



ANNUAL REPORT

वार्षिक प्रतिवेदन

2018-19

ICAR - Agricultural Technology Application Research Institute Kolkata

भाकृअनुप - कृषि तकनीकी अनुप्रयोग संस्थान कोलकाता

Bhumi Vihar Complex, Salt Lake, Kolkata - 700097

भूमि विहार परिसर, सॉल्ट लेक, कोलकाता - 700097

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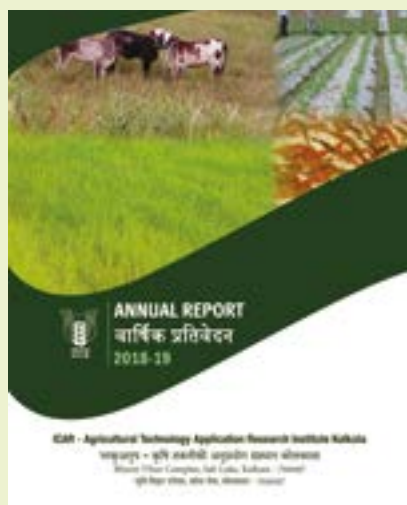
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ICAR - Agricultural Technology Application Research Institute Kolkata

Indian Council of Agricultural Research

Salt Lake, Kolkata- 700 097



ICAR-Agricultural Technology Application Research Institute Kolkata

Bhumi Vihar Complex, GB Block, Sector-III, Kolkata – 700097

Phone: 033 2335 2355, 2335 3830

Fax: 033 2335 2355

Email: atarikolkata@gmail.com; atari.kolkata@icar.gov.in

Website: www.atarikolkata.org

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Dr. S.S. Singh, Director, ICAR-ATARI Kolkata

Compiled & Edited by

S.K. Mondal, K.S. Das, S.K. Roy, P.P. Pal, F.H. Rahman, S.S. Singh and A. Haldar

Technical Assistance

Sk. Golam Rasul, Susanta Kumar Nayak, Debdyuti Datta

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#+91-9830249800

PREFACE



Annual report of any scientific institute is the reflection of accomplishment of assigned duties and responsibilities. The annual report of ICAR-ATARI, Kolkata, accordingly, deals with the fulfilment 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 Department. It also portrays the effectiveness of technical guidance provided at ATARI level, supervision done and technological backstopping provided by Directorates of Extension Education of SAUs as per its jurisdiction and efficiency of host organization in creating adequate infrastructure, staff recruitment and ensuring congenial atmosphere to enable the KVKs to excel in improving agricultural situation of the farming community of this zone.

Compilation of Annual Report 2018-19 of ICAR-ATARI Kolkata has encompassed all the related 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 material production, fish fingerlings and animal breed production and others. Such elaboration will help in understanding the sphere of KVK activities as well as its reach among the farmers of far-flung areas.

With the launching of a number of flagship programmes by Department of Agriculture

Cooperation & Farmers Welfare and ICAR, New Delhi, the KVKs under the direct supervision of ICAR-ATARI Kolkata are addressing various farming, non-farming, climate, entrepreneurship, Swachh Bharat, tribal development and many more related areas which have been adequately depicted in this Annual report with precise information and quality photographs to provide the desired clarity. Likewise, the contribution of Directorates of Extension Education of SAUs in overseeing the KVK functioning, ensuring technological backstopping, developing human resources and performance of ATICs have been given proper weightage in this compilation.

Information about various events like Hindi Pakhwada, Swachhta Hi Sewa, Celebration of Vigilance Week etc. organized at ICAR-ATARI, Kolkata has also been incorporated in this documentation with special emphasis on digitization. A glimpse of PFMS, regular uploading of data in various portals and other relevant information have been recorded in the Annual Report 2018-19.

Bringing out this publication incorporating vast array of agricultural development initiatives within the stipulated time has become possible only due to help and corporation extended by all concerned. As the Director of ICAR-ATARI, Kolkata, I thankfully acknowledge the guidance received from Indian Council of Agricultural Research, New Delhi and assistance received from all Host Organizations, Directors of Extension Education, entire KVK fraternity of this zone and all the staff of ICAR-ATARI, Kolkata including the Young Professional and the project staff.



Director

KVKs under ICAR-ATARI Kolkata

WEST BENGAL, ODISHA AND
ANDAMAN AND NICOBAR ISLANDS



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कार्यकारी सारांश

ग्यारह कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थानों के निपटारे में 713 केवीके रखने के लिए जोनों का पुनर्गठन और राज्यों के वितरण ने कुछ हद तक केवीके की कम संख्या होने पर एटीएआरआई के दबाव को आसान बना दिया है। हालांकि, इसने एटीएआरआई को नए राज्यों के केवीके ग्राहकों के सामाजिक, आर्थिक और संबंधित पहलुओं को समझने में अतिरिक्त घंटे काम करने के लिए मजबूर किया है, अपनी आकांक्षा के अनुरूप कार्रवाई की योजना तैयार की है और यह सुनिश्चित किया है कि किसानों की बेहतरी के लिए केवीके के सभी प्रयासों को निर्देशित किया जाए। ओडिशा राज्य के सभी ग्रामीण जिलों में काम कर रहे 33 केवीके को बिहार और झारखंड के स्थान पर आईसीएआर-एटीएआरआई, कोलकाता (जोन-V) के अधिकार क्षेत्र में दिया गया है। तदनुसार, 2018-19 के दौरान, आईसीएआर-एटीएआरआई, कोलकाता को अंडमान एवं निकोबर द्वीप, ओडिशा और पश्चिम बंगाल के 59 केवीके की निगरानी, मूल्यांकन और मार्गदर्शन करने की जिम्मेदारी दी गई है।

केवीके के साथ एटीएआरआई के जनादेशों की पुनरीक्षण के साथ, एटीएआरआई ने समन्वय और निगरानी प्रौद्योगिकी अनुप्रयोग और फ्रंटलाइन विस्तार शिक्षा कार्यक्रम के साथ कृषि विस्तार अनुसंधान और ज्ञान प्रबंधन को मजबूत करने पर अधिक ध्यान दिया है। दूसरी ओर केवीके अपने व्यापक अनुप्रयोग के लिए प्रौद्योगिकी मूल्यांकन और प्रदर्शन पर ध्यान केंद्रित कर रहा है और क्षमता निर्माण को बढ़ाने के लिए प्रयासरत है। हालांकि बुनियादी गतिविधियां समान बनी हुई हैं, लेकिन छोटे और मध्यम किसानों, ग्रामीण युवाओं और अन्य हितधारकों की आकांक्षा को पूरा करने में केवीके की पहुंच को कई गुना बढ़ा दिया गया है। किसानों के सूचना और प्रौद्योगिकी सहायता देने के लिए केवीके की क्षमता ने उन्हें जमीनी स्तर पर अनुसंधान और विस्तार के बीच एक महत्वपूर्ण लिंक बना दिया है।

अनिवार्य गतिविधियों में, जोन -V के केवीके ने वर्ष 2018-19 के दौरान प्रशिक्षण, खेतों के परीक्षण, फ्रंटलाइन प्रदर्शन इत्यादि के क्षेत्रों में लगभग पूरे लक्ष्य को हासिल किया। केवीके ने क्षेत्र भर में 3374 अलग-अलग स्थानों पर आयोजित 444 कृषि परीक्षणों के माध्यम से फसल की खेती, पशुधन पालन, मछली की खेती, कीट प्रबंधन, भंडारण तकनीक इत्यादि से संबंधित 306 पहचान प्रौद्योगिकियों का आकलन किया। इस तरह के समाधान को फिर से तकनीकी कैप्सूल के रूप में राज्य विस्तार प्रणाली को प्रदान करने से पहले छोटे पैमाने

पर प्रदर्शन के रूप में परीक्षण किया गया था। क्षेत्र की व्यापक कृषि-पारिस्थितिकीय स्थिति के अनुरूप विकसित सुधार की गई प्रौद्योगिकी के आवश्यक सुधार / संशोधन के लिए शोध प्रणाली को प्रतिक्रिया भी प्रदान की गई।

केवीके द्वारा दाल, तिलहन और अन्य फसलों के उत्पादकता में वृद्धि और तेजी से बीज प्रतिस्थापन की गति को बढ़ाने के लिए केवीके द्वारा चयनित दाल और तिलहन फसलों की फ्रंटलाइन प्रदर्शन आयोजित किए गए हैं। 11692 किसानों की भागीदारी के साथ 2251.66 हेक्टेयर में केवीके ने ऐसे प्रदर्शन कार्यक्रमों का आयोजन किया। किसानों के क्षेत्र में दर्ज प्रदर्शन ने उपज और लाभ-लागत अनुपात के संदर्भ में किस्मों और प्रेक्टिस के पैकेज की श्रेष्ठता का संकेत दिया। प्रदर्शन कार्यक्रमों में विस्तार कार्यकर्ताओं की भागीदारी ने कृषि समुदाय के लाभ के लिए अपने बड़े पैमाने पर प्रसार के केवीके द्वारा लिए मार्ग प्रशस्त किया। पशुधन और मत्स्यपालन पर प्रदर्शन 289.62 हेक्टेयर में 2033 संख्याओं के कार्यक्रमों के माध्यम से किया गया था।

किसानों और कृषि महिलाओं, ग्रामीण युवाओं और विस्तार कार्यकर्ताओं के हिस्से में क्षमता विकास वांछित स्तर तक किए गए जो केवीके के मूल कार्य में से एक था। ज्ञान और कौशल प्रदान करने में, केवीके ने 99330 किसानों और फसल उत्पादन, बागवानी, मिट्टी स्वास्थ्य प्रबंधन, कृषि इंजीनियरिंग, पशुधन और मत्स्य पालन, गृह विज्ञान, कृषि विस्तार और कई अन्य पहलुओं को शामिल करने वाली कृषि-महिलाओं के लिए 3300 पाठ्यक्रम आयोजित किए। हालांकि ग्रामीण युवाओं के संबंध में, क्षमता निर्माण के ऐसे क्षेत्रों का चयन किया गया था जो फार्म खेत और आफ फार्म उद्यमों में स्व-रोजगार प्रदान कर सकते थे। इस प्रक्रिया में, लड़कियों सहित 13491 ग्रामीण युवाओं को 614 पाठ्यक्रमों के माध्यम से प्रशिक्षित किया गया था। कृषि कर्मियों, पशुपालन और मत्स्यपालन क्षेत्र में हालिया विकास के बारे में जागरूक करने के लिए विस्तार कर्मियों की क्षमता निर्माण के लिए फ्रंटियर क्षेत्रों का चयन किया गया था। केवीके ने 14193 प्रतिभागियों के लिए 463 ऐसे पाठ्यक्रम आयोजित किए। इसके अलावा, केवीके ने युवाओं को स्व-रोजगार अवसर उजागर करने के लिए तुलनात्मक रूप से लंबी अवधि के व्यावसायिक प्रशिक्षण कार्यक्रम का भी आयोजन किया। इस प्रक्रिया में, 1091 पाठ्यक्रम 2854 युवाओं के लिए आयोजित किए गए। प्रशिक्षण के बाद मूल्यांकन से संकेत मिलता है कि 1139 युवाओं को स्व-रोजगार



मिल सकता है तथा 255 युवाओं को रोजगार कहीं और मिल सकता है। क्षमता विकास के कार्यक्रम में केवीके की क्षमता को सरकार और अन्य संगठनों द्वारा केवीके के प्रशिक्षण कार्यक्रम देने के माध्यम को पर्याप्त रूप से मान्यता प्राप्त है। केवीके ने प्रतिभागियों की आवश्यकता के अनुसार विभिन्न संगठनों द्वारा प्रायोजित 13148 प्रतिभागियों के लिए 596 कार्यक्रम आयोजित किया। विभिन्न विस्तार गतिविधियों के माध्यम से किसानों के बीच बड़े पैमाने पर जागरूकता का आयोजन केवीके की एक और उल्लेखनीय उपलब्धि थी। इस अवधि के दौरान, केवीके ने 1297117 किसानों, विस्तार कार्यकर्ताओं और अन्य लोगों की भागीदारी के साथ ऐसी 135952 विस्तार गतिविधियां आयोजित की।

किसानों को गुणवत्ता के बीज और रोपण सामग्री प्रदान करना हमेशा की आवश्यकता है। केवीके द्वारा केवीके फार्म में या बीज गांव कार्यक्रम के माध्यम से भाग लेने वाले मोड में बीज बनाने के लिए प्रयास किया। उल्लिखित अवधि के दौरान केवीके ने समय-समय पर बीज की अनुपलब्धता को दूर करने हेतु सब्जियों के गुणवत्ता वाले बीज के प्रमुख अनाज और फसलों का 17921.04 क्विंटल का उत्पादन किया। केवीके न गुणवत्ता के फलों की फसल, सब्जियां, फूल उत्पादन के लिए के 51.1 लाख रोपण सामग्री / रोपण भी पैदा किए। कृषि क्षेत्र में जैव उत्पाद का उपयोग पर्यावरणीय दृष्टिकोण से तेजी से लोकप्रिय हो रहा है और केवीके ने 5844 किसानों को उपलब्ध कराने के लिए 285137.12 किलोग्राम विभिन्न जैव-निर्माण का उत्पादन किया। इस तरह के 4241622 उपज के उत्पादन के माध्यम से गुणवत्ता पशुधन तनाव और मछली फिंगरलिंग उत्पादन को केवीके द्वारा पर्याप्त महत्व दिया गया था।

मिट्टी और जल विश्लेषण में, केवीके ने किसानों को मिट्टी स्वास्थ्य कार्ड प्रदान करने के लिए क्षेत्र में 30100 के नमूनों का विश्लेषण किया। इस प्रक्रिया ने किसानों को उच्च उत्पादकता के साथ-साथ निरंतर मिट्टी के स्वास्थ्य के लिए वैकल्पिक रूप से फसलों में रासायनिक उर्वरक का उपयोग करने में सक्षम बनाया है। अनिवार्य गतिविधियों के अलावा, केवीके ने सार्वजनिक निजी भागीदारी, विश्व मिट्टी दिवस, राष्ट्रीय विज्ञान दिवस, विश्व पशु चिकित्सा दिवस और अन्य के माध्यम से प्रौद्योगिकी सप्ताह जैसे कृषि समुदाय के बीच जागरूकता पैदा करने के साधन के रूप में विशेष/ दिन / सप्ताह भी मना गया। इस तरह के समारोहों ने प्रतिभागियों की अच्छी संख्या को आकर्षित किया और किसानों के बीच इस तरह के कार्यक्रमों के लाभ को विस्तारित करने का अवसर प्रदान किया। केवीके ने जिला स्तर पर विभिन्न अभिसरण कार्यक्रम के माध्यम से 317.50 लाख रुपये के राजस्व भी पैदा किए।

इस तरह के समर्थन से केवीके को मौजूदा कृषि स्थिति में सुधार के लिए जिले के दूरदराज के इलाकों तक पहुंच प्रदान करने में मदद मिलती है।

पिछले एक साल के दौरान आईसीएआर-एटीएआरआई, कोलकाता के हिस्से पर वांछित उद्देश्यों की पूर्ति सुनिश्चित करने के लिए आईसीएआर-एटीएआरआई और केवीके के माध्यम से बड़ी संख्या में फ्लैगशिप कार्यक्रम का कार्यान्वयन किया गया है। कार्यक्रमों की निरंतर निगरानी ने न केवल गुणवत्ता के उत्पादन को लाया बल्कि कृषि समुदाय और नीति निर्माताओं के बीच उच्चतम स्तर पर केवीके का घरेलू नाम भी बनाया। जलवायु रेजिएंट एग्रीकल्चर में राष्ट्रीय नवाचार आईसीएआर-एटीएआरआई, कोलकाता द्वारा 9 केवीके के माध्यम से जोन-V में ऑपरेशन, ऐसा एक कार्यक्रम है। पहचान किए गए जिलों की जलवायु भेद्यता का मूल्यांकन, तकनीकी समर्थन, संसाधन विकास और खेती समुदाय के समग्र सशक्तिकरण के संदर्भ में निश्चित आवश्यकता को आगे बढ़ाने के लिए प्रयास किया गया है ताकि उन्हें बाढ़, गर्मी, चक्रवात तूफान, अनियमित वर्षा जैसे जलवायु भेद्यता का सामना करने में सक्षम बनाया जा सके। आदि। गर्मी की खेती, हरी खाद, शून्य टिलेज, कार्बनिक मल्लिचंग, बीबीएफएस, कार्बन अनुक्रमण के बाद प्रौद्योगिकी घटकों के सफल कार्यान्वयन के बाद पानी की बचत सिंचाई विधियों, कृत्रिम भूजल रिचार्ज, बड़े पैमाने पर जल संचयन संरचनाओं का निर्माण, तालाबों का नवीनीकरण आदि न केवल एनआईसीआरए गांवों में सकारात्मक प्रभाव डाला, बल्कि किसानों के लाभ के लिए अन्य जिलों में इसके लिए मार्ग प्रशस्त किया। वैकल्पिक फसल पैटर्न का लोकप्रियकरण, उचित फसल किस्मों का परिचय, सामुदायिक नर्सरी जैसे अभिनव तरीकों, चारा की खेती पर जोर, वीसीआरएमसी और कस्टम भर्ती प्रणाली का निर्माण और इस कार्यक्रम के माध्यम से किए गए अन्य घटकों ने दूर-दराज जिलों के किसानों को बेहद लाभान्वित किया है।

चावल के परती जमीन का उपयोग करने के लिए विशेष जोर देने के साथ उत्पादकता में वृद्धि के लिए तिलहन और दाल फसलों दोनों के लिए क्लस्टरर्ड फ्रंटलाइन प्रदर्शन (सीएफएलडी) कार्यक्रम का कार्यान्वयन पिछले एक साल के दौरान दर्ज एक और उपलब्धि रही है। तिलहन में खरीफ में दर्ज औसत उपज 27-43% की सीमा में थी जबकि यह रबी में 31-48% थी। सभी तीन मौसमों खरीफ, रबी और गर्मी के दौरान पल्स फसलों में उच्च उपज भी देखी गई थी। खरीफ में, उपज में औसत वृद्धि 21 से 47% की सीमा में थी, जबकि यह रबी में 27 से 49% और गर्मियों में 20 से 34% थी।



चयनित केवीके में पल्स बीज हब का निर्माण गुणवत्ता पल्स बीजों की आवश्यकता और आपूर्ति के बीच के अंतर को कम करने के लिए एक सराहनीय कदम है। इस क्षेत्र में, 10 बीज हब साल भर की पहचान की गई जो पल्स फसलों के बीज बनाने में लगे होते हैं और तीन फसल के मौसम को कवर करते हैं। बीज उत्पादन के लिए पहचाने जाने वाली फसलें चना, पीजन, मटर, हरी चना, काली चना, चिक मटर, मसूर और मटर हैं। हालांकि, कुछ केवीके और आईसीएआर-एटीएआरआई द्वारा निर्धारित लक्ष्य को हासिल करने के लिए बीज हबों के प्रदर्शन में सुधार की जरूरत है। कोलकाता लगातार निकट भविष्य में लक्ष्य की पूर्ति सुनिश्चित करने के लिए प्रदर्शन की निगरानी कर रहा है।

पहले इस क्षेत्र में किसान के रूप में किसान केंद्रित कार्यक्रम के लिए तीन आईसीएआर संस्थानों और आईसीएआर-एटीएआरआई, कोलकाता के तहत एक राज्य कृषि विश्वविद्यालय के माध्यम से कार्यक्रम की निगरानी के लिए नोडल संस्थान के रूप में कार्यरत है। इस कार्यक्रम का सार यह है कि किसान अनुसंधान समस्या पहचान, प्राथमिकता, प्रयोग के संचालन और किसान के खेतों में इसके प्रबंधन में महत्वपूर्ण भूमिका निभाते हैं। धान में एकीकृत पोषक प्रबंधन, नई किस्मों का परिचय, मछली को पूरक आहार, पोल्ट्री नस्लों के लोकप्रियता, बेहतर जल प्रबंधन विधियों, ऊतक कल्चर केले, परियोजना क्षेत्र में मिनी दाल मिल हेतु संस्थानों / एसएयू द्वारा हस्तक्षेप कृषि /चयनित किसान / कृषि परिवारों की आजीविका में समग्र सुधार लाने के लिए हैं। 2018-19 में इस क्षेत्र के लिए परिषद द्वारा चार परियोजनाओं को मंजूरी दी गई।

आबादी के हानिकारक हिस्से की विकास आवश्यकताओं को संबोधित करते हुए, इस क्षेत्र के 10 जिलों में जनजातीय उप योजना (टीएसपी) का एक विशिष्ट कार्यक्रम चल रहा है जिसमें बड़ी जनजातीय आबादी है। जनजातीय समुदाय के बीच बेहतर कृषि पद्धतियों के लाभ को बढ़ाने के लिए परिसंपत्ति निर्माण, कृषि परीक्षणों, प्रशिक्षण कार्यक्रमों, बीज और रोपण सामग्री उत्पादन आदि जैसी पहल की गई थी। मूल्यांकन करने पर यह संकेत से संकेत मिलता है कि 82934 किसानों के लाभ के लिए अब तक 346 आदिवासी गांवों को इस परियोजना के तहत लाया गया है।

कृषि नेतृत्व वाले व्यवसाय में ग्रामीण युवाओं को शामिल करना और बनाए रखना देश भर में नीति निर्माताओं के लिए चुनौतियों में से एक है। एक उचित उपाय खोजने के लिए, कृषि में युवाओं को आकर्षित करना और बनाए रखना (एआरवाईए) - भारतीय कृषि अनुसंधान

परिषद की एक परियोजना आईसीएआर-एटीएआरआई, कोलकाता द्वारा इस क्षेत्र के 9 केवीके के माध्यम से लागू की जाती है। जिलों में वाणिज्यिक उद्यम बनाने के अवसर के आधार पर, पहचाने गए युवाओं को चरणबद्ध तरीके से वित्तीय और तकनीकी सहायता प्रदान करने के लिए उद्यमों का चयन किया गया है। केवीके के प्रयासों और आईसीएआर-एटीएआरआई, कोलकाता की देखरेख ने 310 ग्रामीण युवाओं को निरंतर वार्षिक आय के लिए निरंतर तरीके से अपने उद्यम स्थापित करने में सक्षम बनाया है। इस परियोजना की सफलता ने अन्य ग्रामीण युवाओं को अपनी आजीविका के लिए ऑफ-फार्म उद्यमों को भी प्रेरित करने के लिए प्रेरित किया गया है।

वैज्ञानिकों और किसानों के बीच सीधी बातचीत की सुविधा के लिए, इस क्षेत्र के 17 आईसीएआर संस्थान और 2 एसएयू/ आईसीएआर-एटीएआरआई, कोलकाता की देखरेख में मेरा गॉन मेरा गौरव कार्यक्रम लागू कर रहे हैं। 35291 किसानों के लाभ के लिए नियमित रूप से गांवों, इंटरफेस मीटिंग, प्रशिक्षण, प्रदर्शन, मोबाइल आधारित सलाह, जागरूकता निर्माण आदि जैसी गतिविधियां शुरू की गई हैं। अब तक, इस कार्यक्रम के तहत 385 गांवों को कवर किया गया है।

आईसीएआर-एटीएआरआई, कोलकाता भी स्वच्छ भारत अभियान में कार्यालय परिसर के साथ-साथ आस-पास के स्थानों में नागरिकों के बीच स्वच्छता जागरूकता पैदा करने के प्रयासरत है। इसके अलावा, केवीके को नियमित आधार पर आसपास के और गोद लेने वाले गांवों में स्वच्छता अभियान लाने के लिए भी प्रोत्साहित किया गया गया है। इस क्षेत्र के 52 केवीके द्वारा कई जागरूकता कार्यक्रम, संवेदीकरण कार्यशाला और संगोष्ठियों का आयोजन किया गया था।

आईसीएआर-एटीएआरआई, कोलकाता के केवीके ज्ञान पोर्टल ने दूरदराज के क्षेत्रों से बड़ी संख्या में किसानों को केवीके कार्य करने के बारे में जानने और बेहतर कृषि और सहयोगी प्रैक्टिस के लिए सूचना समर्थन मांगने में मदद की है। केवीके किसानों के लिए राष्ट्रीय स्तर पर इस तरह के कार्यक्रमों के बारे में जानने और समीक्षा और निगरानी की सुविधा के लिए इस पोर्टल में उपलब्ध सुविधाओं, पिछले और आगामी कार्यक्रमों, प्रैक्टिस के पैकेज, कार्यान्वित कार्यक्रमों का विवरण, मासिक प्रदर्शन रिपोर्ट इत्यादि जैसी सुविधाओं से संबंधित जानकारी डाल रहे हैं। इसके साथ-साथ, क्रिशी पोर्टल को नियमित रूप से प्रौद्योगिकी, प्रकाशन, प्रयोगात्मक डेटा, अवलोकन डेटा, सर्वेक्षण डेटा और भू-पोर्टल भी अपलोड किया जाता है। यह भंडार किसानों, शोधकर्ताओं और योजनाकारों द्वारा आसानी से पहुंच के लिए आईसीएआर संस्थानों / एसएयू में उपलब्ध कृषि और संबद्ध क्षेत्रों से संबंधित जानकारी की मेटाडेटा सूची है।



आईसीएआर-एटीएआरआई, कोलकाता और केवीके कर्मियों के कर्मचारियों की क्षमता विकास की योजना इस संस्थान द्वारा की गई थी। मानव संसाधन विकास पहल के हिस्से के रूप में कर्मचारियों के लिए प्रशिक्षण की आवश्यकता आकलन और वार्षिक प्रशिक्षण योजना तैयार की गई थी। इसके अलावा, उनके ज्ञान अद्यतन के लिए विभिन्न क्षेत्रों में केवीके कर्मियों, कृषि-प्रेमी और एसएयू संकाय के लिए एचआरडी कार्यक्रम भी प्रायोजित किए गए।

इस क्षेत्र के दो जिलों में प्राकृतिक संसाधन आधार को संरक्षित करने, खेती की लागत को कम करने, किसानों की आय बढ़ाने और किसानों की बेहतर आजीविका सुनिश्चित करने के लिए अनाज आधारित फसल प्रणाली में सुधार के संदर्भ में, सीएसआईएसए परियोजना आईसीएआर (दक्षिण एशिया में अनाज प्रणाली पहल) के सहयोग से चल रही है। फसल स्थापना विधि, डीएसआर और रबी फसल में प्रबंधन, शून्य टिलेज के तहत अनुक्रम में इस परियोजना में मूल्यांकन की गई कुछ तकनीकें हैं। इस वर्ष के दौरान, इस क्षेत्र के 24 केवीके द्वारा परिदृश्य निदान सर्वेक्षण / उत्पादन अभ्यास सर्वेक्षण किया गया था।

इस क्षेत्र के चयनित केवीके द्वारा कौशल प्रशिक्षण प्रदान करने के माध्यम से उद्यमिता के विकास पर कृषि कौशल परिषद (एएससीआई) के साथ एक सहयोगी कार्यक्रम किया जा रहा है। केवीके स्तर पर बाद में प्रशिक्षण प्रदान करने के लिए प्रशिक्षकों का प्रशिक्षण भी आयोजित किया गया और 43 प्रशिक्षण संस्थानों द्वारा कुल 1604 किसानों / ग्रामीण युवाओं को प्रशिक्षित किया गया। इसके अलावा, इस वर्ष के दौरान 21966 ग्रामीण युवाओं को कौशल विकास प्रशिक्षण भी प्रदान किया गया।

राष्ट्रीय किसान पोर्टल में किसानों को एसएमएस सेवा के माध्यम से सलाहकार सेवाएं प्रदान करने के लिए एक शक्तिशाली उपकरण है। अनियंत्रित पूरक सेवा डेटा (यू एस एस डी), इंटरएक्टिव वॉयस रिस्पांस सिस्टम (आईवीआर एस) और पुल एसएमएस इस पोर्टल से जुड़े मूल्यवर्धित सेवाएं हैं जो कि किसानों और अन्य हितधारकों को संदेश प्राप्त करने और इंटरनेट कनेक्शन के बिना अपने मोबाइल में वेब-आधारित सेवाएं प्राप्त करने में सक्षम बनाता है।

पिछले एक साल के दौरान इस क्षेत्र के 29 केवीके के माध्यम से स्वदेशी पौधों की किस्मों को संरक्षित करने के महत्व के बारे में बड़े पैमाने पर जागरूकता पैदा की गई थी। आईसीएआर-एटीएआरआई, कोलकाता द्वारा केवीके के चयन में पीपीवी और एफआर अर्थोरेटी, नई दिल्ली द्वारा फंड प्रदान किया गया था। जागरूकता कार्यक्रम में

250 किसानों ने भाग लिया था जिन्होंने पीपीवी और एफआर / एनबीपीजीआर के संरक्षण के लिए स्वदेशी पौधों की 689 किस्में एकत्र की थी।

आईसीएआर-ईआरपी के तहत वित्तीय प्रबंधन प्रणाली समेत प्रबंधन सूचना प्रणाली को वित्तीय प्रबंधन, मानव संसाधन प्रबंधन, परियोजना प्रबंधन, खरीद और स्टोर प्रबंधन और अन्य संबंधित गतिविधियों में दक्षता बढ़ाने के लिए आईसीएआर-एटीएआई, कोलकाता में कार्यान्वित किया गया है। इससे पेपर काम का उपयोग किए बिना कार्यालय चलाने में काफी हद तक मदद मिली है।

इस क्षेत्र के केवीके को एनवाईके प्रशिक्षण, बीएसएफ कर्मियों के प्रशिक्षण, रॉ कार्यक्रम, ग्रामीण विद्यालय, पशुधन रोग रिपोर्टिंग और अन्य लोगों की तरह कई आवश्यकता आधारित गतिविधियां करने के लिए निर्देशित किया गया है। इसने केवीके को अन्य हितधारकों की आवश्यकता को संबोधित करने में सक्षम बनाया है।

2022 तक किसानों की आय को डबल करने के प्रकाश में सात विशिष्ट क्षेत्रों को संबोधित करने के लिए केवीके द्वारा संकल्प से सिद्ध कार्यक्रम आयोजित किया गया था। इस क्षेत्र के केवीके में बड़ी संख्या में किसान, जन प्रतिनिधियों, मीडिया व्यक्तियों और अन्य कार्यक्रमों में भाग लिया।

आईसीएआर-एटीएआरआई, कोलकाता की अन्य महत्वपूर्ण उपलब्धियों में 2022 तक किसान की आमदनी को दोगुनी करने के लिए ओडिशा और पश्चिम बंगाल राज्य के लिए कार्यान्वयन योग्य कार्य योजना को अंतिम रूप देने में शामिल किया गया है। एसएयू, आईसीएआर संस्थानों, राज्य सरकार अधिकारी, केवीके कर्मियों और अन्य हितधारकों के परामर्श से कार्रवाई की योजना तैयार की गई थी। किसानों की आमदनी को दोगुना करने के लिए खेती की लागत में कमी, सुनिश्चित एमएसपी, कृषि मशीनीकरण, पुलिस विविधीकरण, पोस्ट फसल के नुकसान में कमी, ठंडे भंडारण, विपणन, आईसीटी के उपयोग सहित बुनियादी सुविधाओं का सुझाव दिया गया था।

इनपुट डीलरों (डीईईएसआई) के लिए कृषि विस्तार सेवा में डिप्लोमा पर एक सहयोगी कार्यक्रम आईसीएआर-एटीएआरआई, कोलकाता के तहत पश्चिम बंगाल के केवीके द्वारा इनपुट डीलरों के ज्ञान और किसान को अद्यतन करने के लिए किया गया ताकि वे उचित जानकारी और समाधान प्रदान कर सकें। मैनेज हैदराबाद इस साल डिप्लोमा कोर्स के लिए सैमेटी, पश्चिम बंगाल के माध्यम से फंड प्रदान करता है। वर्ष 2018-19 के दौरान, 25 केवीके ने 986 ग्रामीण युवाओं को लाभान्वित करते हुए DAESI कार्यक्रम शुरू किया।

कृषि में डिजिटल खेती की पहल के तहत, इस क्षेत्र के चयनित केवीके से मास्टर ट्रेनरों के लिए एक प्रशिक्षण कार्यक्रम भी इस अवधि में आयोजित किया गया था। किसानों को डिजिटल मंच प्रदान करने के लिए 3 लाख से अधिक डेटा एक्टर किए गए और परिषद को प्रस्तुत किए गए। पिछले वर्ष की तरह, बीएसएफ कार्मिक प्रशिक्षण, ग्रामीण कृषि कार्य अनुभव, ग्रामीण स्कूल में केवीके, पशुधन रोग रिपोर्टिंग कार्यक्रम, स्वच्छता ही सेवा आदि कार्यक्रम भी केवीके द्वारा संचालित किए गए थे।

इसके अलावा, इस अवधि के दौरान, आईसीएआर-एटीएआरआई कोलकाता केवीके द्वारा नई विस्तार पद्धति और दृष्टिकोण, कृषि कल्याण अभियान, सूक्ष्म सिंचाई प्रणाली की स्थापना, पोषक-संवेदनशील कृषि संसाधन और नवाचार, कृषि में मूल्यवर्धन और प्रौद्योगिकी ऊष्मायन केंद्र, ग्रामीण कृषि मौसम सेवा, जिला किसान मेला, परम्परागत कृषि विकास योजना के तहत मॉडल क्लस्टर प्रदर्शन और विभिन्न सरकारी कार्यक्रम का लाइव वेबकास्टिंग कार्यक्रम जैसी नई पहलों को लागू करने में भी शामिल था। इस अवधि में किसानों के नवाचारों और सफलता की कहानियों के साथ किसानों द्वारा बड़े पैमाने पर प्रौद्योगिकी अपनाने के कुछ मामले केवीके द्वारा दर्ज किए गए थे।

राज्य कृषि / पशु और मत्स्य विज्ञान विश्वविद्यालय के विस्तार शिक्षा निदेशालय ने केवीके कर्मियों की गतिविधियों की निगरानी करने और केवीके कर्मियों के ज्ञान को लगातार अद्यतन करने के लिए विभिन्न कार्यक्रमों का आयोजन करने में पर्याप्त रूप से समर्थन किया। आईसीएआर संस्थानों और एसएयू के तहत किसानों को संचालित एटीआईसी के माध्यम से सूचना और तकनीकी सहायता भी प्रदान की गई है। सभी संबंधित लोगों के संचयी प्रयास ने केवीके को समग्र कृषि

और ग्रामीण विकास के लिए जिलों के भरोसेमंद ग्रामीण संगठन बनने के लिए किसान-अनुकूल पहल को और अधिक विकसित किया है।

आईसीएआर-एटीएआरआई, कोलकाता एक तरफ अपने जनादेश को पूरा करने और खेती समुदाय के सुधार के लिए सभी अनिवार्य और अन्य गतिविधियों को पूरा करने के लिए केवीके और विस्तार शिक्षा निदेशालय को समर्थन प्रदान करने में काफी हद तक शामिल है। आवश्यकता आधारित आधारभूत संरचना और वित्तीय सहायता प्रदान करने के अलावा, आईसीएआर-एटीएआरआई स्तर और केवीके दोनों में भी संपूर्ण वित्तीय प्रबंधन प्रणाली के लिए डिजिटलीकरण किया गया है। एसएसी बैठक में भाग लेने और केवीके द्वारा किए गए प्रमुख कार्यक्रमों के प्रदर्शन का आकलन करने के लिए प्रदर्शन क्षेत्र पर जाकर स्पॉट मूल्यांकन भी किया गया है। मानव संसाधन विकास केवीके कर्मियों के लिए आईसीएआर-एटीएआरआई, कोलकाता के हिस्से में उन्नत कृषि और सहयोगी प्रेक्टिस के बारे में अपने ज्ञान को विकसित करना एक नियमित विशेषता रही है। गरीब किसानों द्वारा अपने विकास के लिए केंद्र सरकार की किसान-अनुकूल योजनाएं/ संसाधन जैसे कार्यक्रमों का लाभ उठाने के लिए बड़ी संख्या में किसानों के बीच पर्याप्त प्रचार किया गया है। कई बड़े पैमाने पर कार्यक्रम में हासिल की गई सफलता को राज्य विस्तार तंत्र द्वारा बड़े पैमाने पर एक्सट्रापोलेशन के लिए दोहराया गया है। प्रभावी अभिसरण और कई राज्यों, केंद्रीय और अन्य संगठनों के सहयोग ने केवीके को प्रभावोत्पादक, उद्देश्य में सफलता तथा इसके उपयोग के लिए अतिरिक्त संसाधन / राजस्व अर्जित करने में भी मदद की है। आईसीएआर-एटीएआरआई, कोलकाता के स्तर पर विकसित काम की योजना और ईमानदारी से निष्पादन ने इस क्षेत्र के केवीके को कृषि को बदलने के लिए एक शक्तिशाली उपकरण बना दिया है।



EXECUTIVE SUMMARY

Distribution of states to place 713 KVKs at the disposal of eleven Agricultural Technology Application Research Institutes have eased the pressure of ATARIs towards looking after less number of KVKs to some extent. However, it has also compelled the ATARIs to work extra hour in understanding the social, economic and related aspects of the KVK clientele of the new states, prepare plan of action to suit their aspiration and ensure that all the efforts of KVKs are directed towards the betterment of the farming community. In this backdrop, 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. Accordingly, ICAR-ATARI, Kolkata vests with the responsibility to monitor, evaluate and guide 59 KVKs of A&N Islands, Odisha and West Bengal during 2018-19.

With the revision of the mandates of ATARI vis-à-vis KVK, ATARI has laid more focus on strengthening agricultural extension research and knowledge management along with coordination and monitoring technology application and frontline extension education programme. The KVK on the other hand is concentrating on technology assessment and demonstration for its wider application and to enhance capacity building. Though the basic activities have remained identical, the reach of KVK has been extended 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.

In mandated activities, the KVKs of Zone-V achieved almost the entire set target in the areas of training, on-farm trial, frontline demonstration etc. during the year 2018-19. The KVKs assessed 306 identified technologies pertaining to crop cultivation, livestock rearing, fish cultivation, insect-pest management, drudgery reduction, storage technique etc. through 444 number of on farm trials conducted in 3374 different locations across the zone. The solution so found out was again tested in the form of small scale 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.

Frontline demonstrations have been conducted by the KVKs in pulse, oilseed and other crops to establish the production potentiality of the newly released varieties/package of practices to enhance the productivity of selected pulse and oilseed crops and faster the pace of seed replacement in the case of cereal and other crops. The KVKs brought 2251.66 ha under such demonstration programmes with the involvement of 11692 numbers of farmers. The performance recorded in the farmers' field indicated the superiority of the varieties and package of practices 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 289.62 ha through 2033 numbers of programmes.

Capacity development on the part of farmers and farm women, rural youth and extension functionaries was one of the core assignments of KVKs carried out up to desired level. In providing knowledge and skill, the KVKs organized 3300 number of courses for 99330 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. In this process, 13491 rural youths including girls were trained through 614 numbers of courses. Frontier areas were selected for the capacity building of extension personnel to make them aware of the recent development in agriculture, animal husbandry and fishery field. The KVKs conducted 463 such courses for 14193 participants. In addition, the KVKs also organized vocational training programme of comparatively longer duration to expose the youths towards self-employment opportunity. In the process, 1091 courses were conducted for 2854



youths. Post-training evaluation indicated that 1139 youths could be ventured into self-employment whereas 255 youths could find employment elsewhere. The potentiality of KVKs in capacity development programme has adequately been recognized through awarding training programme to KVKs by Govt. and other organizations. The KVKs conducted 596 sponsored training programme for 13148 participants nominated by various organizations as per the need of the participants. Conducting large-scale awareness among farmers through various extension activities was another notable achievement of the KVKs. During the period reported upon, the KVKs conducted 135952 number of such extension activities with the involvement of 1297117 farmers, extension functionaries and others.

Providing quality seed and planting materials to the farmers is the perpetual requirement that KVKs try to meet up either producing seeds at KVK farm or through seed village programme in a participatory mode. The KVKs during the mentioned period produced 17921.04 q of quality seeds of major cereals and crops/ vegetables for addressing the issue of non-availability of seeds in time. KVKs also produced 51.1 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 285137.12 kg of different bio-formulation to make available to 5844 number of farmers. Quality livestock strain and fish fingerling production was also given adequate importance by the KVKs through production of 4241662 number of such produce.

In soil and water analysis, the KVKs analyzed 30100 number of samples across the zone to provide soil health card to the farmers. The process has enabled the farmers to optionally utilize chemical fertilizer in crops for higher 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 like technology week through public-private partnership, world soil 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.317.50 lakh 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 both at ICAR-ATARI and through KVKs 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. 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.

Implementation of Clustered Frontline Demonstration (CFLD) programme 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 in kharif was in the range of 27-43% whereas it was 31-48% in rabi. Higher yield was also observed in pulse crops during all three seasons, viz. kharif, rabi and summer. In kharif, the average increase in yield was in range of



21 to 47% whereas it was 27 to 49% in rabi and 20 to 34% in summer.

Creation of pulse seed hub in selected KVKs is a praiseworthy step to reduce the gap between requirement and supply of quality pulse seeds. In this zone, 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 are gram, pigeon pea, green gram, black gram, chick pea, lentil and field pea. However, the performance of seed hubs needs to improve to achieve the set target by a few KVKs and ICAR-ATARI, Kolkata is continuously monitoring the performance to ensure the fulfillment of the set target in near future.

A farmer-centric programme in the form of Farmer FIRST is in operation in this zone through three ICAR Institutes and one State Agricultural University under ICAR-ATARI, Kolkata as the Nodal Institute to monitor the programme. 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 approved by the Council for this Zone in 2018-2019.

In addressing the development needs of the disadvantaged part of the population, a specific programme namely Tribal Sub Plan (TSP) is under operation in 10 districts of this zone having sizeable tribal population. Initiatives like asset creation, conducting on-farm trials, training programmes, seed and planting material production etc. were taken to extend the benefit of improved agricultural practices among the tribal community. The assessment done indicates that so far 346 tribal villages have been brought under this project for the benefit of 82934 farmers.

Involving and 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 310 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.

In facilitating direct interaction between scientists and farmers, 17 ICAR Institutes and 2 SAUs of this zone are implementing Mera Gaon Mera Gaurav programme under the supervision of ICAR-ATARI, Kolkata. The activities like regular visit to villages, interface meeting, training, demonstration, mobile based advisories, creation of awareness etc. have been taken up for the benefit of 35291 farmers. So far, 385 villages have been covered under this programme.

ICAR-ATARI, Kolkata has also been involved in Swachh Bharat Abhiyan to maintain cleanliness and hygiene in office premises as well as nearby places to create awareness among common citizens. Moreover, the KVKs were also encouraged to take up cleanliness drive in the adjoining and adopted villages on a regular basis. A number of awareness programme, sensitization workshop and seminars were organized by 52 KVKs of this zone.

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.

Capacity development of the staff of ICAR-ATARI, Kolkata and that of KVK personnel was planned and executed by this Institute. Training Need Assessment and Annual Training Plan were prepared for the employees as a part of human resource development initiative. In addition, HRD programmes were also organized for KVK personnel, agripreneurs and SAU Faculty in different areas for their knowledge updation.

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 two districts of this zone. Crop establishment method, weed management in DSR and rabi crop in sequence under Zero Tillage are some of the technologies evaluated in this project. During the year, the landscape diagnostic survey/production practices survey was done by 24 KVKs of this Zone.

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 1604 farmers/ rural youth were trained by 43 training institutions. Besides, skill development training was also imparted to 21966 rural youth during the year.

National Farmers Portal is a powerful tool to provide advisory services to the farmers through SMS service. Unstructured Supplementary Service Data (USSD), Interactive Voice Response System (IVRS) and pull SMS are the value added services associated with this portal which enables farmers and other stakeholders to receive message and get web-based services in their mobile without internet connection.

Large-scale awareness was created about the importance of conserving indigenous plant varieties through 29 KVKs of this zone during last one year. Fund support was provided by PPV&FR Authority, New Delhi as per selection of KVK by ICAR-ATARI,

Kolkata. The awareness programme was attended by 250 number of farmers who collected 689 number of indigenous plant varieties for its conservation of PPV&FRA/NBPGR.

Management information system including financial management system under ICAR-ERP has been implemented in ICAR-ATAI, Kolkata to enhance the efficiency in financial management, human resource management, project management, procurement and store management and other related activities. This has helped in running the office without resorting to paper work to a substantial extent.

KVKs of this zone have been guided to undertake a number of need-based activities like NYK training, BSF personnel training, RAWE programme, approaching rural school, livestock disease reporting and others. This has enabled the KVKs to address the need of other stakeholders also.

Sankalp se Siddhi programme was organized by the KVKs to address seven specific areas in light of Doubling Farmers Income by 2022. A large number of farmers, public representatives, media persons and other attended the programme at the KVKs of this zone.

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.

A collaborative programme on Diploma in Agriculture Extension Service for Input Dealers (DAESI) was carried out by the KVKs of West Bengal under ICAR-ATARI, Kolkata to update the knowledge and skill of input dealers to enable them to provide proper information and solution to the farmers. MANAGE, Hyderabad provides fund support through SAMETI, West Bengal for this one year Diploma course. During the year, 25 KVKs took up DAESI programme benefitting 986 rural youth.



Under Digital Farming Initiative in Agriculture, one training programme for Master Trainers from selected KVKs of this Zone was also organized during the period as well as more than 3 lakh data were collected and submitted to the Council to provide digital platform to the farmers. As in previous year, the programmes like BSF Personnel Training, Rural Agricultural Work Experience, KVK in Rural School, Livestock Disease Reporting Programme, Swachhta Hi Seva etc. were also conducted by KVKs.

Besides, during the period under report, ICAR-ATARI Kolkata was also involved in implementing the new initiatives like New Extension Methodologies and Approaches, Krishi Kalyan Abhiyan, Establishment of Micro-irrigation System, Nutri-sensitive Agricultural Resources and Innovations, Value Addition and Technology Incubation Centres in Agriculture, Gramin Krishi Mausam Seva, District Kisan Mela, Model Cluster Demonstrations under Paramparagat Krishi Vikas Yojana, Live Webcasting of various Govt. programmes etc. Some cases of large scale technology adoption by the farmers 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.

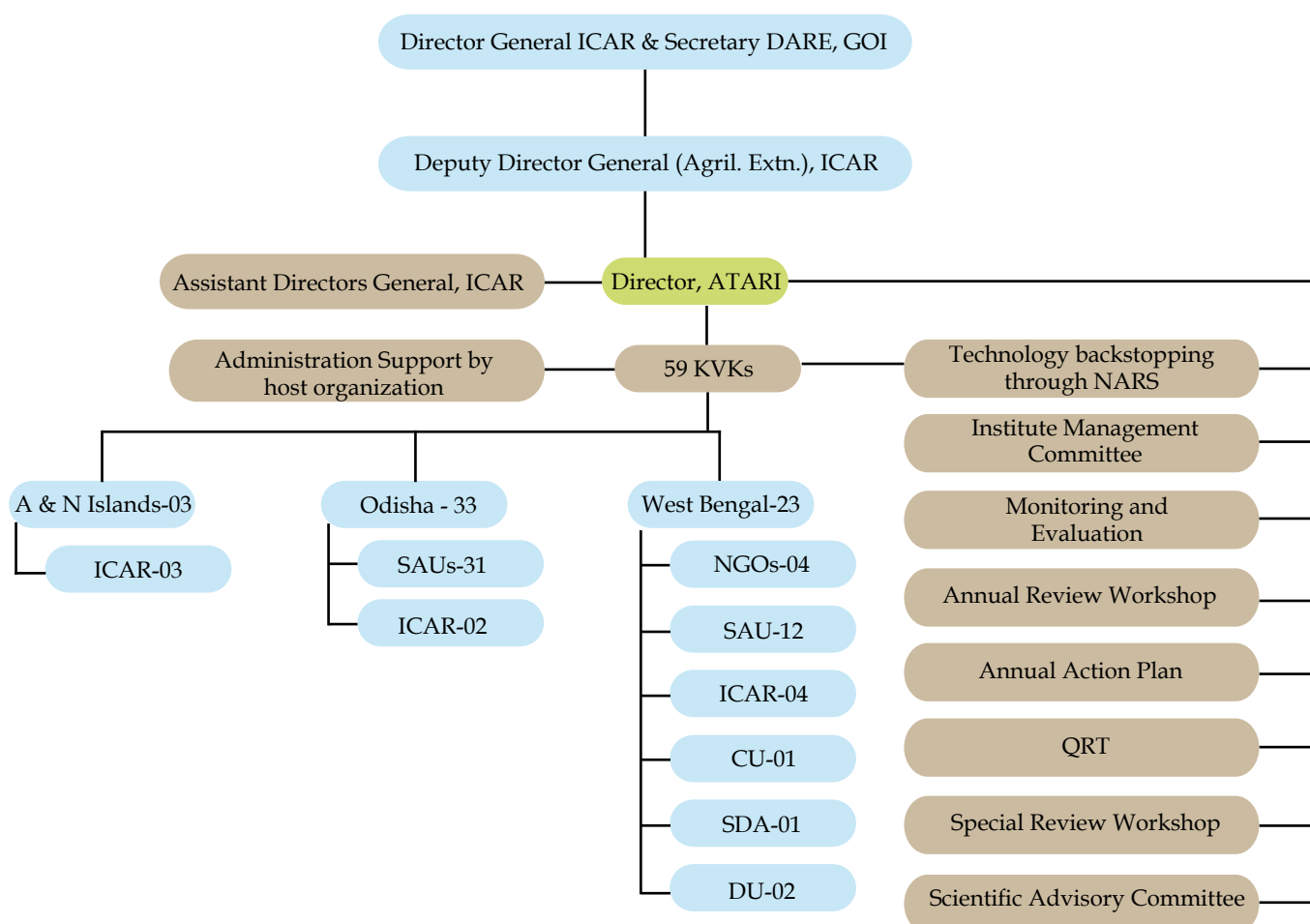
1.0 Introduction

In a view to strengthen the KVK system across the country, Indian Council of Agricultural Research has approved 11 Agricultural Technology Application Research Institute to look after and guide the activities of 713 KVKs functioning in almost all the rural districts of the country, in the larger rural districts one additional KVK has also been established by ICAR. ICAR-ATARI, Kolkata has been entrusted with the monitoring of 59 KVKs spread across A&N Islands, Odisha and West Bengal.

