromet) of DAMU KVK Purulia participated in an interactive session on 'Role of Weather based Agro-Advisory under Dryland Farming condition' during workshop on Dryland Farming held during January 3-4, 2020.

On February 26, 2020 a brainstorming-cum-review workshop of DAMU KVK Cuttack was conducted in presence of Directors and all Heads of district agriculture departments, Nodal Officers, stake holders, Assistant AO's from each block, progressive farmers from each block, NGOs, Media etc.

A short term 10 days online training course was conducted on "Familiarization and Data Analysis using R-Language" during June 1-10, 2020 for the SMS (Agromet) at DAMUs. This training concentrated on IMD grid data analysis, climate studies of their respective locations, statistical analysis which will help the SMS for R&D and advisory improvement. SMS (Agromet) of KVKs Cuttack, Murshidabad and Malda were selected for this training.

ICAR-ATARI Kolkata organized the First Annual Zonal Review Workshop of GKMS consisting of the 24 DAMU KVKs in the states of Odisha and West Bengal on July 21, 2020 through Online Video conferencing. Heads, SMSs and AOs of all the 24 KVKs were present in the meeting along with other dignitaries. A technical bulletin GKMS Newsletter was released in presence of all the delegates.

Several short term online trainings on 'Preparation and Dissemination of Agromet Advisories at Block level' were jointly organized by IMD and ICAR, along with RMCs, MCs, SAUs and other officials during September 24-30 and November 18-21, 2020 for newly recruited SMS (Agromet) and Agromet Observer at DAMUs.



13.9 Skill development training programme (ASCI)

Nodal Scientist: Dr. S. K. Mondal

An entrepreneurship development programme through imparting skill training at the KVKs and SAUs was organised by Agriculture Skill Council of India in collaboration with Indian Council of Agricultural Research, New Delhi during 2020. During the period under report, a total of 33 programmes with different job roles were organised by KVKs and one SAU of this Zone. Due to COVID-19 Pandemic situations, it was very difficult to conduct trainings as per target. However, more than 700 farmers including women farmers were trained from the above skill development programme maintaining all COVID protocols. The details of programmes have been presented in the table.

Table: Skill development training programme (ASCI) conducted during 2020

Period	State/UT	Name of ICAR Institute/ SAU/KVK	No. of skill development programmes organized	No. of job roles	Total no. of farmers trained	Total no. of farm women trained
01.01.2020 to 31.12.2020	A & N Islands	Port Blair	2	2	40	25
	Sub-total		2	2	40	25
	Odisha	Angul	1	1	11	9
		Gajapati	2	2	35	5
		Jagatsinghpur	2	2	40	0
		Sambalpur	1	1	10	10
		Khurda	2	2	24	16
		Sub-total	8	8	120	40
	West Bengal	Bankura	2	2	14	26
		Birbhum	2	2	40	00
		Cooch Behar	2	2	32	3
		DakshinDinajpur	2	2	40	14
		Hooghly	2	2	40	3
		Jalpaiguri	2	2	40	18
		Malda	2	2	40	6
		Nadia	2	2	40	4
		South 24 Pgs, Nimpith	2	2	39	1
		Purulia	2	2	40	13
		Uttar Dinajpur	2	2	40	8

Period	State/UT	Name of ICAR Institute/ SAU/KVK	No. of skill development programmes organized	No. of job roles	Total no. of farmers trained	Total no. of farm women trained
		Uttar Banga Krishi Viswav-idyalaya (UBKV)	1	1	20	0
		Sub-total	23	23	425	96
	Total		**33**	**33**	**585**	**161**

13.10 Garib Kalyan Rojgar Abhiyan (GKRA)

Nodal Scientist: Dr. K. S. Das

The Garib Kalyan Rojgar Abhiyaan (GKRA)- Skill Development Training for Migrant Labours is a 125-day Abhiyan launched by Hon'ble Prime Minister on 20th June, 2020. The objectives were- a) to address the issues of returnee migrant workers and similarly affected rural population by Covid-19 pandemic through a multi- pronged strategy of providing immediate employment & livelihood opportunities to the distressed, b)to saturate the villages with public infrastructure and creation of livelihood assets, and c) to boost the income generation activities and enhance long term livelihood opportunities. The Abhiyan was focused on 25 works in 116 selected districts (including 27 Aspirational Districts) across 6 States (Bihar, UP, MP, Rajasthan, Odisha and Jharkhand) with a resource envelope of Rs 50,000 crore. There were 12 participating Ministries who implemented the programme. The GKRA programme was implemented in 4 districts (5 KVKs) viz. Balasore, Bhadrak, Bolangir and Ganjam of Odisha state under ICAR-ATARI Kolkata. The Nodal Officers from each ATARI and KVK were given responsibility to send weekly progress report to their concerned authority and to upload the same report in *KVK Portal*. The selected skill training areas for migrant labours for Odisha state were Integrated farming system, direct seeded rice, crop diversification to pulses, millets, oilseeds, off season vegetables, planting material production, poultry farming: quail farming, fisheries, sea based activities, processing of pineapple and tuber produce, cashew fruit based enterprise development and handicrafts. The total number of training target was 16 during 4 months i.e. @ 4 per month for each district. The target of total persons trained was 560 i.e. 140 per month from each district. The allotted fund for the programme for 4 districts of ICAR-Kolkata was Rs. 13120000/- @Rs. 328000/- per district. In spite of COVID-19 Pandemic restrictions, all 5 KVKs of this Zone worked hard day and night. They implemented the programme very systematically and fulfilled all given targets within the stipulated time. The physical and financial progress of GKRA Programme under ICAR-ATARI Kolkata has been briefed in the following table.

Name of State	*No. of dis-tricts*	*No. of KVKs*	*Name of KVK*	*No of training conducted*	*No. of person trained*	*Fund released (Rs.)*	*Fund utilized (Rs.)*
Odisha	4	5	Balasore	16	560	328000	281200
			Bhadrak	16	560	328000	328000
			Bolangir	16	560	328000	328000
			Ganjam-I	8	280	164000	162200
			Ganjam-II	8	280	164000	141200
Total				**64**	**2240**	**1312000**	**1240600**

13.11 CSISA-ICAR Collaboration Project Phase - III

Nodal Officer: Dr. S. K. Roy

Collaborative project of Cereal System Initiative for South Asia and Indian Council of Agricultural Research (ICAR) was first approved in 2008 December and it was subsequently approved as phase II in 2012-15 with close collaboration of Extension Division. Now the project is being implemented in Cuttack, Bhadrak and Mayurbhaj I in Odisha in 2019-20.In the year 2020 Zn trial on rice was inihated in 6 KVKs of Odisha- Cuttack, Khorda, Mayurbhanj I, Bhadrak, Puri and Balasore. The title of the project was On-farm evaluation of crop response to Zn fertilizer application in Odisha