1.1 Profile:

ICAR-ATARI, Kolkata 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:



1.3 Budget Provision:

Providing need based fund to the KVKs of this zone is of utmost importance in running the KVKs. It is always ensured that KVKs receive fund in time throughout the year for the mandated activities and to meet up other requirements. 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 6946.72 lakh during 2018-19 from ICAR-ATARI, Kolkata. Head-wise details are as follows:



Table: Budget in respect of ICAR-Agricultural Technology Application Research Institute & KVKs under Zone- V during 2018-19 (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.	Vehicle	Total		
ICAR-ATARI, Kolkata	364.10	13.86	0.98	61.52	0.00	0.00	440.46	11.70	0.00	0.00	0.00	11.70	0.00	452.16
State Agricultural University														
OUAT, Bhubaneswar (31)	2374.50	22.30	0.00	195.00	86.73	45.00	2723.53	39.42	296.32	0.00	32.00	367.74	0.00	3091.27
UBKV, Coochbehar, West Bengal (5)	600.83	3.95	0.30	0.00	0.00	58.00	663.08	0.00	5.00	0.00	8.00	13.00	0.00	676.08
BCKV, Nadia, West Bengal (4)	371.04	3.10	0.25	0.00	0.00	41.50	415.89	0.00	0.00	0.00	9.20	9.20	0.00	425.09
WBUA&FS, Kolkata (3)	319.92	2.00	0.00	0.00	0.00	34.00	355.92	0.00	0.00	0.00	0.00	0.00	0.00	355.92
ICAR														
CIARI, A&N Islands (3)	338.00	6.50	0.50	23.75	11.00	0.00	379.75	0.00	80.00	0.00	0.00	80.00	0.00	459.75
CRRI, Cuttack, Orissa (1)	78.00	0.80	0.00	8.00	0.00	3.00	89.80	0.00	0.00	0.00	8.00	8.00	0.00	97.80
CIFA, Bhubaneswar, Orissa (1)	124.67	1.12	0.00	8.00	0.00	3.00	136.79	0.00	9.93	0.00	8.00	17.93	0.00	154.72
CRIJAF, West Bengal (2)	131.50	2.30	0.00	0.00	0.00	21.00	154.80	0.00	75.00	0.00	9.20	84.20	0.00	239.00
CISH, Lucknow (1)	0.00	0.70	0.00	0.00	0.00	10.00	10.70	0.00	0.00	0.00	9.20	9.20	0.00	19.90
NDRI, Karnal (1)	0.00	0.50	0.00	0.00	0.00	8.00	8.50	0.00	0.00	0.00	9.20	9.20	0.00	17.70
Central University, Visva Bharati, West Bengal (1)	127.00	0.80	0.00	0.00	0.00	12.00	139.80	0.00	0.00	0.00	0.00	0.00	0.00	139.80
Deemed University, RKMVERI, West Bengal (2)	148.25	1.40	0.00	0.00	0.00	20.00	169.65	7.00	98.98	0.00	8.00	113.98	0.00	283.63
State Govt. Undertaking														
WBCADC, Kolkata (1)	40.00	0.60	0.00	0.00	0.00	9.00	49.60	0.00	0.00	0.00	0.00	0.00	0.00	49.60
NGO														
West Bengal (3)	387.00	2.30	0.00	0.00	0.00	33.00	422.30	0.00	5.00	0.00	0.00	5.00	0.00	427.30
Strengthening of DEEs														
DEE,OUAT, Bhubaneswar	0.00	2.00	1.00	17.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
ATIC, Bhubaneswar	0.00	0.50	1.00	2.00	0.00	0.00	3.50	0.00	0.00	0.00	0.00	0.00	0.00	3.50
DEE, UBKV, Coochbehar, WB	0.00	2.20	2.40	8.40	0.00	0.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	13.00
DEE, BCKV, Nadia, WB	0.00	1.00	2.00	6.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00
DEE, WBUA&FS, Kolkata, WB	0.00	1.00	3.00	7.50	0.00	0.00	11.50	0.00	0.00	0.00	0.00	0.00	0.00	11.50
GRAND TOTAL	5404.81	68.93	11.43	337.17	97.73	297.50	6217.57	58.12	570.23	0.00	100.80	729.15	0.00	6946.72

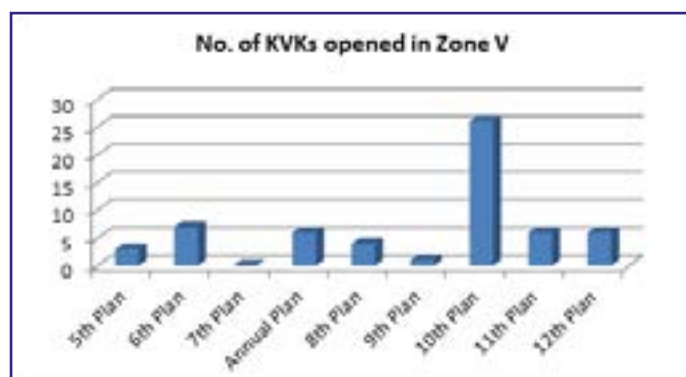
2.0 Krishi Vigyan Kendras

With the advent of newer agriculture and allied technologies, the farming community needs regular access to such development for the betterment of their economic and social condition. To facilitate the process of making technologies available at the doorstep of the farmers, Indian Council of Agricultural Research established Krishi Vigyan Kendras for the rural districts of the country since 1974. Alongside, capacity development of farmers, rural youths and extension functionaries was also

vested on KVK to take technology diffusion process in a holistic manner. 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 mandate activities, the KVKs are also involved in a number of flagship programmes of state/central government to achieve the desire 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 large districts of West Bengal namely, Murshidabad, Nadia, North 24 Pgs, South 24 Pgs and Malda.



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:

With the creation of three new ATARIs and subsequent readjustment of states under each ATARI, the KVKs of Odisha, West Bengal and A&N Islands have been brought under the jurisdiction of ICAR-ATARI, Kolkata (Zone V). Altogether 59 KVKs are in operation in this zone with stipulated mandate and mandated activities.

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

Table: Host organization wise status of Krishi Vigyan Kendras

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 Krishi Viswavidyalaya, Nadia	4
		Uttar Banga Krishi Viswavidyalaya, Coochbehar	5
		West Bengal University of Animal & Fishery Sciences, Kolakta	3
		Visva Bharati, Bolpur, Santiniketan (CU)	1
		Central Research Institute of Jute and Allied Fibres, (ICAR) Barrackpore	2
		W.B. Comprehensive Area Development Corporation (SDA), Kolkata	1
		Kalyan, Purulia (NGO)	1
		Seva Bharati, Jhargram (NGO)	1
		Rama Krishna Ashram, South 24 Parganas (NGO)	1
		Ram Krishna Mission Vivekananda University, Belur Math	2
		ICAR-ERS NDRI Kalyani, Nadia	1
		ICAR-CISH Regional Station, Malda	1
Total			59

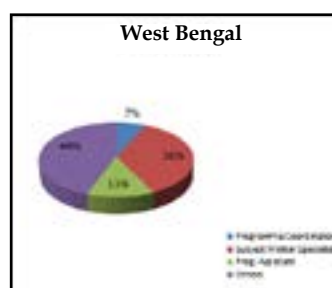
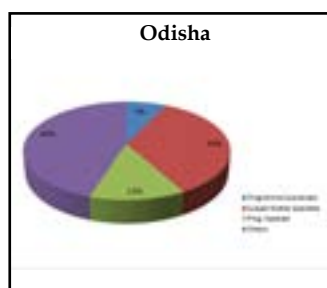
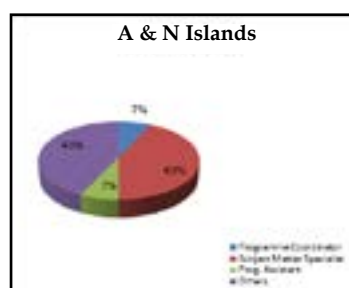
2.4 Manpower:

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 under ICAR-ATARI, Kolkata

Name of State	PC			SMS			Farm Manager			PA (Computer)			PA (Lab. Tech.)			Assistant			Steno. Grade-3			Driver			SSS			TOTAL		
	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V
A&N Islands	3	2	1	18	12	6	3	2	1	3	1	2	3	1	2	3	1	2	3	2	1	6	5	1	6	2	4	48	28	20
Odisha	33	29	4	198	142	56	33	25	8	33	31	2	33	23	10	33	2	31	33	27	6	66	65	1	66	64	2	528	408	120
West Bengal	23	17	6	138	89	49	23	15	8	23	16	7	23	16	7	23	15	8	23	11	12	46	34	12	46	35	11	368	248	120
Total	59	48	11	354	243	111	59	42	17	59	48	11	59	40	19	59	18	41	59	40	19	118	104	14	118	101	17	944	684	260



2.5 Infrastructure facilities:

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

S. No.	Name of the State/ UT	Admn Bldg.	Farmers Hostel	Staff Qtrs (6)	Piggery unit	Fencing	Rain Water harvesting structure	Threshing floor	Farm godown	Dairy unit	Poultry unit	Goatery unit	Mushroom Lab	Mushroom production unit	Shade house	Soil test Lab	Others, Please Specify
1	A & N Islands	1	1	1	0	1	0	1	0	0	0	0	1	0	2	0	2
2	Odisha	26	25	18	1	14	6	21	14	4	22	4	19	13	13	20	34
3	West Bengal	17	16	13	5	14	8	16	17	7	13	13	6	7	13	16	75
Grand Total		44	42	32	6	29	14	38	31	11	35	17	26	20	28	36	111

2.6 Thrust Area:

- ▲ Enhancement of water use efficiency through micro-irrigation system
- ▲ Varietal substitution of field crops
- ▲ Economic improvement of farm women
- ▲ Drudger reduction
- ▲ Value addition and minimization of post harvest loss crop diversification
- ▲ Promotion of IFS
- ▲ Improvement of livestock sector with feed and other management practices
- ▲ Soil health management
- ▲ 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



3.0 About Agricultural Technology Application Research Institute (ATARI) Kolkata

ICAR Agricultural Technology Application Research Institutes came into existence during July 2015 as upgradation of Zonal Project Directorates. All such eight (8) Zonal Project Directorates were renamed as ATARI with the inclusion of research component in its functioning. With the increase in the number of Krishi Vigyan Kendras across the country, it was felt necessary to create additional ATARIs to bring parity in the monitoring and evaluation process. Accordingly, three additional ATARIs were created and the jurisdiction of all eleven ATARIs was re-adjusted keeping more or less equal number of KVKs under them. In the same process, ICAR-ATARI, Kolkata started monitoring and evaluating the activities of 59 KVKs functioning in A&N Islands, Odisha and West Bengal.

The present network of 713 KVKs spread across the country is centrally governed by Division of Agricultural Extension under Indian Council of Agricultural Research, headed by Deputy Director General. The guidelines of administrative, financial and overall functioning of KVK are provided by Division of Agricultural Extension. The ATARIs send regular report to Division of Agricultural Extension in all areas of KVK functioning.

Apart from looking after KVK activities and providing need based support, ICAR-ATARI, Kolkata is also implementing a number of flagship programme of DAC&FW, ICAR, IMD, I&B, Ministry of Tribal Affairs, Deptt. of Forestry, Ministry of Petroleum and others through selected KVKs of this zone. A number of private organizations have also been allowed to work with KVKs in the areas of fuel efficiency, water management, farm mechanization etc. Collaboration with CYMMIT through CSISA project has also been established in this zone.

Capacity development for the manpower of KVKs has been taken up by this ATARI on a regular basis either through organizing specialized training programme at this institute or in collaboration with other ICAR institutes for improving the knowledge and skill level of the KVK personnel. The scientific,

administrative and other staff of this institute are also encouraged to undergo specialized programme organized by national/international institutes.

Application of ICT in monitoring of KVK activities has been ensured followed by financial transaction through Public Financial Management System. All the KVKs have been brought under this system for effortless transaction of fund at the shortest possible time.

3.1 Mandate:

The revised mandates of Agricultural Technology Application Research Institute are as follows:-

1. Coordination and monitoring technology application and Frontline Extension Education Programs.
2. Strengthening Agricultural Extension Research and Knowledge Management

The Agricultural Technology Application Research Institute, Kolkata takes up the following functions to achieve the above mandates.

- ◆ Formulate, implement, monitor, guide and evaluate the programmes and activities of KVKs.
- ◆ Coordinate the work relating to KVKs and ATICs implemented through various agencies such as SAUs, ICAR institutes, voluntary agencies and development departments.
- ◆ Coordinate with State/Central Government organizations, financial institutions and other organizations for successful implementation of programmes.
- ◆ Partnering with Directorates of Extension Education of SAUs in assured technological backstopping to KVKs and appropriate overseeing of KVK activities.
- ◆ Strengthening the Directorates of Extension Education of SAUs with financial support.
- ◆ Serve as feedback mechanism from the projects to research and extension systems.

- ✦ Implementing projects of ICAR like NICRA, NIFTD and others.
- ✦ Maintain close liaison with ICAR headquarter particularly with Division of Agricultural Extension for preparing reports, write ups and other important documents.

3.2 Staff Position of ATARI:

The Agricultural Technology Application Research Institute, Kolkata is having total sanctioned staff strength of 18, out of which 14 were filled up on 31.03.2019.

Table: Staff strength of ATARI, Kolkata

Category	Sanctioned	Filled
Director (RMP)	1	1
Scientific	6	6
Technical	1	1
Administrative	8	6
Skilled Supporting Staff (Gr. II)	2	1
Total	18	15

3.3 Institute Management Committee:

The 12th Institute Management Committee Meeting was held on 26.10.2018 at ICAR-ATARI, Kolkata under



Chairmanship of Director, ICAR-ATARI, Kolkata. Six members participated in the meeting and considered six proposals made

by the Institute on various aspects like approval for procurement of new office vehicle, replacement of vehicle and replacement of tractors of different KVKs. The recommendations were sent to the Council. Presentations were made on the achievement by the Institute.

3.4 New Initiatives of ATARI Kolkata:

ICAR-ATARI Kolkata, besides performing its regular monitoring activities, also encouraged the KVKs of this zone to get them involved in a number of programmes depending on the farmers need in the district and expertise of the KVKs to better contribute towards growth of agriculture and allied sectors. Some of the programmes of national importance which were undertaken by KVKs during 2018-19 and newly conceived ATARI activities are enlisted as under:-

- ✦ New extension methodologies and approaches (NEMA)
- ✦ Krishi Kalyan Abhiyan (KKA, Phase - I, II, III)
- ✦ Nutri-sensitive agricultural resources and innovations (NARI)
- ✦ Value addition and technology incubation centre in agriculture (VATICA)
- ✦ Visit of Central Ministers to KVKs
- ✦ District Kisan Mela
- ✦ Model cluster demonstration under Paramparagat Krishi Vikas Yojana (PKVY)
- ✦ Pradhan Mantri Kisan Samman Nidhi Yojana (PMKSNY)
- ✦ Collaborative project on agro-forestry

4.0 Achievements

4.1 Technology Assessment:

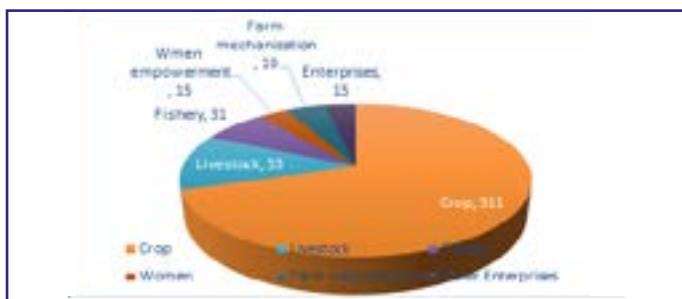
4.1.1 On-farm Trials:

A total of 59 KVKs under ICAR-ATARI Kolkata, spread over Andaman & Nicobar Islands, Odisha and West Bengal, worked towards technology assessment, demonstration and application in agriculture and allied fields. Under this most

important mandated activity, i.e., technology assessment, the claimed superiority of location specific agricultural technologies was assessed through conducting on-farm trials by all the KVKs of this Zone, covering various crops, livestock and fishery related technologies extending their practical utility for increasing the income and betterment of livelihood of the farmers and other stakeholders.

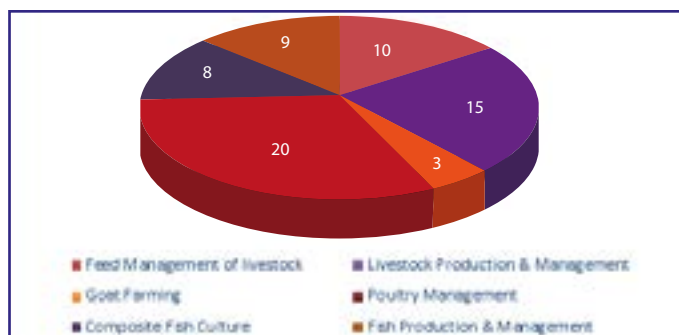
4.1.2 Area-wise Trials Conducted:

During 2018-19, the KVKs conducted on-farm trials with an objective to assess the technologies developed by different institutions in agriculture and allied sectors. Specifically prioritized area of assessing the technologies by KVKs sometimes indicated refinement of the technologies through either KVKs or the research institutions. The assessed technologies included those in the areas of crop production and management, insect-pest and disease management, nutrient management, feed and fodder management, livestock production and health management, farm mechanization, drudgery reduction, value addition, fish production and other areas. About 25 thematic areas were identified for assessment technologies and presented in following table.



4.1.3 Thematic area-wise Trials Conducted:

Improved technologies related to crop production, livestock production, fish production, drudgery reduction, farm mechanization, women empowerment, post-harvest management and value addition etc. have been assessed to provide technological solution to the farming community pertaining to various aspects of agriculture and allied areas. During the year 2018-19, the KVKs conducted 444 on-farm trials in 3374 locations to assess a total of 306 technologies. Among various thematic areas, technologies were tested in varietal evaluation through 51 on-farm trials involving 438 farmers, followed by integrated pest management (39 on-farm trials), integrated nutrient management (31 on-farm trials) and others. In livestock sector, the highest number (38) of on-farm trials was conducted in the area of livestock production and management including poultry and goat farming involving 707 farmers. In fishery, 31 on-farm trials were conducted during this year involving composite fish culture and fish production and management benefitting 307 farmers. The on-farm trials conducted in livestock and fishery sectors have been presented below.



4.1.4 State-wise Trials Conducted:

Analysis of on-farm trials conducted by various states showed that KVKs of Andaman and Nicobar Islands carried out a total of 22 on-farm trials distributed in 130 locations, the corresponding values for the states Odisha were 255 and 1923, and for West Bengal were 167 and 1321, respectively. A total of 41 on-farm trials were conducted by KVKs of Odisha in varietal evaluation, while the KVKs of West Bengal carried out 9 on-farm trials on this thematic area. The other important areas for the KVKs of Odisha were integrated pest management (25 on-farm trials), integrated nutrient management (24 on-farm trials), production and management (14 on-farm trials) and farm implements and machineries (12 on-farm trials) etc. In West Bengal, nutrient management was the most important thematic area (24 on-farm trials) followed by livestock (21 on-farm trials), integrated disease management (16 on-farm trials) and integrated pest management (14 on-farm trials) etc. In the area of livestock production and management, KVKs of Odisha took up 26 on-farm trials followed by KVKs of West Bengal (21 on-farm trials) and KVKs of Andaman and Nicobar Islands (6 on-farm trials). The feedback on the performance of the technologies had also been brought to the notice of research and extension wing for their effective dissemination in the entire zone. Some of the on-farm trials conducted by the KVKs are presented below with table, photographs and relevant information.



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

Thematic Area	A & N Islands		Odisha		West Bengal		Total	
	No. of OFT	No. of Locations	No. of OFT	No. of Locations	No. of OFT	No. of Locations	No. of OFT	No. of Locations
Integrated Crop Management (ICM)	1	7	10	68	3	20	14	95
Integrated Disease Management (IDM)	1	4	12	103	16	115	29	222
Integrated Nutrient Management (INM)	1	5	24	166	6	42	31	213
Integrated Pest Management (IPM)	0	0	25	174	14	103	39	277
Integrated Weed Management (IWM)	0	0	8	64	0	0	8	64
Weed Management (WM)	1	3	10	73	4	36	15	112
Nutrient Management (NM)	0	0	4	31	24	180	28	211
Production & Management	3	21	14	100	12	121	29	242
Farm Implements & Machineries (FIM)	2	14	12	93	5	47	19	154
Food & Nutrition (F&N)	1	10	2	18	3	16	6	44
Crop Diversification	0	0	0	0	2	2	2	2
Integrated Farming System	0	0	0	0	2	15	2	15
Soil Health & Fertility Management	0	0	2	20	3	25	5	45
Varietal Evaluation	1	6	41	265	9	69	51	340
Value Addition	0	0	8	52	1	2	9	54
Varietal Substitution	0	0	12	90	0	0	12	90
Seed Production	0	0	1	7	5	34	6	41
Others	2	10	19	134	19	168	40	312
Total	13	80	204	1458	128	995	345	2533
Fishery								
Composite Fish Culture	2	12	2	6	4	23	8	41
Fish Culture	0	0	0	0	4	56	4	56
Production & Management	0	0	7	33	2	14	9	47
Carp Fry and Fingerling Rearing	0	0	0	0	2	16	2	16
Others	0	0	2	19	6	51	8	70
Total	2	12	11	58	18	160	31	230
Livestock								
Feed Management of livestock	2	13	5	29	3	20	10	62
Livestock Production and Management	0	0	9	166	6	49	15	215
Goat Farming	0	0	0	0	3	15	3	15
Poultry Management	2	11	12	101	6	44	20	156
Others	2	11	0	0	3	38	5	49
Total	6	35	26	296	21	166	53	497
Enterprise							0	0
Enterprise Development	1	3	14	111	0	0	15	114
Total	1	3	14	111	0	0	15	114
Grand Total	22	130	255	1923	167	1321	444	3374



4.1.5 Details of Selected On-farm Trials

Andaman & Nicobar Islands

Nicobar KVK

Thematic area: Production of organic inputs

Effect of decomposers on soil properties and yield of coconut

Coconut is the main commercial crop of Nicobar. Coconuts are cultivated in traditional way without any nutritional and other management. The coconut



palm has become saline and yield is showing a decreasing trend. The soil (sandy loam) is also deficient in many nutrients.

The Nicobarese generally do not practice any scientific management in their coconut

plantations and due to which plantations have become dense. Due to the lack of nutrient and other management, the coconut yield is too low compared to the National average. In order to inculcate scientific farming practices among the tribal community its import to maintain soil fertility year after year. As the Nicobar



group of Islands are defaults organic. Hence an OFT on 'Effect of decomposers on soil properties and yield of coconut' was formulated and is being undertaken at Car Nicobar. Three different technical option viz. Farmer practice (Traditional Farming), Use of waste decomposer Pre and Post Monsoon (TO-I) and External application of enriched compost (TO-II) were formulated.

The treatments were initiated in the month of November, 2018 i.e. during the end phase of rainy season. The result on soil properties indicated no much effect on availability of soil nutrient due to lack of subsequent irrigation (Table). The effect of the treatment may be observed in the next year as the process may take some time for showings its impact on the soil properties and thereby yield of coconut. The average coconut yield of trial field before initiation of the OFT was recorded to be 22.34 nuts/palm/annum. The trial is under progress.



Technology assessed:

- ↳ Farmers Practice (FP): Traditional Farming (no management)
- ↳ Technology option-I (TO-I): Use of Decomposer Pre & Post Monsoon (100ml/5litre water/ Palm)
- ↳ Technology option-II (TO-II): External Application of Enriched Compost/CIAR Bio-consortia (1kg effective microbes/100kg compost)

Source of Technology: ICAR-CIARI, Port Blair

Table: Evaluation of soil properties before intervention

Technology option	Available Nutrients in kg/ ha					
	pH	EC	OC	N	P	K
FP	8.14	102.8	0.2	127.9	6.4	72
TO-I	8.13	108.4	0.8	126.7	4.2	81
TO-II	8.22	115.6	0.2	123.0	4.9	76

Table: Effect of waste decomposer and enriched compost on soil properties (5 months)

Technology option	Available Nutrients in kg/ha					
	pH	EC	OC	N	P	K
FP	8.15	272.7	0.2	130.5	6.9	80
TO-I	8.12	157.8	0.8	133.0	4.8	67
TO-II	8.20	128.4	0.6	131.0	5.7	89

West Bengal

Bankura KVK

Thematic area: Livestock production and management

Evaluation of modified housing for goat with the introduction of raised bamboo-made resting platform over the cement concrete / mud floor

In monsoon and winter season, the neo-natal death of goat kids occurred due to damp/cold micro-climate existing in goat houses, where there are mud/cement floor, without any preventive measure to combat the effect of weather causing mainly Pneumonia in kids. KVK Bankura conducted on firm trial in 18 locations of 3 villages on refinement of construction of goat

farm house with the introduction of raised bamboo made resting platform over the cement concrete / mud floor with 18 farmers in 4 villages. Results in this trial is reflected in above table that Option-II showed better performance in terms of increase kids survivability(80%) as well as increase of gross return Rs. 24,000.00 and similarly BC Ratio also improve from 1.2 to 1.71. Among the technologies, which were conducted under OFT, it has been observed that TO-II showed better performed in terms of percentage of survivability, net return and BC ratio. Therefore, under this micro-climatic situation, goat shed can be constructed with establishment of portable type of raised bamboo platform on 50% of floor area for obtaining healthy goat kids and to reduce the mortality rate.

Technology assessed:

- ◆ FP: Cement concrete floor or mud floor in the goat housing allowing the goat to take rest on the floor itself.
- ◆ TO-I: Fixed type raised bamboo platform throughout the whole floor area.
- ◆ TO-II: Portable type of raised bamboo platform on 50% of floor area.

Source of technology: WBUAFS Kolkata

Table: Effect of different type of platform against kid mortality

Technology option	No of trials	Unit size (No.of goat)	% of mortality of Kids	% of survivability of Kids	Cost of treatment	Gross Return (Rs./unit)	Net return (Rs./unit)	BC ratio
FP	06	10	60	40	12000	14000	2000	1.2
TO-I		10	25	75	15000	21000	6000	1.4
TO-II		10	20	80	14000	24000	10000	1.71

Birbhum KVK

Thematic area: Integrated Farming System

Assessment of profitability due to integration of different components under fish based production systems

Lack of technological knowhow in integration of components in proper way for higher profitability was identified as a problem. The result of the trial indicated that Technology Option -I i.e. Composite fish culture + Poultry farming + Azolla + Pulses

exhibited significantly higher BC ratio (2.93) than those of Technology Option-II (2.52) and farmers practice(1.21). It may be recommended that integrated farming system with composite fish culture, duck farming, azolla and pulse cultivation in bank of the pond is very effective to integrate the components in profitable manner in Birbhum District.

Technology assessed:

- ✦ FP: Traditional fish farming
- ✦ TO-I: Composite fish culture (IMC) + Duck



farming (30 nos.) + Azolla + Pulses (Redgram - Blackgram)

- ✦ TO-II: Ccomposite fish culture (IMC) + Duck farming (30 nos.) + Azolla + Vegetables (Ladys' Finger -Capsicum)

Source of Technology: ICAR [DARE/ICAR Annual Report, 2008-09, Page12-14 & Fertiliser News, 46 (11), pp 53-55 & 57-58]

Table: Profitability under fish based integrated farming system

Technology option	No. of trials	Man days utilized per year	Cost of cultivation (Rs./unit*)	Gross return (Rs./unit)	Net Return (Rs./unit)	BC Ratio
FP	7	15	39860	48320	8460	1.21
TO-I		250	60950	178675	117725	2.93
TO-II		265	90640	228500	137860	2.52
Sem+		9.23	-	-	-	0.107
CD at 5%		28.42	-	-	-	0.33

- FP: 1 unit = 0.19 ha pond only + fallow land
- Opt-1: 1 unit= 0.19 ha pond + 30 nos. of Ducks + 0.13 ha utilized land with pulse
- Opt-2: 1 unit= 0.19 ha pond + 30 nos. of Ducks + 0.13 ha utilized land by vegetables

Coochbehar KVK

Thematic area: Integrated Crop Management

Evaluation of suitable variety of jute under zero tillage condition in Terai Region of West Bengal

Coochbehar district witnessed the problem of low/ stagnant productivity of jute. All four varieties performed well under zero tillage condition. Among these four varieties highest yield was obtained from variety JRO 204 which was statistically higher than rest of the treatment. However, JRO 524 (FP) recorded higher yield than the variety S-19, but yields were statistically at par. Growth parameter also showed similar trend like yield. Due to higher yield Technology Option₁ recorded highest B:C ratio

than rest of the treatment. Considering yield and B:C ratio variety JRO 204 may be recommended.

Technology assessed:

- ✦ FP: Growing jute var. JRO 524 in zero tillage condition
- ✦ TO-I : Growing jute var. JRO 204 in zero tillage condition
- ✦ TO-II: Growing jute var. JBO 2003H in zero tillage condition
- ✦ TO-III: Growing jute var. S-19 in zero tillage condition

Source of technology: ICAR-CRIJAF, Barrackpore and ACAIR Project, UBKV

Table: Performance of different jute 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
		Plant height (cm)	Basal diameter (cm)					
FP	5	301.6	1.72	25.40	34650	81280	46630	2.34
TO-I	5	310.4	1.81	29.70	32100	95040	62940	2.96
TO-II	5	289.7	1.69	26.80	32100	85760	53660	2.67
TO-III	5	291.2	1.71	23.70	32100	75840	43740	2.36
CD at 5%		9.41	0.41	2.65				

Dakshin Dinajpur KVK

Thematic area: Crop management

Evaluation of suitable herbicide for controlling weeds in rabi transplanted rice in Old Alluvial Zone

Poor production of kharif rice is due to heavy infestation of various kinds of weeds during kharif season having favourable weather condition. Heavy weed infestation of various kinds leads to high cost of production of summer rice as the farmers generally controlled weeds adopting hand weeding method. Result showed that significantly highest yield was obtained from the technology option-III. Total number of panicles per meter square area,

number of bold grains per panicle, grain yield and straw yield were increased significantly from the farmers' practice and technology option I except 1000 grain weight.

Technology assessed:

- ✦ FP: Hand weeding
- ✦ TO-I: Application of Butachlor 50% EC @ 1.25 kg. a.i./ha within 4 DAT
- ✦ TO-II: Application of pyrazosulfuron ethyl 10 % WP @ 160 g a.i./ ha within 4 DAT
- ✦ TO-III: Application of Bispyribac sodium 10% SC @25 g a.i./ ha 15-20 DAT.

Source of Technology: UBKV

Table: Effect of various herbicides on weed infestation in rice

Technology option	No. of trials	No. of effective tillers/m ²	No. of bold grains/ panicle	1000 grain weight (g)	Grain yield (t/ha)	Straw yield (t/ha)	BC ratio
FP	7	297.7	111.2	22.21	3.69	4.09	1.24
TO-I		313.5	117.4	22.29	4.33	4.76	1.76
TO-II		335.8	129.6	23.08	4.52	4.97	1.82
TO-III		363.3	133.7	23.11	4.76	5.36	2.42
CD (P=0.05)		13.75	5.24	NS	0.29	0.42	-

Jalpaiguri KVK

Thematic area: Integrated Nutrient Management

Assessment of Nutrient Management in Bengal Aromatic Rice (Kalo nunia)

The problem of low yield and inferior quality of Kalo nunia rice was addressed by Jalpaiguri KVK. From the experiment it was revealed that application of 60% (RDF) through Inorganic source + 40% through Organic Sources were effective in producing grain yield of Kalo nunia rice (2.42 t/ha). Benefit-cost ratio was also highest in TO-II (2.71) and lowest was in FP (2.11). From the results it may be concluded that TO-

II was the best among all the management practice.

Technology assessed:

- ✦ FP: Indiscriminate uses of fertilizer, (30 kg N + 20 kg P₂O₅ + 20 Kg K₂O)
- ✦ TO-I: 80% (RDF:50-25-25) through Inorganic source + 20% through Organic Sources (Organic sources and Mustard cake)
- ✦ TO-II: 60% (RDF:50-25-25) through Inorganic source + 40% through Organic Sources (Organic sources and Mustard cake)

Source of Technology: BCKV/ RKVY Project on Bengal Aromatic Rice

**Table: Effect of different types of nutrient management in rice**

Technology option	No. of trials	Yield component				Grain yield (t/ha)	Straw yield (t/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	BC ratio
		Panicle length (cm)	No. of Panicle/m ²	No. of filled grain/Panicle	1000 grain weight (g)						
FP	10	24.7	261	94	13.2	2.03	6.40	37500	79480	41980	2.11
TO-I		27.2	278	102	13.1	2.35	6.57	35750	91170	55420	2.55
TO-II		27.8	284	106	13.4	2.42	6.60	34570	93780	59210	2.71

Malda KVK

Thematic area: Resource conservation technology

Assessment of productivity and profit of different cropping system through Resource conservation Technology (RCT)

Problem of low system productivity and declining productivity of the main crop rice was encountered in Malda district and attempted to be addressed through conducting a multi-locational trial. From this OFT, it is recommended for the micro level situation that new cropping system with inclusion of Pulse crop by ZT method i.e. Rice (short duration)-wheat-Mung by Zero Tillage method may adopted for more profit and long term sustainability. The recommend cropping system has more B:C (2.46) over the other Technology option. Only the cropping system Rice (short duration)-maize (by Zero Tillage method)

though not significantly different but the 2nd crop maize is exhaustive and not suitable for long term with same cropping system. It is recommended that TO-II [Rice (short duration)-wheat-Mung (by Zero Tillage method)] is recommended as new cropping system for long term sustainability and profit.

Technology assessed:

- ◆ FP: Rice-wheat-jute (Traditional Method)
- ◆ TO-I: Rice (short duration)-wheat-jute (by Zero Tillage method)
- ◆ TO-II: Rice (short duration)-wheat-Mung (by Zero Tillage method)
- ◆ TO-III: Rice (short duration)-maize (by Zero Tillage method)

Source of Technology: UBKV

Table: Performance of various crop combinations in increasing system productivity

Technology option	No. of trials	Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP	7	27	92.43 (29.5+ 30.24+ 27.69)	88500	132606	2310	1.49
TO-I	7	18	97.26 (31.56+34.40+29.30)	67500	143612	10092	2.12
TO-II	7	14	82.41 (34.70+38.25+9.8)	59250	146340	18686	2.46
TO-III	7	14	119.85 (33.45+86.29)	64125	143688	79563	2.24

Nadia KVK

Thematic area: Integrated pest management

Assessment of efficiency of integrated approach of healthy seedling raising in management of viral disease in solanaceous crops

High infestation of viral disease in solanaceous crops was the problem. Solanaceous crops are very important vegetable crops and are cultivated throughout the year. But most of the crops are badly affected by viral diseases which are spread by vectors. This disease may cause 80-90% loss of the crop. From the result it is clear that the Technology option 1 & 2 exhibited superiority in all the parameters than the farmer practice, and Technology option 2 that is Seedling raising in plug tray under 60 mesh mosquito net, use of yellow trap in the main field.- (other practices are normal cultural practices). Barrier cropping with maize exhibited the best result.

Technology assessed:

- ♦ FP: Seed sowing in the nursery bed (other practices are normal cultural practices).
- ♦ TO-I: Seedling raising in plug tray under 60 mesh mosquito net (other practices are normal cultural practices). Barrier cropping with maize
- ♦ TO-II: Seedling raising in plug tray under 60 mesh mosquito net, use of yellow trap in the main field (other practices are normal cultural practices). Barrier cropping with maize

Source of Technology: BCKV

Table: Efficiency of integrated approach of healthy seedling raising technique

Technology option	No. of trials	PDI (Mean)	Average yield (q/ha)	Gross cost (Rs./ha)	Gross return (Rs./ha)	BC Ratio
FP	7	22.43 (1.89)*	309.5	113500.00	194985.00	1.71
TO-I		7.14 (1.22)*	350.25	105500.00	220657.50	2.09
TO-II		5.06 (0.96)*	380.5	107000.00	239715.00	2.24

PDI- Percent Disease Index, * Figures in parenthesis are the mean value of white fly present per top leaf throughout the crop season

South 24 Parganas KVK (Narendrapur)

Thematic area: Aquaculture

Studies on comparative efficiency of Biophyton, Periphyton and Green Water Bioflocs Technology (BFT) for enhancing productivity and reducing cost of cultivation of GIFT Tilapia

Problems of low profitability in culture of GIFT Tilapia due to low stocking density and high feed cost. Poor farm income efficiency due to high commercial feed cost in GIFT - Tilapia farming situation in South 24 Parganas district.

Biofloc systems were developed to improve environmental control over production. In places where water is scarce or land is expensive, more intensive forms of aquaculture must be practiced for



cost-effective production. There are strong economic incentives for an aquaculture business to be more



efficient with production inputs, especially the most costly (feed) and most limiting (water or land). High-density rearing of fish typically requires some waste treatment infrastructure. At its core, biofloc is a waste treatment system and fish toilet was clear the residual part of the biofloc. Biofloc systems were also developed to prevent the introduction of disease to a farm from incoming water. Biofloc,





Periphyton and Biophyton-based aquaculture system are modern concepts and eco-friendly approaches in closed water aquaculture. Bio-phyton technology among all the treatment was recorded highest production over the farmers' practices.



Technology assessed:

- ⋈ FP: Tilapia fishes with feeding (commercial feed) @ 20-25% total body weight, rearing practices with stocking density 75000 nos/ ha.
- ⋈ TO-I: Tilapia fishes with feeding (commercial feed) @ 12-15% total body weight+ Bio floc, rearing practices with stocking density 150000 nos/ ha.
- ⋈ TO-II: Tilapia fishes with feeding (commercial feed) @ 15-20% total body weight+ Periphyton, fish toilet, rearing practices with stocking density 150000 nos/ ha.
- ⋈ TO-III: Tilapia fishes with feeding (commercial feed) @ 8-10% total body weight+ Bio floc+ Periphyton (Bio-phyton rearing practices with stocking density 150000 nos/ ha.

Source of technology: ICAR- CIFA, World Aquaculture Society and SRAC (Southern Regional Aquaculture Centre)

Table: Efficiency of Biophyton, Periphyton and Green Water Bioflocs Technology (BFT) for enhancing productivity

Technology option	No. of trials	Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs/ha)	BC ratio
FP	10	15	45	300000	450000	150000	1.50
TO-I	10	0	75	320000	500000	170000	1.56
TO-II	10	2	75	250000	500000	250000	2.00
TO-III	10	0	80	250000	530000	280000	2.12

South 24 Parganas KVK (Nimpith)

Thematic area: Production technology

Assessment of Chlormequat (Chlorocholine Chloride 50%) on production potential and economic feasibility of cotton (var.Suravi) during rabi-summer season in South 24 Parganas

Low productivity of cotton due to delayed boll bursting and moisture stress was the problem. In South 24 Parganas district, cotton is cultivated with var. Suravi during rabi-summer season with 1 to 2 irrigations. Before onset of monsoon, the whole boll is not harvested and sometime crop faces moisture stress. In this situation, the application of chlormequat may get earliness in boll maturity and also developed tolerance to moisture stress.

Result reveals that the use of 50 ppm Chlorocholine Chloride 50% was increased the no. of boll/plant, no. of harvested boll/plant and seed-cotton yield/boll. The spraying of 50 ppm Chlorocholine Chloride 50% in pre flowering stage in both Tech. Option-1 and Tech. Option-2 and 2nd spray 15 days later in case of Technology Option-II have resulted in higher yield attributes over farmers practice. However, in Tech. Option-2, 22.9 % more seed-cotton yield/ha and an additional Rs.8014.00/ha net return were recorded over Farmers' Practice. The cost-benefit ratio was also



recorded higher (1.63) in Tech. Option-2 over Farmers' Practice (1.50). So, it can be concluded that spraying of 50 ppm Chlorocholine Chloride 50% at



pre flowering stage and 2nd spray 15 days later is a profitable option in cotton cultivation.

After two years observation, it is clear that the application of Chlormequat (Chlorocholine Chloride 50% @ 50 ppm is very useful in increasing seed-cotton yield. It is also noted that two sprays, one at pre flowering stage



(60-65 DAS) and other spray after 15 days (Tech. Option-2) is a profitable option than one time spraying of the chemical (Tech. Option-1).

Technology assessed:

- ▲ FP: Sowing of cotton by direct seeded method (var. Suravi) with a spacing of 60 cm x 45cm and N: P_2O_5 : K_2O @ 80:40:40 kg/ha along with 2 irrigation
- ▲ TO-I: Sowing of cotton by direct seeded method (var. Suravi) with a spacing of 60 cm x 45cm and N: P_2O_5 : K_2O @ 80:40:40 kg/ha and one spray with 50 ppm Chlorocholine Chloride 50% at pre flowering (60-65 DAS) along with 2 irrigation
- ▲ TO-II: Sowing of cotton by direct seeded method (var. Suravi) with a spacing of 60 cm x 45 cm and N: P_2O_5 : K_2O @ 80:40:40 kg/ha and two time spray with 50 ppm Chlorocholine Chloride 50%, one at pre flowering stage (60-65 DAS) and another at 15 days after 1st spray along with 2 irrigation

Source of technology:

- i) Lone, N.A., Khan, N.A., Bhat, M.A., Mir, M.R., Razvi, S.M., Baht, K.A., Rather, G.H., Effect of Chlorocholine Chloride (CCC) on plant growth and development, International Journal of Current Research, Vol. 6, pp.001-007, July, 2010
- ii) Prakash, A.H., N. Gopalakrishnan & S.E.S.A. Khader, Hormonal manipulation to increase cotton productivity, Central Institute for Cotton Research, Regional Station, Coimbatore

Table: Effect of Chlormequat (Chlorocholine Chloride 50%) on production potential and economic feasibility of cotton (var.Suravi) during rabi-summer season

Technology option	No. of trials	No. of boll/plant	No. of harvested boll/plant	Seed-cotton yield/boll	Seed – cotton yield (kg/ha)	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP	30	18.4	14.5	2.43	1320.24	37500	56110	18610	1.50
TO-I		21.9	17.1	2.52	1493.35	39750	63467	23717	1.59
TO-II		24.7	19.8	2.57	1622.60	42336	68960	26624	1.63
SEm ±	-	0.60	0.45	0.028	36.10	-	-	-	-
CD(0.05)	-	1.27	0.96	NS	75.83	-	-	-	-



North 24 Paraganas KVK (Ashokenagar)

Thematic area: Feeding management in livestock

Effect of Rice Distiller's Dried Grains with Solubles (RDGS) supplementation on performance of Black Bengal goats under rural production system

Poor growth and low productivity in goats was a problem. Result showed that supplementation of RDGS increased body weight of the goats significantly than the non supplemented group. Among the three supplemented groups the technology option II i.e. supplementation of RDGS @30g/animal/day is having maximum B:C ratio as well as highest net return. So among the three doses

of RDGS supplementation, the second group (TO II) showed best result. Moreover, the age at first kidding also less for the supplemented groups and no of kids per kidding also increased in supplemented groups.

Technology assessed:

- ✦ FP: Grazing without any supplementation resulting deficiency in required protein
- ✦ TO-I: FP+ RDGS @ 20gm/animal/day
- ✦ TO-II: FP+ RDGS @ 30gm/animal/day
- ✦ TO-III: FP+ RDGS @ 40gm/animal/day

Source of technology: WBUAFS

Table: Effect of Rice Distiller's Dried Grains with Solubles (RDGS) supplementation on performance of Black Bengal goats under rural production system

Technology options	No. of trials	Parameter(s)					Cost of production (Rs./animal)	Gross return (Rs./animal)	Net return (Rs./animal)	BC Ratio
		Initial Body Wt.(kg) (before feeding)	Final Body Wt.(kg) (After 5 months of feed-ing)	Body Wt. Gain (kg) (After 5 months of feed-ing)	Age at first kidding (days)	Ave. No of kids per kidding				
FP	40	4.43 ± 0.18	7.33 ± 0.22a	2.90 ± 0.11a	433.67 ± 4.34a	1.19	1264	2199	935	1.73
TO-I		4.46 ± 0.13	8.42 ± 0.13b	3.96 ± 0.20b	409.67 ± 2.70b	1.65	1324	2526	1202	1.91
TO-II		4.40 ± 0.20	8.75 ± 0.12b	4.35 ± 0.22b	406.00 ± 2.59b	1.8	1350	2625	1275	1.94
TO-III		4.44 ± 0.15	8.62 ± 0.22b	4.18 ± 0.18b	408.67 ± 4.24b	1.64	1370	2586	1216	1.88
SEM		0.166	0.179	0.181	3.566	-	-	-	-	-
P Value		0.995	0	0	0	-	-	-	-	-

Values followed by different letters (a, b, c) within the same column differ significantly (P<0.05)

Purba Medinipur KVK

Thematic area: Nutrient management

Study on effect of different fertilizer treatment on yield and economics of Red Amaranthus (*Amaranthus sp.*)

No standard fertilizer recommendation for Red Amaranthus was there and due to lack of standard fertilizer recommendation, the doses may be

ascertained. Among the nutrient management treatments, integrated option i.e. TO II recorded maximum Plant height of (both at 30 & 40 DAS) 34.36cm and 67.74cm respectively, leaf number (10.29, 21.57 at 30 & 40 DAS, respectively) and maximum number of cuttings (8.57). Subsequently, the same treatment recorded highest yield of 13.66 t/ha and a net return of Rs. 143857.10/ha in two months time with B:C ratio of 3.36. In this trial we found farmers practice and Organic nutrient management practice



(TO-I) recorded almost similar result for all the tested parameters.

For highest economic gain from cultivation of Red amaranthus, farmer should go for integrated nutrient management practice with- FYM @ 10 ton+ N:P:K @ 80:60:60Kg/ha

Technology assessed:

FP: Fertilization with (FYM @ 10 ton + N @ 75 Kg)/ha

TO-I: Fertilization with (FYM @ 10 ton+ Vermicompost @ 3 ton)/ha

TO-II: Fertilization with (FYM @ 10 ton+ N:P:K @ 80:60:60Kg)/ha

Source of Technology: Department of Agriculture, GoWB

Table: Effect of different fertilizer treatment on growth and yield parameters of Red Amaranthus (Amaranthus sp.) var. JABA KUSUM

Technology option	Plant height (cm)		Leaf number/plant		Number of Cutting made	Total yield (t/ha)	Gross return (Rs.)	Net return (Rs.)	BC ratio
	At 30 DAS	At 60 DAS	At 30 DAS	At 60 DAS					
FP	27.14	82.64	8.57	18.57	6.57	9.97	149571.43	92071.43	2.60
TO-I	27.00	72.36	8.29	18.43	6.43	9.77	146571.43	90871.43	2.63
TO-II	34.36	67.64	10.29	21.57	8.57	13.66	204857.14	143857.1	3.36
C.D. at 5%	4.01	6.37	1.19	2.36	1.56	1.42			
SE(m)±	1.28	2.04	0.38	0.76	0.50	0.45			

Purulia KVK

Thematic area: Agriculture Engineering (Promotion of farm implements for crop production)

Assessment of the 4-Row Multicrop planter for maintaining ideal plant population & drudgery reduction in Maize under Rainfed condition in banded uplands of Red laterite zone of Purulia, West Bengal

In Purulia District presently Maize is a promising crop of banded uplands under limited irrigation facilities grown in about 2682 ha with an average yield of 18.2 q/ha. Although there is enough scope for horizontal expansion of maize, farmers of this particular region adopting traditional method for Maize sowing that demands huge labour & time and resulted in increase in cost of production & finally with that a significant reduction in decrease of Net Return has been observed. Moreover it has been noticed that poor Sowing technique is a major cause for reduction in production and productivity. Results revealed that using of 4 Row Multicrop Planter gives

better result compare to farmer Practices and TO-I in terms of increasing yield and drudgery reduction. In case using 4 Row Multicrop Planter gave significantly higher yield (38%), reduction drudgery (88%) and monetary return (93%) over farmers Practice. Therefore, 4 Row Multicrop Planter for Maize cultivation was proved most efficient, productive and remunerative under Purulia condition.

Technology assessed:

- ^ FP: Farmer using Traditional method of broadcasting for Maize sowing during Kharif season.
- ^ TO-I: Line sowing method by traditional way for Maize (60cm X 20cm) cultivation during Kharif season.
- ^ TO-II: Use of 4-Row Multicrop planter, for Maize (60cm X 20cm) cultivation during Kharif season.

Source of Technology: Central Institute of Agricultural Engineering, Bhopal



Table: Effect of the 4-Row Multicrop planter for maintaining ideal plant population & drudgery reduction in Maize under Rainfed condition in bunded uplands of Red laterite zone

D.O.S: 13.07.2018

D.O.H: 07.11.2018 – 14.11.2018

No. Of Replication: 10, Maize (P-3401)

Technology option	No. of trials	Plant Height (Cm.)	Labor (Man hour/ha)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP	10	195	21	39.47	36387	67099	30712	1.84
TO-I		173	19	45.43	35137	77231	42094	2.19
TO-II		159	2.5 (-88%)	54.7 (38%)	33712	92990	59278	2.75
CD at 5%			2.62	0.52				

West Medinipur KVK

Thematic area: Nutrient management

Assessment of performance of precision farming systems for African Marigold (*Tagetes erecta* L.) during summer-rainy season

Indiscriminate use of fertilizers/ Conventional methods of farming system resulting lower yield were the problem. Results showed that among all the technologies TO-II proved to be best so far with 2.73 B:C ratio.

Technology assessed:

- ▲ FP: N:P:K: 3.6:15.6:7.8 kg/bigha
- ▲ TO-I: Fertigation of 75% of RDF(N:P:K- 12:12:10 kg/bigha) in three split doses (50% basal and remaining 50% at 30 & 45 DAT)
- ▲ TO-II: Fertigation of 75% of RDF(N:P:K- 12:12:10 kg/bigha) in five split doses (50% basal and remaining 50% at 15, 30, 45 & 60 DAT) along with foliar application of Humic acid (0.2%) and ZnSO₄ (0.2%) at 30 & 45 DAT

Source of Technology: TNAU

Table: Performance of precision farming systems for African Marigold (*Tagetes erecta* L.) during summer-rainy season

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
		Plant Height (60 DAT, cm)	No. of flower/ plant					
FP	7	57	81	335.5	77300.00	165550.00	88250.00	2.14
TO-I		65	102	418.5	86500.00	213540.00	127040.00	2.46
TO-II		70	121	517.5	95540.00	261600.00	166060.00	2.73

Odisha

Angul KVK

Thematic area: Varietal evaluation

Assessment of BPH tolerant rice varieties

Low yield in rainfed /irrigated medium land transplanted rice due to use of old variety susceptible to BPH was a problem. Var. Hasant, is resistant to BPH attack with 46.8 q/ha production. By using var. Hasant, no BPH attack was seen with 46.8 q/ha production.

Technology assessed:

FP: No specific variety

TO-I: Pratikshya (142 days duration; Average yield: 50 q/ha; resistant to BPH)

TO-II: Hasanta (146 days duration, Average yield: 55 q/ha; resistant to BPH, WBPH, leaf blast, sheath rot)

Source of Technology: OUAT, 2005; OUAT, 2014

Table: Performance of BPH tolerant rice varieties

Technology option	No. of trials	Yield component		Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of effective tillers/hill	No. of hoppers/ tiller						
FP	10	14	5.08	12.79	42	28725	48800	20075	1.41
TO-I	10	14.2	4.8	6.42	42.3	29813	52630	22817	1.43
TO-II	10	14.8	0	Nil	46.8	26645	59870	36225	1.60

Balasore KVK

Thematic area: Integrated Pest Management

Assessment of Integrated Management of Shoot and Fruit Borer in Brinjal

Low yield in brinjal due to high incidence brinjal fruit and shoot borer was identified as a problem. The area affected was around 2,000 ha and the extent of loss was from 30 to 80%. Results showed that intercropping of brinjal with coriander @ 5:1 + Mass trapping of adult with pheromone trap@ 50nos./ha + Removal of infested plant parts + Need Based alternate spraying of Neem oil 1500ppm@ 3ml/ltr & Spinosad 45SC@ 1ml/3ltr water at 10 days interval was best treatment with lower fruit infestation of 4.50% and B:C ratio of 1.96.

Technology assessed:

FP: Spraying of Triazophos 40EC@ 2ml/ltr water

TO-I: Intercropping of brinjal with coriander @ 5:1 + Mass trapping of adult with pheromone trap@ 50nos./ha + Removal of infested plant parts + Need Based alternate spraying of Neem oil 1500ppm@ 3ml/ltr & Spinosad 45SC@ 1ml/3ltr water at 10 days interval

TO-II: Intercropping of brinjal with cowpea @ 5:1 + Mass trapping of adult with pheromone trap@ 50nos./ha + Removal of infested plant parts + Need Based alternate spraying of Neem oil 1500ppm@ 3ml/ltr & Thiodicarb 75WP @ 2g/lit water

Source of Technology: OUAT, 2015

Table: Effect of Integrated Management of Shoot and Fruit Borer in Brinjal

Technology option	No. of trials	No. of fruits / plant	Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP	7	11	10.30	212.20	188343	318300	129957	1.69
TO-I	7	21	4.50	259.30	198950	388950	190000	1.96
TO-II	7	19	5.69	252.50	198298	378750	180452	1.91

Bhadrak KVK

Thematic area: Varietal evaluation

Assessment of incorporation of Amur carp as bottom feeder in composite carp culture for maximizing fish production

Use of pyrethroid group of pesticides, which depletes zooplankton population, is a limiting factor for carp-FW prawn polyculture system. Low fish

yield from composite IMC culture is due to slow growing bottom feeder – mrigal. Results revealed that stocking density of Amur carp in composite pisciculture should be restricted to 1500 nos per ha only.

Technology assessed:

FP: Stocking ratio catla: rohu :mrigal :Amur carp :: 30:40:20:10



TO-I: Stocking ratio catla: rohu :mrigal :Amur carp :: 30:40:15:15

TO-II: Stocking ratio catla: rohu :mrigal :Amur carp :: 30:40:10:20

Source of Technology: UAS, Bangalore, 2015

Table: Effect of incorporation of Amur carp as bottom feeder in composite carp culture for maximizing fish production

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
		ABW at harvesting of Amur carp during 9 months (kg)					
FP	5	2.8	34.25	168000	342500	174500	2.04
TO-I	2	3.2	37.82	182000	378200	196200	2.08
TO-II	2	2.3	35.13	170000	351300	181300	2.06

Bolangir KVK

Thematic area: Crop production

Assessment of integrated management of fruit flies in pointed gourd

Low yield from Pointed gourd was due to moderate to severe infestation of fruit flies. This led to yellowing, dropping and rotting of fruits. The trial results indicated that IPM measures like Earthing up around the vine + Installation of poison Bait (10ml malathion+ 50 gm jaggery /lit) @ 20/ha and need based spraying of Protein hydrolyisate (0.3%)+ Spraying Thiamethoxam@0.4gm/lit at 10 days interval controls the incidence of fruit flies at appreciable limit.

Technology assessed:

FP: No specific strategy except earthing up around the vine

TO-I: Earthing up around the vine + Installation of Poison Bait (10ml malathion+ 50 gm jaggery /lit) @ 20/ha and need based spraying of malathion @ 1.5 ml /lit at 10 days interval

TO-II: Earthing up around the vine + Installation of poison Bait (10ml malathion+ 50 gm jaggery /lit) @ 20/ha and need based spraying of Protein hydrolyisate (0.3%)+ Spraying Thiamethoxam@0.4gm/lit at 10 days interval

Source of Technology: OUAT, 2016

Table: Effect of integrated management of fruit flies in pointed gourd

Technology option	No. of trials	Yield component		Infestation of fruit by fruit flies (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		No. of healthy fruits/ Vine	Size of fruit (cm)						
FP	7	42	4.37	25.72	187	67200	165984	98784	2.47
TO-I	7	47	5.82	13.10	213.14	71500	319710	248210	4.47
TO-II	7	61	6.1	12.52	219	72500	328500	256500	4.53

Jagatsinghpur KVK

Thematic area: Integrated Nutrient Management

Assessment of Arka Microbial Consortium (Microbial Plant Growth promoters) and Seed Pro in Cauliflower for increasing yield

Low yield in cauliflower due to small curd size and weight was the identified problem. From the result it is clear that the TO-I (use of Arka Microbial Consortium) exhibited higher yield than the farmer practice and TO-II (use of Seed Pro). It also fetched higher price in the market due to bigger size. Higher yield and bigger curd size can be obtained by use of Arka Microbial Consortium.

Technology assessed:

FP: No growth promoter used

Table: Effect of Arka Microbial Consortium (Microbial Plant Growth promoters) and Seed Pro in Cauliflower for increasing yield

Technology option	No. of trials	Yield component				Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	BC ratio
		Plant ht.	No. of leaves/ plant	Diameter of curd	Wt. of curd						
FP	5	24.44 cm at 60DAT	12.16 at 60DAT	13.36 cm	562 g	26.42	103.10	71600	206200	134600	2.87
TO-I	5	30.13cm at 60DAT	15.48 at 60DAT	16.21 cm.	621 g	3.18	118.60	72800	237200	164400	3.25
TO-II	5	26.22 cm at 60DAT	13.66 at 60DAT	14.82 cm.	586 g	4.34	114.31	72100	228620	102984	3.17

Jharsuguda KVK

Thematic area: Post Harvest Management

Assessment of low cost artificial ripening process in Banana

Natural ripening of fruits harvested at mature green stage is slow leading to high weight loss, desiccation and in some cases uneven ripening. Low cost artificial ripening process gives more income (80%) over farmers practice. Self life and keeping quality of banana ripened through low cost artificial ripening process increases and gives more income (80%) over farmers practice.

TO-I: Arka Microbial Consortium-A carrier based microbial product containing N fixing, P & Zn solubilising and plant growth promoting microbes. For the main field application of one acre of land, five kg of amc can be mixed with 500 kg of fym and applied near the root zone of standing crop.

TO-II: Seed Pro-Plant-growth-promoting seed coating formulations based on combinations of *Bacillus subtilis* and *Hypocrea lixi*. For the main field application of one acre of land, five kg of seed pro can be mixed with 500 kg of fym and applied near the root zone of standing crop.

Source of Technology: ICAR-IIHR Bangalore

Technology assessed:

FP: No artificial ripening agent used

TO-I: 7.5 ml of Etheral per 10 l of water for dipping of 1q of banana

TO-II: 2 ml Etheral per every 1 cu.mt. room size + 0.25 g NaOH per every 1 ml Etheral used is kept in a container. In every cu.mt. room size, 200-250 kg Banana is kept 18-24 hours of exposure in air tight chamber and shifted to ambient temperature for completing the ripening process

Source of Technology: IIHR, Bengaluru

**Table: Effect of low cost artificial ripening process in Banana**

Technology option	No. of trials	Yield component		Cost of ripening process (Rs./q)	Gross return (Rs./q)	Net return (Rs./q)	BC ratio
		Duration of ripening (days)	Self life (days)				
FP	7	3	2	400	1500	1100	3.75
TO-I	7	2	4	450	2000	1550	4.4
TO-II	7	2	6	500	2500	2000	5.0

Kalahandi KVK*Thematic area:* Integrated Crop Management**Assessment of Nutrient Management in Chickpea**

Improper growth due to blanket use of fertilizers and bio-fertilizers ultimately leads to decrease in yield. The results of the trial revealed that TO-II (inoculation of seeds with Bio-fertilizers such as Rhizobium@20g/ka seeds and PSB 10-12 hours before Sowing + Soil application of Sulphur@20kg/ha through gypsum) was the best among all the alternatives. This was recommended as the yield of Chickpea was recorded to be the highest.

Table: Effect of Nutrient Management in Chickpea

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 pods/plant	No. of seeds/ Pod	Test wt. (100 grain wt.)					
FP	7	23.45	1.02	24.1	8.2	16100	45100	29000	2.80
TO-I	7	37.56	1.14	24.6	12.1	17100	66550	49450	3.89
TO-II	7	39.89	1.21	24.8	12.6	17300	69300	52000	4.01

Kendrapara KVK*Thematic area:* Varietal evaluation**Assessment of colocasia varieties**

Low yield from colocasia was due to high blight infestation and lowered tolerance to water logged condition. Results showed that Muktakeshi variety has 22% yield advantage over FP alongwith leaf blight tolerance capacity.

Technology assessed:

FP: No use of required amount of micronutrient and Bio-fertilizers

TO-I: STBF (NPK)+Soil application of Sulphur@20kg/ha through gypsum

TO-II: Inoculation of seeds with Biofertilizers such as Rhizobium@20g/ka seeds and PSB 10-12 hours before Sowing + Soil application of Sulphur@20kg/ha through gypsum

Source of Technology: OUAT, 2011

Technology assessed:

FP: Cultivation of local variety carry over seed colocasia

TO-I: Colocasia variety Muktakeshi resistant to leaf blight, avg. yield (18 t/ha) t/ha

TO-II: Colocasia variety Telia suitable for water logged condition, good cooking quality with longer shelf life, avg. yield 18-20t/ha

Source of Technology: CTCRI, 2012

Table: Performance of different colocasia varieties

Technology option	No. of trials	Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
FP	07	22	161	75,300	1,28,800	53,500	1.7
TO-I	07	6	178.4	79,700	1,42,720	63,020	1.8
TO-II	07	24	192.8	79,700	1,54,240	80,300	1.9

Koraput KVK

Thematic area: Varietal evaluation

Assessment of China Aster varieties

Low yield from local varieties was a problem. To address this issue, a multi-locational trial was conducted for assessing different varieties. Results revealed that Arka Archana variety of China Aster was a good yielder, an early yielder and a heat tolerant variety giving BC ratio of 1.48.

Technology assessed:

FP: Locally grown hybrid var Lakhmi susceptible to wilt

TO-I: Arka Archana, white colour. powder puff, flower, semi erect plant type, 12.5t/ha shelf life of 4.16 days, no of flowers /plant- 45 propagated by seed

TO-II: Arka Sashanka produces creamy white flower, puff type and attractive flowers than local white variety, bears 45 flowers per plant which are double the yield of the local white variety

Source of Technology: IIHR

Table: Performance of various China Aster varieties

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Plant height (m)	No of flowers / plant	Wt of flowers						
FP	7	30	10	1g	50	66.71	55000	60710	11710	1.21
TO-I		55	30	2g	30	108.42	73000	108420	35420	1.48
TO-II		44	25	1.5g	30	100.00	73000	100000	27000	1.36

Nabarangapur KVK

Thematic area: Micronutrient management

Assessment of foliar application of Boron and Molybdenum in cauliflower

Browning of curd and whiptail as well as low curd weight in cauliflower was a problem. Results of the trial showed that foliar application of 100 ppm B and 50 ppm of Mo (twice at 30 DAP and 45 DAP) + STBFA has resulted 60.62% increase in curd yield and reduced 67.2 % browning problem in cauliflower than farmers practice.

Technology assessed:

FP: No application of B and Mo , 22.5 : 57.5:0 NPK Kg /ha

TO-I: STBFA (120:40:60 Kg NPK /ha)

TO-II: Foliar application of 100 ppm B and 50 ppm Mo (once at 30 DAP) + STBFA (120:40:60 Kg NPK /ha)

TO-III: Foliar application of 100 ppm B and 50 ppm of Mo (twice at 30 DAP and 45 DAP) +STBFA (120:40:60 Kg NPK /ha)

Source of Technology: IIVR, 2017



Table: Effect of foliar application of Boron and Molybdenum in cauliflower

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
		Curd weight (gm)	Percentage. of affected (browning) curds					
FP	5	330	12.8	239.25	104650	358875	254225	3.43
TO-I	5	470	11.4	340.8	108837	511200	402363	4.70
TO-II	5	490	5.7	356.3	112369	535200	422831	4.76
TO-III	5	530	4.2	384.3	115901	576450	460549	4.97

Khorda KVK

Thematic area: Integrated Crop Management

Assessment of various management options for controlling Fruit drop in Pumpkin

Fruit drop problem in Pumpkin at early stages of fruit setting was identified. A trial was carried out in 13 different locations of the district in order to address the issue. In both TO-I and TO-II, it was observed that the fruit setting percentage is high alongwith decrease in fruit drop percentage to 2-3% compared to 10-15% in farmers' practice. The yield recorded was highest 203.1q/ha in TO-II as compared to 192.75 q/ha in TO-I and 160.5q/ha in farmers' practice. The increase in yield between TO-I and TO-II was only 5.36% whereas 20.09% between TO-I and farmers' practice followed by 26.54%

between TO-II and farmers' practice. TO-II, i.e., Use of natural pollinators (Honey Bee) for pollination with foliar application of chelated calcium @1gm/ lit at pre-flowering and fruit setting stages enhanced pumpkin production up to 27%.

Technology assessed:

FP: No management for fruit drop

TO-I: Installation of honey bee box for effective pollination

TO-II: Installation of honey bee box + foliar application of chelated calcium @1gm/ lit at pre-flowering and fruit setting stage

Source of Technology: OUAT (Dept. of Vegetable Science)

Table: Effect of various management options for controlling Fruit drop in Pumpkin

Technology option	No. of trials	Yield component			Disease/ insect pest incidence (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
		Fruit drop (%)	Fruit setting	Increase in Yield (%)						
FP	13	10-15	Low	-	-	160.5	65100	80250	15150	1.23
TO-I	13	2-3	High	20.09	-	192.75	71140	96375	25235	1.35
TO-II	13	2-3	High	26.54	-	203.1	72890	101550	28660	1.39

4.2 Technology Demonstration:

Frontline Demonstrations:

Frontline demonstration (FLD) is the concept of demonstration popularized by Indian Council of Agricultural Research under the Technology Mission on oilseeds. The demonstrations are made on the



latest technologies and varieties less than 10 years old with direct supervision of NARS scientist in the farmers' field. This programme is popular among the

farmers as there is no other programme of oilseeds and pulses within the reach of the farmers which update the knowledge and technique of the oilseeds and pulse cultivation. The KVKs of Zone V took up FLD programme not only in oilseeds and pulses but also in the area of cereals, vegetables, cash crop and other crop, so that farmers are updated with latest varieties and technologies under important field crops.

In 2018-19, the KVKs of Zone-V, conducted Front Line Demonstration programme on oilseeds in 773.9 ha covering 3317 farmers. The area under demonstration in pulse was 736.22 ha which covered 3134 farmers. The coverage in crops like paddy, wheat, maize, brinjal, cauliflower, onion etc. was 741.54 ha which involved 5241 farmers. As a whole the KVKs of Zone V covered 2251.66 ha under demonstration in 2018-19 and benefitted 11692 farmers.



In state-wise analysis of Front Line Demonstrations showed Odisha covered 209.32 ha in oilseeds, 292.52 ha in pulses and 224.32 ha in cereals, vegetables and other crops in 2018-19. Total coverage of demonstration was 726.16 ha in the state which benefitted 3361 farmers. In the state of West Bengal, an area of 564.58 ha in oilseeds, 441.7 ha in pulses and 511.16 ha in cereals, vegetable etc. were covered in 2018-19. Total coverage in West Bengal was 1517.44 ha under demonstration which benefitted 8300 farmers of the zone.

Table: State-wise details of Frontline Demonstration on Oilseeds, Pulses and Other Crops

State	Oilseed		Pulses		Other than Oilseed & Pulses		Total	
	No. of farmers	Area (ha)	No. of farmers	Area (ha)	No. of farmers	Area (ha)	No. of farmers	Area (ha)
A& N Island	0	0	13	2	18	6.06	31	8.06
Odisha	670	209.32	821	292.52	1870	224.32	3361	726.16
West Bengal	2647	564.58	2300	441.7	3353	511.16	8300	1517.44
Total	3317	773.9	3134	736.22	5241	741.54	11692	2251.66

4.2.1 Oilseeds:

Oilseed demonstration was done both kharif and rabi season in 2018-19. Groundnut was most important crop under demonstration in the state of Odisha which covered 134 ha in Kharif in 2018-19. It was followed by sunflower in rabi season which covered 30.52 ha. The demonstrations showed increase in yield of about 25% in groundnut with a net return of Rs.41845/- and BC ratio of 2.1. While

sunflower demonstrations showed doubling of yield with introduction of hybrid varieties and maximized return to Rs.41870/ha with BC ratio of 3.1. In the state of West Bengal mustard was demonstrated in 205 ha which showed 31% increase in yield and Rs.30494/ha net return with 2.29 BC ratio. The crop was followed by sesame (157 ha), groundnut (96.5 ha) and sunflower (59.47 ha). The increase in yield was 23% in sesame, groundnut 27.5% and 25.9% in sunflower.



Table: Frontline Demonstration on Oilseeds in kharif 2018 and rabi 2018-19

S. No.	Crop	State	No. of farmers	Area (ha)	Yield (q/ha)		In-crease %	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross return	Net Return	BCR	Gross Cost	Gross return	Net Return	BCR
1	Groundnut	Odisha	414	134	17.53	14.02	25.0	38414	80259	41845	2.1	35199	63082	27883	1.8
		West Bengal	604	96.55	25.56	20.06	27.5	45036	96640	51604	2.1	41174	73312	32138	1.8
		Total	1018	230.6											
2	Mustard	Odisha	50	7.8	12.14	8.20	48.0	22738	53118	30380	2.3	19091	35226	16135	1.8
		West Bengal	685	205	13.89	10.60	31.1	23698	54192	30494	2.3	22371	41103	18732	1.8
		Total	735	212.8											
3	Linseed	West Bengal	179	40.16	8.55	5.37	59.2	17905	45680	27775	2.6	15085	27628	12543	1.8
		Total	179	40.16											
4	Sesame	Odisha	98	33	5.76	3.85	49.7	13808	26530	12722	1.9	12094	18494	6400	1.5
		West Bengal	841	157	11.15	9.33	23.3	23719	56500	32781	2.4	22175	45590	23415	2.1
		Total	939	190											
5	Sunflower	Odisha	88	30.52	20.00	10.27	94.4	19750	61620	41870	3.1	23150	66900	43750	2.9
		West Bengal	266	59.47	17.30	13.76	25.9	32448	77082	44635	2.4	30657	59897	29240	2.0
		Total	354	89.99											
6	Toria	Odisha	20	4	26.40	19.15	38.0	32350	54625	22275	1.7	26000	39813	13813	1.5
		West Bengal	46	6	9.65	8.05	19.9	17500	34735	17235	2.0	16700	26625	9925	1.6
		Total	66	10											
7	Soyabean	West Bengal	26	0.4	17.50	15.90	10.1	228300	439062	210762	1.9	226100	398437	172337	1.8
		Total	26	0.4											
Grand total				3317	773.9										

4.2.2 Pulses:

Front Line Demonstration were conducted in red gram, black gram in kharif 2018-19 and chickpea, green gram, lentil, pea in rabi 2018-19. In the state of Odisha, red gram was demonstrated in 43 ha which showed 36.6% increase in yield compared to existing practice in kharif while black gram was demonstrated



in 77 ha in kharif which showed 47.6% improvement in yield of existing practice. Net return was Rs.27509/ha in

red gram with BC ratio of 2.3 and Rs.21460/ha in black gram with BC ratio of 2.1.

In rabi 2018-19, chick pea was demonstrated in 23 ha in Odisha which showed 42.8% increase in yield with



net return of Rs.26467/ha and BC ratio of 2.4. Most covered pulse crop in Odisha in rabi 2018-19 was green gram which was demonstrated in 148.52 ha with 34.8% increase in yield and net return of Rs.21757/ha and BC ratio of 2.3.

In the state of West Bengal, kharif 2018 major pulse demonstrated was red gram which covered 32.2 ha with net return of Rs.35745/ha with BC ratio 2.2. In rabi 2018-19, lentil was the major pulse crop in West Bengal which was demonstrated in 178.5

ha. Demonstrated yield was 31.8% higher than old practice. Net return improved and Rs.36137/ha with BC ratio of 2.7. While chickpea was demonstrated in 90.2 ha in West Bengal which showed net return of Rs.38646/ha with BC ratio of 2.6.

Table: Frontline demonstration on pulses

S. No	Crop	State	No. of farmers	Area (ha)	Yield (q/ha)		In-crease %	Economics of Demonstration (Rs/ha)				Economics of Check (Rs/ha)			
					Demo	Check		Gross Cost	Gross return	Net Return	BCR	Gross Cost	Gross return	Net Return	BCR
1	Red gram	Odisha	96	43	8.35	6.12	36.6	21954	49463	27509	2.3	20363	39120	18758	1.9
		West Bengal	158	32.2	12.33	8.35	47.6	29415	65160	35745	2.2	30055	60400	30345	2.0
		Total	254	75.2											
2	Black gram	Odisha	247	77	7.33	5.71	28.5	18891	40531	21640	2.1	16978	29600	12622	1.7
		West Bengal	158	32.2	12.33	8.35	47.6	29415	62160	32745	2.1	29780	59800	30020	2.0
		Total	405	109.2											
3	Chick pea	Odisha	65	23	6.93	4.86	42.8	19483	45950	26467	2.4	18900	32777	13877	1.7
		West Bengal	431	90.2	13.43	9.52	41.2	24490	63136	38646	2.6	25132	50043	24911	2.0
		Total	496	113.2											
4	Green gram	Odisha	408	148.52	7.01	5.20	34.8	16434	38191	21757	2.3	15578	27379	11801	1.8
		West Bengal	494	84.6	10.38	8.08	28.4	23085	52200	29115	2.3	24125	46636	22511	1.9
		A&N Islands	13	2	4.70	3.60	30.6	14500	35250	20750	2.4	14500	27000	12500	1.9
		Total	915	235.1											
5	Lathyrus	West Bengal	32	4	8.26	6.64	24.4	18243	37170	18927	2.0	17874	29880	12006	1.7
		Total	32	4											
6	Lentil	West Bengal	922	178.5	11.49	8.72	31.8	20804	56940	36137	2.7	20763	42510	21748	2.0
		Total	922	178.5											
7	Pea	Odisha	5	1	14.40	8.50	69.4	25200	60480	35280	2.4	20700	35700	15000	1.7
		West Bengal	105	20	12.50	5.10	145.1	13915	56250	42335	4.0	12100	18450	6350	1.5
		Total	110	21											
Grand total			3134	736.22											

4.2.3 Other Crops:

Different field crops important for the respective districts of the KVK were taken up for the purpose of frontline demonstration, rice being the most important crop in the region grown preference for demonstration. The latest varieties and technologies on paddy were demonstrated in 247.13 ha covering 1250 farmers. Average yield increase was 14.2%

in A&N Islands, 22.4% in Odisha and 16.6% in West Bengal. Economics were also in favour of demonstrations showing BC ratio of 1.7 to 2.0 in different states. Wheat and maize is not a major crop in these states but to popularize these crops was demonstrated in 3.6 ha and 49 ha in West Bengal and 8.52 ha in Odisha which showed average increase in yield of 21.8% and 16.5% gave a BC ratio of 1.9 in West Bengal and 3.1 in Odisha.



Among the vegetable crops brinjal, cauliflower, onion, tomato, potato, cabbage, broccoli, chilli, cucumber, point gourd, elephant foot yam, bitter gourd was demonstrated through frontline demonstration programme. Improvement in yield was demonstrated 21.6 to 38.0% in brinjal, 16.3 to 42.2% in cauliflower, 24.8 to 32% in onion, 21.5 to 49.7% in tomato, 13.3 to 26.6% in potato, 32.0 to 34.9% in cabbage, 26.9 to 32.9% in cucumber, 22.2 to 26.9% in okra in the state of West Bengal and Odisha.

Spices like turmeric and ginger were demonstrated in both the states of West Bengal and Odisha showing improvement of yield of 28.6 to 49.8% in ginger and 30.8 to 57.8% in turmeric over the existing practices.

Fruit crops like mango and banana was demonstrated during 2018-19. Yield important with new technologies was 34.9% in Odisha and 13.5% in West Bengal. Banana in Odisha showed 33% increase in yield.

Overall state-wise analysis on demonstration in field crop showed that West Bengal covered on area of 1517.4 ha in different field crops which benefitted 8300 farmers of the state. The area coverage in the state of Odisha was 726.16 ha which benefitted 3361 farmers while only 8.06 ha was covered in A&N Islands benefitting 31 farmers of the Union Territory.

Table: Demonstration on crops other than oilseeds and pulses

Sl. No.	Crop	State	No. of Farmer	Area (ha)	Yield (q/ha)		Increase %	Economics of Demonstration (Rs./ha)				Economics of Check (Rs./ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
1	Paddy	A&N Islands	9	3	45.23	38.90	14.2	38550	76960	38410	2.0	38050	66495	28445	1.7
		Odisha	388	68.44	44.43	38.28	22.4	34836	67291	32455	1.9	33255	56578	23323	1.7
		West Bengal	1250	247.13	51.80	44.79	16.6	43600	74286	30687	1.7	42741	63280	20539	1.5
		Total	1647	318.57											
2	Wheat	West Bengal	25	3.6	31.10	25.69	21.8	23338	44985	21648	1.9	21320	34832	13512	1.6
3	Maize	Odisha	43	8.52	86.03	72.00	16.5	47387	145946	98559	3.1	38820	101226	62406	2.6
		West Bengal	84	49	51.54	40.52	23.9	45701	84570	38869	1.9	46552	69228	22676	1.5
		Total	127	57.52											
4	Brinjal	Odisha	98	18.8	333.65	240.52	38.0	97448	314634	217186	3.2	84703	218232	133529	2.6
		West Bengal	104	13.13	387.39	316.57	21.6	141089	341439	200349	2.4	131964	266113	134149	2.0
		Total	202	31.93											
5	Cauliflower	Odisha	20	2	202.15	174.05	16.3	76372	181150	104779	2.4	73888	155550	81662	2.1
		West Bengal	157	22.77	224.90	163.86	42.2	140138	409107	268969	2.9	118130	251623	133493	2.1
		Total	177	24.77											
6	Onion	Odisha	60	5.7	185.81	158.98	32.7	112308	238519	126211	2.1	104517	189867	85350	1.8
		West Bengal	116	17	213.28	178.12	24.8	211368	402863	191495	1.9	246617	399674	153058	1.6
		Total	176	22.7											
7	Tomato	Odisha	135	16.4	357.24	259.56	49.7	79315	245382	166067	3.1	73676	185393	111717	2.5
		West Bengal	136	9.46	294.63	239.43	21.5	115729	245870	130141	2.1	115165	201688	86523	1.8
		Total	271	25.86											

Sl. No.	Crop	State	No. of Farmer	Area (ha)	Yield (q/ha)		In-crease %	Economics of Demonstration (Rs./ha)				Economics of Check (Rs./ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
8	Potato	Odisha	25	3	242.01	200.09	26.6	72530	168873	96343	2.3	65497	136813	71317	2.1
		West Bengal	50	2.98	305.20	269.83	13.3	147500	287533	140033	1.9	127250	145000	17750	1.1
		Total	75	5.98											
9	Cabbage	Odisha	67	7.04	300.88	230.00	32.0	69571	176726	107156	2.5	60384	137274	76890	2.3
		West Bengal	44	2.13	206.33	153.00	34.9	89398	329800	240402	3.7	68283	155774	87490	2.3
		Total	111	9.17											
10	Broccoli	Odisha	15	2	284.05	219.36	26.9	67789	257443	189655	3.8	77563	190180	112617	2.5
		West Bengal	48	2.27	178.00	145.00	32.9	90255	246324	156069	2.7	90266	167350	77084	1.9
		Total	63	4.27											
11	Chili	Odisha	65	8	146.80	122.29	23.2	79821	200691	120870	2.5	73287	162978	89692	2.2
		West Bengal	93	11.75	156.01	118.32	31.9	107250	295950	188700	2.8	101310	207220	105910	2.0
		Total	158	19.75											
12	Cucumber	Odisha	35	6	241.44	210.47	17.5	73500	237875	164375	3.2	71550	206215	134665	2.9
		West Bengal	194	18.36	299.74	248.10	22.0	135742	296502	160759	2.2	130491	242897	112406	1.9
		Total	229	24.36											
13	Turmaric	Odisha	35	3.8	143.58	119.03	57.8	104818	280685	175868	2.7	100190	187820	87630	1.9
		West Bengal	33	1.67	233.47	175.23	30.8	111667	242155	130488	2.2	100500	163500	63000	1.6
		Total	68	5.47											
14	Ginger	Odisha	20	1.4	68.99	40.30	49.8	207990	542700	334710	2.6	177900	404375	226475	2.3
		West Bengal	10	0.27	135.00	105.00	28.6	135000	295000	160000	2.2	114000	215000	101000	1.9
		Total	30	1.67											
15	Okra	Odisha	45	6	158.47	134.06	22.2	129727	226243	96516	1.7	126333	198410	72078	1.6
		West Bengal	15	0.75	104.40	82.25	26.9	42500	104400	61900	2.5	40600	82250	41650	2.0
		Total	60	6.75											
16	Jute	Odisha	10	1	17.09	14.85	15.1	49409	85450	36041	1.7	49302	74250	24948	1.5
		West Bengal	256	37.03	31.02	25.93	17.8	55576	106750	51174	1.9	55517	90286	34769	1.6
		Total	266	38.03											
17	Elephant Foot Yam	A&N Islands	6	2	21.00	14.00	50.0	100000	420000	320000	4.2	100000	280000	180000	2.8
		Odisha	10	1	184.00	146.00	26.0	214000	368000	154000	1.7	186000	292000	106000	1.6
		West Bengal	67	1.069	623.05	420.35	49.7	317147	848013	530866	2.7	231613	488025	256413	2.1
		Total	83	4.07											
18	Pointed gourd	Odisha	10	2	181.30	137.60	31.6	171981	445520	273539	2.6	239775	242635	2860	1.0
		West Bengal	65	9	191.80	156.45	22.0	69750	183620	113870	2.6	74875	149055	74180	2.0
		Total	75	11											



Sl. No.	Crop	State	No. of Farmer	Area (ha)	Yield (q/ha)		In-crease %	Economics of Demonstration (Rs./ha)				Economics of Check (Rs./ha)			
					Demo	Check		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
19	Mango	Odisha	59	7.9	101.05	70.17	34.9	47206	128736	81530	2.7	36600	79508	42908	2.2
		West Bengal	22	10	462.70	407.50	13.5	130000	462700	332700	3.6	142000	396500	254500	2.8
		Total	81	17.9											
20	Banana	Odisha	43	6.8	352.00	264.00	33.0	136233	370800	234567	2.7	103833	247533	143700	2.4
21	Bitter gourd	Odisha	40	4.6	129.63	105.35	21.6	89037	197860	108823	2.2	92115	171800	79686	1.9
		West Bengal	105	4.07	256.00	206.90	24.2	144000	437650	293650	3.0	147500	355850	208350	2.4
		Total	145	8.67											
22	Others	A&N Islands	3	1.06	134.60	108.25	25.0	41000	147920	106920	3.6	70000	160000	90000	2.3
		Odisha	647	63.92	130.08	99.59	42.6	90703	183090	92387	2.0	85622	143909	58286	1.7
		West Bengal	479	47.72	234.95	172.81	35.9	88536	351269	262732	4.0	71365	156005	84640	2.2
		Total	1129	112.7											
Grand Total			5241	761.54											

4.2.4 Livestock and fishery:

Different areas in livestock and fishery like new breed, feed formulation with locally available materials, deworming, vaccinations, fish pond management, stocking density, ornamental fishery was demonstrated by the KVKs of Odisha and West Bengal. Demonstration was made on 609 livestock involving 15 farmers in A&N Islands. In Odisha, demonstrations were made on 5943 livestock benefitting 758 farmers. In the state of West Bengal, 861 farmers were involved to demonstrate latest technology of 1828 animals/livestock.

In fishery, demonstration was conducted on 289.0 ha in the state of Odisha, West Bengal and A&N Islands. In these demonstrations 399 farmers were involved.

4.2.5 Enterprise:

In different enterprise like apiary, vermicomposting, azolla cultivation, mushroom production, backyard livestock rearing, value addition of fruits and vegetables were demonstrated among farmers and rural youth to exhibit the earning potential of the technologies. These demonstrations benefitted 1480 farmers and rural youths in the 3 states under this zone.

Table: Frontline Demonstration on Livestock and Fishery

Sl. No.	Category	State/UT	No. of farmers	Area(ha)/no.
1	Livestock	A&N Islands	15	609
		Odisha	758	5943
		West Bengal	861	1828
		Total	1634	8380
2	Fishery	A&N Islands	2	2
		Odisha	151	97.1
		West Bengal	246	190.52
		Total	399	289.62

Table: Frontline Demonstration on Enterprise

Sl. No.	Category	State/UT	No. of farmers	Area(ha)/no.
1	Enterprise	A&N Islands	10	10
		Odisha	678	2039
		West Bengal	792	1146.17
		Total	1480	3195.17

4.2.6 Implements:

Agriculture implements and tools available for farmers are not in use in many villages due to lack of awareness about the machineries. To create awareness about implements and machineries, 133 demonstrations were organized involving 620 farmers, mostly in the state of West Bengal.

Table: Frontline Demonstration on Implements

Category	State/UT	No. of farmers	Number	Area(ha)/no.
Implement	A&N Islands	13	3	0.34
	Odisha	115	14	22.5
	West Bengal	492	16	77.16
	Total	620	33	100

4.3 Training:

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 achievements:

The KVKs of Zone V organized 3300 training courses for the benefit of 99330 farmers and farm women during 2018-19. Out of total beneficiaries, 70431 was male (70.91%) and 28899 (29.09%) was female. A good number (24521) of SC farmers were also trained in the programme which constituted 24.69% total trainees. While the number of ST trained was 18867 which was 18.99% of total beneficiaries. The details are given in the table below.

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

State	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
A & N Islands	80	747	1106	1853	0	0	0	370	242	612	1117	1348	2465
Odisha	1252	13499	5736	19235	2532	1501	4033	5869	3871	9740	21900	11108	33008
West Bengal	1968	27183	7671	34854	14948	5540	20488	5283	3232	8515	47414	16443	63857
Total:	3300	41429	14513	55942	17480	7041	24521	11522	7345	18867	70431	28899	99330

State-wise analysis of training for farmers and farmwomen showed that Union Territory of A&N Islands conducted 80 courses for 2465 participants. In Odisha, 1252 courses were conducted for 33008 beneficiaries while in West Bengal 1968 courses were taken up for training of 63857 beneficiaries.

Skill development through training of rural youth was one of the most important objectives of the KVKs to generate rural employment. Mushroom production, production of organic inputs, seed production, value addition, dairy farming, poultry farming, fish seed production, repair and maintenance of farm machines and bee keeping 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.

In the year 2018-19, 614 courses were organized for 13491 rural youths and girls through on and off-campus training. Out of the total participants 8820 (65.38%) was rural youth and 4671 (34.62%) was rural girls. Participation of SC in these programmes was 3905 which constituted 28.94% of the total trainees, while participation from ST was 1901 (14.09%).

State-wise analysis of the rural youth trained showed that West Bengal trained maximum rural girls 3374 which constitute about 35.24% of total trainees. The



percentage of the rural girls was 55.18% in the Union Territory of A&N Islands and 27.17% 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 27 courses

for 830 beneficiaries. Odisha organized 197 courses for 3088 beneficiaries and West Bengal organized 390 courses for 9573 beneficiaries which make a total of 614 courses for 13491 beneficiaries.

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

State/UT	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
A & N Islands	27	302	408	710	0	0	0	70	50	120	372	458	830
Odisha	197	1488	495	1983	243	135	378	518	209	727	2249	839	3088
West Bengal	390	3388	1604	4992	2189	1338	3527	622	432	1054	6199	3374	9573
Total	614	5178	2507	7685	2432	1473	3905	1210	691	1901	8820	4671	13491

The extension functionaries in state level were interested in obtaining training from the Krishi Vigyan Kendras. Those extension functionaries were mainly VLWs, Krishi Prayukti 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 463 courses involving 14193 extension functionaries while Odisha organized 129 courses for 2007 extension functionaries and A&N

Islands organized 7 courses for 160 beneficiaries. The state of West Bengal organized 327 courses for 12026 beneficiaries. Respective state government sent their employees in groups to get training from KVKs. Gender analysis of the trainees indicated that nearly 21.13% were female and 78.87% were male participants in 2018-19. The constitution of SC was 22.77% while ST was 6.02% of the extension females trained in KVKs.

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

State/UT	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
A & N Islands	7	58	102	160	0	0	0	0	0	0	58	102	160
Odisha	129	921	506	1427	182	98	280	203	97	300	1306	701	2007
West Bengal	327	7238	1281	8519	2225	727	2952	367	188	555	9830	2196	12026
Total	463	8217	1889	10106	2407	825	3232	570	285	855	11194	2999	14193

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. Due to lack of accommodation facilities some of the trainings were organized in off-campus mode.

Out of total training programmes (3300) conducted in all categories, around 65.45% was in off-campus mode and 34.55% in on-campus mode. While 66076 participants received training on off-campus mode (66.52%) and 33254 (33.48%) received training on on-campus mode.

Table: On- and Off-Campus training programme conducted for farmers, farm women rural youth and extension functionaries in Zone V

Farmers and Farm Women

State/UT	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
ON	1140	14293	4187	18480	6462	2799	9261	3485	2028	5513	24240	9014	33254
OFF	2160	27136	10326	37462	11018	4242	15260	8037	5317	13354	46191	19885	66076
Total	3300	41429	14513	55942	17480	7041	24521	11522	7345	18867	70431	28899	99330

Rural Youth and Girls

State/UT	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
ON	471	3657	1592	5249	1749	1093	2842	894	451	1345	6300	3136	9436
OFF	143	1521	915	2436	683	380	1063	316	240	556	2520	1535	4055
Total	614	5178	2507	7685	2432	1473	3905	1210	691	1901	8820	4671	13491

Extension Functionaries

State/UT	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
ON	413	7303	1367	8670	2062	623	2685	461	203	664	9826	2193	12019
OFF	50	914	522	1436	345	202	547	109	82	191	1368	806	2174
Total	463	8217	1889	10106	2407	825	3232	570	285	855	11194	2999	14193

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 129 courses involving 3877 participants while in seed production, 93 courses were organized for 2934 beneficiaries. In Horticulture, important areas of training included integrated nutrient management in which 55 trainings were organized for 1613 beneficiaries. In fruits cultivation, 145 trainings were organized for 4015 beneficiaries. Trainings were also organized on ornamental plants cultivation (12), plantation crops (13), tuber crops (16),

spices (10), medicinal and aromatic plants (7). In soil health and fertility management, a large number (398) of training programmes were organized involving 13173 beneficiaries to address the issues of efficient fertilizer use and integrated nutrient management. In Livestock Production and Management, 382 courses were organized for 11172 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, 244 courses were organized for 6575 beneficiaries which included courses like income generation by rural women, value addition of fruits and vegetables. In Agricultural Engineering, 72



courses were organized for 2126 beneficiaries. In plant protection, 437 courses were organized for 12694 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, 276 courses were conducted

involving 8432 farmers. In production of input, 52 courses were organized for 1379 farmers. In capacity building, 133 courses involving 3946 farmers and in agro-forestry, 39 courses for 1416 farmers were organized. A total of 3300 courses were organized in different thematic areas covering 99330 beneficiaries in Zone V in the year 2018-19.