On-farm evaluation of crop response to Zn fertilizer application in Cuttack KVK (kharif 2020)

KVK Cuttack conducted adoptive CISSA trial on "On-farm evaluation of crop response to Zn fertilizer application in rice for the year 2020-21" in two clusters i.e., High Zn and Medium Zn soil status in Cuttack district. The objective was to test the effect of Zn application on grain yield, profit, grain quality and soil fertility in Kharif 2020 in Odisha. Two treatments were undertaken i.e., control plot (no Zn fertilizer) as T1 and Soil application of Zinc Sulphate @ 25 kg/ha at the time of last puddling or just before transplanting as T2 in the above trial. We selected 4 villages (2 from medium soil Zn status and 2 from high soil Zn status) from the list of villages provided by CIMMYT team. So, total replications were 12 as we selected 3 farmers from each village (Total 4*3=12 farmers' fields). We have collected data on soil samples before and after cropping from both plots. At physiological maturity, we collected data in three separate 5 m^2 areas (2 m x 2.5 m) from each treatment and weighed for total biological yield (grain + straw). The results revealed that there is high response of Zn application to grain yield as compared to control. Grain yield was significantly higher (13%) in medium Zn soil condition over control. It can be concluded that application of Zn has positive response to grain yield and quality. Zn responds more in medium Zn status than high Zn status.

Table : Zn trial in rice -Kharif -Cuttack

Name of farmer	Soil status	Control -No Zn			With Zn		
		Grain yield from 5^2 area(kg)	Straw yield from 5^2 area(kg)	Total (Kg)	Grain yield from 5^2 area(kg)	Straw yield from 5^2 area(kg)	Total (kg)
Basudev Mohanty	High Zn	3.31	7.36	10.67	3.27	6.88	10.15
Natabar Barik	High Zn	2.53	4.58	7.11	2.9	4.28	7.1
Srinibas Das	High Zn	2.98	9.26	12.24	3.1	10.9	14.0
Rasananda Rana	High Zn	2.1	5.4	7.5	2.23	4.61	6.84
Sati Behera	High Zn	2.09	6.96	9.05	2.055	7.02	9.27
Sabitri Sahoo	High Zn	2.4	7.4	9.8	2.7	10.54	13.24

Name of farmer	Soil status	Control -No Zn			With Zn		
		Grain yield from 5^2 area(kg)	Straw yield from 5^2 area(kg)	Total (Kg)	Grain yield from 5^2 area(kg)	Straw yield from 5^2 area(kg)	Total (kg)
Bhagyadhar Swain	Medium Zn	3.13	4.35	7.48	3.37	6.41	9.77
Upendra Swain	Medium Zn	2.45	6.78	9.23	2.5	5.9	8.4
Achitananda Das	Medium Zn	2.94	6.90	9.84	3.3	5.715	9.0
Bikram Pattnayak	Medium Zn	2.96	9.34	12.3	2.71	7.505	10.21
Bansidhar Das	Medium Zn	2.65	7.38	10.03	2.99	10.03	13.02
Adikanda Tripathi	Medium Zn	3.43	9.13	12.56	3.6	9.13	12.73

On-farm evaluation of crop response to Zn fertilizer application in Balasore KVK (Kharif 2020)

- An on-farm evaluation of crop response to zinc fertilizer application under CSISA project was conducted by KVK, Balasore during **Kharif, 2020**.
- Two villages namely **Majhipada & Dumichak** of Baliapal block has been selected for low zinc status
- Two villages namely **Nuagan &Asti** of Baliapal block has been selected for medium soil zinc status.
- A total of **12nos.** of farmers was selected for the trial (03nos. of farmers from each village).
- The trial was conducted in an area of **3.6ha.**
- Soil test based NPK fertilizers (N-P2O5-K2O@ 80-40-40kg/ha) +FYM @ 5t/ha was applied to both of the treatments

Treatment Details

T1:- Control Plot (No Zinc fertilizer application)

T2:- Soil application of Zinc Sulphate@ 25kg/ha at the time/just before transplanting

Sl. No.	Status of Soil Zinc	Mean Grain Yield(q/ha)		% Increase in yield
		T1	T2	
1	Low	49.02	55.95	14.13
2	Medium	46.18	48.40	4.81

Results showed that Zn application increased yield of rice by 14.81% in low Zn content of soil.

Table : Status of fund release in 2020

Sl No	Odisha	Fund allocation in 2020-21 (Rs)
1	Cuttack	100000
2	Mayurbhanj I	34825
3	Bhadrak	10000
4	Puri	74313
5	Balasore	100000
	Khorda	100000
	Total	**409138**

13.12 SOIL HEALTH CARDS DISTRIBUTION AND OBSERVANCE OF WORLD SOIL DAY

Nodal Scientist: Dr. F. H. Rahman

December 5 is declared as 'World Soil Day' by the International Union of Soil Sciences and to celebrate the importance of soil as a critical component of the natural system and as a vital contributor to human wellbeing, all the KVKs have organized Seminar/ symposia/workshop. The World Soil Day campaign aims to connect people with soil and raise awareness on their critical; importance in our lives. One of the several ways of connecting people with soils is to restore and preserve the soil health. All the KVKs of Zone-V distributed the soil health cards among the farmers. A total of 12658 numbers of Soil Health Cards were prepared during the year, out of which 982 nos. SHCs were distributed on World Soil Day, Dec 5, 2020 by the public representatives like MP/ MLAs and others in the respective KVKs. State wise distribution of soil health cards are presented in the following table.

Table: Soil Health Card prepared and distributed during the year

KVK	No of soil samples collected	No. of samples analyzed	SHC issued	No of Farmers benefitted
A & N Islands	135	135	125	125
Odisha	3125	3125	6021	6021
West Bengal	3410	3410	6512	6512
Total	**6670**	**6670**	**12658**	**12658**

13.13 KVK Portal

Nodal Scientist: Dr. K. S. Das

The Krishi Vigyan Kendra (KVK), also known as "S*ingle Stop Shop*" in the district, serves as knowledge and resource centre of agricultural technologies and is linking the NARS with extension system and famers. During the year 2016-17, Government of India launched '*KVK Portal or KVK Knowledge Network*' to upload various activities relating to agriculture and allied sectors at district level which was conducted by the KVKs spread over this country. The main aimswere- a) to access information related to KVKs by the farmers and other stake holders from one place at the National Level, b) to review and monitor the functioning of KVKs against the mandates and objectives, and c) to provide the information and advisory to the farmers. The portal is accessed through logging in- *http://kvk.icar.gov.in*.It has been developed in such a way that it can be monitored with ease from Ministry Level to Farmers' doorstep depending upon its necessity. With the passage of time, the portal has been enriched with various kinds of features e.g. facilities available with the KVKs, KVK profile, package of practices for production of crops/ horticulture/ livestock/ fisheries, past, ongoing and future events, monthly report, report on DBT, news items, various national programmes, mobile apps, and so on. It has created deep impression in the minds of farmers related to Agriculture, Horticulture, Animal Husbandry and Dairying, Fishery etc. in retrieving various information. All 59 KVKs (3 from Andaman & Nicobar Islands, 33 from Odisha and 23 from West Bengal) have already been registered with ATARI Kolkata and the information is being uploaded in their respective portal on regular basis for the benefit of farmers, researchers and planners at different level.