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

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
I. Crop Production													
Weed Management	75	1018	216	1234	394	108	502	347	152	499	1759	476	2235
Resource Conservation Technologies	35	460	110	570	220	36	256	78	27	105	758	173	931
Cropping Systems	41	575	99	674	301	121	422	184	101	285	1060	321	1381
Crop Diversification	65	913	187	1100	477	111	588	197	65	262	1587	363	1950
Integrated Farming	36	469	142	611	246	95	341	97	54	151	812	291	1103
Water management	22	294	55	349	111	34	145	66	28	94	471	117	588
Seed production	93	1549	227	1776	714	113	827	226	105	331	2489	445	2934
Nursery management	25	326	51	377	180	19	199	107	55	162	613	125	738
Integrated Crop Management	129	1505	500	2005	736	271	1007	600	265	865	2841	1036	3877
Fodder production	30	446	71	517	250	17	267	137	16	153	833	104	937
Production of organic inputs	36	412	84	496	250	44	294	270	134	404	932	262	1194
Others, (cultivation of crops)	87	1872	171	2043	435	45	480	270	124	394	2577	340	2917
TOTAL	674	9839	1913	11752	4314	1014	5328	2579	1126	3705	16732	4053	20785
II. Horticulture													
a) Vegetable Crops													
Integrated nutrient management	55	858	105	963	319	53	372	178	100	278	1355	258	1613
Water management	12	225	39	264	71	25	96	33	12	45	329	76	405
Enterprise development	18	206	80	286	119	41	160	66	29	95	391	150	541
Skill development	11	129	42	171	37	25	62	29	114	143	195	181	376
Yield increment	28	297	164	461	126	97	223	131	94	225	554	355	909

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Production of low volume and high value crops	29	375	55	430	138	47	185	79	58	137	592	160	752
Off-season vegetables	48	583	96	679	373	69	442	152	88	240	1108	253	1361
Nursery raising	34	383	218	601	169	97	266	53	39	92	605	354	959
Export potential vegetables	10	69	81	150	20	33	53	27	31	58	116	145	261
Grading and standardization	7	72	23	95	79	20	99	47	13	60	198	56	254
Protective cultivation (Green Houses, Shade Net etc.)	13	148	41	189	103	34	137	58	26	84	309	101	410
Others, if any (Cultivation of Vegetable)	91	1283	244	1527	475	113	588	300	227	527	2058	584	2642
Training and Pruning	14	223	81	304	75	59	134	99	38	137	397	178	575
TOTAL	370	4851	1269	6120	2104	713	2817	1252	869	2121	8207	2851	11058
b) Fruits													
Layout and Management of Orchards	24	258	118	376	153	70	223	69	40	109	480	228	708
Cultivation of Fruit	51	570	207	777	339	115	454	85	33	118	994	355	1349
Management of young plants/ orchards	19	258	103	361	59	83	142	30	6	36	347	192	539
Rejuvenation of old orchards	6	126	15	141	11	11	22	1	1	2	138	27	165
Export potential fruits	2	10	29	39	2	3	5	6	0	6	18	32	50
Micro irrigation systems of orchards	8	95	2	97	36	2	38	57	21	78	188	25	213
Plant propagation techniques	20	236	103	339	75	67	142	68	12	80	379	182	561
Others, if any	15	274	65	339	58	24	82	7	2	9	339	91	430
TOTAL	145	1827	642	2469	733	375	1108	323	115	438	2883	1132	4015
c) Ornamental Plants													
Nursery Management	3	24	67	91	14	2	16	0	6	6	38	75	113
Management of potted plants	1	18	5	23	0	0	0	0	2	2	18	7	25
Export potential of ornamental plants	0	0	0	0	0	0	0	0	0	0	0	0	0



Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Propagation techniques of Ornamental Plants	3	45	14	59	42	0	42	2	3	5	89	17	106
Others, if any	5	39	14	53	48	2	50	17	10	27	104	26	130
TOTAL	12	126	100	226	104	4	108	19	21	40	249	125	374
d) Plantation crops													
Production and Management technology	8	77	29	106	39	31	70	27	15	42	143	75	218
Processing and value addition	0	0	0	0	0	0	0	0	0	0	0	0	0
Others, if any	5	11	15	26	18	11	29	46	60	106	75	86	161
TOTAL	13	88	44	132	57	42	99	73	75	148	218	161	379
e) Tuber crops													
Production and Management technology	14	205	51	256	80	36	116	56	42	98	341	129	470
Processing and value addition	0	0	0	0	0	0	0	0	0	0	0	0	0
Others, if any	2	38	5	43	28	5	33	0	0	0	66	10	76
TOTAL	16	243	56	299	108	41	149	56	42	98	407	139	546
f) Spices													
Production and Management technology	10	43	35	78	56	66	122	34	39	73	133	140	273
Processing and value addition	0	0	0	0	0	0	0	0	0	0	0	0	0
Others, if any	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	10	43	35	78	56	66	122	34	39	73	133	140	273
g) Medicinal and Aromatic Plants													
Nursery management	2	32	14	46	0	4	4	0	0	0	32	18	50
Production and management technology	1	0	0	0	6	19	25	0	0	0	6	19	25
Post harvest technology and value addition	0	0	0	0	0	0	0	0	0	0	0	0	0
Others, if any	4	42	9	51	21	9	30	34	4	38	97	22	119
TOTAL	7	74	23	97	27	32	59	34	4	38	135	59	194
III. Soil Health and Fertility Management													
Soil fertility management	73	1237	335	1572	392	71	463	160	150	310	1789	556	2345
Soil and Water Conservation	19	286	63	349	96	47	143	44	30	74	426	140	566
Integrated Nutrient Management	90	1110	318	1428	478	105	583	489	193	682	2077	616	2693

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Production and use of organic inputs	71	1500	220	1720	615	91	706	495	78	573	2610	389	2999
Management of Problematic soils	30	556	73	629	367	52	419	94	29	123	1017	154	1171
Micro nutrient deficiency in crops	26	345	116	461	91	28	119	60	34	94	496	178	674
Nutrient Use Efficiency	12	230	13	243	94	7	101	51	15	66	375	35	410
Soil and Water Testing	30	449	94	543	184	37	221	83	28	111	716	159	875
Others, if any	47	457	504	961	47	10	57	264	158	422	768	672	1440
TOTAL	398	6170	1736	7906	2364	448	2812	1740	715	2455	10274	2899	13173
IV. Livestock Production and Management													
Dairy Management	68	622	442	1064	257	195	452	119	121	240	998	758	1756
Poultry Management	80	577	439	1016	279	419	698	311	396	707	1167	1254	2421
Piggery Management	27	109	78	187	93	233	326	71	113	184	273	424	697
Rabbit Management	8	41	20	61	63	26	89	15	10	25	119	56	175
Disease Management	71	737	341	1078	303	238	541	301	240	541	1341	819	2160
Feed management	73	907	455	1362	363	257	620	173	156	329	1443	868	2311
Production of quality animal products	12	133	87	220	26	50	76	8	22	30	167	159	326
Others, if any Goat farming	43	525	300	825	225	82	307	106	88	194	856	470	1326
TOTAL	382	3651	2162	5813	1609	1500	3109	1104	1146	2250	6364	4808	11172
V. Home Science/Women empowerment													
Household food security by kitchen gardening and nutrition gardening	48	77	475	552	105	237	342	179	332	511	361	1044	1405
Design and development of low/minimum cost diet	5	0	70	70	0	24	24	0	32	32	0	126	126
Designing and development for high nutrient efficiency diet	3	0	63	63	0	26	26	0	12	12	0	101	101
Minimization of nutrient loss in processing	2	0	29	29	0	21	21	0	5	5	0	55	55
Gender mainstreaming through SHGs	5	1	89	90	0	45	45	0	0	0	1	134	135



Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Storage loss minimization techniques	12	5	140	145	27	50	77	0	77	77	32	267	299
Enterprise development	13	24	217	241	4	29	33	51	25	76	79	271	350
Value addition	28	56	406	462	50	82	132	4	102	106	110	590	700
Income generation activities for empowerment of rural Women	70	211	775	986	50	223	273	34	526	560	295	1524	1819
Location specific drudgery reduction technologies	21	39	184	223	25	24	49	130	138	268	194	346	540
Rural Crafts	10	12	141	153	14	93	107	0	14	14	26	248	274
Capacity building	10	11	155	166	14	59	73	31	29	60	56	243	299
Women and child care	7	23	78	101	5	26	31	0	63	63	28	167	195
Others, if any	10	25	32	57	43	59	102	31	87	118	99	178	277
TOTAL	244	484	2854	3338	337	998	1335	460	1442	1902	1281	5294	6575
VI. Agril. Engineering													
Installation and maintenance of micro irrigation systems	11	149	19	168	56	5	61	72	37	109	277	61	338
Use of Plastics in farming practices	4	53	22	75	6	3	9	14	2	16	73	27	100
Production of small tools and implements	3	20	21	41	2	2	4	20	13	33	42	36	78
Repair and maintenance of farm machinery and implements	17	392	70	462	69	12	81	27	8	35	488	90	578
Small scale processing and value addition	2	8	0	8	2	0	2	23	2	25	33	2	35
Post Harvest Technology	8	82	12	94	72	14	86	43	9	52	197	35	232
Others, if any	27	347	271	618	64	7	71	63	13	76	474	291	765
TOTAL	72	1051	415	1466	271	43	314	262	84	346	1584	542	2126
VII. Plant Protection													
Integrated Pest Management	210	2647	825	3472	1048	355	1403	790	457	1247	4485	1637	6122
Integrated Disease Management	105	1097	276	1373	651	190	841	433	202	635	2181	668	2849
Bio-control of pests and diseases	40	432	76	508	264	61	325	125	63	188	821	200	1021



Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Production of bio control agents and bio pesticides	38	823	180	1003	158	70	228	179	55	234	1160	305	1465
Others, if any	44	527	186	713	167	108	190	59	59	249	884	353	1237
TOTAL	437	5526	1543	7069	2288	784	1717	836	836	2553	9531	3163	12694
VIII. Fisheries													
Integrated fish farming	23	281	135	416	121	80	69	18	18	87	471	233	704
Carp breeding and hatchery management	13	148	34	182	61	33	40	23	23	63	249	90	339
Carp fry and fingerling rearing	21	331	44	375	191	12	26	10	10	36	548	66	614
Composite fish culture & fish disease	68	1128	239	1367	459	125	238	55	55	293	1825	419	2244
Fish feed preparation & its application to fish pond, like nursery, rearing & stocking pond	42	769	92	861	345	36	196	23	23	219	1310	151	1461
Hatchery management and culture of freshwater prawn	13	192	22	214	206	15	25	5	5	30	423	42	465
Breeding and culture of ornamental fishes	13	70	56	126	121	34	11	17	17	28	202	107	309
Portable plastic carp hatchery	11	76	50	126	115	49	56	5	5	61	247	104	351
Pen culture of fish and prawn	8	99	27	126	43	3	10	55	55	65	152	85	237
Shrimp farming	9	92	22	114	45	32	49	8	8	57	186	62	248
Edible oyster farming	6	75	13	88	26	0	29	0	0	29	130	13	143
Pearl culture	7	74	20	94	47	10	20	2	2	22	141	32	173
Fish processing and value addition	13	132	49	181	52	29	52	9	9	61	236	87	323
Others, if any	29	468	20	488	197	5	103	28	28	131	768	53	821
TOTAL	276	3935	823	4758	2029	463	924	258	258	1182	6888	1544	8432
IX. Production of Inputs at site													
Seed Production	15	175	35	210	113	44	157	37	22	59	325	101	426
Planting material production	4	47	20	67	27	8	35	14	8	22	88	36	124
Bio-agents production	3	30	30	60	30	20	50	10	10	20	70	60	130
Bio-pesticides production	2	15	5	20	10	0	10	10	0	10	35	5	40



Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Bio-fertilizer production	5	49	15	64	40	10	50	10	10	20	99	35	134
Vermi-compost production	15	134	51	185	31	52	83	14	38	52	179	141	320
Organic manures production	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0	0
Production of Fish feed	1	20	10	30	0	0	0	0	0	0	20	10	30
Others, if any	7	61	6	67	48	12	60	25	23	48	134	41	175
TOTAL	52	531	172	703	299	146	445	120	111	231	950	429	1379
X. Capacity Building and Group Dynamics													
Leadership development	20	266	65	331	33	11	44	70	23	93	369	99	468
Group dynamics	34	561	136	697	219	67	286	226	130	356	1006	333	1339
Formation and Management of SHGs	22	329	83	412	28	17	45	65	58	123	422	158	580
Mobilization of social capital	14	191	73	264	22	30	52	28	27	55	241	130	371
Entrepreneurial development of farmers/youths	18	286	14	300	19	12	31	109	40	149	414	66	480
WTO and IPR issues	6	128	0	128	8	0	8	5	0	5	141	0	141
Others, if any	19	263	67	330	47	33	80	92	65	157	402	165	567
TOTAL	133	2024	438	2462	376	170	546	595	343	938	2995	951	3946
XI Agro-orestry													
Production technologies	26	646	165	811	136	13	149	98	43	141	880	221	1101
Nursery management	5	13	52	65	38	3	41	19	10	29	70	65	135
Integrated Farming Systems	8	18	2	20	0	0	0	101	59	160	119	61	180
TOTAL	39	677	219	896	174	16	190	218	112	330	1069	347	1416
XII. Others (Pl. Specify)	20	289	69	358	230	186	416	12	7	19	531	262	793
Grand Total	3300	41429	14513	55942	17480	7041	24521	11522	7345	18867	70431	28899	99330

4.3.2 Rural Youth:

Considering the employment generation of the rural youth and girls in the rural areas, training programmes for rural youth and girls were organized by the KVKs of this Zone during 2018-19. The KVKs of Zone V conducted 614 courses for 13491 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 60 courses were organized for 1373 beneficiaries while

in production of organic inputs, 57 courses were organized for 1252 youths. Other courses organized were for seed production (50), bee keeping (37), nursery management (34), integrated farming (32), protected cultivation (23), sericulture (22), dairy farming (15), poultry production (13), ornamental fisheries (18), planting material production (15), vermiculture (19), piggery (7), paravet (10), enterprise development (12) and others. The details are given in the following table.

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

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Mushroom Production	60	334	463	797	223	203	426	66	84	150	623	750	1373
Bee-keeping	37	308	43	351	156	78	234	88	15	103	552	136	688
Integrated farming	32	264	114	378	58	8	66	135	39	174	457	161	618
Seed production	50	489	115	604	166	54	220	96	55	151	751	224	975
Production of organic inputs	57	563	154	717	260	67	327	164	44	208	987	265	1252
Planting material production	15	98	77	175	98	23	121	37	32	69	233	132	365
Vermi-culture	19	175	60	235	85	28	113	56	18	74	316	106	422
Sericulture	22	139	106	245	88	92	180	71	11	82	298	209	507
Protected cultivation of vegetable crops	23	233	91	324	57	36	93	83	43	126	373	170	543
Commercial fruit production	22	205	69	274	91	31	122	62	43	105	358	143	501
Repair and maintenance of farm machinery and implements	3	50	0	50	19	0	19	0	0	0	69	0	69
Nursery Management of Horticulture crops	34	330	164	494	177	154	331	56	19	75	563	337	900
Training and pruning of orchards	21	139	71	210	167	108	275	17	38	55	323	217	540
Value addition	13	20	130	150	2	54	56	6	38	44	28	222	250
Production of quality animal products	9	96	40	136	14	10	24	4	12	16	114	62	176
Dairying	15	143	18	161	124	36	160	2	0	2	269	54	323
Sheep and goat rearing	11	85	13	98	23	8	31	17	36	53	125	57	182
Quail farming	4	38	4	42	11	11	22	6	0	6	55	15	70
Piggery	7	33	60	93	59	32	91	4	4	8	96	96	192
Rabbit farming	9	68	30	98	42	43	85	4	2	6	114	75	189
Poultry production	13	106	22	128	43	65	108	32	34	66	181	121	302
Ornamental fisheries	18	80	136	216	16	92	108	19	37	56	115	265	380
Para vets	10	88	54	142	5	33	38	4	0	4	97	87	184
Para extension workers	13	101	43	144	64	39	103	33	4	37	198	86	284
Composite fish culture	9	105	28	133	52	18	70	24	0	24	181	46	227
Freshwater prawn culture	8	99	65	164	79	21	100	11	10	21	189	96	285



Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Shrimp farming	5	26	29	55	41	13	54	0	1	1	67	43	110
Pearl culture	0	0	0	0	0	0	0	0	0	0	0	0	0
Cold water fisheries	7	30	3	33	11	15	26	1	0	1	42	18	60
Fish harvest and processing technology	0	0	0	0	0	0	0	0	0	0	0	0	0
Fry and fingerling rearing	8	86	47	133	39	3	42	5	0	5	130	50	180
Small scale processing	6	30	16	46	16	23	39	7	13	20	53	52	105
Post Harvest Technology	2	9	3	12	16	0	16	8	4	12	33	7	40
Tailoring and Stitching	8	57	38	95	4	3	7	5	6	11	66	47	113
Rural Crafts	7	50	84	134	18	29	47	17	9	26	85	122	207
Enterprise development	12	139	51	190	18	19	37	28	22	50	185	92	277
Others, if any (ICT application in agriculture)	25	362	66	428	90	24	114	42	18	60	494	108	602
TOTAL	614	5178	2507	7685	2432	1473	3905	1210	691	1901	8820	4671	13491

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 the area, KVK played an important role in updating knowledge of the state departments. Sometimes, NGO people also approached for training of their staffs. In the year 2018-19, a total of 463 courses were organized for 14193 extension functionaries under

Zone V. The area of training were productivity enhancement in field crop (75), integrated nutrient management (50), information networking (46), integrated pest management (36), protected cultivation (22), management of farm animals (22), formation of SHGs (11), capacity building of ICT (16), gender mainstreaming through SHGs (7) 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

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Productivity enhancement in field crops	75	1854	509	2363	497	121	618	102	65	167	2453	695	3148
Integrated Pest Management	36	737	91	828	149	31	180	26	6	32	912	128	1040
Integrated Nutrient management	50	933	114	1047	378	64	442	30	10	40	1341	188	1529
Rejuvenation of old orchards	19	297	53	350	109	19	128	14	1	15	420	73	493
Value addition	25	393	102	495	184	30	214	16	3	19	593	135	728
Protected cultivation technology	22	405	72	477	97	11	108	32	6	38	534	89	623
Formation and Management of SHGs	11	73	44	117	57	110	167	2	13	15	132	167	299

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Group Dynamics and farmers organization	30	536	136	672	94	10	104	105	19	124	735	165	900
Information networking among farmers	46	1354	55	1409	202	16	218	90	7	97	1646	78	1724
Capacity building for ICT application	16	179	87	266	45	22	67	11	4	15	235	113	348
Care and maintenance of farm machinery and implements	14	182	53	235	182	47	229	27	3	30	391	103	494
WTO and IPR issues	3	59	6	65	14	0	14	5	0	5	78	6	84
Management in farm animals	22	229	92	321	74	46	120	48	43	91	351	181	532
Livestock feed and fodder production	15	286	17	303	83	5	88	16	5	21	385	27	412
Household food security	11	94	62	156	19	72	91	10	7	17	123	141	264
Women and Child care	7	36	54	90	30	48	78	2	15	17	68	117	185
Low cost and nutrient efficient diet designing	7	49	52	101	15	7	22	0	9	9	64	68	132
Production and use of organic inputs	16	183	62	245	60	10	70	15	18	33	258	90	348
Gender mainstreaming through SHGs	7	98	21	119	30	61	91	0	0	0	128	82	210
Crop intensification	12	148	19	167	66	15	81	11	1	12	225	35	260
Others, if any	19	92	188	280	22	80	102	8	50	58	122	318	440
TOTAL	463	8217	1889	10106	2407	825	3232	570	285	855	11194	2999	14193

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 boards, 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 2018-19, the KVKs conducted sponsored 596 training programmes for 13148 beneficiaries with the fund support from different organizations. Out of these 13148, 69.08% were male and 30.92% were female beneficiaries. The composition of SC/ST in those training programme was 41.31%.

The major courses covered in these programmes were production and value addition in fruits etc. (197) for 1813 participants, crop production (185) for 6345 participants, production of inputs (45) for 335 participants, soil health management (9) for 267 participants, livestock management (79) for 667 participants, fishery nutrition (3) for 148 participants, fishery management (29) for 908 participants, home science (33) for 719 participants and capacity building (20) for 1068 participants.

State-wise analysis showed that Union Territory of A&N Islands, organized 3 courses for 95 participants, while West Bengal organized 305 courses for 11367 participants and Odisha organized 288 courses for 1686 participants. It indicated that sponsoring organization preferred KVKs for getting their clientele trained for benefit of their organization.



Table: Sponsored training programmes conducted by KVKs of Zone V

State/UT	No. of courses									
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
A & N Islands	3	36	59	95	0	0	0	36	59	95
Odisha	288	867	432	1299	308	79	387	1175	511	1686
West Bengal	305	4873	1449	6322	2999	2046	5045	7872	3495	11367
Total	596	5776	1940	7716	3307	2125	5432	9083	4065	13148

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

Area of training	No. of courses									
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Increasing production and productivity of crops	176	2634	653	3287	1758	908	2666	4392	1561	5953
Commercial production of vegetables	9	246	57	303	38	51	89	284	108	392
Total	185	2880	710	3590	1796	959	2755	4676	1669	6345
Production and value addition										
Fruit Plants	13	103	70	173	51	137	188	154	207	361
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	9	198	15	213	51	3	54	249	18	267
Production of Inputs at site	45	163	47	210	85	40	125	248	87	335
Methods of protective cultivation	3	54	5	59	24	7	31	78	12	90
Others (pl. specify)	127	392	55	447	235	78	313	627	133	760
Total	197	910	192	1102	446	265	711	1356	457	1813
Post harvest technology and value addition										
Processing and value addition	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
Farm machinery										
Farm machinery, tools and implements	2	59	0	59	11	0	11	70	0	70
Others (pl. specify)	0	0	0	0	0	0	0	0	0	0
Total	2	59	0	59	11	0	11	70	0	70
Livestock and fisheries										
Livestock production and management	79	142	165	307	119	241	360	261	406	667
Animal Nutrition Management	4	52	2	54	28	9	37	80	11	91
Animal Disease Management	1	0	2	2	1	31	32	1	33	34

Area of training	No. of courses									
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Fisheries Nutrition	3	61	36	97	30	21	51	91	57	148
Fisheries Management	29	244	231	475	241	192	433	485	423	908
Others (pl. specify)	2	67	0	67	4	0	4	71	0	71
Total	118	566	436	1002	423	494	917	989	930	1919
Home Science										
Household nutritional security	9	0	27	27	30	93	123	30	120	150
Economic empowerment of women	7	0	92	92	0	111	111	0	203	203
Drudgery reduction of women	0	0	0	0	0	0	0	0	0	0
Others (pl. specify)	17	123	36	159	104	103	207	227	139	366
Total	33	123	155	278	134	307	441	257	462	719
Agricultural Extension										
Capacity Building and Group Dynamics	20	592	66	658	336	74	410	928	140	1068
Others (pl. specify)	41	646	381	1027	161	26	187	807	407	1214
Total	61	1238	447	1685	497	100	597	1735	547	2282
GRAND TOTAL	596	5776	1940	7716	3307	2125	5432	9083	4065	13148

4.3.5 Vocational Training Programme:

Vocational training are the much needed training programme at KVK level as these programmes are directed to employment generation and much focus are given on rural based employment generation techniques like repair of maintenance of farm machines, commercial floriculture, commercial fruit production, value addition, tailoring & stitching, diary farming, composite fish culture, rural craft. 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 2018-19, 1091 vocational training programmes were conducted by the KVKs of Zone V for benefit of 2854 beneficiaries. Among

these West Bengal organized 779 courses for 1898 beneficiaries and Odisha conducted 252 courses for 918 beneficiaries. Among the courses mushroom cultivation was most sought by the beneficiaries. A total of 193 such courses were organized for 520 beneficiaries out of which, 321 farmers were employed. While the course on composite fish culture gained favour among the rural youths and 303 rural youths and girls were trained through 78 courses. Other courses that gained popularity were commercial fruit production (214 participants), commercial vegetable production (205 participants), vermicomposting (200 participants), poultry farming (155 participants) and sheep and goat farming (117 participants).

In these training programmes a good number (842) of SC/ST got trained which constitute 29.50% of the total beneficiaries.



Table: Vocational training conducted by KVKs of Zone V

State/ UT	No. of courses										Self employed after training			
		General			SC/ST			Grand Total			Type of units	No. of units	No. of persons employed	No. of persons employed else where
		Male	Female	Total	Male	Female	Total	Male	Female	Total				
A & N Islands	60	15	12	27	6	5	11	21	17	38	2	38	0	0
Odisha	252	499	150	649	207	62	269	706	212	918	63	207	396	106
West Bengal	779	831	505	1336	351	211	562	1182	716	1898	81	711	743	149
Total	1091	1345	667	2012	564	278	842	1909	945	2854	146	956	1139	255

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

Area of Training	No. of courses										Self-employed after training			No. of persons employed else where
		General			SC/ST			Grand Total			Type of units	No. of units	No. of persons employed	
		Male	Female	Total	Male	Female	Total	Male	Female	Total				
Crop production and management														
Commercial floriculture	25	13	1	14	5	1	6	18	2	20	1	0	5	0
Commercial fruit production	38	113	38	151	47	16	63	160	54	214	11	50	45	18
Commercial vegetable production	48	105	40	145	44	16	60	149	56	205	13	65	75	23
Total	111	231	79	310	96	33	129	327	112	439	25	115	125	41
Integrated crop management														
Organic farming	2	11	0	11	4	0	4	15	0	15	1	0	0	0
Others (pl. specify)	150	190	35	225	80	15	95	270	50	320	19	64	93	35
Total	152	201	35	236	84	15	99	285	50	335	20	64	93	35
Post-harvest technology and value addition														
Value addition	29	14	39	53	6	16	22	20	55	75	8	11	46	11
Others (pl. specify)	5	15	6	21	7	2	9	22	8	30	1	0	0	0
Total	34	29	45	74	13	18	31	42	63	105	9	11	46	11
Livestock and fisheries														
Dairy farming	15	21	14	35	9	6	15	30	20	50	3	25	42	0
Composite fish culture	78	170	43	213	73	17	90	243	60	303	14	86	101	17



Area of Training	No. of courses										Self-employed after training			No. of persons employed elsewhere
		General			SC/ST			Grand Total			Type of units	No. of units	No. of persons employed	
		Male	Female	Total	Male	Female	Total	Male	Female	Total				
Sheep and goat rearing	54	45	38	83	18	16	34	63	54	117	5	67	67	0
Piggery	10	24	11	35	10	5	15	34	16	50	2	5	11	0
Poultry farming	34	29	81	110	13	32	45	42	113	155	9	105	106	7
Others (pl. specify)	7	4	32	36	1	13	14	5	45	50	2	8	11	0
Total	198	293	219	512	124	89	213	417	308	725	35	296	338	24
Income generation activities														
Vermicomposting	83	104	38	142	42	16	58	146	54	200	10	93	89	12
Production of bio-agents, bio-pesticides, bio-fertilizers etc.	25	42	5	47	17	1	18	59	6	65	3	24	24	9
Repair and maintenance of farm machinery and implements	15	25	0	25	10	0	10	35	0	35	3	12	18	6
Rural Crafts	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seed production	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sericulture	60	32	6	38	13	3	16	45	9	54	3	44	44	10
Mushroom cultivation	163	182	182	364	78	78	156	260	260	520	17	188	277	44
Nursery, grafting etc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tailoring, stitching, embroidery, dying etc.	15	0	14	14	0	6	6	0	20	20	1	0	0	0
Agril. Para-workers, para-vet training	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others (pl. specify)	146	173	22	195	73	10	83	246	32	278	15	71	79	43
Total	507	558	267	825	233	114	347	791	381	1172	52	432	531	124
Agricultural Extension														
Capacity building and group dynamics	29	18	10	28	8	4	12	26	14	40	3	0	6	20
Others (pl. specify)	60	15	12	27	6	5	11	21	17	38	2	38	0	0
Total	89	33	22	55	14	9	23	47	31	78	5	38	6	20
Grand Total	1091	1345	667	2012	564	278	842	1909	945	2854	146	956	1139	255



4.4 Extension Programmes:

Technologies assessed through different programmes of assessment 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 days in the KVK campus. In creating awareness of the latest technologies in crop production, livestock farming, horticultural production, fishery and other allied technologies, the KVKs of Zone-V organized 135952 numbers of activities involving 1297117 farmers and extension officials in the state of West Bengal, Odisha and A&N Islands. Among these beneficiaries 1270230 were farmers and 26887 were extension officials. Analysis of the gender-wise participation showed that 27.97% was women beneficiaries, which is almost 1/3 of the male beneficiaries. A large number of extension officials (26887) paid visit to the KVKs and interacted with them regarding the latest technologies. Farmers in large number (84999) visited the KVKs and took knowledge about the latest technologies available in the KVK farm and nearby villages. Scientists or the KVK also regularly visited the farmers field. A total of 9114 visit were made by the scientists and during the course of visit 63022 farmers consulted with the scientists. KVKs conducted Kisan goshties for creating awareness of the different technologies and 159 such Kisan goshties were organized for 7556 beneficiaries.

KVKs also participated in 102 Kisan Melas and 197 numbers of exhibition which benefitted 130753 and 117727 beneficiaries, respectively. Different technologies and successful cases were also exhibited through arranging film show for 24417 participants. Farmers seminar, workshop were also organized for creating awareness about different programmes and government schemes. In the year 2018-19, 213 seminars and 205 workshops were organized to cover 12115 and 7523 farmers, respectively. Advisory services were one of the most popular services sought by the farmers. In the year, 74670 such services were offered by the KVK staff for the interest of 523778 beneficiaries. Camps and clinics were also organized to show the farmers about the latest technologies through 874 soil health

camps and 1614 animal health camps, 110 agri-mobile clinics were organized to benefit 6423, 82730 and 4647 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, 1702 such meetings were organized for benefits of 12700 rural people. Involving farmers and rural people with the KVKs by observation of different programmes like celebration of important days, mahila divas, Swachhta Hi Seva, Sankalp se Siddhi was the objective of the KVK to create awareness regarding the government programmes.

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 various extension activities for the benefit of 12151 participants. Maximum number of participants (1762) benefitted from Kisan Goshthi. Advisory services were provided to 543 participants and farm science club meeting was attended by 1022 participants as well as celebration of important days by 982 participants.

West Bengal with 23 KVKs organized various extension activities for benefit of 667034 farmers, farm women, rural youth and extension functionaries. Major extension activities included advisory services (215039), Kisan Melas (118831), animal health camps (79359), farmers visit to KVK (54993), exhibition (27657), scientist visit to farmers field (22987), exposure visit (13404), film show (12838) and farmer seminar (10472), etc.

All the 33 KVKs of Odisha carried out different extension activities involving 617932 participants. The highest participation was in advisory services (308196), the next being exhibition (89583). Other important extension activities organized by KVKs of Odisha included scientists' visit to farmers' field (40852), farmers' visit to KVK (30945), diagnostic visits (22747), celebration of important days (12286), Kisan Mela (11604), film show (11426) and field day (10421), etc.

Table: Extension activities organised by KVKs of Zone-V

Nature of Extension Activity	No. of activities	Farmers			Extension Officials			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Field Day	701	14723	5476	20199	563	191	754	15286	5667	20953
Kisan Mela	102	89540	39140	128680	1553	520	2073	91093	39660	130753
Kisan Goshthi	159	5184	2198	7382	117	57	174	5301	2255	7556
Exhibition	197	78553	33007	111560	5516	651	6167	84069	33658	117727
Film Show	723	17532	6284	23816	408	193	601	17940	6477	24417
Method Demonstrations	486	12154	4569	16723	191	93	284	12345	4662	17007
Farmers Seminar	213	8581	3310	11891	154	70	224	8735	3380	12115
Workshop	205	5349	1887	7236	226	61	287	5575	1948	7523
Group meetings	1540	9929	3079	13008	237	139	376	10166	3218	13384
Lectures delivered as resource persons	2594	25222	10104	35326	1272	393	1665	26494	10497	36991
Advisory Services	74670	368471	150503	518974	3497	1307	4804	371968	151810	523778
Scientific visit to farmers field	9114	48580	14442	63022	794	407	1201	49374	14849	64223
Farmers visit to KVK	32508	66222	18777	84999	707	304	1011	66929	19081	86010
Diagnostic visits	5881	23698	5779	29477	379	206	585	24077	5985	30062
Exposure visits	466	11888	4274	16162	422	121	543	12310	4395	16705
Ex-trainees Sammelan	191	4587	1233	5820	55	28	83	4642	1261	5903
Soil health Camp	874	4858	1346	6204	130	89	219	4988	1435	6423
Animal Health Camp	1614	55238	24392	79630	1611	1489	3100	56849	25881	82730
Agri mobile clinic	110	3644	888	4532	67	48	115	3711	936	4647
Soil test campaigns	638	7920	2212	10132	206	80	286	8126	2292	10418
Farm Science Club Conveners meet	1129	2868	810	3678	103	22	125	2971	832	3803
Self Help Group Conveners meetings	411	2672	2152	4824	98	53	151	2770	2205	4975
Mahila Mandals Conveners meetings	162	1874	1836	3710	131	81	212	2005	1917	3922
Celebration of important days (specify)	312	12815	4964	17779	320	157	477	13135	5121	18256
Sankalp Se Siddhi	273	9935	1605	11540	69	52	121	10004	1657	11661
Swatchta Hi Sewa	329	7250	3817	11067	439	128	567	7689	3945	11634
Mahila Kisan Divas	86	1675	2953	4628	214	133	347	1889	3086	4975
Any Other (Specify)	264	13663	4568	18231	265	70	335	13928	4638	18566
Total	135952	914625	355605	1270230	19744	7143	26887	934369	362748	1297117



Table: State-wise extension activities organised by KVKs of Zone-V

Nature of Extension Activity	A & N Islands			Odisha			West Bengal			Total		
	M	F	T	M	F	T	M	F	T	M	F	T
Field Day	157	91	248	7266	3155	10421	7863	2421	10284	15286	5667	20953
Kisan Mela	149	169	318	8199	3405	11604	82745	36086	118831	91093	39660	130753
Kisan Goshthi	969	793	1762	1463	590	2053	2869	872	3741	5301	2255	7556
Exhibition	328	159	487	63628	25955	89583	20113	7544	27657	84069	33658	117727
Film Show	107	46	153	8356	3070	11426	9477	3361	12838	17940	6477	24417
Method Demonstrations	54	57	111	3744	1787	5531	8547	2818	11365	12345	4662	17007
Farmers Seminar	272	190	462	842	339	1181	7621	2851	10472	8735	3380	12115
Workshop	120	108	228	1003	330	1333	4452	1510	5962	5575	1948	7523
Group meetings	276	145	421	6244	2052	8296	3646	1021	4667	10166	3218	13384
Lectures delivered as resource persons	460	289	749	12224	4868	17092	13810	5340	19150	26494	10497	36991
Advisory Services	377	166	543	259377	48819	308196	160481	54558	215039	420235	103543	523778
Scientific visit to farmers field	276	108	384	32206	8646	40852	16892	6095	22987	49374	14849	64223
Farmers visit to KVK	52	20	72	25318	5627	30945	41559	13434	54993	66929	19081	86010
Diagnostic visits	50	18	68	17860	4887	22747	6167	1080	7247	24077	5985	30062
Exposure visits	10	40	50	2514	737	3251	9786	3618	13404	12310	4395	16705
Ex-trainees Sammelan	381	457	838	2413	373	2786	1848	431	2279	4642	1261	5903
Soil health Camp	425	112	537	2610	674	3284	1953	649	2602	4988	1435	6423
Animal Health Camp	177	172	349	2541	481	3022	54131	25228	79359	56849	25881	82730
Agri mobile clinic	691	194	885	535	104	639	2485	638	3123	3711	936	4647
Soil test campaigns	249	62	311	4697	1432	6129	3180	798	3978	8126	2292	10418
Farm Science Club Conveners meet	702	320	1022	1292	168	1460	977	344	1321	2971	832	3803
Self Help Group Conveners meetings	227	37	264	560	1316	1876	1983	852	2835	2770	2205	4975
Mahila Mandals Conveners meetings	109	24	133	1076	833	1909	820	1060	1880	2005	1917	3922
Celebration of important days (specify)	640	342	982	9050	3236	12286	3445	1543	4988	13135	5121	18256

Nature of Extension Activity	A & N Islands			Odisha			West Bengal			Total		
	M	F	T	M	F	T	M	F	T	M	F	T
Sankalp Se Siddhi	138	200	338	8507	444	8951	1359	1013	2372	10004	1657	11661
Swatchta Hi Sewa	39	42	81	4014	1925	5939	3636	1978	5614	7689	3945	11634
Mahila Kisan Divas	0	60	60	911	1618	2529	978	1408	2386	1889	3086	4975
Any Other (Specify)	112	183	295	1520	1091	2611	12296	3364	15660	13928	4638	18566
Total	7547	4604	12151	489970	127962	617932	485119	181915	667034	982636	314481	1297117

4.4.2 Other Extension Activities:

The KVKs of Zone V also gave extensive coverage of their programme through social network and print media. A total of 619 news coverage in newspaper, 211 radio talks and 237 TV talks were provided to highlight the KVK programmes and on-going projects. About 404 extension literature was distributed among the farmers and visitors.

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

Nature of Extension Activity	No. of activities
Newspaper coverage	619
Radio talks	211
TV talks	237
Popular articles	225
Extension Literature	404
Other, if any	279
Total	1975

5.0 Production of Seed, Planting Materials and Bio-products

5.1 Seed Production:

Seed production programme of Krishi Vigyan Kendra is a unique venture for supply of quality seed to the farmers at district level. There is no designated agency at village level to cater the need of quality seed of the farmers. Therefore, the farmers compelled to use their own seeds. On the other hand, seeds of the recently released varieties are also not available to the farmers. Seed production programme of the KVK enables the farmers to get recently released

varieties of different crops, thus helps in spread of such varieties.

State-wise analysis of seed production programme showed that A&N Islands produced 455.98 q rice and 0.02 q okra seeds. This benefitted 95 farmers and earned Rs.1368000/- in 2018-19. Odisha produced 4447.00 q seeds, West Bengal produced 13018.04 q seeds in 2018-19. Total value of seeds was about Rs.37925581.12 which benefitted more than 8424 farmers to get seeds of recent varieties.

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	7.00	21000	11	449.00	1347000	24	456.00	1368000	35
2	Odisha	200.00	528400	188	4247.00	5562077	1635	4447.00	6090477	1823
3	West Bengal	9649.57	22669096.07	2128	3368.47	7798008.05	1478	13018.04	30467104.12	3606
	Total	9856.57	23218496.07	2327	8064.47	14707085.05	3137	17921.04	37925581.12	5464



In seed production programme major varieties of rice viz., MTU 7029, Swarna Sub I, Prabhath, Khitish (IET), CR 1009, Pratikshya, Hasanta, Hironmayee, Luna, Sampad etc. were taken up and total production of seed in rice was 13452.31 q which benefitted 2949 farmers. After rice, pulse seed production was given importance and 661.24 q seed of lentil, 682.75 q green gram, 757.53 q black gram seeds were produced through village and KVK seed production

programme. Major varieties of lentil were WBL-77, green gram was IPM-02-03, IPM-02-14, black gram was OBG-17, PU 31 and WBU 108 & WBU 1091. In oilseeds, mustard varieties like MC-1, B9, JD6, Pusa, Mustard 30, sesame varieties like Amriti, Sabitri and groundnut varieties like Devi (ICGV91114) and TAG 24, TG 51, JL 24 were taken up in seed production programme and 169.76 q of mustard, 400.6 q of sesame and 79.76 q of groundnut seeds were produced.

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	5689.57	12097546.07	1296	7762.74	13376790.05	1653	13452.31	25474336.12	2949
	Wheat	15	42000	5	15.35	42980	17	30.35	84980	22
	Maize	0	0	0	8.91	33094	60	8.91	33094	60
Oilseeds	Mustard	146.78	300000	79	22.84	140460	192	169.62	440460	271
	Toria	0	0	0	8.5	61300	9	8.5	61300	9
	Linseed	30.9	298500	64	0.4	0	0	31.3	298500	64
	Niger	0	0	0	3.8	20500	19	3.8	20500	19
	Sesame	394	225000	30	6.6	38300	27	400.6	263300	57
	Groundnut	79.76	550450	58	0	0	0	79.76	550450	58
	Sun Flower	0	0	0	0.24	720	0	0.24	720	0
Pulses	Redgram	9.6	77000	32	2.2	21340	18	11.8	98340	50
	Chickpea	5.6	38000	26	0	0	0	5.6	38000	26
	Lentil	649.76	3072000	258	11.48	142750	149	661.24	3214750	407
	Greengram	673.5	2510000	199	9.25	79340	62	682.75	2589340	261
	Blackgram	744.1	3993000	202	13.43	147670	219	757.53	4140670	421
	Pea	0	0	0	11.3	148479	17	11.3	148479	17
Commercial crops	Potato	1413	0	46	2.37	3952	10	1415.37	3952	56
Vegetables	Okra	0	0	0	7.2	4240	186	7.2	4240	186
	Tomato	0	0	0	1.57	970	49	1.57	970	49
	Onion	0	0	0	0.1	20000	10	0.1	20000	10
	Brinjal	0	0	0	0.02	0	20	0.02	0	20
	Lobia	0	0	0	4	12000	40	4	12000	40
Spices	Ginger	0	0	0	2.25	9000	24	2.25	9000	24
	Turmeric	5	15000	32	73.52	184700	149	78.52	199700	181
Fiber crops	Sunhemp	0	0	0	1.5	0	0	1.5	0	0
Others	Dhaincha	0	0	0	6.5	14000	58	6.5	14000	58
	Elephant Footyam	0	0	0	84.9	187000	149	84.9	187000	149
	Sisbania	0	0	0	3.5	17500	0	3.5	17500	0
Total		9856.57	23218496.07	2327	8064.47	14707085.05	3137	17921.04	37925581.12	5464

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	455.98	1366400	29	4186.4	5740568	1388	8810.31	18366528.12	1552	13452.31	25473496.12	2949
	Wheat	0	0	0	0	0	0	30.35	84980	12	30.35	84980	12
	Maize	0	0	0	5.48	26920	45	3.43	6174	8	8.91	33094	53
Oilseeds	Mustard	0	0	0	0	0	0	169.62	440460	588	169.62	440460	588
	Toria	0	0	0	8.5	61300	9	0	0	0	8.5	61300	9
	Linseed	0	0	0	0	0	0	31.3	298500	101	31.3	298500	101
	Niger	0	0	0	3.8	20500	19	0	0	0	3.8	20500	19
	Sesame	0	0	0	0	0	0	400.6	263300	387	400.6	263300	387
	Groundnut	0	0	0	0	0	0	79.76	550450	182	79.76	550450	182
	Sun Flower	0	0	0	0	0	0	0.24	720	0	0.24	720	0
	Redgram	0	0	0	2.2	21340	18	9.6	77000	107	11.8	98340	125
	Chickpea	0	0	0	0	0	0	5.6	38000	17	5.6	38000	17
Pulses	Lentil	0	0	0	0	0	0	661.24	3214750	138	661.24	3214750	138
	Greengram	0	0	0	201.5	6000	0	481.25	2583340	214	682.75	2589340	214
	Blackgram	0	0	0	3.2	30420	11	754.33	4110250	176	757.53	4140670	187
	Pea	0	0	0	10.3	133479	17	1	15000	0	11.3	148479	17
	Potato	0	0	0	0	0	0	1415.37	3952	23	1415.37	3952	23
Commercial crops	Okra	0.02	1600	6	7.18	3480	178	0	0	0	7.2	5080	184
	Tomato	0	0	0	1.57	970	49	0	0	0	1.57	970	49
	Onion	0	0	0	0	0	0	0.1	20000	10	0.1	20000	10
	Brinjal	0	0	0	0	0	0	0.02	0	11	0.02	0	11
	Lobia	0	0	0	0	0	0	4	12000	10	4	12000	10
Spices	Ginger	0	0	0	2.25	9000	24	0	0	0	2.25	9000	24
	Turmeric	0	0	0	9	22500	47	69.52	177200	1	78.52	199700	48
Fiber crops	Sunhemp	0	0	0	1.5	0	0	0	0	0	1.5	0	0
Others	Dhaincha	0	0	0	4.5	14000	18	2	0	20	6.5	14000	38
	Elephant Foot yam	0	0	0	0	0	0	84.9	187000	49	84.9	187000	49
	Sisbania	0	0	0	0	0	0	3.5	17500	0	3.5	17500	0
Total		456	1368000	35	4447.38	6090477	1823	13018.04	30467104.12	3606	17921.04	37925581.12	5464

5.2 Planting Material Production:

Number of fruits and vegetable crops are grown in the states of West Bengal, Odisha and A&N Islands. Very few nurseries are available in these states which supply quality planting materials to the farmers. To address this problem KVKs took up planting material production programme in the district level to provide direct access to the farmers

to the planting materials. In the year 2018-19, KVKs of Zone V produced 51.1 lakh planting materials of graft, gooties, sapling, seedlings and bulbs of fruits and vegetables and earned Rs. 225.4 lakh which benefitted 34456 farmers. Among the different crops mango, banana, guava, lime, papaya, watermelon, brinjal, tomato, cucumber, cauliflower, okra, onion, chilli, bitter gourd, broccoli, capsicum varieties were produced in these programme.



State-wise analysis showed that A&N Islands produced 10570 number of planting materials, Odisha produced 3347826 number of planting materials and

West Bengal produced 17550554 number of planting materials in the year 2018-19.

Table: Planting materials production by KVKs

Crop		A & N Islands			Odisha			West Bengal			Total		
		Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers
Vegetable seedling	Cauliflower	0	0	0	353431	433964	1235	81232	69579	221	434663	503543	1456
	Brinjal	2705	423	33	180661	190947	512	157412	84278	1281	340778	275648	1826
	Tomato	525	17.5	12	260252	362378	1451	242500	196221	850	503277	558616.5	2313
	Chilli	1410	546	20	102870	114830	619	131170	92337	492	235450	207713	1131
	Cabbage	0	0	0	229921	230121	308	115710	96408	428	345631	326529	736
	Capcicum	0	0	0	9344	16438	131	6672	14250	115	16016	30688	246
	Brocoli	0	0	0	46462	45768	264	34200	20300	312	80662	66068	576
	Other vegetable	0	0	0	2000000	355395	1588	688400	679875	900	2688400	1035270	2488
Fruits	Banana	100	0	10	1566	31980	375	1050	13500	107	2716	45480	492
	Mango	100	0	0	0	0	0	35638	801855	1986	35738	801855	1986
	Litchi	0	0	0	0	0	0	4755	152900	1362	4755	152900	1362
	Guava	0	0	0	0	0	0	12925	167181	2196	12925	167181	2196
	Sapota	0	0	0	0	0	0	1250	50000	22	1250	50000	22
	Lemon	0	0	0	0	0	0	7300	39000	1555	7300	39000	1555
	Anola	0	0	0	0	0	0	960	82600	557	960	82600	557
	Papaya	80	0	15	12440	323084	1159	6040	42600	2368	18560	365684	3542
	Pomegranate	0	0	0	0	0	0	700	0	8	700	0	8
	Jack fruit	0	0	0	0	0	0	120	1200	12	120	1200	12
	Woodapple	0	0	0	0	0	0	3000	30000	1000	3000	30000	1000
	Citrus	120	0	0	1640	155470	375	35564	231890	1942	37324	387360	2317
	Orange	0	0	0	0	0	0	150	0	55	150	0	55
Ornamental plants	Ornamental	700	0	0	120122	157880	482	16610	32170	422	137432	190050	904
Medicinal & aromatic	Lemon grass	0	0	0	200	2000	10	2450	4700	113	2650	6700	123
Plantation	Arecanut	2330	12550	17	40	400	10	12500	17000	494	14870	29950	521
	Coconut	0	0	0	0	0	0	320	12800	120	320	12800	120
Spices	Black pepper	250	5000	5	212	2550	19	22066	973500	133	22528	981050	157
Tuber		250	1000	4	109	3650	59	1906	15774040	67	2265	15778690	130
Fodder Crop saplings		2000	0	4	0	0	0	27000	16200	40	29000	16200	44
Forest Sp	Koronda	0	0	0	0	0	0	43000	50000	1395	43000	50000	1395
	Forest Sp	0	0	0	4316	29478	426	50000	250000	4400	54316	279478	4826
Other	Tuberose	0	0	0	0	0	0	11854	47534	114	11854	47534	114
	Marigold	0	0	0	24240	23877	238	600	300	8	24840	24177	246
Total		10570	19536.5	120	3347826	2480210	9261	1755054	20044218	25075	5113450	22543965	34456



5.3 Production of Bio-product:

There is lot of demand of organic fertilizers at village level particularly in vegetable cultivation. To meet up the need of the farmers and to promote organic cultivation for maintaining soil fertility of the soil KVKs encourages the use of bio product and promotes vermicompost and bio-fertilizer in large scale. In the state of Odisha, 19832 kg of vermicompost, 43.7 kg vermiwash, 2816 kg of biofertilizers and 1204 kg

of bio-agent were produced which benefitted 711 farmers and earned a value of Rs.254660/- in 2018-19. In West Bengal 100106 kg of vermicompost, 12935 kg of biofertilizers, 6579.8 kg of bio agent and 5930 kg of earthworm was produced which benefitted 3309 farmers and earned Rs.1133366/- in 2018-19. The total production of bio products was 149447.62 kg in 2018-19 under zone V which benefitted 4020 farmers and earned value of Rs.1388026/-.

Table: Production of bio-product by KVKs

Product Name	Name of the bio-product	Odisha	West Bengal	Total (A & N Islands, Odisha, W.B.)		
		Quantity (kg)	Quantity (kg)	Quantity (kg)	Value(Rs.)	No. of Farmers
Bio Fertilisers	Vermicompost	19832	100106	119938	620150	1033
	Bio Fertilisers	2816.5	12935	15751.5	226715	791
Total		22648.5	113041	135689.5	846865	1824
Bio Agents	Bio Agent	1204.62	6579.8	7784.42	487161	2003
	Honey	0	0	0	0	0
	Vermi wash	43.7	0	43.7	22250	110
	BGA	0	0	0	0	0
Earth-worm		0	5930	5930	31750	83
Total		23896.82	125550.8	149447.62	1388026	4020

5.4 Livestock and Fishery:

Livestock strains, like chicks, eggs, piglets, fingerlings, spawns etc. are supplied to the farmers by KVKs through their livestock production programmes. In the year 2018-19, A&N Islands produced 119 chicks, 253 fertile eggs, 5045 fingerlings and 68 ornamental spp. which earned Rs.56047 after making available to the farmers. In the state of Odisha 3662 goat strains, 18722 chicks, 3463 layer chicks, 1588 broiler chicks, 2662 ducks, 307 fertile eggs, 110752 fingerlings of major carps, 536080 fingerlings, 66000 fish spawn were produced which makes total production of

1346676 livestock and fish produced in the state of Odisha in 2018-19. It benefitted 2416 farmers and earned revenue of Rs.2096256. In the state of West Bengal chick production of 4577, duckling production was 1488, fish fingerling produced of 165961 for mixed crop, 226892 for major crop. Fish spawn production was 2150000. Total production of livestock production was 2889500 in 2018-19 in the state of West Bengal. It benefitted 1401 farmers and earned Rs.3222963. In the entire Zone V, the total production of livestock production was 4241662 number in 2018-19 which benefitted 3817 farmers and earned Rs. 5375266.

Table: Production of livestock and fishery by KVKs

Particulars of Livestock	A & N Islands			Odisha			West Bengal			Total		
	Quantity (No.)	Value (Rs.)	No. of Farmers	Quantity (No.)	Value (Rs.)	No. of Farmers	Quantity (No.)	Value (Rs.)	No. of Farmers	Quantity (No.)	Value (Rs.)	No. of Farmers
Dairy animals												
Cows	0	0	0	0	0	0	18	405000	0	18	405000	0
Calves	0	0	0	0	0	0	30	286000	0	30	286000	0
Other (Pl. specify) Goat	0	0	0	3662	117825	25	128	166250	14	3790	284075	39



Particulars of Livestock	A & N Islands			Odisha			West Bengal			Total		
	Quantity (No.)	Value (Rs.)	No. of Farmers	Quantity (No.)	Value (Rs.)	No. of Farmers	Quantity (No.)	Value (Rs.)	No. of Farmers	Quantity (No.)	Value (Rs.)	No. of Farmers
Poultry												
Broilers	0	0	0	1588	80546	243	0	0	0	1588	80546	243
Layers	119	20987	0	3463	365150	589	188	40225	23	3770	426362	612
Duals (broiler and layer)	0	0	0	18722	847199	997	4577	547780	690	23299	1394979	1687
Ducks	0	0	0	2662	209429	41	1448	123820	221	4110	333249	262
Egg	253	1617	0	307	1535	0	0	0	0	560	3152	0
Others (Pl. specify) Rabbit, Ornamental bird, feed, chicks etc.	0	0	0	1000	37774	50	1464	72334	51	2464	110108	101
Piggery												
Piglet	0	0	0	0	0	0	102	329600	8	102	329600	8
Fisheries												
Indian carp	5045	25930	0	110752	107904	229	226892	319697	105	342689	453531	334
Mix carp	0	0	0	5000	1100	0	165962	742757	71	170962	743857	71
Fingerling	0	0	0	536080	291544	175	6590	61300	70	542670	352844	245
Fish spwan	0	0	0	660000	30150	25	2150000	7200	85	2810000	37350	110
Others (Pl. specify) Ornamental fish, Carp fry, Exotic fish etc.	68	7513	0	3440	6100	42	332102	121000	63	335610	134613	105
Total	5485	56047	0	1346676	2096256	2416	2889501	3222963	1401	4241662	5375266	3817

6.0 Soil, Water and Plant Sample Analysis

Scientists engaged in the KVKs under ATARI Kolkata motivated farmers through conducting various awareness and training programmes for testing soil before cultivation in their land to decrease indiscriminate use of fertilizers, and to control environmental and other health hazards. Besides those, scientists tested a large number of water samples in their KVK laboratories taken by the farmers for quality analysis. A total of 30100 soil and 2 water samples were tested from 1774 villages which benefitted total 72990 farmers in this Zone. A minimum amount was charged from farmers for testing each soil sample. Thus, KVKs of ICAR-ATARI Kolkata earned about Rs. 9.15 lakh during the period.

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

State	Name of Sample	Number of			Amount Realized
		Samples	Farmers	Villages	
A & N Islands	Soil	340	82	6	0
Sub-Total		340	82	6	0
Odisha	Soil	7601	16797	791	11424
Sub-Total		7601	16797	791	11424
West Bengal	Soil	22157	56107	960	904379
	Water	2	2	17	0
Sub-Total		22159	56109	977	904379
Total of Zone	Soil	29893	72988	1757	915803
	Water	2	2	17	0
Total		30100	72990	1774	915803

7.0 Celebration by KVKs

7.1 Technology Week:

To bridge the knowledge gap between farming community, researchers and research systems, KVKs under ATARI Kolkata use to showcase agriculture, livestock and fishery sector related recent technologies available with KVKs in the form of “Technology Week Celebration”. It was being organized in a very systematic manner for creating interest and awareness even among the common people. As technology week is being celebrated in public-private partnership (PPP) mode, there is opportunity to exchange their views using a common platform. In the year 2018-19, KVKs under

ATARI Kolkata conducted 398 different activities benefitting 65748 stakeholders. The authorities from ICAR-ATARI Kolkata, concerned host organizations, KVK personnel, officials from line departments of concerned state, NABARD, ATMA, lead bank of the district, IFFCO, Mahindra, input dealers, seed companies, NGOs, SHGs, marketing agencies, men and women farmers, rural youths and many others were present in the celebration. The KVKs of West Bengal state organized highest number (324) of activities which benefitted 63190 persons followed by KVKs of Odisha (74) state which benefitted 2558 persons during the period.

Table: Technology Week celebration in different states

Type of Activities	Odisha		West Bengal		Total	
	No. of Activities	No. of Participants	No. of Activities	No. of Participants	No. of Activities	No. of Participants
Goshthies	1	50	2	365	3	415
Demonstration	17	260	15	8825	32	9085
Exhibition	0	0	37	4350	37	4350
Exposure Visit	0	0	21	1180	21	1180
Farmers Training	8	184	22	2414	30	2598
Farmers - Scientist interaction	2	150	22	2204	24	2354
Field Visit	0	0	0	0	0	0
Film Show	5	200	25	1182	30	1382
Group discussion	2	20	0	0	2	20
Krishi Mela	0	0	8	11404	8	11404
Lectures Organized	0	0	0	0	0	0
Seminar	1	300	3	210	4	510
Animal health camp	2	79	1	50	3	129
Ex-trainees Meet	0	0	1	250	1	250
Soil testing Camp	4	135	2	200	6	335
Cultural programme	0	0	7	730	7	730
Displaying of posters/ charts	0	0	100	750	100	750
Distribution of Organic Inputs	0	100	0	0	0	100
Krishi quiz	0	0	1	300	1	300
Plant health clinic	0	0	0	0	0	0
Publication of Extension Literatures	5	180	3	0	8	180
Various campaign	25	850	54	28776	79	29626
Road Show	2	50	0	0	2	50
Total	74	2558	324	63190	398	65748



7.2 World Soil Day:

Fifty six KVKs of this Zone celebrated 'World Soil Day' on 5th December, 2018. On the occasion, KVKs organized various programmes like seminar, lectures, hands on training, awareness programme

and so on. Three MPs attended the programme on that day. From different states/ UT of this Zone, a total of 12205 persons including 11270 farmers participated in the soil day programme. About 6775 soil health cards were distributed among the farmers.

State/UT	Number of KVKs Organised the programme	No. of Hon'ble MPs (Loksabha/ Rajyasabha) participated	No. of farmer participated	Total No. of Participants	No. of Soil Health Cards distributed
A & N Islands	2	0	51	107	0
Odisha	33	1	7097	7919	4203
West Bengal	21	2	4122	4179	2572
Total	56	3	11270	12205	6775

7.3 National Science Day:

Like every year, the 'National Science Day' was celebrated on 28th February, 2019 by a number of KVKs under ICAR-ATARI Kolkata to popularise the benefits of scientific knowledge and its practical appropriation in our day to day life. Six KVKs i.e. 1 from Andaman & Nicobar Islands and 5 from West Bengal state observed National Science Day through organizing lectures, quiz competitions, trainings, awareness camps, demonstrations, debates, film shows, seminars, painting competitions etc. to disseminate latest scientific knowledge on agriculture, animal husbandry, fishery sciences and other day to day activities.

7.4 World Veterinary Day:

The World Veterinary Association (WVA) and the World Organisation for Animal Health (OIE) created 'World Veterinary Day' in 2000 as an annual celebration of the veterinary profession, falling on the last Saturday of every April month to raise public awareness about the important role of veterinarians and to promote the veterinary profession all over the world. During the year 2019, the 'World Veterinary Day' was celebrated on 27th April, 2019 under the selected theme-'Value of Vaccination'. Four KVKs of West Bengal state organized various programmes on vaccination camp, health camp, scientific livestock rearing etc. at their KVK premises involving large number of livestock owners.

8.0 Revenue Generation

The KVK scientists under ATARI Kolkata were actively involved in receiving funds from a large number of external sources through sanctioning projects i.e. organizing additional training programmes, research projects, building infrastructural facilities and so on which helped in supporting and strengthening of their KVKs. During the year 2018-19, KVKs of this zone managed to receive funds from State Department of Agriculture, Central Government, RKVY, NABARD, ATMA and many others. A total of Rs. 318 lakh revenue was generated by the KVKs of ICAR-ATARI. Out of this,

Andaman and Nicobar Islands KVKs generated fund of Rs. 0.95 lakh, Odisha KVKs of Rs. 14.83 lakh and West Bengal KVKs of Rs. 301.71 lakh.

Table: Revenue generation by KVKs

State/UT	Amount (Rs.)
A & N Islands	95,000
Odisha	14,83,216
West Bengal	3,01,71,978
Total	3,17,50,195

9.0 Publication by KVKs

During 2018-19, KVK scientists were actively engaged in preparing and publishing research papers, technical bulletins, newsletters, popular articles, leaflets/ pamphlets, DVD/CD etc. to highlight the achievements of research and other related activities and to make it available to other KVKs, SAUs, ICAR institutes, line departments, ATMA, NABARD, other agencies, farmers and other stake holders. A total of 6331 publications comprising of 139 research papers, 95 symposia papers, 75 newsletters, 163 popular articles, 179 books, 24 book chapters, 4205 extension

pamphlets/ literature, 73 bulletins, 1075 technical reports and 303 electronic publications were made by the KVK personnel of this Zone. The total number of circulation was 112883. The Andaman & Nicobar Islands KVKs have published 45 publications which was circulated among 400 beneficiaries. Similarly, KVKs of Odisha and West Bengal state published 1336 and 4950 publications, respectively. In the respective state, number of circulation was 81954 and 30529 during the period.

Table: Publication by KVKs under ICAR-ATARI, Kolkata

Item	A&N Islands		Odisha		West Bengal		Total	
	Number	No. circulated	Number	No. circulated	Number	No. circulated	Number	No. circulated
Research paper	11	0	61	2036	67	56	139	2092
Seminar/conference/symposia papers	18	200	41	1246	36	0	95	1446
Books	2	50	71	13259	106	430	179	13739
Bulletins	4	0	41	8750	28	6742	73	15492
News letter	0	0	57	25500	18	340	75	25840
Popular Articles	0	0	114	2743	49	438	163	3181
Book Chapter	2	150	8	1015	14	0	24	1165
Extension Pamphlets/literature	0	0	88	24075	4117	21700	4205	45775
Technical reports	8	0	777	3184	290	503	1075	3687
Electronic Publication (CD/DVD etc)	0	0	78	146	225	320	303	466
Total	45	400	1336	81954	4950	30529	6331	112883

10.0 Scientific Advisory Committee Meetings

The Scientific Advisory Committee (SAC) Meeting is being organized by the KVKs every year to finalize the Action Plan for the coming year. As per the guidelines of ICAR, the committee comprises of representatives from ICAR-ATARI Kolkata, Host Organization, other nearby ICAR Institutes, State Agricultural Universities, development departments of the district, media personnel, financial institutions, progressive farmers and farm women and others. It was assured that all nominated members were present in the meeting. During the year 2018-19, out of total 59 KVKs of ICAR-ATARI Kolkata conducted

54 SAC meeting. Thirty three KVKs of Odisha state conducted 32 SAC meeting and 23 KVKs of West Bengal state conducted 20 meetings, whereas, 3 KVKs of Andaman & Nicobar Islands conducted one meeting during the period. The meeting was attended by 1453 participants.

State	No. of SAC Meeting	No. of participants
A&N Islands	2	90
Odisha	32	956
West Bengal	20	407
Total	54	1453



11.0 Technology Backstopping by Directorates of Extension Education

To transfer various agricultural technologies from Research Institutes/ Agricultural Universities to the end users and to cater the needs of the farmers in the district after getting feedback from them, the concerned KVKs under the guidance of Directors/ Dean of Extension Education of concerned State Agricultural Universities (SAUs) of this zone plan various activities round the year through conducting on-farm-trial (OFT), front line demonstration (FLD), training programmes, hands-on-training, health camps and so on.

Under the technological and administrative support of Directors of Extension Education (DEEs), all 59 KVKs of ATARI Kolkata disseminated latest and most suitable agricultural technologies developed by various institutes/ universities. For efficient transfer and use of technologies, 59 KVKs of ICAR-ATARI Kolkata were distributed under the jurisdiction of 4 DEEs irrespective of any host organizations of KVK. 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 2018-19, DEEs under ATARI Kolkata extended their hands in supplying seeds, planting materials, package of management practices for agriculture, livestock and fish farming, printed literatures, organizing HRD training for KVK personnel and many others.

To meet out the demand of KVK personnel, to improve their skill for efficient transfer of technologies and to make the newly recruited staff of KVK aware of mandate and functioning of KVKs, all the Extension Directorate of ATARI Kolkata conducted HRD programme throughout the year 2018-19. During the period, a total of 28 HRD programmes for 1735 KVK personnel were organized on skill training, scientific livestock/ fish production, disease/ pest management in crops, geo-tagged OFT and

FLD monitoring system, energy conservation in agriculture, operational modalities of KVKs, value chain management, conducting PPVFRA/ ARYA/ CFLD on pulses and oilseeds, gender mainstreaming, ICT application in agriculture, documentation, soil health management, conducting health/ vaccination camp for animals, mechanization in agriculture and many others. The maximum number of programme (12) was conducted by OUAT, Bhubaneswar followed by WBUAFS, Kolkata (9 programmes) and UBKV, Pundibari (6 programmes). The number of KVKs from different Directorates of this Zone involved in such programmes was 374 during 2018-19.

In the year 2018-19, the DEEs/ Dean, Extension Education and their officials visited KVKs for 287 occasions for different programmes including SAC meeting, field days celebration, technology week celebration, training programmes, interaction meeting, *Kisan Goshthi*, *Kisan Chaupal*, *Rabi* and *Kharif Campaign*, *World Soil Day* celebration, *Adibasi Divas* celebration, special programme celebration, monitoring of OFTs and FLDs etc. to oversee various activities of KVKs. The Dean, Extension Education of Odisha state visited their KVKs for 92 times, DEE of BCKV for 86 times, UBKV for 60 times and WBUAFS for 49 times. The Dean/ Directors attended total 180 programme organized at their KVKs during 2018-19.

The overseeing of KVK activities by the DEEs plays very crucial role in assessing the technological needs of KVKs and in making the KVKs empowered with updated knowledge and skills. During the year 2018-19, the DEE officials of OUAT visited their

OFT fields for 79 occasions and FLD fields for 110 times to monitor the performance of newly released variety crops/ new strains of poultry/ low-cost incubator for poultry, disease and pest incidences, and many others. The officials of BCKV made OFT field visits for 23 occasions and FLD field visits for 51 occasions to oversee the performance of various crops cultivated under soil-test based nutrient management practices, to know the effect of weedicides and pesticides under the field conditions



etc. The Directorate officials of UBKV and WBUAFS also visited their OFT and FLD fields for 15 times *vs.* 11 times and 20 *vs.* 10 times, respectively for the similar purposes. A total of 13 visits were done by the officials of various Directorates for special purposes like monitoring ARYA and NICRA activities, attending Agri-Farm clinics etc.

During the period under report, the Directorate of OUAT provided and implemented 22 technologies e.g. varietal substitution, soil test based nutrient applications, protected cultivation, post-harvest management, value addition, introduction of high value crops, bee keeping, dairy farming, fish farming etc. in 33 KVKs. The Directorate of BCKV, UBKV and WBUAFS also provided 21, 45 and 10 technologies, respectively to their KVKs and the same was implemented. Some of the important technologies were profit maximization of mango orchard through multiple cropping systems, agronomical practices of paddy cultivars under low land water logged condition, agro-technique of colocasia/ turmeric/

ginger/ elephant foot yam cultivation, climate smart Animal husbandry with special reference to area specific mineral mixture, seasonal fodder cultivation for livestock, ornamental fish rearing in pond eco-system, sensor based smart irrigation system, nutrient management of Darjeeling Mandarin (*Citrus reticulata*), zero tillage technology and so on.

All the Directorates under ICAR-ATARI Kolkata were actively engaged in publishing various literatures in English and local languages covering all aspects of agriculture and allied sectors for the benefit of farmers. In the year 2018-19, a total of 31 technology inventories were published. Out of these, 21 published by BCKV, 7 by OUAT, 3 by WBUAFS and one by UBKV. About 22 technological inventories were also updated during that period. The Directorates also supplied seed and planting materials to 40 KVKs each, bio-products to 36 KVKs, livestock to 8 KVKs, poultry breeds/ strains to 44 KVKs, poultry products to 5 KVKs and area specific mineral mixture to 9 KVKs during the period 2018-19.

12.0 Agricultural Technology Information Centre (ATIC)

The Agricultural Technology Information Centre (ATIC) serves as a “single window” system and it usually situated at the entrance of any institute. The updated technologies available at the research institute/ state agricultural universities relating to agriculture, animal husbandry and fishery sciences are transferred to the end users i.e. farmers through ATICs. Farmers can access the desired information for solution of farming oriented problems. There are four ATICs under ATARI Kolkata which 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 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.

All the ATICS are facilitated with reception counter, exhibition/ technology museum, touch screen kiosk,

cafeteria, sales counter, farmers’ feedback register, hall for farmers’ interaction etc. During 2018-19, ATICs were visited by 11019 farmers from different districts of this Zone. Out of which, 5951 farmers visited for technology information, 700 farmers for technology products, 100 farmers for technology services and 3268 farmers for other purposes.

Considering the technology information, during the period 2018-19, about 993 farmers used kisan call centre to get the information on varieties/ hybrids, pest management, disease management, agro-techniques, soil and water conservation, post-harvest technology and value addition, and animal husbandry including fisheries. The majority of the farmers were interested in receiving information on pest management (75) followed by disease management of various crops (52), animal husbandry and fishery (37), post-harvest technology and value addition (25), crop varieties (16), agro-techniques (14) and soil and water conservation (8). A total of 32 farmers were benefitted from video showing in the ATICs. Twenty two farmers met



their queries by sending letters to the concerned authorities of the ATICs. To fulfil the demands of farmers/ technocrats/ students, ATICs of this Zone were used for training of 637 farmers/ technocrats/ students. Maximum farmers were interested on animal husbandry and fisheries (224) followed by post-harvest technologies and value addition (152) and agro-technologies (117).

The farmers and other stake holders were also provided with various types of publications either in the form of books, technical bulletins, CDs etc. for updating their knowledge. Sometimes, the literatures were supplied at minimum price or free of cost from the ATICs. During the period, 3473 copies of books, 8325 copies of technical bulletins and around 10 CDs/DVDs were sold which benefitted 11800 farmers. An amount of Rs. 20150/- in the form of revenue was generated from different ATICs during the year 2018-19.

The ATIC of this Zone was also a potential source of supplying various technological products like seeds, planting materials, table fishes, fish feeds, bio-products, mushroom spawn and others. About 109 q seed, 11512 planting materials, 0.50 q bio-products, 20 kg mushroom spawn, 430 kg carp grower feed, 49 q table fishes, 20 q aromatic rice, 1.6 q arecanuts, 3.25 q mustard oil, 0.20 q strawberry, 2000 lemons etc. were sold to the farmers from different ATICs. A total of around 3000 farmers were benefitted from sale of those technological products and a worth of Rs. 1.90 lakh revenue was generated during 2018-19. From different ATICs under ATARI Kolkata, 470 soil and water samples were tested and 24 plants were diagnosed for different diseases. It also provided various technological services to other departments of the concerned institutes. A total of 1021 farmers got benefit from various technology services during the period.

13.0 HRD Programme by ATARI

ICAR-ATARI, Kolkata conducted 14 HRD programme during the year for updating knowledge and skill of the KVK staff. The details are given in following Table.

Table: Workshop-cum-training programme and meetings organised by ICAR-ATARI, Kolkata

Sl. No.	Title of the Programme	Organized at	Date	No. of participants
1	Fourth Zonal Program Management Committee (ZPMC) meeting of FFP under ICAR-ATARI Kolkata and Patna	ICAR-ATARI Kolkata	28.04.2018	25
2	Screening committee meeting for selection of Best Scientist for CFLD (Pulses & Oilseeds) 2017-18	ICAR-ATARI Kolkata	19.05.2018	11
3	Workshop-cum-training on LDS under CSISA project	ICAR-ATARI Kolkata	05-07.06.2018	40
4	Annual Zonal Workshop of NICRA-TDC of ICAR-ATARI Zone IV & V	WBUAFS, Belgachia, Kolkata	27-28.06.2018	40
5	Training programme for Master Trainers on "KVK Sandesh under Digital Farming Initiative in Agriculture"	ICAR-ATARI Kolkata	25.07.2018	14
6	Orientation programme on "Preparation and dissemination of Agromet Advisories at Block level under GKMS scheme" for Nodal Officers of KVKs	ICAR-ATARI Kolkata	09-10.08.2018	32
7	Meeting on district wise Action Plan for DFI by 2022 in West Bengal	ICAR-ATARI Kolkata	10.09.2018	14
8	R.E. Meeting 2018-19	ICAR-ATARI Kolkata	25.09.2018	35
9	Group meeting for CFLD Pulses & Oilseeds with KVKs of West Bengal	ICAR-ATARI Kolkata	03.11.2018	42
10	Orientation course on IPM in important agricultural and horticultural crops of A & N Islands, Odisha and West Bengal	ICAR-ATARI Kolkata	13-15.12.2018	84
11	Review Meeting of NICRA, Seed Hub and CSISA of ICAR-ATARI Zone V	CISH-KVK Malda	21-22.12.2018	26

Sl. No.	Title of the Programme	Organized at	Date	No. of participants
12	Workshop-cum-training on PPS under CSISA project	ICAR-ATARI Kolkata	12-13.03.2019	30
13	Regional workshop on PPV&FR	WBUAFS, Belgachia, Kolkata	15.03.2019	250
14	Launching workshop of ARYA	ICAR-ATARI Kolkata	28.03.2019	38

14.0 Flagship Programmes

14.1 National Innovations in Climate Resilient Agriculture- Technology Demonstration Component (NICRA-TDC):

Nodal Scientist: Dr. F.H. Rahman

In the context of climate variability, farmers need to adapt quickly to increasing frequency of drought, flood and other extreme events to stabilize crop yields and farm income. Over the years, 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 working 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 9 KVK districts of West Bengal, Odisha and Union Territory of A & N Islands at district level regionally coordinated by ICAR-Agricultural Technology Application Research Institutes (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 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. Climatic vulnerability of selected 9 KVK districts of Odisha, West Bengal and union Territory of A & N Islands assessed during implementation of NICRA programme brought 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. Plan of action, accordingly, was prepared for its implementation through executing technological interventions to initiate crop production, resource conservation, livestock and fish rearing, water harvesting *etc.* in the vulnerable villages of KVK districts.



14.1.1 Natural Resource Management:

Total 2505 numbers of farmers were benefited covering 648.6 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 85.8 ha among 454 no. of farmers. The technologies followed mainly

by zero tillage operation. More than 31 ha have been brought under Broad Bed and Furrow intervention with significant impact among the farmers in A&N Island. Ridge and furrow method of sowing maize was 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 265 numbers of farmers. *Zero tillage technology* successfully implemented in more than 44 ha area of 124 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 paddy demonstrated in NICRA adopted villages covering an area of 36 ha

in 124 farmers fields. There were 40 new rainwater harvesting structures have been developed and 38 numbers renovated which could store 393091 cu m of water having protective irrigation potential 352 ha. This intervention increased the cropping intensity to the maximum extent upto 250%. Around 220 q compost prepared from solid wastes was

added to the soil through which 37 thousand carbon sequestrations was done during 2017-18. Artificial ground water recharge done by field bunding, water management and through SRI by sub-soiler in paddy covering 32 ha area in 41 farmers' fields.



Ground water recharge through SRI by sub-soiler



recorded highest paddy yield (55.5 q/ha) and benefit: cost ratio (2.24). Land shaping with *ail* cultivation and rain water

harvesting structure have been constructed covering 1.07 ha area during post *kharif* to mitigate the scarcity of irrigation water, increase in soil carbon and reduce soil salinity.



14.1.2 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 2904 farmers. Drought tolerant paddy varieties like *Sahbhagi*, *Anjali*, *Naveen*, *Abhishek* were demonstrated in 76.2 ha areas of 627 number

of farmers' field. Salt tolerant varieties of paddy like *CARI Dhan-5*, *Usar Dhan-5*, *Jarava*, *Geetanjali*, *SR-26B*, *Amalmona* were demonstrated in 12.3 ha area in 130 farmers' fields. *Javarva*, *Geetanjali* and *Amalmona* varieties proved maximum salt tolerant potential by giving highest yield of 44.8 q/ha and more economic return (BC ratio of 2.23). Flood tolerant varieties of paddy like *Swarna sub 1*, *sabita*, *dudheswar*



were demonstrated in 23 ha area in 114 farmers' field by giving yield of 45.0 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 180 number of farmers' fields with an area of 33.7 ha land. An area of 38.6 ha

was covered for staggered community nurseries of paddy, brinjal, cauliflower, tomato which benefitted 187 numbers farmers. Introducing different crops like *Ol* (var. *HYV Gajendra*); Cauliflower (var. *MSN-16*) Paddy (var. *Pusa Bold*, *Pusa 362*); Tomato (var. *Param F1*); etc in Kendrapara, Jharsuguda as less water requiring crop as contingent crop planning during deficit rainfall in *kharif*. An area of 140.5

ha was covered for crop diversification of paddy, brinjal, cauliflower, lentil, cabbage which benefitted 855 numbers of farmers. In Jharsuguda, Sonapur 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 average annual income is Rs.40, 000/ha of land. From cauliflower and cabbage cultivation, they got a profit of Rs.22, 000 from 22



ha of area. Crop diversification by hybrid maize is carried out. Near about 120 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 2904 numbers of farmers were benefitted covering 452.8 ha of land.

14.1.3 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 914 livestock owner with 1586 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 178 ha involving 908 numbers 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 demonstrations, legume Sudan grass showed maximum benefit return (B:C: 5.59). Silage making for 285 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. Khaki Campbell duck was also introduced through this intervention.

14.1.4 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 48 units have been developed covering of 191 ha area of 1455 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.



14.1.5 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.



14.1.6 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, chaff cutter, conoweeder, duster, sprayer, laveler, FIRB planter, sub-soiler, zero-till seed drill,, disc harrow, bucket laveler, reaper, thresher, cultivator, rotavator, pumpset *etc.*

Status of Custom Hiring Centres:

Name of KVK	Revenue generated (Rs.)	
	From Custom Hiring Centres	Total under VCRMC
Cooch Behar	36600	55416
Malda	23570	55215
Port Blair	18500	44500
South 24 Parganas	52932	231661
Kendrapara	Nil	24800
Sonepur	33000	35000
Jharsuguda	34555	5200
Ganjam	12000	12000
Kalahandi	No CHC has been established yet	
Total	211157	463792

14.1.7 Capacity Building:

A total 175 courses were conducted under Capacity Building on various thematic areas benefitting 3388 farmers and farmwomen (2603 males and 785 females) during 2018-19. 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.*



14.1.8 Extension Activities:

A total of 874 Extension Activities on various thematic areas benefitting 8435 practicing farmers (5512 males and 2923 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, group discussion, World Earth Day, technology week, kishan mela *etc.* December 5, 2018 was observed as World Soil Day in the respective KVK and distributed a total of 1555 soil health cards among the farmers of NICRA villages.



14.1.9 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 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, Forest Department *etc.* NICRA KVKs being a part of the different convergence programmes during the period of 2018-19.



14.2 Cluster Frontline Demonstrations:

14.2.1 Oilseeds:

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

Cluster Frontline Demonstration was conducted on Oilseed crops during kharif, rabi and summer of 2018-19 by the



KVKs of Zone V. In kharif, groundnut, sesame, soybean and niger were demonstrated in 610 ha.

Groundnut was demonstrated in Odisha and West Bengal for an area of 370 ha during Kharif. Groundnut has emerged as a leading oilseed



crop in Odisha and West Bengal with a boost from improved varieties like Devi(ICGV 91114), Smrut,



TAG 24, TG-51, TG-37A and technologies like seed treatment, line sowing, IPM and INM. In Odisha during kharif groundnut CFLD

demonstration it was observed that the average demonstrated yield was 32.32% more than local

check whereas in West Bengal it is 30.85%. CFLD on sesame was covered an area of 160 ha in Odisha and 30 ha in West Bengal during



kharif season and the increased yield percentage of these states are 35.97 and 35.28 respectively. Another



oilseed crop Niger was demonstrated in two KVKs of Odisha in 40 ha area. The increase average demonstrated yield was 43.44 percent. Soybean

is one of the kharif oilseeds crop which was demonstrated only in West Bengal in 10 ha area with 26.98% yield increased.

Table: Cluster Frontline Demonstration on Kharif Oilseeds during 2018-19

Name of crop	State	Target of FLD approved		Achievements of FLD		Yield (qt/ha)		Increase %	Difference in yield (qt/ha)
		No. of Demo	Area (ha)	No. of Demo	Area (ha)	Demo field	Local		
Groundnut	Odisha	725	290	725	290	16.54	12.5	32.32	4.04
	West Bengal	200	80	200	80	19.68	15.04	30.85	4.64
Sesame	Odisha	400	160	400	160	6.35	4.67	35.97	1.68
	West Bengal	75	30	75	30	9.74	7.2	35.28	2.54
Soybean	West Bengal	25	10	25	10	17.65	13.9	26.98	3.75
Niger	Odisha	100	40	100	40	4.92	3.43	43.44	1.49
Total		1525	610	1525	610				

In rabi 2018-19, the major oilseeds crops are Mustard, Groundnut, Sunflower and Linseed which were demonstrated by the KVKs West Bengal in an area of



455 ha. There was no allotment of area for KVKs of Odisha. In West Bengal mustard varieties namely NC-1, Keshari, B-9, JD-6, YSH 0401, Pioneer 45S35 etc

were demonstrated by 17 KVKs. An area of 280 ha was covered with demonstration with participating 1052 farmers. It recorded an average yield increase of 34.72 percent then compared to local



check. The yield increase in case of rabi groundnut was in the range of 30-35% whereas for sunflower the average yield increase was 31.16 %. Linseed is an important oilseed crop in rabi season was also demonstrated under CFLD by 7 KVKs in West Bengal covering an area of 100 ha with an average yield increase of 48.56 percent. The major technologies demonstrated on the farmer's field



were the new varieties of sunflower namely KA-501, KBSH-51 and linseed varieties namely Sekhar, Sabour Tisi. Application of secondary nutrient like Sulphur, spray of micronutrient like Boron and need based plant protection chemical.

Table: Cluster Frontline Demonstration on Rabi Oilseeds during 2018-19

Name of crop	State	Target of FLD approved		Achievements of FLD		Yield (qt/ha)		Increase %	Difference in yield (qt/ha)
		No. of Demo	Area (ha)	No. of Demo	Area (ha)	Demo field	Local		
Groundnut	Odisha	-	-	-	-	-	-	-	-
	West Bengal	110	45	110	45	24.50	18.38	33.28	6.12
Sunflower	Odisha	-	-	-	-	-	-	-	-
	West Bengal	75	30	75	30	17.47	13.32	31.16	4.15
Mustard	Odisha	-	-	-	-	-	-	-	-
	West Bengal	700	280	700	280	12.34	9.16	34.72	3.18
Linseed	West Bengal	250	100	250	100	9.27	6.24	48.56	3.03
Total		1135	455	1135	455				

The CFLD on Groundnut, Sesame and Sunflower were conducted in summer 2018-19. During summer, 150 demonstrations on various oilseeds crops in area 60 ha were allotted in Odisha. The demonstration was



conducted in an area of 20, 10 & 30 for groundnut, sesame and sunflower respectively. Various

improved technologies followed are line sowing, chemical seed treatment (Carboxin + Thiram), soil test based fertilizer application, application of Phospho-gypsum and need based plant protection measures. These technologies augmented the average yield by 19-25 percent. There has on demonstration conducted in West Bengal during summer 2018-19.



Table: Cluster Frontline Demonstration on Summer Oilseeds during 2018-19

Name of crop	State	Target of FLD approved		Achievements of FLD		Yield (qt/ha)		Increase %	Difference in yield (qt/ha)
		No. of Demo	Area (ha)	No. of Demo	Area (ha)	Demo field	Local		
Groundnut	Odisha	250	100	50	20	20.90	16.60	25.87	4.30
	West Bengal	-	-	-	-	-	-	-	-
Sesame	Odisha	75	30	25	10	2.42	2.12	14.15	0.30
	West Bengal	-	-	-	-	-	-	-	-
Sunflower	Odisha	175	70	75	30	25.20	21.10	19.43	4.10
	West Bengal	-	-	-	-	-	-	-	-
Total		500	200	150	60				

14.2.2 Pulses:

Nodal Scientists: Dr. S.K. Roy and Dr. F.H. Rahman

Cluster frontline demonstration (CFLDs) are demonstrated for the production potential of newly released technologies on the farmer's fields at a different location in a given farming system and organized farming and extension activities for farmer and extension workers for the dissemination of various technologies. The CFLD on Pulses programme during Kharif 2018, pigeon pea, black gram, green gram were taken up for demonstration as per the communication received from DAC & FW. Altogether 1040 ha were allotted for kharif pulses



out of which 1025 ha could be finally brought under demonstration programme in Odisha and West Bengal. A total of 2562 demonstrations were conducted to cover 1025 ha area in these two states. The varieties like PRG 176 (Ujwala), UPAS 120 were in pigeon pea, PU 31, WBU 109, OBG 17(Ujala) in black gram and IPM -02-03, IPM-02-14, SML-668, Sukumar in green gram was demonstration in 2018-



19. Recent technologies like to seed treatment, line sowing, integrated nutrient management, micronutrients like Zn & S application, use of herbicide, integrated pest management



were demonstrated in farmers' field for these demonstrations. Performance analysis of individual



pulse crop indicates that in pigeon pea resulted 47.59 per cent increase in average yield increase in Odisha and 44.43 per

cent in West Bengal. In West Bengal, black gram was covered in large area of 360 ha because of its popularity. Increase in average yield of black gram in West Bengal was 33.8 per cent. The average increase of demonstrated yield of black gram was of 22 per cent Odisha. In green gram, the average increase in demonstration yield was 33.82 % in West Bengal whereas was 38.38 per cent in Odisha. The details are given in table below:

Table: Cluster Frontline Demonstration on Kharif Pulses during 2018-19

Sl. no	Crops	State	Target of FLD Approved		Achievement of FLD		Average yield (q/ha)		Yield increase %	Difference of yield between demo & local (q/ha)
			No. of Demo	Area (ha)	No. of Demo	Area (ha)	Demo	Local		
1	Pigeon pea	Odisha	875	350	875	350	12.87	8.73	47.59	4.14
		West Bengal	150	60	150	60	10.52	7.27	44.43	3.25
2	Black gram	Odisha	500	200	500	200	6.54	5.37	21.84	1.17
		West Bengal	900	360	900	360	9.46	7.14	33.80	2.32
3	Green gram	Odisha	75	30	75	30	6.88	5.05	38.38	1.83
		West Bengal	100	40	62	25	9.03	7.09	33.82	1.94
Total kharif season			2600	1040	2562	1025				

Lentil, chick pea, field pea, green gram and black gram are major rabi pulses crop demonstrated under clustered frontline demonstration programme in rabi



2018-19, by KVKs of Odisha and West Bengal to cover an area of 1723 ha. However, lentil was demonstrated only in West Bengal in 443 ha which result 27.38 per

cent increase in average yield. The average yield was affected by heavy rainfall in South & North 24 Parganas. Lentil varieties like WBL 77, IPL 406, Pant Lentil 8, HUL 57



was demonstrated in West Bengal to achieve higher yield. In chick pea, the KVKs of Odisha recorded an increase in yield to the extent of 27.38 per cent in 90 ha demonstration. The increase in average yield was against 41.86 per cent in West Bengal in 120 ha demonstration in chick pea. The latest varieties like NBeG3 are demonstrated in Odisha and JAKI 9218, Subhra & Bidisha in West Bengal. Technologies like seed treatment, foliar spray of micronutrients and adoption of integrated pest management proved beneficial for augmenting the yield. In field pea, the area covered in demonstration was 60 ha & 100 ha by KVKs Odisha and West Bengal. The increase in average yield of demonstration was 48-49 % in these



two states. In Odisha, a large area of 670 ha was allotted under rabi green gram. The result of demonstration in green gram show that 38.04 per cent increase in average yield. The black



gram was demonstrated in 210 ha in Odisha in rabi season. These demonstration indicated the yield of black gram covered be improved by 28.57 per cent over the existing practices. The black gram varieties PU 31, Prasad and Ujjal were most promising in this demonstration. Horse gram demonstration was conducted in an area of 30 ha in Odisha with increase in average yield of 41.66 per cent. The details are given in table below.

Table: Cluster Frontline Demonstration on Rabi Pulses during 2018-19

Sl. No	Crops	State	Target of FLD Approved		Achievement of FLD		Average yield (q/ha)		Yield increase %	Difference of yield between demo & local (q/ha)
			No. of Demo	Area (ha)	No. of Demo	Area (ha)	Demo	Local		
1	Lentil	West Bengal	1809	443	1809	443	11.07	8.69	27.38	2.38
2	Chick pea	Odisha	225	90	225	90	11.07	8.69	27.38	2.38
		West Bengal	300	120	300	120	13.86	9.77	41.86	4.09
3	Field pea	Odisha	150	60	150	60	14.5	9.75	48.72	4.75
		West Bengal	250	100	250	100	14.25	9.56	49.05	4.70
4	Green gram	Odisha	1675	670	1675	670	7.33	5.31	38.04	2.02
5	Black gram	Odisha	525	210	525	210	6.75	5.25	28.57	1.51
6	Horse gram	Odisha	75	30	75	30	5.61	3.96	41.66	1.65
Total rabi season			4307	1723	5009	1723				

In summer season, green gram is main pulse crop grown in Odisha and West Bengal. A total area of 430 ha (150 ha in Odisha and 280 ha in West Bengal) were covered by these two states in summer season. The summer green gram demonstrated yield



in West Bengal is 10.67q/ha where as in Odisha it is 5.7 q/ha. The increase in per cent of yield is 32.87 and 34.1, respectively.



Table: Cluster Frontline Demonstration on Summer Pulses during 2018-19

Sl. No	Crops	State	Target of FLD Approved		Achievement of FLD		Average yield (q/ha)		Yield increase %	Difference of yield between demo & local (q/ha)
			No. of Demo	Area (ha)	No. of Demo	Area (ha)	Demo	Local		
1	Green gram	Odisha	375	150	375	150	5.65	4.15	34.06	1.50
		West Bengal	800	320	700	280	10.67	8.09	32.87	2.58
Total summer season			1075	470	1075	430				



14.3 Creation of Seed Hubs for Increasing Indigenous Production of Pulses in India:

Nodal Scientist: Dr. S.K. Roy

Government of India has made committed provisions by allocating additional funds about Rs.500 crores for promotion of pulses during next three years where ICAR will provide all need based technology backstopping and demonstrate pulses production technologies. As it has been advocated by one and all and is a hard fact that there is non-availability of quality seed of various pulses, therefore, ICAR has



taken lead to establish 150 'Seed Hubs' for production of quality seed (including breeder seed) of pulse crops at ICAR-IIPR, State Agricultural Universities (SAUs) and Krishi Vigyan Kendras (KVKs) with



the assistance from GoI. An amount of Rs. 50 lakhs for creating seed processing and seed production infrastructures as well as storage of

each seed hub at SAUs/ KVKs/ ICAR institutes is allowed during 2016-17. An amount of Rs. 100 lakhs for each seed hubs at SAUs/ KVKs/ ICAR institutes is allowed as revolving fund to meet the various expenses for production, procurement and processing of seed during 2016-17 & 2017-18.

There are 10 Seed Hubs under ATARI, Kolkata, Zone V, three seed hubs in West Bengal (CISH

Malda, Narendrapur and Uttar Dinajpur) and seven seed hubs in Odisha (Baragarh, Bhadrak, Cuttack, Deogarh, Kalahandi, Keonjhar and Mayurbhanj-I). The fund for each seed hub is 150 lakhs. The fund for 10 seed hub centres is Rs. 1500 lakh and it is fully released from ATARI, Kolkata to DEE, OUAT, Bhubaneswar & other seed hub centres. In two seed hubs each of West Bengal and Odisha



(Narendrapur, Uttar Dinajpur, Bhadrak & Mayurbhanj-I) were seed storage structure and seed processing plant has been completed and functional. In four seed hubs of Odisha (Mayurbhanj-I, Kalahandi, Bargarh & Keonjhar), 85% work of seed storage structure has been completed. The target of seed production for 2018-19 was 8520 q for Kharif, rabi and summer season of this Zone. The



different varieties of kharif, rabi and summer pulses seed production are PRG 179 (Ujwala), PU 31, IPM-2-3, IPM-02-14, OBG 17, Moitryee, IPL-406, HUL-57, KLR-320, KLS-9-3, IPM-2-14, IPM-2-43, Samrat and Virat. About 979 q, 525.6 q, 512 q of black gram, lentil and green gram seed were produced respectively. The total seed production in 2018-19 under seed hub programme of this zone was about 2532 quintals.

Table: Details of Seed Hub Programme

Sl. no	Seed centre name	Crop & season	Target (q)	Variety	Production (q)	Budget Utilization (Rs. In lakh)		Infrastructure status		Remarks
						Fund allocation	Amount released	Seed storage	Seed processing plant	
1	Keonjhar	Chick pea (rabi)	150	Ujjawal	11	150	150	Under construction	Machinery purchased	Farmers sold the chickpea in green pod condition for higher profit
		Black gram (summer)	350	PU 31	0					Crop damaged due to cyclone (Fani)
	Total		500		11					
2	Bhadrak	Green gram (summer)	500	IPM-2-3	23.92	150	150	Completed	Completed & functional	Shortfall in target is due to crop damage in cyclone Fani
3	Bargarh	Pigeon pea (kharif)	120	PRG 176	16.19	150	150	85% of work completed	Machinery purchased	
		Green gram (summer)	800	IPM-02-14	4.94					
			920		21.13					
4	Mayurbhanj I	Green gram (summer)	200	IPM-02-14	0	150	150	Completed	Installation of machinery completed	Crop has been damaged due to sever cyclonic storm "FANI" on 3rd May 2019
5	Cuttack	Blackgram (Kharif)	400	IPU2-43	40.6	150	150	Construction under progress	Purchase of machinery completed	Crop was damaged at harvesting stage due to cyclone 'fani'
		Greengram (Kharif)	600	IPM 2-3	92.75					
		Blackgram (summer)	15 ha	PU 31	13.7					
		Greengram (summer)	11 ha	IPM 2-3	15.8					
	Total		1000		162.85					
6	Deogarh	Pigeon pea (kharif)	120	PRG 176	11.2					
		Green gram (summer)	800	IPM-02-03	54	150	150	90% of work completed	Purchase of machinery completed	Crop damage due to heavy rainfall
	Total		920		65.2					
7	Kalahandi	Pigeon pea (kharif)	560	PRG 176	368	150	150	Completed	Machinery purchased	
		Black Gram (kharif)	200	PU 31	160					
	Total		760		528					



Sl. no	Seed centre name	Crop & season	Target (q)	Variety	Production (q)	Budget Utilization (Rs. In lakh)		Infrastructure status		Remarks
						Fund allocation	Amount released	Seed storage	Seed processing plant	
8	Uttar Dinajpur	Black Gram (kharif)	460	PU31, IPU 2-43	286.6	150	150	Completed	Completed	
		Lentil (rabi)	400	Moiyeteeyee, IPL-406, HUL-57, KLR-320, KLS-9-3	215.6					
		Green gram (summer)	400	IPM-02-14, IPM-02-03, Samrat, Virat	244.8					
	Total		1260		747.0					
9	South 24 Pngs (Additional) Narendrapur	Black Gram (kharif)	460	PU 31, IPU 2-43	422	150	150	Completed	Completed	90% crops area has been damaged due to heavy rains during 26-28 February, 2019 & 4-5 March, 2019.
		Lentil	200	Moitree	20					
		Field Pea	50	IPFD-10-12	5					
		Green gram	750	IPM-02-3	50					85% crops area has been damaged due to heavy rains during 26-28 February, 2019 & 4-5 March, 2019.
	Total		1460		497					
10	CISH Malda	Black Gram (kharif)	100	IPU2-43, PU 35	56	150	150	At finishing stage		
		Lentil	400	Moitree, Pant Lentil-8, KLS 320	290					
		Chick pea	100	Ujjal (Kabuli Type) RVG 202 JG 14	80					
		Green gram (summer)	400	Sweta IPM 2-03 IPM 2-14	50					
	Total		1000		476					
	Grand total		8520		2532.1	1500	1500			

14.4 Farmer FIRST Programme:

Nodal Scientist: Dr. K.S. Das

After achieving success of Farmer FIRST Programme (FFP) during Phase I (2016-18), Agricultural Extension Division, ICAR, New Delhi decided to extend this prestigious programme for next two years (2018-2020). As per the directives of the Council, project proposals from the existing three ICAR Institutes (ICAR-NRRI, Cuttack; ICAR-CIFA, Bhubaneswar and ICAR-IIWM, Bhubaneswar) and one State Agricultural University (OUAT, Bhubaneswar) were invited by ATARI Kolkata for the year 2018-2019 and 2019-20. Accordingly, Fourth Zonal Programme Management Committee (ZPMC) Meeting of FFP was

conducted on 28.04.2018 at ATARI Kolkata for two Zones i.e. ATARI Kolkata and Patna to finalize the Action Plans for those existing institutes during the period 2018-2020 considering the target of Doubling Farmers Income. The recommendations of ZPMC on those projects were sent to the Council for approval from Programme Management Committee (PMC) at ICAR, New Delhi. Finally, four projects were approved by the Council for this Zone for the 2018-2019 and the details have been given below. During the period, one meeting-cum-workshop on 'Impact assessment of FFP' was organized at ICAR-NRRI Cuttack for four FFPs under ATARI Kolkata where scientists from ATARI Kolkata and Hyderabad, ICAR-NIAP New Delhi and participating Institutes attended the programme.

Table: Details of Farmer FIRST Programme under ICAR-ATARI Kolkata during 2018-19

Sl. No.	Name of the project (Institute/ University)	Name of the PI of the project	Fund allotted during 2018-19 (Rs. in lakh)	Fund utilized during 2018-19 (Rs. in lakh)
1.	Promoting Improved Agriculture & Allied Sector Technologies in Khordha District (ICAR-Central Institute Freshwater Aquaculture, Bhubaneswar)	Dr. H. K. De Pr. Scientist	18.75	18.69
2.	Increasing Productivity and Sustainable the Rice based Production System through Farmer First approach (ICAR-NRRI, Cuttack) (ICAR-National Rice Research Institute, Cuttack)	Dr. S. K. Mishra Pr. Scientist	37.15	32.24
3.	Enhancing water & livelihoods security (ICAR-Indian Institute of Water Management, Bhubaneswar)	Dr. P. Nanda Pr. Scientist	22.00	12.53
4.	Enhancing Farm Productivity & Profitability with 'Farmer-First' focus in Khordha district of Odisha (OUAT, Bhubaneswar)	Dr. B. Behera Professor	29.25	20.08
5.	ICAR-Agricultural Technology Application Research Institute (ATARI) Kolkata	-	6.50	3.36
Total			113.65	86.90

Salient achievements of projects:

14.4.1 ICAR-CIFA, Bhubaneswar:

Farmer FIRST project covered four villages in Khordha district and involved more than 400 beneficiaries that included small, marginal, landless and women-headed households. Demonstration of improved practices, field day, exposure visit and scientists-farmers interface were conducted



during 2018-19. Thirteen field days and five scientist-farmer interfaces were organised involving 414 and 191 farmers/farmwomen, respectively. Modules on improved technologies of paddy, green gram, carp culture, Horticulture, poultry and integrated farming system were demonstrated during the period. Bush type French bean was also introduced in 0.4 ha of land for the first time including 10 beneficiaries. An average yield of 8 t/ ha of green pods





in 75-85 days was obtained. Institute Advisory Committee meeting and site planning & monitoring group meeting was held on 9th November, 2018. The Institute facilitated formation of Bhargabi Fish Farmers Producers Company Limited having CIN no- U01100OR2019PTC030755 in Balipatna block. The DD Kisan channel 4th February, 2019 (09:00 AM). Collection of data on performance of improved technologies as compared to farmers' previous practices is in progress. Impact assessment of Farmer FIRST project on socio-economic development of farmers will be carried out.



14.4.2 ICAR-NRRI, Cuttack:

NRRI demonstrated four most promising rice varieties i.e. Maudamani (CR Dhan 307), Pradhandhan (CR Dhan 409), CR Dhan 303 and



Pooja with complete package of practices during Kharif 2018 covering over 100 ha area in four adopted villages. As input, 430 farmers were provided minikit seeds @ 10 kg/

farmer along with partial fertilizers and need-based pesticides etc. Demonstrated Leaf Colour Chart based nitrogenous fertilizer management for 430 farmers. Under farm mechanization, CRRI finger-weeder for 430 farmers and Cono-weeder for 10 farmers were demonstrated. Rice pest monitoring and surveillance were done through pheromone traps for 100 farmers. Demonstrated the raising mat type nursery and eight row power operated mechanical transplanter; green gram IPM-02-03 (360 kg seeds to 72 farmers



@ 5 kg per farmer) to cover 18 ha area; nutritional garden with ten types of vegetables (Tomato- KSP 1306 Bahubali, Beans- Shravani, Radish- Palak Patta, Koshala- Red Kanka, Coriander- Royal Green Pumpkin-Rana BSS-749, Amaranthus- all Green, Cucumber-Supriya, French Bean- Harith and Okra- Amba) to 125 farmwomen; Backyard poultry strain Vanaraja to 65 farmwomen @ 20 chicks per women; Backyard duckery strain Khaki Campbell to 15 farmwomen @ 20 ducks per women and pond-based aquaculture production to 18 fish farmers (10000 fingerlings of Rohu and Catla).