13.14 New Extension Methodologies and Apporaches (NEMA)

Nodal officer: Dr. P. P. Pal and K. S. Das

With the growing population and changing scenario in middle income developing market economy, Indian agriculture is standing in a point where it strives with two major challenges. The challenges are to feed people as well as to provide better livelihood to farming community. Its nearly two decades passed when economists and policy makers are focusing on making agriculture more lucrative. This situation has forced the agriculturists

to look into their innovation in two different ways. Primarily, to develop and identify sound and businesslike technologies, as well as to reach farmers with those technologies. By that means, farmers can adopt those technologies and make agriculture a lucrative affair. However, with constantly changing market demand, another newly evolved challenge was added in this aspect that was the ease of profitable marketing. To offer a sneak peek in this field, Division of Agricultural Extension, ICAR has conceptualized and involved eighteen ICAR institutes in an academic research project called NEMA in 2019. This is one of the largest Pan-India based prestigious extension project. ICAR-ATARI Kolkata is one of the stakeholders in this project. Briefly, the project aims to identify the cutting-edge technologies developed by selected ICAR institutes and assess their impacts on a homogenous population of farmers. Moreover, this project is also containing a mandate of searching some novel potential extension methods that can carry those technologies to farmers from the warehouse of technologies like KVKs. ICAR-ATARI Kolkata was assigned to collaborate with ICAR-CIFA for assessing the impact of composite fish farming technology and with ICAR-IARI to assess the impact of wheat variety HD 2967. The data collection was planned from the farmers of several districts of Odisha and West Bengal. The survey work was started in 2019 after introductory workshop and training. In 2020, that survey work was planned to be continued to complete the data collection of targeted samples. The horizontal spread of the technologies was first assessed and following specific sampling design the sampling locations were selected. For composite carp culture districts of South 24 Pgs., North 24 Pgs., Mursidabad from West Bengal and Dhenkanal, Jagatsinghpur and Bhadrak from Odisha were selected. The survey was completed in all the districts except Bhadrak. A sum of nearly 600 farmers were surveyed face to face for completing the interview schedule. Those primary data were tabulated and sent to ICAR-CIFA for mathematical modelling with active participation of experts from IFPRI, New Delhi. For assessing the impact of HD 2967 district of Mursdabad was also chosen. Following specific sampling method, the sampling locations were also identified. However, the onset of covid-19 pandemic situation greatly hampered the survey. To maintain proper social distancing, in several cases the survey had to be rescheduled or aborted. Due to that reason the survey work in Bhadrak for composite carp culture and in Mursidabad for HD 2967 were not possible to be completed in this year. However, the scientific workers associated with this project carried forward the project to fulfill its other objective. Under the supervision of nodal scientist, several meetings were conducted with the agricultural extension scientists of different KVKs to understand different novel extension methods that were in practice at small scale, regionally. From their experience, ideas and suggestions 9 unique extension methods namely market driven approach, site specific advertisement approach etc. were categorized during 2020-2021, utilizing the constrains arisen due to pandemic situation. Some of the methods were purely hypothetical and designed during brainstorming discussions with scientists or ATARI and KVKs while others were in practice within a very small region in recent times. In the coming days it has been planned to analyze the potential of these extension methods and check their usability in carrying technologies to farmers or expand their market for farm products. Also, the remaining data collection will also be completed once the pandemic situation comes under control. In this year, a total of Rs. 584833 was received with total available fund of Rs. 830844. The fund was adequately utilized for different purposes.

13.15 Project on beekeeping

Nodal Scientist: Dr. Avijit Haldar

Bees, like other insects, are part of a food chain. Bees are well known for their effectiveness towards pollination and the service of pollinating flowers is necessary for sustainable agricultural farming. There is a famous quote from Albert Einstein "If the bee disappeared off the surface of the globe then man would only have four years left to live" and this may be quite true for an absolutely huge amount of food, because of the existence of bees. The growing market potential for honey and its products has resulted emerging of bee keeping as an economically viable and socially acceptable agro-based enterprise, particularly for socioeconomic development of landless, small and marginal

farmers as well as unemployed rural youth. Thus, beekeeping has come up as an important agricultural activity which shows the way of self-employment and entrepreneurship among the rural youth as well as subsidiary income for the practicing farmers.

In view of the importance of beekeeping, DAC&FW, GoI has sanctioned Rs. 921.15 lakh/- to the ICAR in the month of January 2021 for organizing 600 trainings (500 physical and 100 online trainings) on scientific beekeeping by 100 KVKs across the country under National Beekeeping & Honey Mission (NBHM). Accordingly, 50 % of the sanctioned budget i.e. Rs. 46057500/ has been received by ATARI Kolkata from the Council during 2020- 21 financial year for organizing training on scientific beekeeping by 14 KVKs under ATARI Kolkata and subsequently, Rs. 4,60,575.00 has been released to each selected KVKs of Andaman and Nicobar islands (Port Blair), Odisha (Cuttack, Dhenkanal, Gajapati, Kalahandi, Keonjhar, Jharsuguda, Puri, Sundargarh-I) and West Bengal (Cooch Behar, Dekshin Dinajpur), Murshidabad-II-Sargachi, Nadia-I-Gayespur, South 24 Parganas-Nimpith). Out of 14 KVKs, 12 KVKs conducted 20 physical trainings each of 7 days involving 500 participants with a batch of 25 participants in each training and one KVK organized one online training of 3 Days with a batch of 25 participants on scientific beekeeping. Out of 500 trainees, 155 were female participants which accounted 31% of the total trainees. The participation was also noted from 22 SHGs and 9 FPOs. The most significant achievements of the training included effective skill development on scientific beekeeping, enthusiasm and interest creation among the rural youth, especially women for beekeeping entrepreneurship, starting of scientific beekeeping by most of the trainees as a new venture after receiving training.

Table: Beekeeping training undertaken by 14 KVKs under ICAR- ATARI, Kolkata

State	Number of KVKs selected for Bee Keeping Training	Name of KVKs	No of Physical training conducted	No of persons trained in Physical training	No of Online training conducted	No of persons trained in Online training
A & N Islands	1	Port Blair	0	0	0	0
Odisha	8	Cuttack, Dhenkanal Gajapati, Kalahandi, Keonjhar, Jharsuguda, Puri, Sundargarh-I	12	300	1	25
West Bengal	5	Cooch Behar, Dekshin Dinajpur, Murshidabad-II- Sargachi, Nadia-I-Gayespur, South 24 Parganas-Nimpith	8	200	0	0
Total	14	14	20	500	1	25

Figure 1: 7 days physical training on scientific beekeeping at Cuttack KVK, ICAR-NRRI, Odisha

Figure 2: 7 days physical training on scientific beekeeping at Murshidabad-II- Sargachi, West Bengal

Figure 3: Hands on training on scientific beekeeping at Dakshin Dinajpur KVK, UBKV, West Bengal

Figure 4: Hands on training on scientific beekeeping at Puri KVK, OUAT, Odisha

Figure 5: Hands on training on scientific beekeeping at Jharsuguda KVK, OUAT, Odisha

Figure 6: Trainees after successful completion of 7 days physical training on beekeeping at Coochbehar KVK, UBKV, West Bengal

14. Success Stories

Nodal Scientist: Dr. Avijit Haldar

Success Story 1: Real-time, Online Farm to Home Delivery Model through Value Chain Smart Farm Social Networking System

KVK: Coochbehar, West Bengal

Background: Coochbehar district is characterised by the dominance of marginal farmers with very low and fragmented land holdings. The district holds a significant position in steady production of variety of vegetables round the year, and of course, obviously quite sometimes, the vegetable growers face the hardship of distress selling due to ill managed and tiring middleman dominated marketing system and many a cases face post-harvest losses of perishable commodities to the tune of 30-40%. Inspire of all these bottlenecks, vegetable cultivation has been the mainstay of life sustenance and earning livelihood of a sizable number of farmers in the district. But the situation got worsen in the wake of COVID 19 and subsequent lock down situation since April 23, 2020. The farmers of Coochbehar district started facing problem of marketing vegetable, cereals, pulses and fruit crops during lockdown period due

to stand stillness of public transport system and absence of any mechanism to make agricultural products available to the markets. Local markets started experiencing shortage of availability of vegetables. Bihar, Uttar Pradesh, Punjab, Bhutan and North Eastern states are the major consumers of vegetables from Coochbehar and Jalpaiguri. But due to lockdown, the famers failed to market and send their produces in these areas. Fresh green vegetables like pointed gourd, bitter gourd, brinjal, Chilli, cucumber, ridge gourd, late cauliflower, late cabbage, tomato, water melon, leafy vegetables and the prized local banana land race the *Malbhog* started getting over matured and got rotten in the field itself. Phone calls and whatsapp picture from the distressed farmers flooded the INBOX of Coochbehar KVK.

Activities: At this juncture, Coochbehar KVK and Kisankarts Agro Management Private limited (Startup), the newly developed Startup, registered under the umbrella of "Startup India" of government of India with knowledge partnership of Coochbehar KVK jointly develop artificial intelligence (AI) enabled smart farm management portal and an online Farm to Home delivery model of fresh vegetables, fruits and others food grain during the lockdown period with the objective of developing an effective supply chain network for ensuring on-demand supply of agricultural produce at the doorsteps of the consumers during the lock down period vis a vis helping the growers to get remunerative price out of their field produce at the time of distress. KVK acted as knowledge partner and Start-up Company provided the material technology as applicable. In Primary stage, the beneficiary farmers have been selected from adopted villages under Coochbehar KVK of UBKV. The company offered to make the farmers aware of the storage solution through product demonstration and information dissemination, getting the consumers on the platform to buy farmers' produce and arranging all logistic support to transport the farm produce to the doorstep of the consumers in a B2B, B2C and C2C type of agri e-commerce marketplace named as KISANKARTS.COM using social networking sites (Facebook, Whatsapp, Youtube) and phone call for online delivery of vegetables and fruits to the locked down people of Coochbehar.

Success: The portal is used for distance marketing of agriculture produces along with equipment, pesticides and insurance too. It gives a platform to the suppliers and manufacturers to showcase their products and sell them without the intervention of any middlemen. Apart from online and digital presence, this Startup has also a strong offline network at village panchayat level to provide 24x7 hand holding assistance to the farmers. Since the inception of this experimental extension model on April 9, 2020 Kisankarts Agro Management Private limited (Startup) has procured Green vegetables (05 t), Watermelon (90 t), Wheat (25 t), Pulses (10 t), Potato (70 t) and has paid an amount of Rs. 25.91 lakh to the farmers of the KVK adopted villages of Coochbehar district within a period of two weeks' time (9/4/2020 – 23/4/2020). Moreover, the Startup has procured field crops (in advance) like lentil (100 mt) worth of Rs. 53.5 lakh and Maize (1000 mt) worth of Rs. 1.35 crore from the farmers of Coochbehar district. This experimental extension model of developing value chain social networking system, farmers cooperation and collective action has create some positive research insights which can be effectively replicated to some competent and potential Farmers Producers Companies of the district for scaling up such marketing model for enabling them stepping into the marketing domain of post-harvest segment of Indian agriculture. This initiative can pave the way of long cherished objective of doubling farmers income through getting rid of them from ill managed and tiring middleman dominated marketing system and getting remunerative price for their produce.



Success Story 2: Diversified Farming- A Way to Empowerment

KVK: Gajapati, Odisha

Background: Smt. Ambika Nayak, 55 years old, a progressive farm woman of village- Jubagaon, G.P.- Chandragiri, Block- Mohana, Dist- Gajapati own 3.0 ha of farmland in which she grew direct seeded rice, maize and ragi followed by horse gram as a traditional farming practice and profit generated was very meagre to maintain her family of fourteen members in a better way for health, education and decent livelihood status.

Activities: During 2014-15, Smt. Ambika Nayak cultivated hybrid maize (2.2 ha) var. super-36 as per the recommendation of KVK scientist. Training and demonstration programme were conducted on improved package and practices for cultivation of hybrid of Maize. Smt. Nayak was identified as very progressive and receptive farmer who could mobilize the beneficiaries for systematic and scientific cultivation by her own interest. She harvested 52 q/ha of maize which was the highest yield and the net return was Rs. 68,120/- with BC ratio of 2.27 against the farmer practice of 30 q/ha. She was motivated towards scientific maize cultivation to diversify her farming system along with improved cultivation of rice (2.4 ha), ragi (0.8 ha) and vegetables (1.0 ha) for maximization of profit.

KVK provided Agri advisory services and established linkage with AAO/AHO, R.Udayagiri, input suppliers Paralakhemundi for availability of quality seeds and other critical inputs like biofertilizer, fertilizer, biopesticides, micro nutrient and finance from banks and micro finance agencies. She started cultivation with maize, transplanted ragi (Bhairabi), Maize+cowpea inter crop, off season cauliflower, brinjal (Tareni), Green pea (local), tomato (BT-10) and Chili (Local) through improved cultivation practices. She followed proper seed treatment and appropriate fertilizer management practices integrated with organic and chemical inputs.