Farmers were trained on 'Oyster mushroom farming' for 124 farmers and farmwomen, on 'Freshwater aquaculture' for 37 Farmers & farmwomen and on 'Scientific crop management practices' for commercial vegetable production for 103 farmers and farmwomen. Field visits and interaction meets were also conducted for 52 farmers and farmwomen. Scientists attended training programme on "Socio-economic impact assessment of research programmes" at ICAR-NAARM, Hyderabad.

14.4.3 ICAR-IIWM, Bhubaneswar:

Three training programmes on "Water resource management and agricultural diversification for enhancing water productivity and ensuring livelihood of farmers" and one programme on "System of rice intensification" for 42 farmers (37 acre area of rice fallow land during Zaid 2019) were organized. One exposure visit for 51 farmers to State Level Kisan Mela at ICAR-NRRI, Cuttack was organized. The Institute demonstrated cultivation of vegetables (35000 seedlings of Brinjal, tomato and chili) and



tuber crops (2000 planting materials of Tapioca and 200 kg of Yam) for more than 200 farmers. Kitchen gardening was encouraged by distributing seeds of okra, radish and amaranthus. Use of pheromone trap and sticky trap was also demonstrated in the farms of the stake holders.



Nine Farmers groups were formed and nine power threshers were distributed among them. WhatsApp group was used to identify and solve diseases/ pests in

crops/ vegetables. One lady farmer of the project village was nominated and she received 'Best Farmer Award' at ICAR-NRRI Cuttack.

14.4.4 OUAT, Bhubaneswar:

Under crop based module, demonstrations were done for high yielding rice variety 'Swarna Sub-1'



in 30 ha involving 136 households under medium land condition and rice var. 'Upahar' in 30 ha involving 100 households under

low land condition; scented rice var. 'Geetanjali' in 2.5 ha involving 14 households and YMV resistant green gram var. IPM 02-14 in 20 ha rice-fallows involving 75 households. Among different horticultural crops, demonstrations were also conducted to intensify the production of hybrid pumpkin var. 'Vimal' in 4 ha involving 20 households; hybrid cucumber var. 'Rajmata' (Arnnapurna hybrid) in 4.2 ha involving 21 households; hybrid bitter gourd var.



'VNR-21' in an area of 2 ha involving 10 households; leafy Amaranthus in 2.5 ha involving 25 households; tomato var. 'VNR-Samridhi' in 0.4 ha involving 10 households; tissue culture banana var. 'Bantal' in 3.3 ha involving 21 households; hybrid papaya var. 'Red lady' in 2.5 ha involving 13 households and many others. Four



hundred 'Pallishree' chicks of 21 days old were provided to 20 households @ 20 birds per household for backyard poultry rearing. The birds were reared for seven weeks and the mean body weight of the birds was 2 kg/ bird. The mortality rate was totally avoided by taking care of birds in respect of feeding and health care. Each farmer realised gross income of Rs. 5330/- and net profit of Rs. 4430/-. Training was imparted on 'Honey bee rearing' for 20 farmers, on 'Mushroom spawn production' for 3 farmers and on 'Estrous synchronisation of heifer' for 40 farmers during the year 2018-19.

14.5 Tribal Sub-Plan:

Nodal Scientists: Dr. K.S. Das and Dr. S.K. Mondal

The Tribal Sub Plan was implemented in India for the first time during Fifth Five Year Plan (1974-1979) and the sphere of the plan has been gradually increased with the passage of time. The purpose of TSP

was to minimize the gap between the livelihood of tribal people and other general communities both in physical and financial terms through addressing the issues relating to education, health services, housing, income generating opportunities, and protection against exploitation and oppression. In the year 2018-19, Ministry of Tribal Affairs, GoI identified tribal dominated districts in India for providing better quality of life to tribal community.





Under ICAR-ATARI Kolkata, such 10 tribal dominated districts i.e. one district (Nicobar) from Andaman & Nicobar Islands and nine (Gajapati, Kandhamal, Mayurbhanj-I and II, Malkangiri, Nabarangapur, Raygada, Sundergarh-I and II) from Odisha state were identified under this scheme in the year 2018-19. Sixteen villages of Nicobar district and 330 villages of Odisha tribal districts were covered during the period. A sum of Rs. 219.70 lakh fund was allotted to above ten KVKs for conducting various activities e.g. agricultural farming, horticulture,

animal husbandry, dairy development, fish production, kitchen gardening, vocational training and many others for tribal people. Out of total fund, Rs. 11.0 lakh was allocated for Andaman & Nicobar Islands KVK and rest 208.70 lakh was allocated for Odisha state KVKs.



Table: Achievements of physical output/outcome under TSP during 2018-19

Sl. No.	Achievements of physical output		Achievements of physical outcome	
1.	Asset creation (in number; Sprayer, ridge maker, pump set, weeder etc.)	2797	Number of technologies identified after assessment	5
2.	On-farm trials (in number)	77	Upgraded skills and knowledge of farmers (in number)	19372
3.	Frontline demonstrations (in number)	1715	Oriented extension personnel in frontier areas of agricultural technology (in number)	458
4.	Farmers training (in lakh)	0.165	Increased availability of quality seed (in quintal)	687.8
5.	Extension personnel training (in lakh)	0.01804	Increased availability of quality planting material (in number)	385000
6.	Participants in extension activities (in lakh)	0.62915	Increased availability of live-stock strains and fingerlings (in number)	20740
7.	Seed production (in tonnes)	91.71	Testing of soil & water samples for balance fertilizer use (in number)	6312
8.	Planting material production (in lakh)	3.85351		
9.	Livestock strains and fingerlings production (in lakh)	0.2074		
10.	Soil, water, plant, manures samples testing (in lakh)	0.06312		
11.	Provision of mobile agro - advisory to farmers (in lakh)	8.22014		
12.	No. of other programmes (Swachha Bharat Abhiyaan, agriculture knowledge in rural school, planting material distribution, vaccination camp, animal health camp etc.)	362		

The achievements of physical output and outcome under TSP by the KVKs of ATARI Kolkata during 2018-19 have been presented in the table. As per achievements of physical output was concerned, a substantial number (2797) of assets e.g. sprayer, ridge maker,



pump set, weeder, store bins, drip irrigation set, poultry feeder/ drinker etc. were created for the benefit of tribal farmers during the period. The KVKs of tribal districts conducted 77 OFTs and 1715 FLDs for overall agricultural development in the districts. More than 16000 farmers were trained and 62915 farmers took participation in various



extension activities conducted by the KVKs. The KVKs produced 91.71 tonnes seed, 3.85351 lakh planting materials and more than 20000 livestock strains and fingerlings. In addition, ten KVKs of this Zone conducted 362 programmes on 'Swachha Bharat Abhiyaan', 'Agriculture knowledge in rural school', 'Planting materials distribution', 'Vaccination camp', 'Animal health camp' etc. Considering the



achievements of physical outcome of TSP during the year 2018-19, 19372 farmers upgraded their knowledge and skills and 6312 farmers were

benefitted from testing soil and water samples to use balanced fertilizer in their fields. It also increased the availability of quality seed, planting materials, livestock strains and fish fingerlings in the tribal districts.



14.6 Attracting and Retaining Youth in Agriculture (ARYA):

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

Engaging youth in agriculture has been a prominent topic recently and has risen up the development agenda, as there is growing concern world-wide that young people have become disenchanted with agriculture. In a country like India where most young people are living in rural areas, this vast youth force must be involved in agriculture for the betterment of the country. As per the UN World Health Organization, by 2030, six out of every ten people will live in a city, and by 2050 this proportion will increase to seven out of ten people, meaning that more young people than ever before are moving to cities and towns



to find work, leaving few behind to work in rural areas/agriculture. Challenging the mind set of youth that agriculture is a life of toil, hardship and poverty is not easy, but it can be done – and must be done to secure our future food security. By identifying young people and showing them the potential of agriculture as a challenging but rewarding business, we can bring a new generation to the farms.



Attracting and Retaining Youth in Agriculture (ARYA) is a flagship programme of Indian Council of Agricultural Research, New Delhi to promote and empower the rural youths in various agriculture, allied and service 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. Provision is also kept to enable the youths 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. Retaining youth in agriculture is a big challenge faced by our country. Also, there is a continuous increase in the migration of rural youths to urban areas. The states of Odisha and West Bengal are also experiencing the same trend like other parts of the country. In spite of having adequate opportunity, rural unemployed youths are not that much inclined to self-employment through available agro-based resources.

During 2018-19 altogether 9 KVKs including 2 existing KVKs namely, KVK Nimpith from West

Bengal and KVK Nayagarh from Odisha and 7 newly sanctioned KVKs namely, KVK Hooghly, Uttar Dinajpur, Purulia from West Bengal and KVK Sambalpur, Ganjam-I, Puri, Cuttack from Odisha are carrying out this ARYA project under ICAR-ATARI, Kolkata.

KVK Nimpith promoted enterprises like fishery unit including carp hatchery and Asian catfish hatchery, betelvine cultivation in climate smart hi-tech shade net *boroz* and horticulture nursery under ARYA project. A number of 230 rural youths are trained through 7 training programmes organized in the year 2018-19 in different enterprises. A fund support of Rs.16.72 lakh was provided to the KVK for running the ARYA activities.



KVK Nayagarh promoted ARYA project to attract the rural youths for adopting resource specific need-based alternative remunerative occupation at a sustainable level like stunted fingerlings production, mushroom production, backyard poultry farming. KVK Nayagarh organized 6 training programmes by which 80 rural youths are trained in the above mentioned identified enterprises. A fund support of Rs.20.31 lakh was provided to the KVK under ARYA project.

Among the new KVKs, Hooghly KVK selected nursery raising of vegetables (Tomato, Capsicum, Cauliflower, Chilli), backyard poultry (Gramapriya/ Vanaraja), mushroom cultivation, vermi-compost unit for implementing ARYA activities. KVK Purulia identified four enterprises under ARYA project like nursery raising of vegetables (Tomato, Brinjal,

Chilli, Capsicum, Cauliflower, Cabbage, Broccoli & Red Cabbage), goatery, mushroom cultivation, vermi-compost unit. KVK Uttar Dinajpur identified



enterprises like production, value addition and marketing of mushroom (Terai zone), fish fingerlings production of Carps, vermi-compost unit, value addition and processing in pineapple. KVK Cuttack identified 4 enterprises for ARYA activities i.e. broiler production (Gramapriya/ Vanaraja), mushroom cultivation, Black Bengal goat farming and protected cultivation of tomato, cucumber and capsicum. Sambalpur KVK selected to promote mushroom cultivation, poultry production, nursery for horticulture crop: tomato, brinjal, cauliflower, cabbage, chilli, papaya, drumstick. KVK Ganjam-I identified mushroom cultivation, poultry production, nursery for horticulture crop tomato, brinjal, chilli, capsicum, cabbage, cauliflower and fish production for empowering the rural youths at village level. Puri KVK identified mushroom cultivation, poultry production, apiary and fish production. Each KVK of newly proposed KVKs were provided with Rs.6.84 lakh for implementing ARYA project. These KVKs initiated the programme.

In implementing the programme, ICAR sanctioned the fund support to ICAR-ATARI, Kolkata to the extent of Rs.95.23 lakh for 2018-19. Altogether 310 rural youths were provided skill development training in entrepreneurial activities of which 90 youths are benefitted for establishment of micro-enterprise units. The details of enterprises identified for this programme during 2018-19 by the KVKs were as follows-

Table: KVK-wise details of ARYA project during 2018-19

State	Name of the KVK	No. of training programme conducted during 2018-19	Enterprises promoted	No. of unit developed	No. of youths identified	Skill imparted	Overall Success/ Impact
West Bengal	Nimpith	7	Betel vine plantation	1	5	Betel vine cultivation in hi-tech shade net ("boroz")	<ul style="list-style-type: none"> Annual income of Rs. 52000/- per youth before adopting the program Annual income of Rs. 138000/- per youth after adopting ARYA program Other 13 youths of the districts adopted this enterprise
			Carp hatchery	1	3	Induced breeding technique with fish hormones	<ul style="list-style-type: none"> Annual income of Rs. 62000/- per youth before adopting the program Annual income of Rs. 122000/- per youth after adopting ARYA program Other youths of the districts are willing to adopt this technology by seeing the achievement and one youth already adopted this enterprise by his own.
			Asian catfish hatchery	1	3	Induced breeding of catfish with fish hormones and larval rearing technique	<ul style="list-style-type: none"> Annual income of Rs.131000/- per farmer from three cycles with production of 1 lakh fry Before adopting the program annual income of Rs. 67000/- per youth Another 2 youths adopted this enterprise.
			Horticulture nursery	2	5	Poultry farming, vaccination schedule and disease management	<ul style="list-style-type: none"> Annual income of Rs. 67000/- per youth before adopting the program Annual income of Rs. 124000/- per youth after adopting ARYA program Adoption of this enterprise by 5 youths of the districts.
Odisha	Nayagarh	6	Mushroom growers	30	75	Scientific mushroom production technique, Training & exposure visit	<ul style="list-style-type: none"> Annual income of Rs.42000/- per youth per unit from this enterprise Before adopting the program annual income of Rs.162000/- per unit per youth Another 25 youths adopted this enterprise.
			Stunted fingerling production	20	75	Scientific stunted fingerlings production, Training & exposure visit	<ul style="list-style-type: none"> Annual income of Rs.35520/- per youth before adopting the program Annual income of Rs.135000/- per youth after adopting ARYA program Other 12 youths of the districts adopted this enterprise

State	Name of the KVK	No. of training programme conducted during 2018-19	Enterprises promoted	No. of unit developed	No. of youths identified	Skill imparted	Overall Success/ Impact
			Backyard poultry rearing	20	50	Scientific Backyard poultry rearing, Training & exposure visit	<ul style="list-style-type: none"> Annual income of Rs. 72345/- per youth before adopting the program Yearly income of Rs. 92035/- to 100000/- per farmer from this enterprise. Adoption of this enterprise by 18 youths of the districts

Besides, a launching workshop of ARYA was organized on 28.03.19 at ICAR- Agricultural Technology Application Research Institute, Kolkata for



the newly proposed seven KVKs (KVK Sambalpur, Ganjam-I, Puri, Cuttack, Uttar Dinajpur, Hooghly and Purulia) and two existing KVKs (KVK

Nimpith & Nayagarh) of West Bengal and Odisha. The Launching Workshop was chaired by Dr. S.S. Singh, Director, ICAR-ATARI, Kolkata. The workshop was attended by Prof. P. Bandyopadhyay, Director of Extension



Education, BCKV, Nadia; Dr. M.P. Nayak, Joint Director, OUAT, Bhubaneswar; Dr. P. Adhiguru, Principal Scientist, ICAR, New Delhi; Dr. S.K. Roy,



Dr. P.P. Pal, Dr. A. Haldar, Dr. S.K. Mondal, Dr. F.H. Rahman, Dr. K.S. Das, Principal Scientist, ICAR-ATARI, Kolkata, Senior Scientist & Heads and the

concerned Subject Matter Specialists of the respective KVKs. In this workshop basic purpose of the project was discussed. The existing KVKs presented their achievement of ARYA project during 2015-16 to 2018-

19 and the newly sanctioned KVKs presented their action plan and interacted with the dignitaries.

14.7 Strategy Formulation for Doubling Farmers Income:

Nodal Scientists: Dr. A. Haldar and Dr. S. K. Mondal

Primary focus of present National Govt. has been Doubling farmers' income. It has been observed in the past that emphasis was given on production and productivity enhancement without little consideration on enhancing farmers' income. The past policies were usually farm-centric rather than farmers-centric. This has resulted into farmers' distress despite the fact that our country has achieved commendable position in food production. The Finance Minister while announcing budget for financial year 2017-18 emphasized that 'we need to think beyond food security and give back to our farmers a sense of income security'.



In achieving the set objective, the measures like reduction in production cost, ensuring remunerated price through a transparent price discovering mechanism for agricultural commodities, improving income from allied activities to agriculture and non-farm sector on even wage employment during the agricultural off-season bringing relating agencies together in working harmony, leveraging

technology, adopting precision farming and ensuring that farmers get correct and timely crop advisory



and market information to reduce substantial yield gaps exists in major crops, exploiting the genetic yield potential of individual crop

variety with adoption of proper agronomic packages and addressing the irrigation efficiency through implementation of 'more crop per drop' strategy.

With special emphasis on doubling farmers' income by 2022 for the states of Odisha and West Bengal, concerted efforts have been made by ICAR-ATARI, Kolkata in soliciting views of SAUs, ICAR Institutes, State Development Departments, Banking Institutions and KVKs. Some of the recommendations for the state of West Bengal are as follows:

- Cost of cultivation must be reduced for augmenting the farm income.
- Minimum support price and remunerative price in the market must be ensured to avoid distress sale by the farmers.
- There is a need to develop agro-ecological zone specific, crop specific and the farmers-centric technological modules.
- Farm mechanization and irrigation facilities need to be expanded.
- Soil fertility, nutrient management and crop response are to be integrated.
- Crop diversification and cultivation of high value crops are to be promoted.
- New and innovative technologies for crop cultivation, animal husbandry practices and fish production are to be identified for its transfer to the farmer's field.
- Facilities/infrastructure are to be established for post harvest technologies/food processing/value addition/preparation of byproducts.
- ICT based agri-extension portal is to be used at a larger scale to disseminate crop, livestock and

fishery related solution to the farmers at farm-gate level.

The actionable points for Doubling Farmers' Income in Odisha that arose from various stakeholders' meet have been outlined below:-

- Selection of 2-5 villages per KVK/Institute
- Undertaking baseline survey
- Identification of interventions based on the agro-climatic condition and farming situations
- Undertaking system approach linking all aspects of production, processing and marketing (in place of present/current individual commodity approach)
- Involving NGOs, FPOs, SHGs and CSR wing of Corporate for better impact
- Replication of such systematic efforts by Odisha Govt. in all the districts

14.8 Mera Gaon Mera Gaurav Programme:

Nodal Scientist: Dr. P.P. Pal

Mera Gaon Mera Gaurav (MGMG) programme was launched by the Hon'ble Prime Minister in 2015. It is an innovative initiative planned to promote the direct interface of scientists with the farmers to hasten the lab to land process. The objective of this scheme is to provide



farmers with required information, knowledge and advisories on regular basis by adopting villages. The participation of small and marginal farmers in Indian agriculture is very important. Small farmers put forth their desire on various forums to have timely information on investment in agriculture, loans, availability of other basic amenities, market rates, extension activities and facilities provided by different agencies, new research findings and technologies, etc. Presently, various agencies are working in agriculture and farmers are keen to

know about the services provided by them. The technologies developed and refined by Research Institutes, Agricultural Universities, private and other organizations are accepted and adopted to various extent by farming community. Therefore, the awareness among farmers about the organizations and their programmes need to be created on regular basis.



Under this scheme, scientists have selected villages as per their convenience and remain in touch with the selected

villages. They provided information to the farmers on technical and other related aspects in a time frame through personal visits or on telephone. Being a resource person for the village, the scientists also monitor the process of adoption of agricultural technologies by the farmers. The scientists took initiative to make use of community radio, local newspapers, mobile messages, video, exhibition and local media and make initiatives to have dialogue



with the farmers in their local language. The cooperation of KVKs, ATMA, etc. is effective in demonstration of technologies to the

farmers. Besides providing information to farmers on market rates, market trends, the information on various agricultural organizations associated with agriculture is also given so that the farmers can contact these organizations for finding solutions to their agriculture related problems. Scientists have also created awareness among farmers about climate change, other customized services, protective measures and other issues of local and national importance. In this process of social transformation, scientists involved local Panchayats, development agencies, NGOs and private organizations. In addition, scientists encourage the ideology of clean

and good agricultural techniques for producing good quality agricultural products and in some cases, they linked this to Swachh Bharat Abhiyaan.

In this initiative, 20,000 scientists of National Agricultural Research and Education System (NARES) are working by selecting villages. At Institute/ Agricultural University level, many groups of multidisciplinary scientists are constituted. One group is consisted of four or five scientists who have adopted 5 or more



villages. The groups of scientists at every Institute/ University have adopted villages within a radius of 50-100 km from their place of working. KVKs, Panchayats and other related



departments provided necessary cooperation to the scientists at the local level in the selected villages. Scientists are provided with minimum necessary facilities by their organizations for travelling and conduct of the programmes.

Under MGMG programme 17 ICAR institutes and 2 SAUs are promoting direct interface of scientists with the



farmers to faster the process of lab to land technology dissemination. For this purpose a total of 86 groups are formed. Altogether 372 scientists are involved in this programme and 385 villages were covered for strengthening interface with farmers. The details of activities undertaken during 2018-19 under MGMG programme are given below.

Table: Major Activities organised by ICAR Institutes/ SAUs under MGMG

S. No.	Name of activity	No. of activities conducted	No. of farmers participated & benefitted
1.	Visit to village by teams	196	24924
2.	Interface meeting/ <i>Goshthies</i>	89	2615
3.	Training organized	6	71
4.	Demonstrations conducted	13	779
5.	Mobile based advisories (No of message)	59	3719
6.	Literature support provided (No)	1318	1242
7.	Awareness created (No)	72	1941
8.	Other, if any	'Swachh Bharat' initiatives in the MGMG villages	-
	Total	1753	35291

Table: Zonal Summary of various activities of MGMG

S No./ State	No. of institutes/ universities involved	Total No of Groups/team formed	No. of Scientists Involved	No. of villages covered	No. of field activities conducted	No. of messages/ advisory sent	Farmers benefitted (No.)
West Bengal	11	44	196	262	412	383	22033
Odisha	5	29	120	68	123	79	6738
A & N Islands	1	13	56	55	124	472	6520
Total	17	86	372	385	659	934	35291

14.9 Swachh Bharat Abhiyan and Celebration of Swachhta Pakhwada 2018:

Nodal Scientist: Dr. S.K. Mondal

14.9.1 Swachh Bharat Abhiyan:

To maintain the nation-wide cleanliness drive foster by the National Government, all the staff members of ICAR-ATARI, Kolkata including KVKs under this Zone picked up the broom to clean the dirt, garbage, debris, litters, other obnoxious/ unwanted materials from the office surroundings, roads, dwelling places etc. The KVKs of this Zone observed the cleanliness drive through sensitizing farmers/ villagers adopting the slogan "*Neither litter, nor let others litter*". A number of awareness programmes, sensitizing workshops and campaigns were carried out within KVKs and even in the remote villages for all categories of citizens. A sense of responsibility was evolved among the people to keep the environment clean. Scientists of KVKs made effort to train the

people for making compost from different kinds of waste materials and also taught them in maintaining hygiene and sanitation in and around the houses. Fifty two KVKs under ICAR-ATARI, Kolkata conducted this Abhiyan during last one year. State-wise data envisaged that Andaman & Nicobar Islands, Odisha and West Bengal organized 40, 497 and 416 programmes, respectively in various forms. An amount of Rs. 11.90 lakh (approx.) has been spent on various Swachhta related activities by the KVKs of this zone.

Table: Swachh Bharat Abhiyan

State	No. of observation/ programme	No. of activities	No of KVK	Total Expenditure (Rs.)
A & N Islands	40	16	3	0
Odisha	497	201	29	607364
West Bengal	416	167	20	583074
Total	953	384	52	1190438



14.9.2 Swachhta Pakhwada 2018:

Table: Details of 'Swachhta Pakhwada' activities under ICAR-ATARI Kolkata from 16.12.2018 to 31.12.2018

Sl. No.	Date	Activities	No. of KVKs involved	No. of Participants (as per the respective activity conducted)
1	16.12.2018	Display and Banner at prominent places, taking Swachhta pledge, stock taking and briefing of the activities to be organized during the Pakhwada, plantation of trees.	08	160
2	17.12.2018	Basic maintenance - Stock taking on digitization of office records/ e-office implementation. Cleanliness drive including cleaning of offices, corridors and premises. Review of progress on weeding out old records, disposing of old and obsolete furniture's, junk materials and white washing/ painting.	11	110
3	18.12.2018	Sanitation and SWM Cleanliness and sanitation drive within campuses and surroundings including residential colonies, common market places. Stock taking of biodegradable and non-biodegradable waste disposal status and providing on the spot solutions.	09	90
4	19.12.2018	Sanitation and SWM Cleanliness and sanitation drive in the villages adopted under the Mera Gaon Mera Gaurav programme or other schemes by ICAR Institutes/KVKs involving village community. Reviewing the progress of ongoing Swachhta activities including implementation of SAP and providing at the spot solutions.	10	150
5	20.12.2018	Stock taking of waste management and other activities including utilization of organic wastes/generation of wealth from waste, polythene free status, composting of kitchen and home waste materials, promoting clean and green technologies and organic farming practices in kitchen gardens of residential colonies/one nearby village and providing on the spot technology solution.	10	240
6	21.12.2018	Campaign on cleaning of sewerage and water lines, awareness on recycling of waste water, water harvesting for agriculture/ horticulture application/kitchen gardens in residential colonies/1-2 nearby villages.	09	180
7	22.12.2018	Organizing workshops, exhibitions, technology demonstrations on agricultural technologies for conversion of waste to wealth, safe disposal of all kinds of wastes. Debate on Swachhta at the DARE/ICAR establishments, seminars, awareness camps, rallies, street plays and expert talks.	08	208
8	23.12.2018	Celebration of Special Day - Kisan Diwas (Farmer's Day) - 23 rd December, inviting farmers. Experience sharing on Swachhta initiatives by farmers and civil society officials. Felicitating farmers/civil society officials for exemplary initiatives on Swachhta.	07	140
9	24.12.2018	Swachhta Awareness at local level (organizing Sanitation Campaigns involving and with the help of the farmers, farm women and village youth in new villages not adopted by any institutes/establishments.	08	96
10	25.12.2018	Cleaning of public places, community market places and/or nearby tourist spots.	05	125

Sl. No.	Date	Activities	No. of KVKs involved	No. of Participants (as per the respective activity conducted)
11	26.12.2018	Fostering healthy competition - Organizing competition and rewarding best offices/ residential areas/ campuses on cleanliness. Quiz, essay and drawing competitions for school children, village youth.	09	333
12	27.12.2018	Stock taking of waste management and other activities including utilization of organic wastes/ generation of wealth from waste, polythene free status, composting of kitchen and home waste materials. Promoting clean and green technologies and organic farming practices in community places and on the spot redressal of issues.	08	216
13	28.12.2018	Campaign on cleaning of sewerage and water lines, awareness on recycling of waste water, water harvesting for agriculture/ horticulture application/ kitchen gardens in residential colonies outside campuses/ nearby villages with the involvement of local/ village communities.	07	98
14	29.12.2018	Visits of community waste disposal sites/ compost pits, cleaning and creating awareness on treatment & safe disposal of bio-degradable/non bio-degradable wastes by involving civil/ farming community.	06	108
15	30.12.2018	Involvement of VIP/ VVIPs in the Swachhta activities, involvement of print and electronic media may be ensured so that adequate publicity is given to the Swachhta Pakhwada.	05	155
16	31.12.2018	Organization of press conference for highlighting the activities of Swachh Bharat Pakhwada by involving all stake holders including farmers/ VIPs/ press and electronic media.	06	148
Total			126	2557

14.10 Krishi Vigyan Kendra (KVK) Knowledge Network/ KVK Portal:

Nodal Scientist: Dr. K.S. Das

The Krishi Vigyan Kendra (KVK), also known as “Single Stop Shop” in the district, serves as knowledge and resource centre of agricultural technologies and is linking the NARS with extension system and farmers. During the year 2016-17, Government of India launched ‘KVK Portal or KVK Knowledge Network’ to



The main objectives were- 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 can be 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, national programmes and many others. It has created deep impression in the minds of every category of



agricultural farmers 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.

14.11 KRISHI Portal:

Nodal Scientist: Dr. K.S. Das

The Knowledge based resources information systems hub for innovations in agriculture (KRISHI) Portal, one kind of data inventory repository, was developed by Indian Council of Agricultural

Research (ICAR) to bring its knowledge resources to all stakeholders e.g. farmers, researchers and planners etc. at one place. This portal has a centralized data repository system of ICAR consisting of technology, data generated through experiments/ surveys/ observational studies, geo-spatial data, publications, learning resources etc. The portal can be accessed at <http://krishi.icar.gov.in>. During the year 2018-19, all the documents including books, annual reports, newsletters, technical bulletins, videos of successful farmers etc. published by this institute were uploaded in KRISHI Portal for their wide circulation among readers.



15.0 Training and Capacity Building

Nodal Scientist: Dr. S.K. Mondal

The exercise of Training Need Assessment (TNA) and preparation of Annual Training Plan (ATP) for all categories of employees were initiated in the year 2015-16. In continuation, ICAR-ATARI, Kolkata has performed TNA and prepared ATP for the year 2018-19. For a continuous Human Resource Development (HRD) in the institute, such plans became instrumental and category-wise trainings have also been planned and implemented. The completed trainings have successfully been uploaded in ERP system by individual employees. During the year 2018-19, out of 14 employees of the institute 8 persons were planned to be trained as per their identified skill deficiency areas like Public Finance Management System (PFMS), Goods and Services Tax (GST) and MIS-FMS operating procedures etc.

Table: Category wise training achievements of ATARI Kolkata during 2018-19

Category	Total employees (No.)	Employees undergone training (No.)	% employees undergone training as per ATP	% Utilization of allotted budget
Scientists	6	0	0	0
Technical	1	0	0	0
Administrative staff	6	3	60	99.99
SSS	1	0	0	0
Total	14	3	37.50	99.99

During the year, a total of 14 HRD programmes involving KVK personnel, agri-preneurs, SAU Faculty members and scientists of ATARI Kolkata were organized in the field of technological



interventions for doubling farmers' income, entrepreneurship development and better livelihood opportunities. Zonal Farm Innovators Meet 2018

was also organized in order to encourage innovative farming technology in the eastern parts of India.

16.0 राजभाषा

“हिन्दी पखवाड़ा- 2018” समापन समारोह का आयोजन

प्रभारी अधिकारी: डॉ. श्यामल कुमार मंडल

भा.कृ.अनु.प.-कृषि तकनीकी अनुप्रयोग संस्थान, कोलकाता में दिनांक 14.09.2018 से दिनांक 28.09.2018 तक “हिन्दी पखवाड़ा-2018” का समापन समारोह का आयोजन लगातार तीसरी साल के लिए किया गया। इनमें संस्थान के सभी अधिकारी एवं कर्मचारी भाग लिया। संस्थान में 28.09.2018 को “हिन्दी पखवाड़ा-2018” का समापन समारोह आयोजित की गयी। इस समापन समारोह की अध्यक्षता संस्थान के निदेशक महोदय डॉ. एस.एस. सिंह ने की।



पखवाड़ा का समापन समारोह का शुभारंभ डॉ. एस. के. मंडल, प्रधान वैज्ञानिक के स्वागत भाषण एवं मुख्य अतिथि के परिचय से हुआ। तत्पश्चात डॉ. मंडल ने संस्थान में राजभाषा कार्यान्वयन की प्रगति प्रतिवेदन प्रस्तुत की। इस प्रतिवेदन में संस्थान से प्रकाशित हो रहे वार्षिक वैज्ञानिक पत्रिका “कृषि- पूर्वी किरण”, हिन्दी में पत्राचार एवं सभी हिन्दी पत्रों में हिन्दी टिप्पणी देना इत्यादि के उल्लेख किए गए।

हिन्दी पखवाड़े के दौरान आयोजित हिन्दी काव्य पाठ प्रतियोगिता एवं हिन्दी अनुवाद प्रतियोगिता (तत्कालिक) के विजेताओं को मुख्य अतिथि डॉ. एस. के. झा, प्रधान वैज्ञानिक, क्राईजाफ, वाराकपुर द्वारा पुरस्कार वितरित किए गए।



पखवाड़े के समापन समारोह के मुख्य अतिथि डॉ. एस. के. झा, प्रधान वैज्ञानिक, क्राईजाफ, वाराकपुर ने अपने संबोधन में संस्थान के सभी अधिकारी एवं कर्मचारी के प्रशंसा करते हुए हिन्दी को और तेजीसे बढ़ावा देने पर जोर दिए एवं सूचना प्रौद्योगिकी के सफल प्रयोग के साथ हिन्दी के प्रगति पर अपने विचार रखें। डा. एफ. एच. रहमान, प्रधान वैज्ञानिक के धन्यवाद ज्ञापन के उपरांत समारोह समाप्त हुआ।



17.0 Ongoing Programmes

17.1 Implementation of CSISA-ICAR Collaboration Project Phase-III:

Nodal Scientists: Dr. S.K. Roy and Dr. S.K. Mondal

Cereal Systems Initiative for South Asia (CSISA) and Indian Council of Agricultural Research (ICAR)



agreed a collaborative project of Phase-III of CSISA of CIMMYT and ICAR. CSISA was first approved by DARE on December 28, 2008 with subsequent agreements to support specific collaborative

activities with ICAR institutes and KVKs. In Phase-II of CSISA (2012-2015), close collaborations were developed and executed through the Natural Resources Management Divisions. Collaborations were also initiated with the Extension Division through a jointly sponsored and continuing dialogue

on modernizing extension services that was launched at an event hosted by IFPRI and the University of Illinois in June, 2015.



The overarching goal of CSISA in Phase III (2016-2020) remained to support the widespread adoption of SI technologies to spur inclusive agricultural growth, both within the time-horizon of investment and beyond. CSISA's theory of change in Phase III was structured around four inter-linked primary outcomes and was coordinated by a fifth that ensures that potential synergies across the project was realized and lessons learnt during implementation was reflected in periodic strategy adjustments.

Now the project is being implemented in Cuttack and Mayurbhanj-I in Odisha in 2018-19. Technologies



like crop establishment methods, weed management in direct seeded rice, performance of rabi crop in sequence under Zero Tillage were evaluated under this programme.

In the trials carried out in Odisha, following results were observed:

- Direct Seeded Rice (DSR), drill sown in dry soil condition, is superior to Manual Random Transplanting (MRT) in terms of different crop establishment methods in low land ecologies of Odisha. DSR yield is 61.45q/ha.
- Mechanical Transplanting (MT) is found to be superior with respect to rice transplanting method followed by Manual Line Transplanting (MLT) in terms of different methods of rice transplanting in double rice ecologies of Odisha. MT - 330 (panicle/m²).
- The highest average yield in integrated weed management option in direct seeded rice was achieved with the treatment Pre-emergence pretilachlor with safener (SOFIT) 500 g ai/ha followed by hand weeding at 20-25 DAS i.e. 5.02 t/ha, followed by the treatment two hand weeding (15-20 DAS and 30-35 DAS) i.e. 4.84t/ha, and the treatment Bispyribac + pyrazosulfuron at 20 + 20 g ai/ha (200 ml+200 g/ha or 80 ml + 80 g/acre) 15-25 DAS followed by one hand weeding at 30-35 DAS i.e. 4.42t/ha.

Landscape Diagnostic Survey/Production Practices Survey: Landscape diagnostic survey/production practices survey was initiated in 12 KVKs of Odisha and 12 KVKs of West Bengal.

The KVK system is acquiring new capabilities on landscape diagnostics within the digital space using Open Data Kit (ODK). The production practice



survey design and its methodology were finalized through series of discussions in joint workshops of CSISA project organized in ATARI, Kolkata and

OUAT Bhubaneswar. The KVKs staff was trained on the process of randomization through several training sessions. A total of Rs. 35,75,578/- was



sanctioned and received during the year for carrying out this survey.

Following KVKs are conducting landscape diagnostic survey / production practices survey during 2018-19 and 2019-20 under the project.

Sl. No.	Odisha	Status	Sl. No.	West Bengal	Status
1	Khordha	Completed	1	Hooghly	Completed
2	Cuttack	Completed	2	Coochbehar	Completed
3	Mayurbhanj-I	Completed	3	West Midnapore	Completed
4	Keonjhar	2019 - 20	4	Uttar Dinajpur	2019 - 20
5	Jagatsinghpur	2019 - 20	5	Malda	2019 - 20
6	Balasore	2019 - 20	6	Burdwan	2019 - 20
7	Nuapada	2019 - 20	7	Murshidabad	2019 - 20
8	Puri	2019 - 20	8	Howrah	2019 - 20
9	Nayagarh	2019 - 20	9	South 24 pgs (addl) - Narendrapur	2019 - 20
10	Jajpur	2019 - 20	10	North 24 pgs (addl)	2019 - 20
11	Bhadrak	2019 - 20	11	Nadia	2019 - 20
12	Mayurbhanj-II	2019 - 20	12	Purulia	2019 - 20

17.2 Skill Development Training Programme:

Nodal Scientist: Dr. S.K. Mondal

17.2.1 Skill Development Training Programme (ASCI):



A collaborative approach of Agriculture Skill Council of India and Indian Council of Agricultural Research has been taken for carrying out entrepreneurship development programmes through imparting skill training by KVKs. During 2018-19, 36 KVKs alongwith 4 SAUs and 3 ICAR Institutes of this

Zone were assigned with the job of undertaking the training programmes in the line of ASCI norms. All of these KVKs/ SAUs/ Institutes had undertaken 2 Skill Development Training



Programme (each) for a total of 1604 participants. During the year, a fund of Rs. 145.52 lakh was allocated to ATARI Kolkata for this purpose. The details have been presented in the Table.

Table: Skill development training programme (ASCI) conducted in Zone V

State/UT	No. of KVKs	No. of SAUs	No. of ICAR Institutes	No. of Job roles	No. of training programmes	No. of participants	Fund allocated (Rs. in lakh)
A & N Islands	1	0	0	2	2	40	3.92
Odisha	22	1	2	13	50	884	83.62
West Bengal	13	3	1	17	34	680	57.98
Total	46	4	3	32	86	1604	145.52



17.2.2 Training of Trainers for Skill Development in Agriculture:

An orientation-cum-capacity development programme of three days duration on skill development in agriculture was organized by ICAR-ATARI Kolkata in collaboration with Agriculture Skill Council of India



(ASCI) and Bidhan Chandra Krishi Viswavidyalaya (BCKV) during September 18-20, 2018. In this programme, the Trainers from KVKs, ICAR Institutes and SAUs were oriented for conducting the training, each of 200 hours or more duration and for 20 farmers/ rural youth in each batch, after getting certified by ASCI for both domain and platform skills. About 86 scientists/ faculty members from KVKs, SAUs, ICAR Institutes of West Bengal, Odisha and Andaman & Nicobar Islands of this Zone as well as from Assam, Nagaland, Meghalaya and Arunachal Pradesh participated in the programme.



17.2.3 Skill Development Training programme (Other than ASCI):

As a part of capacity development of farmers in various job-oriented aspects of agriculture and allied sectors, KVKs of this Zone also conducted different skill development training programmes (of less than 200 hours duration) during the period under report. The details are given in the Table below.

Table: Skill development training programme (less than 200 hrs) conducted in Zone V

State	No. of KVKs	No. of training conducted	No. of participants			Fund utilized (Rs. in lakh)
			M	F	T	
A & N Islands	3	58	725	229	954	19.08
Odisha	33	742	9621	3742	13363	227.17
West Bengal	18	509	5890	1759	7649	137.68
Total	54	1309	16236	5730	21966	383.93



17.3 National Farmer's Portal:

Nodal Scientist: Dr. K.S. Das

With the advancement of information technology, farmers from every nooks of the country are also being educated to receive latest information/ knowledge on various agricultural activities through



using telephones, mobiles, internet, touch screen kiosks, agri-clinics, mass media, common service centres, kisan call centres etc. The Central and State Government Organizations e.g.

Krishi Vigyan Kendras, Meteorological Department, State Agriculture Universities, ICAR Institutes, Department of Animal Husbandry, Dairying and Fisheries and others are providing information/ services/ advisories to the agricultural farmers by sending SMS in their language through National Farmers' Portal/ mKisan Portal platform (www.mkisan.gov.in). Since its inception in the year 2013, about 2450 crore messages with 4.2 lakh advisories on



crops, seeds, pesticides, farmers' insurance, farm machineries, storage, fertilizers, market price of agricultural produce, package of practices, various extension activities, weather forecasts, disease

incidences and so on have been sent to more than 5.38 crore Indian farmers. All the KVKs under ICAR-ATARI Kolkata are providing various information to the farmers of their concerned district through SMSs. During 2018-19, KVKs of Andaman and Nicobar Islands, Odisha and West Bengal sent 15, 888 and 406 advisory, respectively which benefitted more than 7.11 crore agricultural farmers.

Table: State wise distribution of SMS advisories and number of beneficiaries during 2018-19

State/UT	No. of advisory count	No. of beneficiaries
A & N Islands	15	3366
Odisha	888	59377953
West Bengal	406	11759056
Total	1309	71140375

17.4 Protection of Plant Varieties and Farmers Right Awareness Programme:

Nodal Scientist: Dr. P.P. Pal

The Protection of Plant Variety and Farmers Right Act, 2001 (PPVFR Act) is an Act of the Government of India that was enacted to provide for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders, and to encourage the development and cultivation of new varieties of plants.

This PPV&FR Act, 2001 was enacted to grant intellectual property rights to plant breeders, researchers and farmers who have developed any new or extant plant varieties. The Intellectual Property Right granted under PPV&FR Act, 2001 is a dual right – one is for the variety and the other is for the denomination assigned to it by the breeder. The rights granted under this Act are heritable and assignable and only registration of a plant variety confers the right. Essentially Derived Varieties (EDV) can also be registered under this Act and it may be new or extant. Farmers are entitled to save, use, sow, re-sow, exchange or sell their farm produce including seed of a registered variety in an unbranded manner.



Farmers' varieties are eligible for registration and farmers are totally exempted from payment of any fee in any proceedings under this Act. Such farmer's varieties were unique for their morphological characters (size, shape, texture and colour of grain in case of rice), tolerance to water logging (rice), soil salinity (rice), lodging as well as aroma (rice), size, shape, texture and colour etc. The rights granted under this Act are exclusive right to produce, sell, market, distribute, import and export the variety. The objective of this programme is to sensitize the farmers about their rights and protection acts in respect of their contributions made at any time in



conserving, improving and making available plant genetic resources for the development of new plant varieties and to discuss the issues and perspectives of PPV&FRA for the agricultural development.

To fulfil these objectives a Regional Workshop on Protection of Plant Varieties and Farmers' Rights was organized on 15.03.19 at West Bengal University of Animal & Fishery Sciences, Belgachhia, Kolkata by ICAR-Agricultural Technology Application Research Institute, Kolkata with the fund support of Protection of Plant Varieties and Farmers' Rights Authority, New Delhi. Altogether 250 progressive farmers from



all the KVKs of Odisha and West Bengal, PPV&FR officials, ICAR Scientists, University teachers, media personnel and others participated in this Regional Workshop. Inaugural session of this Regional Workshop was chaired by Prof. Purnendu Biswas, Vice Chancellor, WBUA&FS, Kolkata in the

presence of Dr. R.C. Agarwal, Registrar General, PPV&FRA, New Delhi; Dr. Randhir Singh, ADG(AE), ICAR, New Delhi; Dr. S.S. Singh, Director, ICAR-ATARI, Kolkata; Sh. R.S. Sengar, Deputy Registrar, PPV&FRA, New Delhi and others.

The dignitaries delivered the importance of Protection of Plant Varieties and Farmers' Rights Act and farmers' contribution towards preservation of the indigenous plant varieties for future research endeavour.



An exhibition of indigenous plant varieties and seed materials was also arranged on this occasion which was inaugurated by the dignitaries. The farmers from both the states brought 689 samples of seeds and plant materials of rice, oilseed, pulse, vegetables, cash crop, millets and fruit crops. The progressive farmers displayed their exhibits in the stall and interacted with visitors, scientists, KVK personnel and fellow farmers.

Table: Details of indigenous varieties displayed by different KVKs of West Bengal and Odisha

Sl. No.	Name of KVK	Crop Name	No of variety
1	Angul	Paddy, Pulses, Oilseeds, Millet	21
2	Boudh	Paddy (4), Pulses (12), vegetables (5), Mustard (1)	22
3	Cuttack	Paddy (22), Vegetables (10), Pulses (4), Oilseed(1)	37
4	Deogarh	Paddy (3), Pulses (4), Oilseed (1), Vegetable (2), Millet (1)	11
5	Gajapati	Millet (2), Pulses (1), Bean (1)	4
6	Ganjam-I	Pulses (4), Bean (1)	5
7	Jagatsinghpur	Paddy	10
8	Jajpur	Paddy, Pulses, Oilseeds, vegetables	25
9	Kandhamal	Paddy (15), Millet (2), Oilseed (2), Pulses (3)	22
10	Kendrapara	Paddy (21), green gram(2)	23
11	Keonjhar	Maize (3), Brinjal (1)	4
12	Nuapada	Paddy	9
13	Puri	Paddy	5
14	Sonepur	Paddy (10), Vegetables (17), Pulses (4), Papaya (2)	33
15	Sundarharh-I	Paddy (15), Millet (3), Pulses (1), Oilseeds (1)	20
16	Sundargarh-II (Rourkela)	Paddy (6), Potato (1)	7
17	Bankura	Paddy, Pulses, Oilseeds, Vegetables, Mushroom	17
18	Burdwan	Paddy	22

Sl. No.	Name of KVK	Crop Name	No of variety
19	Coochbehar	Spices (5), Paddy (3), Vegetables (3)	11
20	Dakshin Dinajpur	Paddy (39), Vegetables (15), Fiber crop (2), Tuber crop (4), Pulses (1), Oilseed (1)	62
21	East Midnapur	Paddy (47), Vegetables (23)	70
22	Hooghly	Paddy (17), Vegetables (7), Paddy (68) by Farmers club	93
23	Jalpaiguri	Paddy	3
24	Malda	Mango (3), Jackfruit (1), Rice (1), Vegetable (1), Pulses (3)	9
25	Nadia	Paddy (48), Vegetables (3), Papaya (1)	52
26	North 24 Parganas (Ashokenagar)	Paddy	26
27	Purulia	Paddy, Pulses, Oilseeds, vegetables, Millet	28
28	South 24 Pgs (Nimpith)	Paddy (26), Vegetables (5)	31
29	Uttar Dinajpur	Paddy (1), Oilseed (3), Vegetables (3)	7
Total			689

17.5 Management Information System Including Financial Management System (MIS-FMS) under ICAR-ERP:

Nodal Scientist: Dr. S.K. Mondal

Since 2014-15, ICAR-ERP is web based online comprehensive Enterprise Resource Planning (ERP) software application, used at ICAR-ATARI Kolkata. It is used to store and manage data generated from various process of this institute. This ERP has been developed under NAIP sub-project "Implementation

and used in this institute under the coordination of concerned nodal officer assisted by the required technical manpower. Bill creation, validation and payment, Leave and personal service related data management, payroll run, electronic payment (PFMS) are different kind of aspects through which all records can be maintained. Now by the help of this system only system generated pay slip is to be used of all employees and other regular day to day activities.

17.6 Institute Website:

Nodal Scientist: Dr. K.S. Das

The website of ICAR-ATARI Kolkata was regularly updated for latest information on KVKs, host organizations, personnel of ATARI Kolkata, district profiles, past/ present and upcoming events, publications, proceedings of meetings/ review workshops, awards, news, KVK websites and many others. The website can be accessed through logging in www.atarikolkata.org.



of Management Information System (MIS) including Financial Management System (FMS) in ICAR". This solution has enabled ICAR-ATARI Kolkata to enhance its efficiency and introduce best practices in the areas of Financial Management, Human Resource Management, Project Management, Procurement & Stores Management, Grants, Budgeting and Payroll. All the modules of the MIS-FMS, except project module, are being regularly implemented



17.7 Digital Farming Initiative in Agriculture:

Nodal Scientists: Dr. K.S. Das and Dr. S.K. Mondal

The Indian Council of Agricultural Research (ICAR), New Delhi in collaboration with Tata Consultancy Services (TCS) initiated digital agricultural extension



services or digital farming initiatives in agriculture (DFIA) using Krishi Vigyan Kendra (KVK) network across the Nation wherein

ICAR provided the technical input and advisory through KVK network and TCS provided its digital platform *mKRISHI*® offering two way communication through using “KVK Sandesh” App. At least 10 farmers from every village under each KVK were targeted to connect with ICAR using *mKRISHI* platform. The platform was created to bring farmers, KVK experts and researchers/ experts from SAUs,



and/ or other ICAR Institutes together so that the farmers were able to exchange their knowledge with the scientists/ experts on the

latest technologies related to agriculture, livestock and fishery sciences. The farmer details were collected in a prescribed format of Agriculture Extension Division (AE), ICAR, New Delhi in different phases. Thus, more than 3 lakh data from ATARI Kolkata were collected and submitted to the Council to provide digital platform to the farmers. During the period, one training programme for Master Trainers from selected KVKs of this Zone was also organized at ICAR-ATARI Kolkata in collaboration with Tata Consultancy Services (TCS) for using “KVK Sandesh” Mobile App to improve the communication among farmers and researchers.