Success: The continuous follow up activities by the scientists of KVK during the cropping season built the confidence and skill of Smt. Ambika Nayak for the improved method of cultivation with minimization of cost of cultivation by timely farming operations. Smt. Ambika Nayak is now better up in her social status due to strengthening her farming economy through such type of diversified farming system. Her husband and four sons helped a lot taking care of her homestead farming system. However, the family labour could be efficiently utilized for sustainability of the system.

Economics

Crop	Gross cost	Gross return	Net return	B:C ratio
Maize	30,000	68,120	38120	2.75
Ragi	6,000	20,000	14,000	3.30
Vegetables	25,000	1,35,000	11,0,000	5.40
Rice	25,000	48,960	23,960	1.95
Total	86,000	2,72,080	1,86,080	3.16

The farmers of Jubagaon village appreciated the technological intervention of KVK, Gajapati and realized the outcome of the improved cultivation practices through diversified farming system and cost effectiveness. Most of the farmers of the village have now started diversifying their farming. Smt. Ambika Nayak is now become a farmer trainer of that village for her friends and relatives. Even some of them have now started seed production in tomato seeds of BT-10 variety and supplying to the private traders @Rs. 5000 /Kg of seed.

The scientists of KVK Gajapati are making regular follow up and giving suggestions for the critical technical interventions as and when necessary. The feedback is collected through ex-trainee meet, diagnostic field visit and group discussion. The crop planning is advised well ahead to procure the critical inputs for their timely applications.



Success Story 3: Value Chain Management for Sustainable Vegetable Marketing during Covid Situation

KVK: Bankura, West Bengal

Background: During Covid-19 pandemic, the vegetable price and demand both were very low at Sonamukhi local market, but at metro city like Kolkata the vegetable prices were quite high. At that time, WBCADC and KVK Sonamukhi came up with a marketing channel approach where the main objective was to abolish middle man activity.

Activities: WBCADC and KVK Sonamukhi, Bankura jointly conducted the activity where they collected all the vegetables from SHGs on weekly basis and sold it at Kolkata. In this value chain management, "Dihipara Monalisa Mahila Swanirvar Dal", a SHG of Sonamukhi Block, Bankura involved actively. The group members of the SHG received different improved vegetables seeds and seedlings from WBCADC KVK, Sonamukhi, Bankura along with various skill development trainings on nutrition garden, nutri thali and organic farming. This facilitated production of a variety of fresh vegetables on farm and subsequent marketing. WBCADC and KVK Bankura have provided Refrigerator Insulated ToTo Rickshaw to the SHG so that they could supply fresh product at consumer door steps and abolish the middle man.

Success: This value chain marketing management enabled the farmers to get reasonable prices of their vegetables. According to the SHG members, the price of the vegetables provided by the institutions was much higher than the local market. In this way, the SHG members earned a handsome income and did not have to face the difficulty of storing perishable product and losses. "Dihipara Monalisa Mahila Swanirvar Dal" of Sonamukhi Block, Bankura has set an example of the well said proverb: 'If there is will there is way'.

Such kind of shift from only production to production and marketing approach has been established to be sustainable. This is one kind of supply driven approach too. Because when the market and remunerative price is assured, automatically the production gets a hike in quantity as well as quality. This kind of produce-market driven approach motivates the farmer to form a FPO/FPC. This value chain marketing system becomes a model for organized marketing of vegetables not only in Bankura but also in South Bengal.

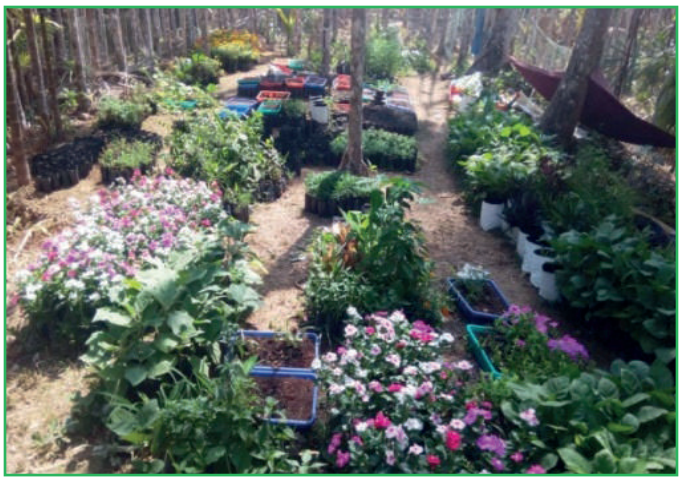
Success Story 4: Horticultural Crop Nursery Business for Self-employment

KVK: Nimbudera, Andaman and Nicobar Islands

Background: Shri. Om Prakash, a young man, lives in Govindpur village near KVK office in Nimbudera of North and Middle Andaman. He studied up to 10th class. He is the only earning member of his five members family. He has 0.5 ha of agricultural land. He was engaged to work as daily mazdoor in various departments and NERGA and earned about Rs. 2.0 lakh annually. But this income was not sufficient to meet the day to day requirement of his family. Once he worked at KVK farm for two year in NABARD funded project on 'Establishment of farm nursery' during 2017-18. During the tenure of two years, he learnt many scientific ways of rearing ornamental plants and how to raise ornamental nursery suitable for North and Middle Andaman climate. He gathered knowledge on various vegetative propagation methods like cuttings of ornamental plants, grafting in mango, layering in lemon and guava etc. Besides, he learnt rising of scientific vegetable nursery like growing of chilli, tomato and brinjal seedling etc. He realized the potential of nursery in North and Middle Andaman and became highly motivated from KVK nursery project and showed his keen interest in developing own nursery unit.

Activities: In 2018, Shri. Om Prakash approached KVK for technical guidance and sources of quality planting materials and quality seeds. Further, he attended the training at KVK for learning on scientific nursery management and different plant propagation methods in horticultural crops. Then, he constructed a low-cost shade net and poly house for nurseries (10mx8m) in his farm and purchased various nursery tools and implements. He started plant nursery for the production and supply of ornamental plants for flowering and foliage, vegetable seedlings and superior variety of local fruits. He started nursery by doing grafting in local superior varieties of mangoes, citrus and guava fruits. He also established mother plants of guava, mangoes, sapota and flower plants in his farm. Now he has 10 varieties of local type superior mangos, 4 varieties of citrus fruits, 3 varieties of sapota. Mr Om Prakash is not only practicing different propagation methods but also doing conservation and multiplication of many native flowers, local fruit crops, orchids, ferns and other local ornamental foliage and flowering plants. Besides, he procured some ornamental and good variety of rose plants and started production of flower and ornamental plants and other useful medicinal plants. In 2019, he purchased hybrid seeds of flowering Plants (marigold-inca, petunia, vinca, china aster etc). He is now totally engaged in horticultural crop nursery business. The KVK personnel regularly visit his farm and provide technical guidance and necessary inputs, as and when necessary.

Success: Shri. Om Prakash is now regularly selling various horticultural crop seedlings, plants etc. He benefited net profit of 3.0 lakh from only sale of flowering plants. In 2020, he was able to earn an additional income of Rs.3.5 lakh. With the generation of income from the nursery business he is now able to take proper care of his family and his parent. Now, more and more people are recognizing him and appreciating him for his great collection of horticultural plants and business. This business has made him a great plant lover. He is also selling the fruit and ornamental plants to other farmers, thus helping other farmers in obtaining the fruit and other seedling in local area. The success of Shri. Om Prakash has set an example before the rural youth in the nearby villages for nursery business as a good source of income. Now, Shri. Om Prakash is planning out of aspiration to establish nursery in Port Blair.



Success Story 5: A Rural Farm Woman Finds Empowerment through Selling of Kadaknath and Assel Chicks using Micro Hatchery

KVK: South 24 Parganas- II, Narendrapur, West Bengal

Background: Mrs. Gouri Bala Naskar is hailing from a village- Badukulla, P.O. Herobhanga, Canning, South 24 Parganas. Her family owns a land of 0.3 h which is used for agricultural activities. In her village, she was known as Pranimitra as she was engaged to provide first-aid treatment and immunization to farm animals. Though she was working as Pranimitra, she was searching a suitable option for livestock farming to enhance her income.

Activities: In 2019, Mrs. Gouri Bala Naskar attended a training programme on scientific backyard poultry farming supplementary feeding, health management at KVK Narendrapur. She came to know about Kadaknath and Assel poultry birds. Both Kadaknath and Assel are popular Indian backyard poultry breeds. Out of her interest, she started a small poultry farm with Kadaknath and Assel poultry birds. Later she procured a small incubator. Since 2020, she is using her incubator for hatching of fertile eggs from Kadaknath and Assel poultry birds. The incubator which is being used by Mrs. Naskar is environmentally friendly and it also consumes very less power compared to other incubators.

Success: Mrs. Gouri Bala Naskar reported that both Kadaknath and Assel backyard poultry birds showed higher degree of growth rate as compared to desi birds with higher returns and thus offered entrepreneurship opportunities. Both Kadaknath and Assel birds have good laying capacity in the agro-climatic conditions of South 24 Parganas. Mrs. Gouri Bala Naskar is not only selling good quality chicks, but also selling fertile eggs to her fellow villagers. She sells each chick @ Rs. 30- 45/-. From one cycle, she earns about Rs. 1000/- to 1200/- from the selling of 25- 30 chicks. By using the small incubator, she is earning about Rs. 15,000/- in a year. After witnessing the success of Mrs. Gouri Bala Naskar, other farm women of Badukulla and surrounding villages have shown their interest towards rearing of Kadaknath and Assel birds. Earlier, the villagers had to depend upon middleman and traders for poultry chicks. Now, the villagers find a new authentic source of popular indigenous poultry breeds like Kadaknath and Assel chicks within the village itself. Backyard poultry farming with Kadaknath and Assel birds is becoming a promising enterprise to improve the socio-economic status and provide livelihood security of the villagers in rural areas with low-cost initial investment and securing the availability of animal protein to the rural family in Sundarbon areas of South 24 Parganas.

Success Story 6: Mushroom Spawn Production- A Way of Agri-entrepreneurship

KVK: Puri, Odisha

Background: Smt. Renubala Dash, who belongs to Tulasi Chaura Village of Block- Pri Sadar in Puri district, always wanted to find a better way to earn income to become self-dependent. In 2017, she approached KVK, Puri for knowing about mushroom production.

Activities: In 2017, Smt. Renubala Dash participated a training on mushroom production and value addition organized by KVK Puri under ICAR-ARYA Project. Thereafter, she attended skill development training on scientific spawn production organized by AICRP Mushroom at OUAT. She then set up a small spawn production unit in 1500 sq. ft. area. Presently she is producing 9000 kg spawn of oyster and paddy straw mushroom in a year. KVK has provided the vermicomposting technology by which she is recycling the spent substrate into vermicompost from the waste to earn an additional income in addition to own use for vegetable cultivation. She has started making of different varieties of pickles and selling the products in the local retailers and friend circle.

Success: Smt. Renubala Dash is now earning a net income of about Rs. 30,000/- per month which can be translated into Rs 3.6 lakhs per annum approximately. The value addition unit by Smt. Dash has provided a net profit of Rs. 40,000/- during 2019-20. She has also started selling the mashroom products in the local retailers and friend circle and marketing of paddy straw mushroom with proper packaging to outside Odisha. She is now a successful mushroom spawn production agri-entrepreneur. Smt. Dash's success is motivating other farm women of her village and presently 8 more women of the village are engaged in processing activities. Smt. Dash has been nominated as the Best Farm Women speaker in Radio Kisan Programme being organized by AIR, Puri. Various organizations are now inviting her for delivering lectures as an agri-entrepreneur.

15.0 Publication by ATARI Scientists

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(i) Ebook on Initiatives during Covid-19 Pandemic

(ii) E-book of 'innovative agricultural solutions during Covid-19'

(iii) E-book on kharif agro-advisories to farmers

(iv) E-book on National Agro-advisories for farmers.

(v) E-book on breaking the productivity and profitability barriers for Pulses: Cluster Frontline demonstration.

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S. Das, F. H. Rahman, S. Mukherjee and K. Nag (2020). Response of Biofertilizers and Primary Nutrients on Growth and Yield of Garlic (Allium sativum L.) in New Alluvial Soil of West Bengal in the National Webinar on "Agrochemicals for Upkeeping Environment" organized by the Society for Fertilizers and Environment in collaboration with Bidhan Chandra Krishi Viswavidyalaya, Aug 27-29, 2020.

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16. WORKSHOP/MEETING/ TRAINING DURING 2020

Particulars	Date	No. of participants
Zonal Workshop of KVKs of Zone V (online)	01-02.07.21	80
Short Term Training Course on Preparation & dissemination of Agromet Advisories at Block level under Gramin Krishi Mausam Seva (GKMS) (online)	11-12.03.21	30
KVKs Review Meeting/Workshop on ARYA	03, 05, 16, 19, 22, 30.12.20	140
CSISA Workshop	01.03.21	25
NICRA Workshop		
One day Webinar on Farm Act 2020	29.10.20	940
FPO orientation Workshop (online)	05.03.21	900
Annual Meeting or Farms First	17-18.06.20	60
Review meeting or NEMA	22.06.20	22
Celebration on Poshan MAAH	08.09.20	73

17.0. Krishi Kalyan Abhiyan, Phase III Programme

Nodal Scientist: Dr. K. S. Das

A total of 112 Aspirational District KVKs in the country were selected and were given responsibility to conduct mainly capacity building trainings for farmers in their respective districts under *Krishi Kalyan Abhiyan, Phase-I (KKA-I)* and *Phase-II (KKA-II) programme* and also to upload AI data (after collecting from the State Animal Husbandry Department) in the *KVK Portal* under *Phase-III (KKA-III)* programme. The programme was successfully conducted by each KVK across the states. Considering the success of previous Abhiyans, the Council planned to conduct third phase of training programmes at KVKs in 112 Aspirational Districts (10 districts in Odisha state under ATARI Kolkata) for the farmers under *KKA-III* (or Extended KKA-III) programme for consecutive three years i.e. during the year 2020-21, 2021-22 and 2022-23. The programme was started from July, 2020. During first 90 days of 2020-21, 6 training programmes on diversified farming practices for doubling farmers' income involving 180 farmers was targeted. For rest of the year, the target was of 18 training programmes involving 540 farmers. During 2nd year and 3rd year, 24 training programmes involving 720 farmers for each year have been targeted under KKA-III programme. The training achievements of 10 KVKs under ATARI Kolkata during the year 2020 have been presented below.