Table: Farmers’ Database preparation by KVKs under ATARI Kolkata

State/ UT	Database prepared/ covered for		KVK Level Committee formed	
	Total no. of villages	Total no. of farmers	No. of formation	No. of members
A & N Islands	140	1747	0	0
Odisha	6434	119918	6	37
West Bengal	28411	154621	12	54
Total	34985	276286	18	91

17.8 Implementation of Public Financial Management System (PFMS):

Nodal Scientist: Dr. S.K. Mondal

Public Financial Management System (PFMS) has been operational since 2017 in this Institute. It is end to end solution for processing payments, tracking, monitoring, accounting, reconciliation and reporting which is used at ICAR-ATARI Kolkata. The Public Financial Management System (PFMS) earlier known as Central Plan Schemes Monitoring System (CPSMS) is a web-based online software application developed and implemented by Controller General of Accounts and administered by the Department of Expenditure, both in Ministry of Finance. ICAR-ATARI Kolkata utilizes this platform to monitor utilization of funds provided to the implementing agencies and governments.





17.9 Diploma in Agriculture Extension Service for Input Dealers (DAESI) Programme:

Nodal Scientist: Dr. S.K. Mondal

During the period, 16 KVKs of this Zone conducted 'Diploma in Agricultural Extension Service for Input-Dealers (DAESI)' programme to educate Agri-Input Dealers in their concerned districts on agriculture, to facilitate them to serve farmers better and to act as para-extension



professionals. The programme was implemented by MANAGE through State Agricultural Management and Extension Training Institutes (SAMETIs) in West Bengal. A total of 986 input dealers were trained through 25 courses during 2018-19. The similar programme is being planned for Odisha KVKs too.



The details are given in the table below:

State	Name of KVK	Total no. of courses 2018-19	Total no of participants
West Bengal	Murshidabad	3	120
	Coochbehar	2	80
	Hooghly	2	80
	Uttar Dinajpur	2	77
	Malda	2	80
	Nadia	2	80
	North 24 Pgs	2	80
	Jalpaiguri	2	69
	Burdwan	1	40
	Bankura	1	40
	Dakshin Dinajpur	1	40
	Howrah	1	40
	West Medinipur	1	40
	Nimpith	1	40
	Darjeeling	1	40
	Narendrapur	1	40
Total		25	986

18.0 Other Programmes

18.1 BSF Personnel Training:

The KVK scientists of ATARI Kolkata educated BSF personnel available in their respective districts on various technologies relating to agriculture and allied sectors e.g. horticultural production, grafting techniques, honey production, hi-tech agriculture, livestock rearing, fish rearing and many others. Very good liaison between army personnel and local civilians were established by the KVKs. During 2018-19, two KVKs from West Bengal state trained 46 BSF personnel.

18.2 Programme on Rural Agricultural Work Experience (RAWEx):

To acquaint with the agricultural farming situations under rural conditions, the KVKs of this zone also organized various programmes for ARS trainee probationers at their district level. They were also

associated with ICAR-ATARI Kolkata to interact with the scientists and administrative staffs, and to know the activities of the institute. Thirty one KVKs, 22 from Odisha and 9 from West Bengal, trained a total of 479 ARS trainee during 2018-19. Out of which, 271 trainees were from Odisha and 208 from West Bengal state and altogether they spent for 989 days at different districts under ATARI Kolkata.

State	No. of Student Trained	No. of Days stayed	No. of KVKs
Odisha	271	376	22
West Bengal	208	613	9
Total	479	989	31

18.3 KVK in Rural School:

Being an agrarian country, India, proper agricultural knowledge, skills, attitude and dedication of farmers play very important role for successful and sustainable

farming. However, in the present scenario, farmers are well aware of latest technologies in the fields of agriculture, but, the current generation of children and youths are not willing agriculture as their dignified profession. In this light, it is very essential to educate the children at young stage about the importance and benefits of agricultural farming. The scientists from 28 KVKs under ICAR-ATARI Kolkata tried to motivate such young buds to inculcate the basic knowledge of agriculture through delivering lectures, presentations, showing audio visuals, distributing leaflets/ pamphlets, group discussion, organizing quizzes etc. Three schools from A & N Islands, 12 schools from Odisha and 45 schools from West Bengal were approached for the purpose. During the year 2018-19, a total of 66 programmes were conducted in different districts of this zone.

State/ UT	No. of Schools	No. of Visits	No. of KVKs
A & N Islands	3	3	2
Odisha	12	16	10
West Bengal	45	47	16
Total	60	66	28

18.4 Livestock Disease Reporting Programme:

The surveillance and reporting of livestock diseases play important role in forecasting disease incidences and also in conducting animal health programmes. Like other years, during 2018-19, the KVK scientists under ATARI Kolkata were engaged to report various disease incidences of livestock species in their districts and accordingly, they organized various programmes like vaccination and deworming camp for different categories of animals, health camps etc. to keep the animal disease free and to get optimum production from animals. It was observed that a large no. of animals especially cattle, buffaloes, sheep, goats, pig, poultry etc. were affected with Foot and Mouth Diseases (FMD), Black Quarter (BQ), Haemorrhagic Septicaemia (HS), Theileriosis, parasitic infestations and so on which caused economic losses to the farmers. In the year 2018-19, 13 KVKs (one from A & N Islands, 7 from

Odisha and 5 from West Bengal) of this zone carried out various programmes. As per report, more than 10 lakh animals were vaccinated and 549 animals were died in different districts.

State	No. of KVK	No. of Death	No. of animals vaccinated
A & N Islands	1	0	43
Odisha	7	295	1005317
West Bengal	5	254	16474
Total	13	549	1021834

18.5 'Swachhta Hi Sewa' Programme:

Nodal Scientist: Dr. S.K. Mondal

As a part of the implementation of the Swachh Bharat Mission, Indian Council of Agricultural Research (ICAR) carried the 'Swachhta Hi Sewa' in 2 phases, 1st from 15.09.2018 to 02.10.2018 and 2nd from 16.12.2018 to 31.12.2018 at ATARI Kolkata and KVKs under this Institute. The following action plan was prepared during the campaign.



- Sanitation and cleanliness drive in and around the Institute/KVK campus throughout the period.
- Awareness campaigns for sanitation and hygiene and their importance in public health.
- Undertaking specific activities on specified dates during the period.

Among different activities, displaying the banners of "Swachhta Hi Sewa" and "Swachhta Pakhwada" at appropriate places in and outside the Institute/ KVK campus, Sapath/ Oath taking, organizing cleaning of office campus, conducting awareness programmes and etc. were carried out by the officials at this Zone including ATARI Kolkata.





Table: Details of 'Swachhta Hi Sewa' programme under ICAR-ATARI Kolkata from 15.09.2018 to 02.10.2018

Sl. No.	Activity	No. of KVKs involved	No. of villages Involved	No. of Participants	No. of VIPs	Name(s) of VIP(s)
1	Toilet pit-digging exercise and other toilet construction activities	45	56	1730	13	<ul style="list-style-type: none"> Shri. Lawrance Mathew, 1st Headman, Tappoiming Shri. Paterson Job, 1st Headman, Chuckchucha Shri. Nova Crispan, 2nd Headman, Tappoiming Shri. John Crispan, 5th Headman, Tappoiming Sri RC Mahakud Sri R Samantaray, Sarapanch & local farmer representatives
2	Organizing cleaning of streets, drains and back alleys through awareness drives	51	51	1850	11	<ul style="list-style-type: none"> Govt. officials
3	Organizing waste collection drives in households and common or shared spaces	55	59	2130	-	
4	Conducting door-to-door meetings to drive behaviour with respect to sanitation behaviours	39	41	1440	-	
5	Organizing awareness campaigns around better sanitation practices like using a toilet, hand washing, health and hygiene awareness, etc.	38	36	1710	9	<ul style="list-style-type: none"> Line dept officials & KVK Staff
6	Performing Swachhata related Nukkad Nataks/ street plays, folk song and dance performances	25	26	680	8	<ul style="list-style-type: none"> Sarapancha and Local MLA Mr. Rabindra Nath Khuntia (DDA, Rayagada) Bijoy Kumar Soren (DAO, Gunupur) Digambar Biswal (ASCO, Gunupur) Ananda Chandra Sahu (DDH, Rayagada)
7	Conducting Village or School-level rallies to generate awareness about sanitation	46	52	2261	14	<ul style="list-style-type: none"> Sri Santosh Kumar Jena Sri Brajabandhu Panigrahi Sri P.K Dey Sri. Narendra Kumar Sahoo Sri. Saroj Kumar Dash Dr. Sunil Kumar Mohapatra Prasanta Kumar Satapathy Srinnibash Mallick Antryami Sahoo Prakash Kumar Sahoo Sri T.S. Rout Sri. Hitesh Ku. Badhei Dr. Bhuban Mohan Sahu, DAO, Sundargarh

Sl. No.	Activity	No. of KVKs involved	No. of villages Involved	No. of Participants	No. of VIPs	Name(s) of VIP(s)
8	Making wall paintings in public places on the theme of Swachhata	33	37	720	-	• Govt. officials
9	Volunteering for segregation of solid waste into non-biodegradable and biodegradable waste	43	48	1490	5	<ul style="list-style-type: none"> • Directorate of Jute Development • Dr. K. Monoharan, Director, Directorate of Jute Development, Govt. of India
10	Mobilizing community to build compost pits, where organic matter decomposes to form manure	54	54	1780	7	<ul style="list-style-type: none"> • Mrs. Antima Halder, ADA, Joynagar -II • Sri Ramprasad Ghosh, Principal, Joynagar -II, Govt. ITI, Nimpith • Dr. Pradip, Programme Coordinator, Handique, KVK, Sivasagar, Assam • Dr. Sanjoy Borthakur, Programme Coordinator, KVK Tinsukia Assam • Dr. L. N. Banerjee, Principal Green College • Prof. Prabhat Kumar Pal, Director of Extension Education Uttar Banga Krishi Viswa Vidyalaya • Prof. S.K Laha, Ex Vice Chancellor, Uttar Banga Krishi Viswa Vidyalaya
11	Conducting Debates, discussions, awareness programmes, poster competitions etc.	35	30	400	7	<ul style="list-style-type: none"> • Swami Vaskarananda Ji Maharaj, Asstt. Secretary Kalyan • Dr. Asis Bandapadhyay, Deputy Director of Agriculture (Admn.), Department of Agriculture, Govt. of WB., Purulia • Mr. Sudip Bhakat, Deputy Director of Horticulture, Food Processing Industries and Horticulture, Govt. of WB., Purulia. • Dr. Debashis Dutta, Deputy Director Soil & Water Conservation Govt. of WB, Purulia • Dr. Subal Chandra Dey, Controller of Examination, SidhoKanho Birs University, Purulia • Mr. Samanta Layek, District Horticulture Officer Govt. of WB, Purulia • Mr. Kanchan Bhattacharya, DDM (NABARD)
TOTAL			490	16191	74	



18.6 Mahila Kisan Diwas Celebration:

Nodal Scientists: Dr. S.K. Mondal and Dr. K.S. Das

Considering International Day of Rural Women (IDRW) as an UN observance, Government of India (GoI) declared 15th October as 'Mahila Kisan Diwas' for recognizing the critical role and contribution of rural women, for enhancing agricultural and rural development, for improving food security and eradicating rural poverty.



Table: Details of Mahila Kisan Diwas organised

State/UT	Number of KVKs Organised programme	No. of villages Involved	No. of VIPs	No. of Participants
A&N Islands	2	5	2	122
Odisha	31	128	23	2237
West Bengal	18	142	24	1814
Total	51	275	49	4173



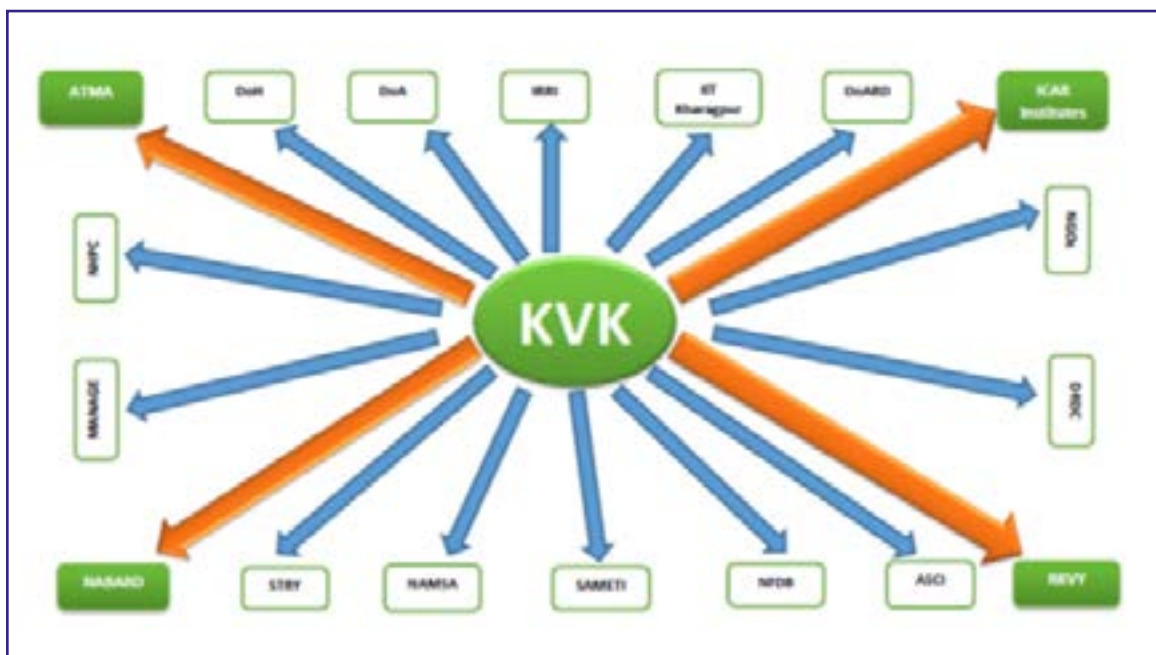
19.0 Convergence with other organizations

During the period under report, KVKs under ATARI Kolkata continued their linkage with various organizations and agencies while discharging their duties as farm science centres at the respective district level. In maintaining such linkages, the KVKs had jointly organized various collaborative programmes with international institutes/ organizations like IRRI, CIMMYT, Coromandel International Ltd. as well as national bodies like Deptt. of Agriculture Cooperation and Farmers Welfare, Deptt. of Horticulture, MGNREGS, NABARD, RKVY, ATMA of different districts, MANAGE, ICAR-NBSS&LUP, ICAR-NINFET, ICAR-NBAIM, Agriculture Skill Council of India, BGREI, Coconut Development Board, Pesticide India and SAMETI West Bengal etc. Nature of convergence by KVKs, ATARI Kolkata as well as the external agencies was collaborative and the joint responsibilities for conducting meetings/

visits/ group activities by farmers for capacity development were fixed with mutual understandings of each others' strengths. Besides, funding was also provided to KVKs by these agencies to conduct the programmes. The details have been presented below.

Table: Linkage and collaboration of KVKs with various organizations

State/UT	No. of KVKs involved	No. of external agencies approached	No. of programmes organized	Fund generated/ created (Rs. in lakh)
A & N Islands	1	1	5	49.71
Odisha	16	27	38	115.19
West Bengal	18	55	104	1473.70
Total	35	83	147	1638.60



20.0 New Initiatives Undertaken

20.1 New Extension Methodologies and Approaches (NEMA):

Nodal Scientists: Dr. P. P. Pal, Dr. K. S. Das and Dr. A. Halder

ICAR-ATARI Kolkata is involved in one ongoing research project namely, Network Project on New Extension Methodologies and Approaches. The project was initiated by ICAR, Division of Agricultural Extension to develop new extension methodologies, to assess the impact of the selected agricultural technologies developed by National Agricultural Research System i.e. ICAR Institutes, State Agricultural Universities, AICRPs and others and disseminated through existing extension methodologies and approaches.

The objectives of the project are (i) to study the existing extension methodologies and develop new extension methodologies, (ii) to develop technology map for different agro-ecosystem, (iii) to study the extent and determinants of adoption of selected improved NARS technologies, (iv) to assess the impact of the technologies in different agro-ecosystem, (v) to undertake yield gap analysis and suggest suitable strategies to reduce gaps.

The study is carried out in five different agro-ecosystems as identified in the World Bank funded National Agricultural Technology Project (NATP) viz. Irrigated Agro-ecosystem, Rainfed Agro-ecosystem, Arid Agro-ecosystem, Coastal Agro-ecosystem and Hill and Mountain Agro-ecosystem. Improved technologies viz. varieties, NRM, INM, IPM, technologies from fishery, veterinary, dairy, horticulture, engineering, etc. developed by National Agricultural Research System in last 5-10 years is identified for five agro-ecosystems for study. A total of 7 ICAR- Institutes/ Deemed Universities are identified as nodal institution to support technological and methodological backstopping to the 11 ATARIs for data collection. The identified institutions are responsible for designing the methodologies for the study, collating the data from all the ATARIs, managing database for that particular agro-ecosystem across the country and generate a knowledge pool.

All the implementing institutes have also been provided with one manpower to look after the project activities like coordination, data collection, compilation and submission. An amount of Rs.70000/- was provided to ICAR-ATARI Kolkata during 2018-19 for this NEMA project.



20.2 Krishi Kalyan Abhiyan:

Nodal Scientist: Dr. K. S. Das

The Department of Agriculture, Cooperation & Farmers' Welfare under Ministry of Agriculture & Farmers Welfare, Government of India launched the Krishi Kalyan Abhiyan, Phase-I (KKA-I) programme w.e.f. 01.06.2018 to 31.07.2018 which was extended up-to 15.08.2018 to aid, assist and advice farmers on how to improve their farming techniques and raise their incomes. The programme was implemented in 25 villages of each 117 Aspirational Districts identified across the country. As a part of Abhiyan, the trainings were imparted by domain expert from KVKs so as to guide farmers towards doubling of income. An action plan was framed in consultation with all line departments of those districts. During the period of 2018-19, under ATARI Kolkata, ten districts of Odisha state (Bolangir, Dhenkanal, Gajapati, Kalahandi, Kandhamal, Koraput, Malkangiri, Nabarangpur, Nuapada and Rayagada)

were covered as Aspirational Districts for carrying out different activities under KKA-I. Those 10 KVKs were provided with the fund of Rs. 2.10 crore to establish/ construct 20 NADEP pits in each village for 15 villages @Rs. 7000/- per NADEP pit. However, after getting success of KKA-I programme in all Aspirational Districts, the Indian Government again decided to start another phase of KKA programme (KKA-II) w.e.f. 02.10.2018 to 25.12.2018. To carry out various activities, the KVKs were directed to select new 25 villages from the existing Aspirational Districts of Odisha state and new five Aspirational Districts of West Bengal (Birbhum, Dakshin Dinajpur, Malda, Murshidabad and Nadia) state. During the period under report, as a part of *Krishi Kalyan Abhiyan* activities, Aspirational District KVKs under ATARI Kolkata trained total 25022 farmers through conducting 423 programmes during first phase and 16160 farmers through organizing 304 programmes during second phase. Other salient achievements of KKA programme under ATARI Kolkata have been presented in the tables.

20.2.1 Trainings:

Name of programme	Training programmes on	No. of programmes	No. of farmers benefitted									No. of officials attended the programme
			SC		ST		Others		Total			
			M	F	M	F	M	F	M	F	T	
KKA-I	Vermicomposting, mushroom production andkitchen gardening	423	1974	2837	6447	7409	3654	2701	12075	12947	25022	1177
KKA-II		304	2584	1505	4680	3439	2353	1599	9617	6543	16160	876

20.2.2 Distribution of seed/ planting materials/ input/ others:

Name of programme	No. of programme	Total quantity distributed				No. of farmers benefitted									No. of other officials attended the programme
		Seed (q)	Planting material (lakh)	Input (kg)	Other (kg/ No.)	SC		ST		Others		Total			
						M	F	M	F	M	F	M	F	T	
KKA-I	250	12892.2	1.05080	1800	150	13028	8755	19911	12274	13575	8260	46514	29289	75803	567
KKA-II	234	8828.2	0.49620	7600	0	7163	3945	11873	5849	8190	2999	27226	12793	40019	495

20.2.3 Livestock and Fishery related activities:

Name of programme	No. of Programme	Activities performed				No. of farmers benefited									No. of other officials attended the programme
		No. of animals vaccinated	No. of animals dewormed	Feed/ nutrient supplements provided (kg)	Any other (Distribution of animals/ birds/ fingerlings) [No.]	SC		ST		Others		Total			
						M	F	M	F	M	F	M	F	T	
KKA-I	282	120280	22118	1750	1214	5548	1838	10695	4265	16360	1259	32603	7362	39965	219
KKA-II	318	51874	9073	400	277	2535	1008	5099	1709	6858	825	14492	3542	18034	214



20.2.4 Other activities:

Name of programme	Activities	Number distributed	No. of farmers benefited									No. of other officials
			SC		ST		Others		Total			
			M	F	M	F	M	F	M	F	T	attended the pro-gramme
KKA-I	Soil Health Card distribution	24896	4708	1331	8120	2645	5556	2034	18384	6010	24394	221
	NADEP pit establishment	3743	645	100	1783	484	733	206	3161	790	3951	279
	Farm implements distribution	1193	3014	821	9207	1094	1150	685	13371	2600	15971	134
KKA-II	Soil Health Card distribution	12381	1926	813	3959	1520	2975	807	8860	3140	12000	174
	NADEP pit establishment	1050	63	26	538	174	172	77	773	277	1050	44
	Farm implements distribution	1028	1595	239	7056	421	2014	769	10665	1429	12094	38





Following the success of Krishi Kalyan Abhiyan, the Department of Animal Husbandry, Dairying and Fisheries under Govt. of India had decided to extend the Artificial Insemination under Genetic Upgradation programme through High Yielding Indigenous Breed (HY-IB) bovine semen and delivery of quality AI services at farmers' doorstep to 100 more villages/ district in 112 Aspirational Districts of the country under Phase- III w.e.f.



15.01.2019 to 15.04.2019. The Aspirational District KVKs of this Zone were given responsibility to upload AI related data in their respective KVK Portal. During the period, a total of 8191

inseminations were conducted in 10 Aspirational Districts under ATARI Kolkata.

20.3 Establishment of Micro-irrigation System:

Nodal Scientists: Dr. K. S. Das and Dr. S. K. Mondal

To enhance water use efficiency in agricultural production and to encourage the farmers for using

water saving and conservation technologies, the Department of Agriculture and Cooperation, Ministry of Agriculture and Farmers Welfare, Govt. of India under "Per Drop More Crop" component on Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) launched this programme to establish demonstration units on Micro-Irrigation technologies (drip & sprinkler) in one hectare land at the selected KVKs of Aspirational Districts and KVKs under ICAR Institutes, and CAUs during the year 2018-19. Under ICAR-ATARI Kolkata, total twenty five KVKs i.e. three from Andaman & Nicobar Islands (Port Blair, Nimbudera and Nicobar), twelve from Odisha (Bolangir, Cuttack, Dhenkanal, Gajapati, Khurda, Koraput, Kandhamal, Kalahandi, Malkangiri, Nabarangpur, Nuapada and Rayagada) state, and ten from West Bengal [Birbhum, Burdwan, Dakshin Dinajpur, Malda, Malda (Additional), Murshidabad, Murshidabad (additional), Nadia, Nadia (additional) and North 24 Parganas (Additional)] state were involved for the programme. Each KVK was funded with an amount of Rs. 1.0 lakh to establish micro-irrigation demonstration unit. A total of 15 training programmes and 22 demonstrations were organized by the KVKs for the farmers of this Zone during the period under report. About 78000 planting materials were produced from those units. More than 900 farmers from different corners of the districts and 100 officials from other departments also visited micro-irrigation demonstration units at the KVKs.

State/UT	No. of micro-irrigation demo unit	No. of training programme	No. of demonstrations	No. of planting materials produced	Visit made by the farmers	Visit made by the officials
A & N Islands	3	3	3	0	3	0
Odisha	12	3	5	20000	550	70
West Bengal	10	9	14	58700	409	30
Total	25	15	22	78700	962	100

20.4 Nutri-sensitive Agricultural Resources and Innovations (NARI):

Nodal Scientist: Dr. S. K. Mondal

During the year 2018-19, one new project (rather a concept), namely, NARI was implemented through selected 6 KVKs; the details of the project are given below.



Project Details	No. of Units to be formed	No. of KVKs to be involved	Budget estimate per KVK (Rs. in lakh)*		
			Capital	Revenue	Total
<ul style="list-style-type: none"> ➤ Food security must lead to Nutritional Security, ➤ To focus on gender empowerment and nutrition, ➤ Demonstrations to promote nutrition-sensitive agriculture, capacity development and gender mainstreaming, ➤ Interventions: family farming, linking agriculture to nutrition, skill development among women and youth, ➤ Bio-fortification of locally available food, round-the-year dietary pattern, nutri-thali ➤ Nutrition Smart villages, etc. 	6	Odisha: 4 (Jajpur, Koraput, Nuapada, Angul); West Bengal: 2 [Uttar Dinajpur, North 24 Parganas (Ashokenagar)]	0	5.16	5.16

* The amount has been worked out from the EFC provisions for these two projects.

As per the above guidelines, the selected KVKs under ICAR-ATARI Kolkata were implementing the project with the action plan as detailed below:-

In Odisha, 4 KVKs have been selected based on their technical expertise, manpower availability and the potential district to undertake the following activities-

- Identifying Nodal officer at KVK level keeping the technical aspect of the project in view.
- Conducting one On-farm trial on food quality, nutritional aspect of agriculture, tackling mal-nutrition in mothers and children and other related aspects with a multidisciplinary approach



- Demonstration on Nutritional garden, nutrient rich varieties of different crops, agricultural crops and human nutrition, bio-fortification of locally available food, round-the-year dietary pattern etc.
- Capacity development through training and skill development programmes on these aspects towards creation of nutrition-smart villages
- Addressing gender issues through increasing women's participation

Similarly in West Bengal, 2 selected KVKs undertook the same activities as mentioned above.





20.5 Value Addition and Technology Incubation Centres in Agriculture (VATICA):

Nodal Scientist: Dr. F. H. Rahman

The new project, namely, VATICA was implemented

Sl. No.	Project Name	Project Details	No. of Units to be formed	No. of KVKs to be involved	Budget estimate per KVK (Rs. in lakh)*		
					Capital	Revenue	Total
1	Value Addition and Technology Incubation Centres in Agriculture (VATICA)	<ul style="list-style-type: none"> 3 Models <ul style="list-style-type: none"> Establishing in KVK Premises and operated for incubation and skill development. Establishing in KVK Campus and outsourcing to group of Entrepreneurs to operate for incubation, skill development and partial commercial games to operate the unit sustainably. The unit is to be given to FPO or any private entity with one time grant of RKVY to operate on commercial lines 100 VATICA centers in the country Funding <ul style="list-style-type: none"> Revolving Fund and one time grant of RKVY 	9	A & N Islands: 1 (Port Blair); Odisha: 5 (Deogarh, Dhenkanal, Ganjam-II, Jagatsinghpur, Nabarangpur); West Bengal: 3 (Darjeeling, Howrah, Murshidabad)	5.05	0.36	5.41

* The amount has been worked out from the EFC provisions for these two projects.

A total of 9 KVKs (1 from A & N Islands; 5 from Odisha and 3 from West Bengal) were implementing this project in this Zone by taking up the following activities-

- Nodal officer at KVK level to be identified keeping the technical aspect of the project in view.
- Such centres to be established in KVK premises with the potential enterprises of the district.
- The Unit to be operated for incubation and skill development of the farmers, rural youth, women and other stakeholders.
- Sustainability of the centre to be ensured by occasional commercial use, if felt necessary.

20.6 Gramin Krishi Mausam Seva (GKMS):

Nodal Scientist: Dr. F. H. Rahman

Under Gramin Krishi Mausam Sewa project (GKMS), India Meteorological Department, Ministry of Earth

through selected 9 KVKs during 2018-19. The details of the project are given below.

Science in collaboration with State Agricultural Universities / Indian Council of Agricultural Research has established District Agro-Met Units (DAMU) for issuing crop and location specific weather based agro advisories for the benefit of farming community and occurrence of extreme weather. The Agro-meteorological Advisory Services (AAS) under the GKMS is operated to prepare biweekly weather based bulletins. The information is transmitted through multimedia channels and SMS to help farmers plan farm operations accordingly. Farmers can get the information through the website of Agrimet Division to utilize these services. The total amount sanctioned for 16 KVKs for the year 2018-19 is Rs. 8000000/- (Rs. 4.80 lakh for each KVK). The respective KVK districts under this zone are mentioned here:



Table: State-wise details of establishment of DAMUs

Sl. No.	State	Name of District / KVK	Sl. No.	State	Name of District / KVK
1	Odisha	Angul	1	West Bengal	Murshidabad
2		Bolangir	2		N 24 Pgns
3		Ganjam-I	3		Jalpaiguri
4		Puri	4		Birbhum
5		Gajapati	5		Purulia
6		Jagatsinghpur	6		Malda
7		Mayurvanj-I			
8		Nayagarh			
9		Rayagada			
10		Cuttack			

An Orientation programme on Preparation and Dissemination of Agromet Advisories at Block Level under Gramin Krishi Mausam Seva scheme for Nodal Officers of KVKs of Zone V held at ICAR-ATARI Kolkata on August 9-10, 2018. The programme



was chaired by Dr. S. S. Singh, Director, ICAR-ATARI Kolkata and attended by Dr. K. K. Singh, Head, Agromet Advisory Science Division, IMD, Pune; Dr. Sanjib

Bandopadhyay, Deputy Director General, RMC, Kolkata; Dr. Gokul Debnath, former Deputy Director General, RMC Kolkata; Dr. Saon Banerjee, Prof and Head, Department of Meteorolgy, BCKV, Nadia; Dr. Kripan Ghosh, IMD, Pune; Dr. Anumapa Balier Singh, OUAT, Bhubneswar, Prof. P. K. Roul, Dean, OUAT, Bhubneswar; Scientists of ICAR-ATARI Kolkata and the Heads of 16 KVKs of Odisha and West Bengal.

20.7 Visit of Dignitaries/ Central Ministers:

Nodal Scientist: Dr. S. K. Mondal

During the year, some notable personalities as well as Ministers of Central Cabinet made visits for reviewing the KVK activities. Some of the important aspects of their visits have been presented below.

Steep hike in Minimum Support Price (MSP) for Kharif crops will go a long way in improving the income of the farmers, said Shri M. Venkaiah Naidu, Hon'ble Vice President of India while interacting with the Island farmers and KVK scientists under ICAR-CIARI, Port Blair on 05.07.2018. The Vice President stressed on the need to streamline the procurement process and Public Distribution System network so that the farm derives the maximum benefit apart from providing MSP at 50% or more over the cost of production. Other income enhancing measures need to be taken to mitigate agrarian distress, especially of the small and marginal farmers, he added.





Table: Details of visit of Central Ministers to KVKs of Zone V

State	Name of KVK	Name of Hon'ble Minister	Name of Ministry	Salient points in his/ her observation
A & N Islands	KVKs Port Blair and North & Middle Andaman	Shri M. J. Akbar	Union MoS, External Affairs, Govt. of India	<ul style="list-style-type: none"> Reviewed three years progress of KVK and appreciated the progress & suggested for further improvement.
Odisha	KVK Jharsuguda	Shri Jual Oram, Hon'ble Minister Tribal Affairs, Govt. of India	Tribal Affairs, Govt. of India	<ul style="list-style-type: none"> Appreciated the activities of KVK. Appreciated the demo units and KVK, well maintained KVK campus. Pleased with the NICRA village activities
	KVK Sundargarh-I	Shri Jual Oram	Tribal Affairs, Govt. of India	<ul style="list-style-type: none"> KVK is doing good work at village level for upliftment of tribal farmers with very appropriate technologies in reducing the gap from the mainstream farming. KVK requires a full-fledged administrative building. KVK should have more model demonstration units for showcasing technologies for the tribal poor. KVK should start their programme from the poorest.

20.8 Organizing District Kisan Mela:

Nodal Scientist: Dr. P. P. Pal

During 2018-19, KVKs of this Zone, in close association with respective ATMA, organized 'Kisan Melas' at District level in KVK premises during the period from 25th December, 2018 to 25th February, 2019.



The expenditure on organizing such Kisan Melas was borne by ATMA, while KVKs provided their premises and jointly organized the event. The details are given in the Table.



Table: Details of District level Kisan Mela organized by KVKs

State/ UT	No. of KVKs organized	No. of programmes organized	No. of Hon'ble MPs (Loksabha/ Rajyasabha) participated	No. of State Govt. Ministers	No. of participants
Odisha	6	6	0	10	1248
West Bengal	21	21	16	2	7578
Total	27	27	16	12	8826



20.9 Conducting Model Cluster Demonstrations under Paramparagat Krishi Vikas Yojana (PKVY) by KVKs:

Nodal Scientist: Dr. S. K. Mondal

It was preliminarily decided by ICAR to submit a project proposal to DAC&FW for conducting model demonstrations by KVKs under Paramparagat Krishi Vikas Yojana (PKVY). KVKs were to be provided 10.00/- lakh each for conducting demonstrations in 20.0 ha area. However, the KVKs for this purpose were identified and the proposed list was sent to the Council for further processing. The details are as follows:-

Table: Proposed KVKs for Organic Farming Demonstration under Paramparagat Krishi Vikas Yojana (PKVY)

State/UT	Name of KVK	District	No. of clusters
A & N Islands	North & Middle Andaman	North & Middle Andaman	3
Total	1	1	3
Odisha	Cuttack	Cuttack	3
	Khurda	Khurda	4
	Gajapati	Gajapati	3
	Kandhamal	Kandhamal	3
	Koraput	Koraput	2
	Keonjhar	Keonjhar	2
	Mayurbanj-II	Mayurbanj	3
	Baragarh	Baragarh	3
	Kalahandi	Kalahandi	2
	Nuapada	Nuapada	2
Total	10	10	27
West Bengal	Darjeeling	Darjeeling	4
	Darjeeling	Kalimpong	3
	Coochbehar	Coochbehar	3
	Uttar Dinajpur	Uttar Dinajpur	2
	Nadia	Nadia	2
	North 24 Parganas (Ashokenagar)	North 24 Parganas	2
	Purulia	Purulia	2
	Paschim Medinipur	Paschim Medinipur	2
Total	7	8	20
Grand Total	18	19	50

20.10 Webcasting of various programmes:

Nodal Scientist: Dr. S. K. Mondal

20.10.1 Pradhan Mantri Kisan Samman Nidhi Yojana (PM-KISAN) Launching Programme:

On 24 February, 2019, Hon'ble Prime Minister of India launched the new scheme of Govt. of India - "Pradhan Mantri Kisan Samman Nidhi Yojana" (PM-KISAN) from a programme organized at Gorakhpur, U.P. This programme was webcast pan India through all the KVKs, ICAR institutes and Agriculture, Fisheries and Animal Husbandry Universities. Besides, PM's Mann ki Baat programme was also broadcasted directly to the participants simultaneously. Sasya Shyamala KVK, RKMVERI was the only KVK in the country through which a woman farmer Mrs. Mousumi Das of Block Budge Budge-I, South 24 Parganas, West Bengal interacted as representative farmer. Shri Ramvilash Paswan, Hon'ble Minister for Consumer Affairs, Food and Public Distribution, Govt. of India, Mrs. Rupa Ganguli, Hon'ble MP, Rajyasabha, Swami Rajibeshananda, Asstt. Secretary, RK Mission Ashrama, Narendrapur, Dr. S.K. Malhotra, Agriculture Commissioner, Govt. of India and Dr. S.S. Singh, Director, ICAR-ATARI, Kolkata attended the programme. Total 511 farmers and others have participated in the programme.

In a befitting programme at North 24 Parganas (Additional) KVK, Hon'ble Governor of West Bengal Shri Keshari Nath Tripathi visited and took an active role in the Webcasting of PM-KISAN Launching Programme. Besides, other KVKs of the Zone have also organized the webcasting programme, details of which have been presented in the Table.

Table: Details of Webcast programme on launching PM-KISAN

State / UT	No. of KVK organized the programme	Name of VIPs attended	No. of participants attended
A & N Islands	3		309

State / UT	No. of KVK organized the programme	Name of VIPs attended	No. of participants attended
Odisha	2		270
West Bengal	20	Shri Keshri Nath Tripathi, Hon'ble Governor of West Bengal, Shri Ramvilash Paswan, Hon'ble Minister for Consumer Affairs, Food and Public Distribution, Govt. of India, Mrs. Rupa Ganguli, Hon'ble MP, Rajyasabha, Swami Rajibeshananda, Asstt. Secretary, RK Mission Ashrama, Narendrapur, Dr. S.K. Malhotra, Agriculture Commissioner, Govt. of India' Dr. S.S. Singh, Director, ICAR-ATARI, Kolkata	4449
Total	25		5028

20.10.2 Prime Minister's interaction with women members of SHGs:

Hon'ble Prime Minister of India interacted with the women members of Self Help Groups across the country on 12.07.2018 through video conferencing. The KVKs of this Zone also organized the live webcast of this programme across A & N Islands, Odisha and West Bengal. The details of the programme are given in the Table below.

Table: Programme of live webcast of the Hon'ble Prime Minister's interaction with women members of SHGs

State/ UT	No. of KVKs organized	Venue	Total No. of participants
Andaman & Nicobar Islands	1	Respective KVK campus	107
Odisha	18	Respective KVK campus	981
West Bengal	10	Respective KVK campus	707
Total	29		1795



20.10.3 Prime Minister's interaction with Farmers:

Farmers across India got the opportunity to interact with Hon'ble Prime Minister of India interacted on 20.06.2018 through video conferencing. The KVKs of this Zone also organized the live webcast of this programme across A & N Islands, Odisha and West Bengal. The details of the programme are given in the Table below.



Table: Details of live webcast programme of Hon'ble Prime Minister's interaction with Farmers

State/ UT	No. of KVKs organized	Venue	Total No. of participants
Andaman & Nicobar Islands	3	Respective KVK campus	174
Odisha	33	Respective KVK campus*	5976
West Bengal	22	Respective KVK campus**	2735
Total	58		8885

21.0 Large scale adoption of technologies

21.1 Summary of technologies adopted in large scale across the Zone:

State/ UT	On. of KVKs	No. of technologies upscaled	Important technologies
A & N Islands	2	4	<ol style="list-style-type: none"> 1. Paddy Varieties 2. Coconut based cropping system
Odisha	25	161	<ol style="list-style-type: none"> 1. Backyard rearing of improved poultry breed "Rainbow rooster" 2. Cultivation Technology of drought tolerant groundnut Var. Devi in rainfed uplands 3. Biological control of aquatic weeds 4. Mineral mixture supplementation 5. Integrated management practices for management of stem borer in paddy 6. Tractor operated seed cum fertilizer drill for sowing groundnut 7. Demonstration on onion var. Agrifound light red 8. CIFABROOD: A Carp brood diet 9. Use of light trap for control of Yellow stem borer in Rice 10. Growing of bamboo raised through culm cutting method 11. Popularisation of off season cauliflower cultivation for higher profit upto 20% 12. Popularisation of Use of fruit fly trap + spraying of Deltamethrin @ 2ml/lit before ripening of mango for fruit fly management in mango
West Bengal	18	112	<ol style="list-style-type: none"> 1. Piglets production 2. Improved Method of Elephant's Foot Yam Cultivation 3. Preparation and Use of Vermin-Composting 4. Azolla production for livestock feeding and green manuring 5. Drum Seeder in kharif rice 6. Scientific Rural Poultry Farming 7. Management of blight disease of Large Cardamom 8. Application of Gibberellic Acid to increase yield in Cucurbitaceous Crop 9. Backyard RIR chicken rearing as a part of village livelihood



State/ UT	On. of KVKs	No. of technologies upscaled	Important technologies
			<ol style="list-style-type: none"> 10. Fruit fly management in fruit crops- like Mango, Guava and ber and vegetables like cucurbits. 11. Vanaraja farming in backyard 12. Breed improvement of deshi ducks through cross breeding with Khaki Campbell drakes. 13. Resource conservation of Black Bengal Goat. 14. Popularisation of Vanaraja & Khaki-campbel ducks 15. Resource conservation Technology (Zero Tillage cultivation in Rice and Wheat) 16. Weaning food for malnourished children 17. Air breathing fish culture 18. Use of biocontrol agents (<i>Trichoderma harzianum</i>, <i>Pseudomonas fluorescens</i>, <i>Metarhizium anisopliae</i>) in pest disease management 19. Cotton cultivation in rice fallows 20. Land Shaping and Rain Water Harvesting Technology including Land Embankment Cultivation for Augmentation of Agricultural Production:

21.2 Selected cases of large scale adoption:

21.2.1 Prateeksha (IET-15191): An improved high yielding rice variety:

Rice is the major crop of Hooghly district covering around 1,77,000 ha land in kharif season. The most important variety of kharif rice in the district was Swarna Masuri. Low productivity in Swarna



Masuri (MTU 7029) variety of paddy was a major problem to farmers mainly due to susceptibility of sheath blight

disease. Realizing the problem of low productivity, KVK, Hooghly conducted an On Farm Trial for three years since 2013 using 3 other variety, namely Prateeksha (IET-15191), Kanak (IET-19886) and Swarna sub-1. Out of which the variety Prateeksha was found most superior in yield and disease tolerance. This variety was taken as FLD in farmers' field. The technology demonstrated was improved production technology for rice variety, Prateeksha (IET-15191). The variety Prateeksha produces more number of effective tiller and number of seed per panicle thereby higher yield than other variety. Around 19 % yield is increased over farmers' common

variety, Swarna Masuri. It also possesses sufficient tolerance against sheath blight disease. This technology is now on adopted in 37 villages of 11 blocks of the district covering around 9135 ha.



21.2.2 Hi-Tech Pan Boroz: A new vista in betel vine cultivation:

Betel leaf is one of the important commercial crops of the district South 24 Parganas. Out of total cultivable area of 368197 ha of the district, betel leaf occupies 2685 ha area covering around 35000 number of households from six coastal blocks (Sagar, Namkhana, Kakdwip, Pathar pratima, Mathurapur II and Kulpi). This crop has become mainstay of occupation for three blocks namely Sagar, Namkhana and Pathar Pratima.

Betel vine is a shade loving crop usually grown in artificial shade structure, called *Boroz*, made up of bamboo, paddy straw and other related bio-degradable items. Growing betel vine within this structure are prone to numerous diseases and insect pests. Also, in the coastal area these structures are frequently affected by storms and cyclones.

Considering these aspects Ramkrishna Ashram KVK conceptualized a durable *boroz* structure using GI

pipes on concrete basement fitted with green shade net, 75% on the top and 50% on the side walls. Unlike traditional *boroz*, this new *boroz* is made up of non-degradable items and there by chances of pest and disease attack is very less. Also, this modern *boroz* is fitted with micro-sprinkler irrigation facility,



which not-only reduces irrigation cost, but maintains temperature and humidity within the *boroz* during the hot summer and dry winter.

Another advantage of this hi-tech *boroz* is the uniformity in shading, there by uniform coloration of leaf is achieved.

Adopting this modern *boroz*, farmers are experiencing better profitability in betel vine cultivation due to lower cost of cultivation, minimum/no recurring cost



for maintenance of *boroz* structure, higher production and higher market value of the produce (leaf) due to good colour, shape (roundish)

and luster of the leaf.

Since 2011-12, KVK has demonstrated nearly 650 numbers of units in collaboration with Department of Horticulture, Govt. of W.B., South 24 Parganas through National Horticulture Mission programme. To construct a Hi-Tech *boroz* of 500 sqmt size, the costing is Rs 300000. Farmer needs to bear 50% of the total cost and the rest half is assisted by State Dept. of Horticulture through NHM scheme. KVK has made an arrangement of getting bank loan of the farmers' contribution amount (50% of the total cost) through



a tying-up programme with Axis Bank, Joynagar Branch. For the ease of the farmers, door step bank account opening was done at village level. At present

around 2000 farmers approached KVK for getting this type of hi-tech *boroz* in lieu of their traditional one.

21.2.3 Coconut based cropping system:

Coconut is major crop of coastal agriculture prevalent in Andaman & Nicobar Islands. KVK Port Blair identified the problem of low system productivity due to monocropping of coconut. Therefore, on-farm trials and later frontline demonstrations on various crop combinations with coconut have been tried and the most profitable alternatives were put to upscaling mode for the benefit of island farmers. The practice

of growing different crops of varying height, rooting pattern and duration is called multi-tier cropping system. In



this system, the leaf canopies of intercrop components occupy different vertical layers. The tallest components have foliage tolerant of strong light and high evaporative demand and the shorter component with foliage requiring shade and relatively high humidity. The tested combinations were:- Coconut + Black Pepper + Cinnamon + Banana+ Pineapple; Coconut + Black Pepper + Clove + Cinnamon + Banana + Elephant Foot Yam + Ginger; and Coconut + Arecanut + Blackpepper + Clove + Cinnamon + Banana + Papaya + Pineapple +Fodder+Ginger+ Vegetables. The last combination with different spices, vegetables, fruits, etc. yielded highest production as well as profit. Till date, the coverage of such multi-tier cropping system reached to 4.6 ha across the district.

21.2.4 Integrated disease management in rice:

Throughout the state of Odisha, particularly in Jajpur district, rice is the major agricultural crop which covers a considerable acreage. During recent years, the yield loss due to sheath blight has been identified as major setback to rice cultivation. In order to



address this issue, the field level trials as well as demonstrations were being continuously taken by KVK Jajpur. The combination of Tricyclozole and Propiconazole has been found to be most effective control measure to tackle sheath blight. Currently, this effective technology has been upscaled and adopted by farmers of Jajpur and adjoining districts covering around 70000 ha.

21.2.5 Backyard poultry farming with Vanaraja breed:

Backyard poultry farming is one of the most important viable non-crop enterprises of tribal district of Malkangiri of Odisha. However, the traditional way of backyard poultry keeping system is less remunerative as a consequence of scarcity of superior germplasm. Though, rural backyard poultry



segment contributes nearly 30 per cent of the national egg production, still it is a neglected one. The meat of backyard

scavenging chickens is highly accepted in the markets and more remunerative than commercial broiler meat because of its taste, lower fat content and texture.

Various field level demonstrations on different breeds suitable for backyard poultry production were undertaken by KVK Malkangiri to address the problem of low egg as well as meat production resulting to less profitability. Being predominantly inhabited by small and marginal tribal farmers, the problem further got complicated. The identified suitable breed, Vanaraja was most desirable germplasm for further propagation in the district. Keeping this in view, the breed was upscaled and till now a sizable 850 tribal families have adopted this technology to get remunerative market leading to higher profitability.

21.2.6 CIFA BROOD: A carp brood diet:

CIFA for the first time in India has developed a balanced feed for carp brood after a decade of research duly validated through repeated field trials. This ensures quality and quantity of egg production, remarkable improvement in their breeding responses and hatching performance. The feed was tested first in the Institute's pond of carp breeding unit at CIFA farm during 1996-98. Later, it was again tested in KVK pond of CIFA in 1998. The feed



was also tested in off season gonad maturation and breeding experiment of CIFA in controlled condition during 2007-2009. The feed is tested (July-September, 2012) in farmers' (Asha Fish Breeding Farm) pond at Ramsagar, Bishnupur, Bankura, W.B. The key benefits of this fortified diet are as follows:

- ✦ Readily accepted by carp broods, palatable and water stable.
- ✦ Adequately nutrient rich, provides essential nutrients generally lacking in conventional feed or natural fish organisms.
- ✦ Advances gonad growth and maturation and facilitates early spawning.
- ✦ Improves breeding response.
- ✦ Ensures higher production of viable eggs and sperms.
- ✦ Remarkably improves hatching performance.
- ✦ Suitable for multiple/repeated breeding in carp.
- ✦ Enhances spent fish recovery.
- ✦ Promises higher recovery of quality seed per unit body weight of female.
- ✦ Ensures better survival of seed and rapid growth during nursery rearing.
- ✦ Economically viable and validated through repeated field trial.