Particulars	Name of KVKs										Total
	Bolangir	Dhenkanal	Gajapati	Kalahandi	Kandhamal	Koraput	Malkangiri	Nabarangpur	Nuapada	Rayagada	
Total no. of training programmes conducted	7	14	9	27	32	18	8	36	9	6	166
No. of farmers trained											
Male	157	145	178	288	724	302	159	380	135	131	2599
Female	18	165	92	387	226	238	81	520	65	49	1841
Total	175	310	270	675	950	540	240	900	200	180	4440

18. Doubling Farmers Income

Nodal Scientist: Dr. Avijit Haldar

Indian economy is predominantly dependent on Agriculture and other allied activities with more than 60% population dependent on agriculture as their principal means of livelihood. During the period of last 50 years from 1965 to 2015, since the adoption of green revolution, India's food production multiplied 3.7 times while the population multiplied by 2.55 times. The net result has been a 45% increase in per person food production, which has made India not only food self-sufficient, but also an exporting country. So far the strategy for development of agriculture sector in India has focused primarily on raising agricultural output and improving food security.During last five decades, agricultural research has focused on the development of higher productivity of crop varieties and animal breeds, better farm implements and machinery, increased fertilizer use and other production technologies

which enabled the farmers to grow more food, but at the same time it over exploited the resources and resulted in decreasing farm productivity and profitability.While the country achieved commendable position in food production, farming itself turned non-profitable overtime due to rising costs and uneconomical holdings. Farmers' income remains low in relation to income of those working in the non-farm sector.Low level of absolute income as well as deteriorating disparity between income of a farmer and non-agricultural worker constitute an important reason for the emergence of agrarian distress and farmers' unrest in the country.In this background, the goal set to double farmers' income by 2022 is central to promote farmer's welfare, reduce agrarian crisis and bring parity between income of farmers and those working in non-agricultural professions. Hence, the paradigmhas been changed from food security to income security for the farmers.The Government of India (GoI) announcement of doubling farmers' income by 2022 and its implementation must have a direct impact on almost half of the population to realize a sense of income security to farmers in a time bound manner to reduce agrarian distress and promote farmers' welfare. The subject has attracted a lot of attention, generating thoughts and debates on policy, strategy and implementation to achieve the goal. However, the government's intension seems to be to double the income of the farmers from farming in real terms.In this context, efforts have been undertaken at various levels to make strategic plans and prepare road map for doubling the farmers' income at the district level. Accordingly, KVKs of Andaman and Nicobar Islands, Odisha and West Bengal have selected two villages and collected baseline data on natural resources, agricultural farming, farm produces, marketing etc and made fund proposal. Till the fund is allocated and sanctioned, all KVKs under ICAR-ATARI, Kolkata, Zone V have undertaken various routine activities like FLD, OFT and Training in the selected two villages of a particular block of the district covering a total of 82 villages in this zone. A number of technologies have been made available at the farmer's field to figure out how the income could be doubled or more. Technological interventions covered 469.8 ha land with the participation of 1133 farmers in Odisha and 451.5 ha land with the involvement of 2247 farmers in West Bengal. A total of 166 SHGs were actively involved in this programme. A total of 368 numbers of training programmes were organized to build up the capacity of the farmers. Many technological interventions like farm mechanization, natural resource management, resource conservation technologies, integrated crop management, integrated farming system, integrated nutrient management, crop diversification, cultivation of high-value crops, protected cultivation practices, varietal replacement, scientific livestock management and heath care, scientific aquaculture etc have been implemented at the selected villages under the study. The most significant fifteen technologies have been enumerated in the table to understand the effect of technology in doubling income of the farmers.

Table: Doubling Farmers' Income Programme undertaken by KVKs under ICAR- ATARI, Kolkata

Name of State	No. of Villages	Area Covered (Ha)	Total Farmers Involved (Number)		SHG Involved (Number)	Capacity Building Programme Done (Number)	Total Interventions Executed
			Male	Female			
Odisha	46	469.8	740	393	69	179	158
West Bengal	36	451.5	1545	702	97	189	85
Total	**82**	**921.3**	**2285**	**1095**	**166**	**368**	**243**

Table: Technologies enhancing income double or more under ICAR- ATARI, Kolkata

Sl. No.	Technology	KVK	Productivity of Agri Produces under Intervention		Income under Intervention	
			Check	Demo	Before	After
1	Pond based integrated farming system	Purba Medinipur, W.B.	Rice= 4 ton/ha	Aman Rice= 3.5-4 ton/ha (cv. Dudheswar for seed purpose along with veg cultivation, duckery, bee keeping, fish cultivation	Rs.90,000.00	Rs.250,000.00
2	Cultivation of sunflower hybrid var. KBSH- 41 with line sowing and Integrated Nutrient Management	Rayagada, Odisha	9.2 q/ha	15.2 q/ha	Rs. 10,642/ ha	Rs. 41,102/ ha
3	Multi cropping model with IPM of rice and ICM of Mustard and oilseed	Uttar Dinajpur, W.B.	53.5 q/ha (rice 39.6 q + mustard 5.2 q)	98.5 q/ha (rice 46.7 q + mustard 11.2 q + sesame 9.4)	Rs. 32,700/ ha	Rs. 68,550/ ha
4	Off season vegetable production under protected cultivation using poly-tunnel	Jalpaiguri, W.B.	145 q/ ha	298 q/ ha	Rs.1,83,334/ ha	Rs. 398,667/ha
5	Cultivation of finger millet variety Arjun	Nabarangpu, Odisha	7.5 q/ha	13.5 q/ha	Rs. 10,500/ ha	Rs. 20,750/ha
6	Potato cultivation with sustainable management	Nadia- I W.B.	250 q/ha	370 q/ha	Rs. 54,000/ ha	Rs. 103,000/ha
7	Cultivation of wilt resistant resistant tomato varieties, Eg. Arka Rakshak and Arka Samrat	Deogarh, Odisha	265q/ha	460 q/ha	Rs. 168,000/ ha	Rs. 345,000/ha
8	Dragon fruit cultivation and intercrop vegetables	Nimpith, South 24 Parganas, W.B.	438q/ha/y (vegetables)	255q/ha/y (dragon fruit) + 148q/ha/y (intercrop vegetables)	Rs.15,300/ha	Rs.36,100/ha
9	Low cost portable poly tunnel for seedling raising	Nayagarh, Odisha	370 no/unit	425 no/unit	Rs. 205/unit	Rs. 4,702/unit
10	Improved production technology of tissue cultured banana	Burdwan, W.B.	520 q/ha	680 q/ha	Rs. 266,000/ ha	Rs. 380,000/ha
11	Oyster Mushroom Cultivation	Cooch Behar, W.B.	1.5 kg/cylinder	3.5 kg/cylinder	Rs.75,000/ unit (1000 cylinder)	Rs.175,000/unit (1000 cylinder)
12	Nutritional Gardening	Sundargarh-II, Odisha	42 kg/200 m^2/mo	86 kg/200 m^2/mo	Rs.533/unit/ mo	Rs.1092/unit/ mo
13	Air breathing fish culture	Dakshin Dinajpur, W.B.	8 q/ha	24 q/ha	Rs. 302,000/ ha	Rs.905,000/ha
14	Kadaknath poultry farming under backyard system	Angul, Odisha	Avg. BW of cock at 10 mon-1.09 kg Avg. BW of hen at 10 mon- 0.97 kg	Avg. BW of cock at 10 mon- 1.61kg Avg. BW of hen at 10 mon- 1.54g	Rs. 4,274/unit of 10 birds	Rs.11,475/unit of 10 birds
15	Shrimp (*Litopenaeus vannamei*) production	Narendrapur, South 24 Parganas, W.B.	6.5 q/ha	11.0 q/ha	Rs.105,200/ha	Rs. 230,700/ha

Figure 1: Pond based Integrated Farming System (Fish–Duck–Dyke Vegetables) in Purba Medinipur, West Bengal

Figure 2: Field day on sunflower organized by Rayagada KVK, Odisha

Figure 3: Off season vegetable production under protected cultivation using poly-tunnel in Jalpaiguri, West Bengal

Figure 4: Cultivation of finger millet variety Arjun in Nabarangpu, Odisha

Figure 5: Potato cultivation with sustainable management in Nadia-I, West Bengal

Figure 6: Wilt resistant resistant tomato after harvesting in Deogarh, Odisha

Figure 7: Dragon fruit cultivation in Nimpith, South 24 Parganas West Bengal

Figure 8: Low cost portable poly tunnel for seedling raising, Nayagarh, Odisha

18.0 POSHAN MAAH

POSHAN MAAH ON 17 SEPTEMBER 2020 in KVKs of ATARI Kolkata, ZONE V

The National Development Agenda, Government of India launched Poshan Abhiyaan, a multi-ministerial convergence mission with a vision to address malnutrition in a targeted approach to ensure community mobilisation and bolster people's participation, every year the month of September is celebrated as Rashtriya Poshan Maah across the country. The two major themes suggested for this year's **POSHAN MAAH** are: 1- Identification and tracking of children with severe acute malnutrition (SAM). 2- Plantation drive for Promotion of Kitchen garden under "**POSHAN KE LIYE PAUDHE'** "पोषण के लिए पौधे" drive. The Poshan Abhiyaan Scheme is basically a flagship scheme of the government of India with an aim to improve the nutritional outcomes of the children, the pregnant women and lactating mothers. The third Rashtriya Poshan Maah is being celebrated in September 2020 to address the problem of malnutrition in women and children. The Poshan Abhiyaan aims to reduce anaemia among women and adolescent girls in the age group of 15-49 years and reduce low birth weight. It was launched by PM Modi in 2018, Poshan Abhiyaan is a robust scheme which has been playing an unprecedented role in eliminating malnutrition from the country. In Zone V, Rashtriya Poshan Maah was celebrated in September 2020 with participation of 11527 number of Angwandi Workers and farm women from the states of Odisha, West Bengal and A & N Islands. Under this scheme, **12506** number of bio- seeds from IFFW seed packets, **56279** number of vegetable seedlings and **18503** number of planting material were distributed.

State	No. of Angwandi Workers	No. of Farm Women	Total Trainees	Distribution of seed packets, seedlings and planting material			Others	Total Participants
				No.Seed packets	No. Veg Seedlings	No. Planting material		
A & N Islands	4	16	20	0	0	0	1	21
Odisha	871	1353	2244	2333	14273	4072	170	2480
West Bengal	**2859**	**5127**	**8067**	**10173**	**42006**	**14431**	**642**	**9026**
Grand Total	**3734**	**6496**	**10331**	**12506**	**56279**	**18503**	**813**	**11527**

19.0 Personnel

Staff position of ICAR-ATARI Kolkata as on 31.03.2020 has been presented in the table below:

Sl. No.	Name	Designation
1	Dr. S.S. Singh	Director (upto 12.03.2020)
2	Dr. S.K. Roy	Principal Scientist & Acting Director (since 13.03.2020)
3	Dr. P.P. Pal	Principal Scientist
4	Dr. A. Haldar	Principal Scientist

Sl. No.	Name	Designation
5	Dr. S.K. Mondal	Principal Scientist
6	Dr. F.H. Rahman	Principal Scientist
7	Dr. K.S. Das	Principal Scientist
8	Shri Roshan Lal	Asstt. Administrative Officer
9	Smt. S. Pal	Private Secretary
10	Shri S. Mukherjee	Junior Accounts Officer
11	Shri A.D. Banik	Assistant
12	Shri D. Debnath	Driver (T-2)
13	Shri S. Saha	UDC
14	Smt. A. Roy	SSS
15	Ms. J. Basak	SRF, CFLD-Pulse
16	Ms. R. Bhattacharya	SRF, NICRA
17	Shri S. Ghosh	SRF, NEMA
18	Dr. S. Dutta	SRF, ARYA
19	Shri S. Khutia	DEO, CFLD-Pulse - NFSM
20	Shri S. Nandi	Project Assistant, GKMS
21	Shri S. Paul	DEO, CSISA
22	Shri A. Dewanji	YP-II, MIS-FMS

Joining/Relieving/Promotion/Demise

1. Dr. S. S. Singh relieved to join at RLBCAU, Jhansi as Director of Extension Education on 13.3.2020.
2. Dr. S. Das, SRF (FFP) relieved on 17.08.2020
3. Ms. S. Halder, SRF (ARYA) relieved on 12.06.2020

Figure 9: Dragon fruit cultivation in Nimpith, South 24 Parganas West Bengal

Figure 10: Nutritional Gardening in Sundargarh-II, Odisha

Figure 11: Harvesting of Shrimp in Narendrapur, South 24 Parganas West Bengal

Figure 12: Kadaknath poultry farming under backyard system in Angul, Odisha

भाकृअनुप
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