KVK Khordha put this technology into upscaling mode and six hatcheries developed by KVK have adopted the practice of producing off-season fish seed using this carp brood diet.

22.0 Selected Success Stories

22.1 Pond-based integrated farming system – A sustainable livelihood option for island farmer:

Shri Ashok Kumar Roy, aged 48 years, a progressive farmer blessed with an inquisitive mind belonged to Badmas Pahar Village, South Andaman district. He earned his livelihood by backyard poultry farming (desi poultry birds 20nos.), mud crab culture and cultivating traditional vegetables like amaranthus, nalibhaji, okra, brinjal, chilli, bitter gourd, pumpkin



and bottle gourd on his leased land (1.5 ha) employing indigenous methods. With this meager income (Rs.80000 – Rs. 120000 per annum), he used to sustain his family

life (6 family members). From 2011, he used to have regular contact with KVK Port Blair for development of his agricultural land for maximum returns and has undergone many training programmes in the areas of poultry farming, pisciculture, crab fattening and vegetable cultivation etc. He meticulously began to put into practice the knowledge, skill in his farming. Initial orientation from the experts of KVK



and their frequent visits set him on the path towards progress. He had established pond-based integrated farming system on his land under KVK

supervision. The major components are fish, poultry, vegetables and fruits. He adopted composite fish culture (Catla, Rohu and Mrigal) in his small pond of 0.5 acre and got an average yield of 250kg fish per year. Besides, KVK Port Blair provided him all the inputs of high yielding and climate resilient vegetable seeds and seedlings. The yield of vegetables and fruits was 4.5 ton per year with this

small area of land. He has also adopted backyard poultry (Nicobari fowl-50nos) and duckery (Khaki Campbell duck-50 nos) in his pond-based integrated farming system model. The total cost of cultivation was Rs.150000 per annum. However, the gross return obtained was Rs. 350000 per year with net profit of Rs.200000. He also made optimum use of all the farm waste into organic manure and utilized in vegetable cultivation. An award-winning man received many awards from ICAR for his relentless efforts towards agriculture under the vulnerable Island ecosystem. He achieved his self-sustainability and livelihood in pond-based integrated farming system and also an inspiration for others in this Island.

22.2 Seed production of *Pangasius hypophthalmus*- First time in Andaman & Nicobar Islands:

North & Middle Andaman is the hub of farm production in A & N Islands and fisheries as a component plays vital role in doubling farmer's income of island farmers. Vast area of more than 100 ha for freshwater fish culture is centralized in N&M Andaman district and there lies with high potential of fish production although present average productivity of freshwater resources is poor (< 500 Kg/ha) and need appropriate



intervention for higher income of fish farmers. *Pangasius hypophthalmus* (Locally known as Pangas) already existed in this area and preferred by local populace due to their certain traits such as fast growth rate, less spines, meat quality etc but unavailability of seed was the major bottleneck for adoption of culture practices of Pangas in this area. Foreseeing demand of fish seedlings particularly Pangas and other fishes in A&N Islands a contractor turned farmer Shri Srivash Das, a resident of Madhupur, Diglipur wanted to establish an Eco-hatchery in his farm. On construction of eco-hatchery he approached KVK N & M Andaman for providing technical supports



for seed production of *Pangasius* and other species. Following him many farmers are investing more capital in fish farming and some want to replicate same model in his farm.

KVK N & M Andaman from initial days of establishment of Mr. Srivash Das farm made several attempts to guide him in every stage of fish breeding and seed production programme. Scientific advisory and other inputs from KVK included method of fish breeding and seed production, stocking and post stocking management



in pond, water quality management, preparation and application of suitable plankton booster, preparation of feed, feeding management in nursery, handling and management of fish brooders etc. KVK intervention made in Mr. Das farm benefitted more than 140 farmers through supply of *Pangasius*



and other fish seedling. Fish seed production programme is a seasonal activity where farmers can involve him for 5-6 month in a year. Return from fish seed production and

rearing is good as compared to table size production of fish. During last year farmer received an income of Rs 532100 during initial phase of establishment from an area of about 1 ha land.

22.3 Cultivation of flowers- A potential boon for Income Generation:

Floriculture is the potential intervention for Ganjam as well as Odisha. Now, farmers are showing a keen interest in an income generating activity like mushroom, poultry, floriculture, beekeeping etc. than traditional agriculture. On the other hand, one Flower Association has been registered in Berhampur and Govt. extended his support to flourish this sector with flower freezer van to sell out flowers at *Mandi*. With this background, Shri Durga Charan Sahu, a 48 years old man of Hinjili village was inspired to start the activity in Hinjilikatu block of Ganjam. He is a marginal farmer having 2 acres own land.

He has taken another 2 acres land on tenant basis to cultivate flowers like Marigold, Tuberose, and Gerbera. In order to check the poor quality of flower and low yield of tuberose, soil test based nutrient management practice with 75% RDF + FYM (1 kg/sqm) + Vermicompost (300g/m²) + Azospirillum 2g/plant + PSB 2g/plant were recommended to the farmer. Subsequently, a marigold demonstration was conducted in the farmer's field with the application of plant growth regulator GA₃ @ 200 ppm in 15 days interval during bud initiation stage.



As a result, the farmer got an increased yield of 46.35% to a tune of 6.03q/ha with an average 25 number of florets per spike. The benefit-cost ratio per ha area reveals that the net profit of Rs. 3,45,930 with an investment of Rs. 2,30,620 with a higher B:C ratio of 2.50. Similarly, in marigold, the farmer got an increased yield of 41.3% (130 q/ha) and relished a net profit of Rs. 3,19,742



per ha area with an elevated B:C ratio of 2.59. Both the technologies have been well adopted by the farmers. Procurement of tuber under NHM programme and exposure visit for farmers and experiential learning through Dept. of Horticulture, Govt. of Odisha can change scenario of floriculture in Ganjam district.

22.4 Integrated farming brought smile to farmers:

Shri Sadhu Mari of Jhankarguda, Pottangi, Koraput owns a total 1 ha of land. He practised integrated farming, KVK supported him to grow improved varieties like Bhairabi of Finger millet, drought tolerant paddy var DRR 42, wilting tolerant variety like swarnasampad, sweet corn var Sugar 75, with suitable cropping system. KVK also supported him for back yard rearing of poultry breed Vanaraja and goat breed Black Bengal with proper vaccination and

feeding. From his own interest he has also made a vermicomposting unit for farm waste decomposition. In the 1st year and 2nd year he got Rs. 70030 & Rs. 142300, respectively.

KVK in collaboration with district veterinary, horticulture and watershed department guided and supported him for developing a farming system model of 1ha and with that farming system he uplift there social life and motivate the neighbored farmer to develop farming system. His success influenced neighbouring farmers so much that many other farmers get interested and adopted the IFS model in their farm.

22.5 Floating Fish Feed boosted growth of fish farmers:

Pisciculture is an important livelihood activity for economic upliftment of farmers in Puri district. The success of fish farming mostly depends on stocking of good quality fingerlings/yearlings in proper density



and ratio, feeding and water quality management. Farmers mostly use Groundnut oil cake and rice bran as supplementary feed for which the FCR is comparatively more.

Floating feed is the modern generation feed for producing farmed fish. Greatest advantages with the feed is efficient nutrient delivery system made possible to fish, low FCR and considerable reduction in grow out period. The farmer has stocked 5000 numbers of yearlings of Catla, Rohu, Mrigal and was applying Floating fish feed @ 1% of body weight daily. The FCR by using floating feed was 1.2 where as it was



2.1 by use of Groundnut oil cake and Rice bran. Mr. Batakrusna Swain of Village- Machhapada, Block- Delanga, Dist- Puri was motivated by KVK to take up this

technology. With the use of Floating fish feed the farmer became able to reduce the cost of cultivation by Rs 24000 per ha with a reduction of culture period

of 2 months. The farmer got a net profit of Rs223000 per ha per year.

Floating feed is safe because feed ingredients can be pasteurized or sterilized during feed extrusion operation thus reducing the effects of feed on the health of aquatic animals and water quality. Better water quality is maintained, helps in



low occurrence of diseases resulting in better survival and a healthy pond bottom. The technology has been widely accepted by other fish growers of the district.

Now more than 1200 ha water area is utilized for pisciculture by use of Floating feed and the demand for floating



feed is increasing day by day. Farmer- Scientist interaction, training programmes are also conducted for dissemination of the technology.

22.6 Improved cultivation practices of vegetables fetched sizeable income:

Mr. Narayana Sabar of Village- Rupapadar, Block- Gunupur, Dist.- Rayagada cultivated different crops and vegetables throughout the year (Kharif- Paddy, cotton, arhar and vegetables), [Rabi- vegetables (brinjal, tomato, chilli, cauliflower, cabbage, cowpea), sweet corn and leafy vegetables]



and (Summer- pointed gourd, spine gourd, bitter gourd, watermelon, cucumber, ridge gourd etc.). Mr. Sabar followed the improved cultivation practices of vegetable cultivation of 2.2 acres from which he got gross return of Rs. 95000 and from sweet corn he harvested 19500 numbers of green cobs of sweet corn and got gross return of Rs. 58500 from 1.0 acre area.



Similarly he cultivated sweet corn var. Sugar-75 in rabi season along with different vegetable and got net income of Rs. 82000.

By the intervention of KVK scientists he followed scientific method of cultivation of high yield and hybrid vegetables like



brinjal, tomato, chilli, pointed gourd, bitter gourd, okra, chilli, cucumber etc. He also introduced sweet corn

in the village for commercial cultivation. He followed improved method of management practices such as line sowing, soil test based recommended dose of fertilizers, FYM, micronutrient, IPM and IDM. He also used neem based PP chemicals for disease pest control, neem coated urea, bio-fertilizer which was good for environment and also reduced cost of cultivation. Mr. Sabar has become brand for growing high yielding vegetables and sweet corn with scientific method in his village and locality. As scientific method gave good yield and better return other farmers of his and neighboring villages were very much encouraged to grow the crops and vegetables scientific method with soil test based fertilizer application.

22.7 Scientific banana and rice cultivation proved profitable:

Shri Sujit Mishra aged 35 years of village Satupali of Dhankauda block of Sambalpur district is a young and educated (graduate) farmer. His family consists of parents and two younger brothers. Family of Mr.



Mishra has total cultivated area of 13 acres. After completion of graduation Mr. Mishra without searching for any job took his interest in

cultivation and started cultivating Paddy in his 13 acres of land. Due to lack of scientific knowledge of cultivation and judicious use of fertilizer & pesticides his income was meagre. During the year

2012 he came in contact with the scientists of KVK Sambalpur and as per the suggestion of KVK he shifted his focus from Paddy to Banana cultivation in an area of 1 acre. He was supported by KVK through training and demonstration of Tissue Culture Banana variety Grand Naine (G-9). In that year out of 1 acre of Banana cultivation he was able to earn a profit of 1 lakh which inspired him to increase the area of banana cultivation. Looking into his interest KVK scientist linked him with Dept. of Horticulture to avail the available subsidy and thus he increased the area of Banana cultivation to 8 acres. Now he is a successful banana entrepreneur of Sambalpur district and gains a profit of 8 lakhs per annum.



Apart from banana he also cultivates paddy in an area of 5 acres in both Kharif and Rabi. From the earning of his farming he has also purchased 2 power tillers and maintaining his family requirements.

Farmers from other villages are also inspired by Mr. Sujit's Crop Diversification of Paddy to banana cultivation. Mr. Sujit has been awarded by Hon'ble Governor of Odisha in Sambalpur folk festival for his tremendous work in horticulture. Mr. Sujit due to his hard work and dedication has become a motivation for all the young farmers of Sambalpur district.

22.8 Mushroom an alternate sustainable source of income to farmwomen:

To provide food and nutritional security to our people, it is imperative to diversify the agricultural activities in areas like horticulture. Mushrooms are one such component that not only uses vertical space but also help in addressing the issues of quality food, health and environmental sustainability. KVK Bankura worked in this endeavour and Smt. Alochona Majhi, a house wife of



Village Nabinbagan, P.O- Sonamukhi, Dist.- Bankur got training from this institute and take initiative for adoption of technology at her own house including with one SHG members. It was observed that BC ratio was 4.0. After successful implementation of this technology she explained her experience and



said that it's very helpful technology to farmers as alternate source of income generation and it also meets the nutritional requirement to farming community.

As a result most of the women of this village are encouraged for established this techniques for sustainable income generation for betterment of their family. This technology or



enterprise requires very small land holding and locally available necessary material are used for adoption of this techniques. Recycling of waste material has been undertaken

by vermin composting which also serve as very important tool for sustainable waste management. Mushroom cultivation technology becomes very popular due to requirement small land holding, high nutritional value, output will come with in very short period of time, investment is very less and higher income due to potential yield.

22.9 Backyard poultry Farming: A sustainable source of income:

Shri Tapan Kumar Ghosh of Village Bishnubati, Block Bolpur-Sriniketan, Dist. Birbhum was practising poultry farming in a traditional way. Backyard poultry farming is one of the most important viable non-crop enterprises of dry semi-arid zone of West Bengal. However, the traditional way of backyard poultry keeping is less remunerative as a consequence of scarcity of superior germplasm. Though, rural backyard poultry segment contributes nearly 30

per cent of the national egg production, still it is a neglected one. The meat of backyard scavenging chickens is highly accepted in the markets and more remunerative than commercial broiler meat because of its taste, lower fat content and texture. He started his backyard poultry unit at his own land and constructed a non-conventional low-cost poultry house made of locally available materials, such as bamboo and wood as night shelter and to



protect the birds from predators. Birds were let loose as free range scavenging for utilizing the feed base, i.e., fallen grain, insect, earthworm, kitchen waste, green grass etc. with supplementary feeding of concentrate mixture prepared by the locally available feed resources. Almost one fourth of the amount of concentrate mixture was replaced by *Azolla* (*Azolla pinnata*) and vegetables like *Kalmi* (*Ipomoea aquatica*) and Spinach (*Spinacia oleracea*) etc. De-worming and vaccination of birds were done by Mr.Tapan Kumar Ghosh as per the standard protocol with technological backstopping by the scientist of the Rathindra KVK.

Shri Ghosh started to brood fertile eggs of both Vanaraja and Rhode Island Red by using his local hen; this has initiated breed up-gradation of his chicken breeds. Vanaraja and Rhode Island Red bird fetches a market price of Rs.180.00 – Rs. 200.00 /kg., which is similar with local poultry price in market. The price of newly hatched chick is around Rs. 22.00 to Rs.25.00 per chick and table purpose egg fetches a price of Rs. 6.00 to Rs. 7.00 per egg. Besides, Shri Ghosh diversified his Back Yard Poultry Farming into a breed up-gradation sector also by crossing these two breeds viz. Vanaraja and Rhode Island Red with local birds. This success of Shri Ghosh can be used as a Model for formulating the Strategies to double the incomes of the farmers of the Birbhum District, West Bengal within 2022.



22.10 Hi-tech polythene mulching improved quality and yield in Chrysanthemum:

Mr. Kutubuddin Biswas of Village Dhantala of Nadia district is well known not only in West Bengal, but also in other states for adoption of technology as well as modification of technology. He adopted poly mulch technology for large scale cultivation of chrysanthemum in his field with application of artificial light. He is practicing this technology for last few years. This year he has cultivated



chrysanthemum in two hectare of land. 2006 onwards, Nadia KVK started its activity in the flower growing areas of Nadia district

particularly in Puratan Chapra and Dhantala village. Mr. Kutubuddin Biswas passed through continuous training on modern techniques of floriculture in several phases from Nadia KVK and combined all



the factors in an innovative way for high quality chrysanthemum production in his field. Beds are 3.0 ft wide, 6.0 inch high and 30-40 ft long.

In winter the beds are covered with silver colour mulch but in spring summer crop the beds are covered with milky white mulch. Before mulching required fertilizers are applied in the bed. In 1.0 ha of land 150 Kg bone meal, 375 Kg horn meal, 375 Kg mustard cake, 150 Kg DAP and 75 Kg 10:26:26 applied during bed preparation. Then it is covered with poly mulch. 3-4 rows of chrysanthemum seedlings planted longitudinally in each bed. Seedlings were planted in the mid of October. During planting 1500 Kg of vermicompost per hectare applied in the planting holes. Flood irrigation applied in the channels and sometimes 10:26:26 @ 20 Kg / ha applied with the irrigation water. Some liquid fertilizers like calcium nitrate, 19:19:0 and 12:0:61 also applied as spray in the standing crop. Harvesting of the flower started from 1st week of February. Artificial lights are applied @

7500 watt per hectare for six hours after sunset. This improves the size and quality of the flowers.

Large scale cultivation is only possible with mulching. The profit generated per ha was Rs. 1.50 lakh in traditional cultivation while the same was Rs. 12.75 lakh in modified practice of cultivation. Large scale cultivation has advantage of marketing. Mr. Biswas packs 500 flowers per box



with ice pack. It is sent to New Delhi within 33 hours of harvesting and marketed immediately. He also sent flowers in Bangalore through flight. Another important outcome of Mr. Biswas's achievement is production of huge number of chrysanthemum saplings. He has collected more than 20 highly demanded varieties of chrysanthemum from different parts of India. With this high tech cultivation process he is now able to produce saplings of different varieties in large quantities. A number of female labourers are engaged in his sapling production unit. A number of young flower growers inspired by the success of Mr. Biswas. It is a profitable venture, so more than fifteen farmers of that locality are cultivating chrysanthemum following this technology.

22.11 Large scale Vannamei production through scientific culture method opened vista for export:

Hazi Alamgir Hossain of Village Hossainpur, Nandigram, Purba Medinipur is by birth a member of farmer family. He got the scope to know the problem and prospect of different crop cultivation from very childhood. His struggle to survive in his school days made him so determine to achieve his today's fame. He was the first farmer in his area to successfully cultivate high yielding and Hybrid varieties of rice and to make it spread in the neighboring areas. Still now he used



to cultivate 2 ha of Aman rice (cv. Dudheswor) in his own ways of management that helps him to earn a net profit of Rs. 1.20 lakh per annum. But his father's inspiration led him to enter into fishery sector in the year 1996 when he produced only sweet water fish in 2 bighas of land and the huge return in the first attempt provoked him to expand his fishery cultivation area more and more. Now, Alamgir Hossain is one of the big fishery farmer who out of his total 150 bighas land (both ownership and rental) used to produce Vannamei (*Litopenaeus vannamei*) in 100 bighas of land following exportable culture method and in other 50 bighas produces normal saline water fishes. He exports his produce through big exporter like Magnum, SNC Sea Food Pvt. Ltd. to foreign countries like Japan, Thailand, UK, USA etc and that makes him easily earn crore of rupees yearly. From this success, he is treated as role model



for other farmers in the district as well as in the state. In his total fishery business, he creates 50 numbers of regular employments. In recent time, he practices, out of his hobby, to reuse the vacant cement bags, feed bags to cultivate annual vegetables like cucurbits, brinjal, chilli, ginger, turmeric etc which also are a profitable business to him as it avoids soil and climatic hazards as well as require less input.

22.12 Hybrid mustard variety increased profitability:

Smt. Rajbala Mahato of Village Jambad of Purulia district owned a land area of about 2 acre where she is growing Mustard for the last 3 years using

locally available seed and traditional knowhow. The demonstration plot is located just beside the main approach road of the village that passes through the



village to another neighboring village. Mrs. Mahato is willing to cultivate Mustard as per our direction in 1 acre land keeping rest portion to sow the same crop as usual to have a comparative experience. She has irrigation facility to provide at least 5 irrigations. She is capable of arranging all physical and financial requirements, like timely land preparation, sowing, weeding, fertilization, irrigation etc. The hybrid mustard variety, Pioneer F1 hybrid 45S35 along with all the improved package of practices including seed treatment, bio-fertilizer and micro-nutrient application resulted into 123.8 times increase in net return per ha. apart from other benefits like increasing cropping intensity areas with limited irrigation facility, oil for human consumption, supply of good quality fuel and supply of oil cake to be used for cattle feed.



22.13 Oyster mushroom cultivation brought name and fame to tribal farm women:

Since last 3 years Smt. Shushila Tudu of Gulamigachh, Uttar Dinajpur is engrossed in this enterprise. By running two small units continuously she is able to give uninterrupted supply in market. Mushroom Production unit





was constructed under asset creation in Tribal Sub Plan Project.

From tea garden labourer to an enterpreneur, Shushila Tudu is earning net profit of Rs. 7000-9000 per month by selling mushrooms. This year in the month of January she has been nominated for Mahindra Samridhi Awards 2017-18 and remunerated with Rs. 2.16 lakh. This was a pride moment for Shushila Tudu her family members, whole locality as well as



pride moment for Uttar Dinajpur KVK. She is now stepping towards better livelihood. Smt. Shushila Tudu is source of inspiration for so many other farmers not only in chopra block but in

whole district. She is role model for many other farms women especially among tribal farm families. She has been acting as catalyst for mushroom cultivation promotion program of KVK. During training mushroom cultivation, farmers and farm women were instructed and made cautions about proper



use of chemical and its impact on environment if it is unjudiciously used. As per instructions, Shushila Tudu is also making judicious use of chemical when and where it is required

and above all she is not dumping the spent here and there, but making quality vermicompost along with her fellow SHG members in a vermicompost production unit provided by KVK under Tribal sub plan in the year 2016-17 in her village. Shushila Tudu is contracted by many farmers of near by village for her expertise in the field of mushroom cultivation. So, far 5 near by villages SHGs in 18 individual farmers has started this venture after learning from her.

22.14 Breeding Farm of Large White Yorkshire Pig provided social security to rural youth:

Mr. Amit Das, an educated youth of BonHooghly, Sonarpur, South 24 Parganas was attracted to pig

farming after a training course on pig farming by SS KVK Narendrapur, South 24 Parganas in the year 2018. He stopped job seeking and focused on gathering technological knowledge regarding white pig farming. In the last of 2018, he started his own pig farm named 'Das Piggery' on a leased land of approximately 1 ha. He bought 30 female and 5 male pigs from State Govt owned Haringhata Piggery. He used to feed concentrate mixture to pigs. To minimize feeding cost he also started to feed azolla and hotel wastes. His farm was highly integrated with timely vaccination and deworming.



On average he sells five to six piglets to his customers. He also sells adult pigs to local markets as per the market needs. His income level is Rs. 15000.00 per month presently

His endeavor for becoming a successful pig farmer is now a reality. Upon mastering the artificial insemination technology for pigs, he will soon become more than a successful pig-rearer, but a true breeder who could be able to disseminate best pig germplasm in the concerned area. Already five farmers in Sonarpur block took pig farming as their livelihood option after seeing Amit's success.



Pig farming was always a neglected sector in West Bengal. However, successful pig farming by Mr. Amit Das inspired many young and energetic rural youths to adopt this farming in and around Sonarpur block. Mr. Das formed a Pig Farmers' group in South 24 Parganas district who shares their knowledge regarding pig farming via WhatsApp.

23.0 Selected Farmers' Innovations

23.1 Indigenous feed management technology for increasing carp growth and seed survivability:

Shri Pradeep Kumar Singh of village Budhapanka of Angul district invented an indigenous technology for feeding management in fish. Initial idea from the KVK Scientists and subsidies from District Fishery Office, Angul inspired and motivated him to prepare indigenous feed mixture for reducing his feed cost as well as for increasing fish survivability and yield.



Use of mustard oil cake paste was done @ 135 kg/ha 24 hour prior to spawn stocking for increasing Zooplankton (i.e. Rotifer) quantity in the pond. After one day of stocking the spawn, mustard oil cake was given @ 60 kg/ha/day up to 15 days and thereafter @ 120 kg/ha/day for better health



and survival of carp seed. Use of cooked mixture of locally available broken rice and mustard oil cake with broken pulses mineral mixture was done for feeding of the Brood fish. Use of chopped green leaves and tender stems of banana for feeding of Grass carp was also done. It also maintained suitable water pH and helpful in preventing fish suffocation



during oxygen depletion. Further, immature smaller unmarketable raw papaya fruits were cut into pieces and thrown into pond. This was generally consumed by the Grass carps. Along with raw papaya fruits, papaya latex also enters into pond water which acts as antibacterial and antifungal agent and thereby prevents disease outbreak in fish. Before this

innovation, he got profit of around Rs. 90000. But now he is earning total Rs. 540400 by adopting these innovative practices by increasing fish yield by 32%, increasing seed survivability to 78% and reducing his feed cost by 62%.

23.2 The 3-tyne cycle weeder:

Shri Rama Badamundi of village Alama of Gajapati district is a vegetable grower with very inquisitive mind. Alama is one of the vegetable growing village of the block. High cost is involved for intercultural operations and weeding in vegetable cultivation. Non-availability of labour during the peak period is another problem. But when Shri Rama Badamundi attended the exhibition at Gajapati Mahotsav, he was inspired by the cycle weeder displayed which was a single tine weeder. Thus he started to design a cycle weeder that could be used for weeding, hoeing and ridging in any vegetable crop at a time.



Three tyne cycle weeder consists of 3 tynes, one cycle wheel, one frame and one handle. It is easily operated in push pull mode with adjustable tynes made up of mild steel. It is used for weeding, hoeing and hedging operation.

Cost of operation of 3 tyne cycle weeder is Rs.1250/ha. This implement works 3 times better than manual labour with a capacity of 180-200 m² per hour in comparison to human capacity of 50-60 m² per hour.

23.3 "Nutriflav-BR": A flavoured fish feed:

Mr. Banamali Rout of Digambarpur village of Jajpur district of Odisha has a pisciculture unit but feed cost was very high. So, he tried to develop a low cost fish feed. The composition of feed mainly included the locally available materials and the procedure is as follows:-

- Take a bowl (plastic/steel) and spread a layer of polished rice bran.
- Put a layer of cow dung (fresh cow dung/4-5 days old cow dung as per availability) above it, then stack a layer of powdered mustard oil cake, subsequently one layer of any mills waste like (rice/dal/sattu mill's powdered waste) in dust or powder form and at the top give a layer with sodium bi-carbonate (NaHCO_3).
- At last if space is left inside the bowl, then cascade layering will start from polished rice bran again.
- Each layer is 6" thick and at the top, fresh and clean water is added *ad lib* to the layered materials.
- This soaked content will be left covered at one shady place for 5-6 days till it gets dry and hard.
- Dried and hard content is taken out, powdered by thrashing 7 again some quantity of water is added to prepare the readymade feed for fish.



Fresh product or water soaked powdered mix product can be given in silver tub /bamboo basket/ plastic tub near one shallow corner or bay of the pond for use as fish feed @ 20 kg Nutriflav-BR/4000 fish fingerlings/day.

23.4 Hand-made low cost manual incubator:

Shri Ershad Molla of Sattore, Birbhum has got the idea of a low cost manual incubator for Poultry egg hatching through technical inputs and knowledge and skill acquired from the Scientist of Rathindra KVK in the year 2017-18 and he proceeded to make that

incubator in the same year at a total expenditure of Rs. 35000 and started egg hatching in 2018-19. Hand-made incubator (operated by both Main Line Electric and Inverter current) can handle 700 hatching egg with around 8 cycles in a year. The farmers get the opportunity to procure chicks or ducklings of Rhode Island Red, Deshi Duck and Khaki Campbell as per their own needs at the door step at reasonable price. Shri Ershad Molla earns around Rs. 10000 per month with 700 egg hatching capacity of the incubator. Normally Shri Molla buys egg for hatching at the rate of Rs. 12 per egg from the State Govt. Poultry Farm of West Bengal and also from the Rathindra KVK trained farmers of Birbhum District and sells at the rate of Rs. 30 per chick or duckling.

23.5 Germination box for vegetable seed germination during winter season:

Manas Kumar Kundu of Ghagarpara, Hooghly gathered information about basic requirement of seed germination from book and then he discussed with KVK scientists and made the box. Now last four years, he is applying this innovative idea in seed germination of vegetable crops like pumpkin, snake gourd, ridge gourd and cucumber. In common practice farmers generally germinate their wetted and treated seeds in between dry paddy straw heap after wrapping with bamboo leaf and cloth. But in this condition seed take more time to germinate and germination percentage is also less due to low temperature. In this particular case, he placed seeds on wetted cotton in plate and the plate was kept inside the germination



box which was made by him. During winter season in that box, temperature is given through kerosene lamp that can be maintained manually for which one thermometer is attached from outside. He made this box with of Length x Breadth x Height: 1' x 1' x 1'

6" size with the help of hard paper board in which the lower side is made by metal sheet and top of the box can be open to place the seeds or when required. In the middle portion of the sheet, there is a chamber (Made by metal cane) for placing the kerosene lamp from outside. The box is placed on wooden foot. Seed germinates within a short period in comparison with the normal method of seed germination

23.6 Fish based integrated farming with duckery:

Mangal Soren of Machhol, Uttar Dinajpur traditionally practiced fish farming with his small pond. His innovation was integrating this farming with ducks of different varieties like indigenous and Khaki Campbell. In pond based farming situation,



comparatively less income from pond due to single crop production. If fish culture is integrated with duck farming, then total income

of farmers will be increased. This duck-cum-fish farming model was based on a total water area of 0.13 ha. Fish fingerlings were stocked @ 10000 nos./ ha. Stocking density of ducks was maintained @ 300 nos/ ha. The main



innovation is that the fisher stocked his pond with ducks of native and Khaki Campbell varieties at a ratio of 1:1 due to non-availability of Khaki Campbell in sufficient numbers. Practically it was very difficult to collect requisite numbers of Khaki Campbell at every corners of Uttar Dinajpur district to integrate ducks in pond based production system. This type of innovation may help to integrate ducks in pond based production system at a local level.



24.0 Publications

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25.0 Awards and Recognitions

25.1 Recognition of ATARI Scientists:

Dr. F. H. Rahman, Principal Scientist of this Institute was conferred with "SEE Fellow Award-2018" during 9th National Extension Education Congress held at CAPHET, Gangtok on Nov 15, 2018.



25.2 KVK Awards:

Name of KVK	Name of the Award	Year	Conferring Authority	Amount/ Citation	Purpose
N & M Andaman	Best Extension Scientist	2018-19	ICAR-CIARI	2000	Foundation Day Celebration
Nicobar	Certificate for Best trainee	2018	21 days winter school on Advances in Salinity and Sodcity Management under Agro-climatic regions for enhancing farmer income from 4 th to 24 th September, 2018		ICAR-CSSRI, Karnal.
Port Blair	Best Stall Award	Feb.,2019	UTATMA, Port Blair	Nil	For boosting the farming community
	Best SMS	June,2018	ICAR-CIARI, Port Blair	2000	Best Performance



Name of KVK	Name of the Award	Year	Conferring Authority	Amount/ Citation	Purpose
West Bengal					
Nimpith	Best MVC unit of the District	2018-19	ARD Department, South 24 Parganas	-	Best Performance
Coochbehar	Best KVK Professional Award	2018	Society of Extension Education, Agra	-	To Recognize Dr. Surajit Sarkar (SMS, Horticulture) and Mr. Ganesh DAS (SMS, Agricultural Extension) for Best Extension Work in Krishi Vigyan Kendra
	Young Scientist Award	2018	EET-CRS, Bangalore	-	Mr. Ganesh DAS (SMS, Agricultural Extension) for Best Extension Work in Krishi Vigyan Kendra
Purulia	Mahindra Krishi Sammriddhi Award	2013	Mahindra Co.	2.11 lakh	Best KVK
	Young Scientist Award	2018	Astha Foundation, 85-Phool Bagh Colony, Meetut (UP)	-	Outstanding contribution in the field of Horticulture
	Young Scientist Award	2018	COBACAS, UBKV, Pundibari	-	Outstanding contribution in the field of Soil Science
Uttar Dinajpur	Pandit Deen Dayal Upadhyay Rastriya Krishi Protsahan Puraskar, Zone – V	2016-17	ICAR, New Delhi	2.25 lakh	For Excellect works towards farming communities of Uttar Dinajpur KVK
Odisha					
Angul	Best KVK Award	2018	OUAT	-	Foundation day of OUAT
Bhadrak	DeenDayalUpadhyay Best KVK Award (Zonal)	2017-18	ICAR	2.25 lakh	Best performance
	Best Extension Scientist Award	2018-19	OUAT		
Cuttak	Best Worker under T6 and above category of NRRI	2018	NRRI	-	Dr RK Mohanta, SMS, KVK
	Appreciation certificate for his contribution on implementing PFMS and FMS-MIS	2018	NRRI	-	Shri BB Polai
Khordha	Krusha Mitra Award	2018	Odisha Krushak Samaj	-	Recognition for the outstanding work in Extension

25.3 Selected Farmers' Award

Name of KVK	Name of the Award	Name of the Farmer	Year	Conferring Authority	Amount	Purpose
West Bengal						
Birbhum	Certificate of Excellence Award at the Halakarshana Utsav - 2018	Sri Aurobinda Pal	2018-19	Visva-Bharati University	-	To encourage the farmer in spreading the Technological Package of Practices for Fishery based Integrated Farming System (IFS)



Name of KVK	Name of the Award	Name of the Farmer	Year	Conferring Authority	Amount	Purpose
	Certificate of Excellence Award at the Halakarshana Utsav - 2018	Sri Debasish Mondal	2018-19	Visva-Bharati University	-	To encourage the farmer in spreading the Package of Management Practices of Small-scale Dairy Unit
South 24 Parganas (Nimpith)	Best Innovative Farmer Award 2018	Sanat Naskar	2018	CRIDA, Hyderabad	-	Climate smart farmer
	Krishi Ratna	Kartik Halder	2018	ATMA (FIAC), Joynagar -II Block, Dept. of Agriculture, GoWB	10,000	Progressive farmer
Burdwan	Best women farmer	Noorjahan Khatun	2018	Doordarshan, Govt. of India	-	Best performance
Coochbehar	Krissak Ratna	Ekramul Haque	2018-19	Deptt. of Ag., GoWB	10,000	Floriculture
Hooghly	Krishak Samman	Laxmikanta Nandi	2018	Govt. of West Bengal	2000	Fish Production
	Krishak Ratna	Jagannath Pal	2018	Govt. of West Bengal	15000	Agriculture
	Krishak Samman	Alok Das	2018	Govt. of West Bengal	10000	Agriculture
Howrah	Innovative Farmer	Sujoy Bera	2019	(FFCSWR-2019)	-	Best innovation
Jalpaiguri	Udyan Ratna	Sri Dhruba Roy	2019	Govt. of West Bengal Jalpaiguri In MATI UTSAB	25,000with Certificate & Memento	Adoption & Dissemination of new technology specially Resource Conservation, Zeo Tillage Technique, Crop Diversity, Goat Farming
	Recognition	Smt. Sushama Roy	2019	Doordarshan Kishan Channel, Jalpaiguri	Certificate & Memento	Adoption & Dissemination of new technology and Scientific Goat Management
Malda	Krishak Ratna	Sri Trilochan Manda	2018	Govt of West bengal	25000	Best performance
	Krishi Ratna	Meher Ali	2018	Ratua-II Krishi Mela	10000	
	Best Farmers award	Tanvir Rahaman	2018	SATSA, Agri. Deptt	10000	
	Krishak Ratna	Tanvir Rahaman	2018	Govt of West bengal	25000	
Murshidabad	Best Progressive Farmers	Md. Abul Kalam	2019	West Bengal University of Animal & Fishery Sciences	5000	Production of high value vegetables, vermicompost, cultivation under poly house
Nadia	Mahindra Samridhi Award	Dipak Mandal	2019	Mahindra Trust	-	Excellence
North 24 Parganas	IASWC award	Gopal Ghosh	2019	IASWC		Successful farmers
	IASWC award	Bholanath Pal	2019	IASWC		Successful farmers
	WBUAFS award	Harinarayan Biswas	2019	WBUAFS	5000	Successful farmers
	Kriti Krishak	Bholanath Pal	2019	Govt of WB	25000	Successful farmers
	UdyanRatna	Shankar Jana	2019	Govt of WB	10000	Successful farmers



Name of KVK	Name of the Award	Name of the Farmer	Year	Conferring Authority	Amount	Purpose
Purulia	Outstanding Progressive Farmer from Hon'ble Agriculture Minister of Govt. of India	Sri Adesh Dube	2017-18	ICAR	-	Scientific Duck Farming
	Outstanding Mahila Progressive Farmer	Mrs. Laxmi Karmakar	2018-19	Kalyan	-	Agriculture
Purba Medinipur	Kishak Ratna	Amit Bera	2106	Govt of WB	20000	Extraordinary contribution in the field of Agriculture
	Plant Genome Saviour	Amit Bera	2016	PPV&FRA	1,50,000	Conservation of 224 rice varieties
	Best Farmer	Amit Bera	2019	Purba Medinipur KVK	-	Exemplary contribution in farm and allied sector
Uttar Dinajpur	Mahindra Samridhi Agri National Award in the best Youth Women Farmers' of India category 2018	Smt. Anima Majumdar	2018	Mahinda India	2.11 lakh	For her excellect contribution in Mushroom Production, Value addition of Mushroom products, Mushroom Spwan production technology and Marketing Linkages.
Odisha						
Angul	Best Farmer Innovator	Mr. Shanu Sahu	2018	OUAT	-	For Low cost fish feed preparation technique by using locally available feed ingredients
	Best Livestock Award	Mr. Lalmohan Singh	2018	OUAT	-	Commercial dairy, poultry & duckery unit
	Best Innovator	Mr. Lambodar Pradhan	2018	CIFA	-	For designing low cost agril. implements
Balasore	Best Farmer award	Ratan Kumar Barik	2018	OUAT, Bhubaneswar	-	University foundation day observation
Bargarh	Best progressive farmer award	Mr. Sudam Sahoo	2018	OUAT, Bhuabneswar	-	Innovation on Bio-pesticides
Bhadrak	District level ATMA Award	Bidyadhar Pradhan	2018-19	ATMA	5000	Best innovation
	State level ATMA Award	Aziz saha	2018-19	ATMA	10000	
	Mukhya Mantri Krishi Yantrapati Samman	Susanta Kumar Lenka	2018-19	State Agril Dept.	15000	
Bolangir	Best farmer on the occasion of OUAT Foundation Day	Udaya Naik	2018-19	OUAT	Citation, Certificate	Crop Diversification
Cuttak	Innovative Farmer Award	Sri Jagannath Mahanta (Tangi-Choudwar)	2018	OUAT		Best innovation

Name of KVK	Name of the Award	Name of the Farmer	Year	Conferring Authority	Amount	Purpose
	Best Farmer Award	Bibhu Prasad Kanungo	2018	NRRI		Practicing integrated nutrient management in rice and pulses
		Smt. Jharana Lenka	2018			Landless farmwoman, poultry farming
		Smt. Banchha Dehuri	2018			Landless tribal agriculture worker with 40 goats, 10 ducks & 18 local poultry bird
Ganjam I	Best Progressive farmer	Sri Pitabasa Pradhan	2018	OUAT		OUAT Foundation Day
Jajpur	Innovator award	Mr. Banamali Rout	2018	OUAT	-	OUAT Foundation Day
Kalahandi	Progressive farmer	Nityananda Pradhan	2018	OUAT, Bhubaneswar	--	57 th OUAT Foundation Day
Keonjhar	Best Innovative award 2018	Raghunath Juanga	2018	OUAT	-	Farm machinery Category
Khorda	Recognition award	Sri Paban Bhujabal, Kathakhuntia, Begunia	2019	ICAR-National Rice Research Institute	-	For adopting improved technologies and package of practices
	Best Farm Innovator	Sri Bijayram Mahapatra	2018-19	Government of Odisha	1.0 lakh	For farm innovation
Koraput	Padmashree	Kamala Pujari	2018	Govt of India	7.5 lakh	Conservation of Rice Germ Plasm
Malkangiri	Progressive farmers award in OUAT foundation day	Sri. Bhima Madkami	2018	VC, OUAT BBSR	-	Achiever Farmer
Mayurbhanj -I	Best Hatchery-Coastal States	Sri Akshya Kumar Sahu	2018	NFDB, Hyderabad	-	Best Hatchery among the coastal states of India
Mayurbhanj -II	Best Farmer	Sri Padma Lochan Mohanta	2018-19	OUAT	-	Off season vegetable production
Nabarangapur	Best farmer award	Dhaneswar Majhi	2018	OUAT	--	Outstanding achievement in Crop production
Nayagarh	Best farmer award	Bipra Biswal	2019	OUAT	-	Innovation in farm mechanization
Nuapara	Best farmer award	Rohit Kumar Sahu	2018	State level farmers fair Govt. of Odisha	15000	Round the year Vegetable cultivation through drip irrigation
Puri	Best women Entrepreneur	Mrs. Gauripriya Mahapatra	2018	ICAR	-	International women's Day
	Progressive farmer	Mrs. Laxmipriya Das	2018	State Govt.	-	Krishi Odisha
	Progressive farmer	Mr. Ranjan Behera	2018	State Govt.	-	Krishi Odisha
Sonepur	Best farmer award	Mitrabrata Mishra	2018-19	OUAT	-	Best farmer of the district
Sundargarh I	Best farmer award	Kamal Sagar Kullu	2018	OUAT	Certificate	Best farmer



Name of KVK	Name of the Award	Name of the Farmer	Year	Conferring Authority	Amount	Purpose
Sungargarh II	Best farmer of The district	Yogesh Patel	2018	OUAT, Bhubaneswar		
	Farmer Innovator	Ramesh Pattnaik	2018	CIFA, Bhubaneswar		

26.0 Distinguished Visitors

26.1 At ATARI Kolkata:

Date	Name of the person	Purpose of visit
28.04.2018	Dr. A.K.Singh, DDG (AE), ICAR, New Delhi	Interaction with ATARI Scientist
	Dr. V. P. Chahal, ADG (AE), ICAR, New Delhi	4 th ZPMC meeting of Farmer FIRST Programme
	Dr. A. N. Tiwari, Expert Member, ZPMC, Kolkata	
	Dr. R. K. Malik, Expert Member, ZPMC, Kolkata	
	Dr. Anjani Kumar, Director, ICAR-ATARI Patna	Discussion with Director, ATARI Kolkata
05-07.06.2018	Dr. R. K. Malik, Expert, CIMMYT-India	CSISA workshop on Landscape Diagnostic Survey
07.06.2018	Dr. A. Upadhyay, Head, ICAR-RCER, Patna	
09-10.08.2018	Dr. K. K. Singh, Head, AAS Div., IMD, New Delhi	Orientation programme of DAMU

26.2 At KVKs:

KVK	Date	Name of the person	Purpose of visit
A & N Islands			
Nicobar	09.10.2018	Shri. Bishnu Pada Rai	Visited the farm of Shri. Patrick and appreciated the efforts of KVK
	05.02.2018	Hon'ble Member of Parliament	
	12.11.2018	Assistant Commissioner, Car Nicobar	Visited the farm of Shri. Patrick and appreciated the efforts of KVK
Nimbudera	08.07.2018	V. S Prasad, GM, NABARD	To interact with FPO members.
	18.12.2018	Dr. A. Kundu, Director, CIARI, Port Blair	To visit KVK and field visit .
	07.01.2019	Dr. A. Kundu, Director, CIARI, Port Blair	Interactive meeting with stakeholders and farmers.
	07.01.2019	Dr. SNS Randhawa, Member, QRT	Interactive meeting with stakeholders and farmers
	07.01.2019	Dr. H.K. Senapatti, Member, QRT	Interactive meeting with stakeholders and farmers
	07.01.2019	Dr. S.K. Zamir Ahmed, Principal Scientist & Head, Social Science Division, CIARI	Interactive meeting with stakeholders and farmers
	07.01.2019	Dr .D Battacharaya, Principal Scientist & Head Animal Sc. Section, CIARI and Member Secretary, QRT	Interactive meeting with stakeholders and farmers
	03.03.2019	Prof. Chittaranjan Kole, Chairman, QRT	Interactive meeting with stakeholders and farmers
	03.03.2019	Dr. V.V. Sadamate, Member, QRT	Interactive meeting with stakeholders and farmers

KVK	Date	Name of the person	Purpose of visit
	03.03.2019	Dr. S.K. Zamir Ahmed, Principal Scientist & Head, Social Science Division, CIARI	Interactive meeting with stakeholders and farmers
	03.03.2019	Dr. D Battacharaya, Member Secretary, QRT	Interactive meeting with stakeholders and farmers
	03.03.2019	Dr. S.K. Zamir Ahmed, Principal Scientist & Head, Social Science Division, CIARI	Interactive meeting with stakeholders and farmers
Port Blair	20.06.2018	Shir M J Akbar MoS, External Affairs, GoI, New Delhi	All India KVKs Assessment.
	20.06.2018	Shri Bishnu Pada Ray, Hon.ble M.P. of Andaman and Nicobar Islands.	Launching of hon.ble PM programme on doubling the farmers Income.
	05.07.2018	Hon'ble Vice President of India, Shri M. Venkaiah Naidu	Interaction with farmers and Scientists for the Islands farming community.
	07.07.2018	Dr. H. K. Pradhan, Ex. Director, National Institute of High Security, Animal Disease, Bhopal, Bhubaneswar, Odisha.	Interaction with the farmers and KVK, Scientists
	07.07.2018	Prof. S. K. Sharma, Chairman RAC, Ex Vice Chancellor, HPKV, Palampur.	Interaction with the farmers and KVK, Scientists
	23.08.2018	Dr. W.S. Dhillon, ADG (Hort.Science-II), New Delhi	Interaction with the farmers and KVK, Scientists
	02.09.2018	Dr T. Janikiram, ADG (Hort.Science-II), New Delhi.	Interaction with the farmers and KVK, Scientists
	24.04.2018	Shri Kanhaiya Choudhary, Director (Administration) , ICAR-New Delhi	Interaction with KVK, Scientists
	28.11.2018	Dr. V.V.Sadamate, Member, Institute QRT.	Interaction with the farmers and KVK, Scientists.
	27.11.2018	Dr.C.R.Kolle, Chairman Institute QRT.	Interaction with the farmers and KVK, Scientists.
	13.04.2019	Dr. R.K.Singh, Director, ICAR-CIPHET, Ludhiana	Interaction with the farmers and KVK, Scientists.
Odisha			
Angul	18.04.2018	Vice Chancellor, OUAT	To attend State level Akshaya Tritiya Programme
	17.07.2018	Project Director, DRDA	To attend the R-E linkage meeting
	05.12.2018	Collector & District Magistrate	To attend World Soil Day
	05.12.2018	Chairman, Zilla Parishad	To attend World Soil Day
	12.12.2018	Collector & District Magistrate	KVK farm visit
	12.12.2018	Project Director, DRDA	KVK farm visit
	29.08.2018	Mrs. Snehangini Chhuria, Hon'ble Minister of Handlooms, Textiles & Handicraft, Govt. of Odisha	Chief Guest of a training Prog. For Panchayatiraj members by Dept. of Hort., Bargarh at KVK Campus
	31.08.2018	Dr. M. Muthukumar, IAS, Director Agriculture, Govt. of Odisha	Review of BGREI activities
	18.09.2018	Dr. Sumit Mishra, Joint Director Dr. A.K. Singh, Asst. Director, DRD, GOI, Patna	Monitoring of Seed Hub activities
	16.01.2019	Dr. Biswanath Sarangi, Emeritus Scientist, ICAR-CIWA	To collect information on collaboration work of KVK-ATMA on Gender Sensitization
Bhadrak	26.07.2018	G.N. Mohanty, Ex. Addl. Director of Agril. Odisha, Bhubaneswar	To see the processing and rearing of fingerlings
	29.08.2018	Dr. R. C.Patra , Dean Research, OUAT, Bhubaneswar	Courtesy visit



KVK	Date	Name of the person	Purpose of visit
	01.09.2018	Dr P.K.Roul, Dean Extension Education	To attend SAC meeting and monitoring of KVK activities
	19.12.2018	Sri Gyana Das, IAS, Collector & DM, Bhadrak	To see the activities of KVK and development of irrigation facility in Kuanrda village
Bolangir	06.09.2018	Prof. S.N.Pasupalak, VC, OUAT	11 th SAC meeting
	14.06.2018	Prof. P.K.Roul, DEE, OUAT	Monitoring of KVK activities
	06.09.2018	Sri A. Dakua, Collector & DM	11 th SAC meeting
	06.09.2018	Dr. S.S. Singh, Director, ATARI	11 th SAC meeting
Cuttack	02.12. 2018	Dr T Mohaptra, DG, ICAR & Secretary, DARE	Inaugurated administrative building of KVK Cuttack
	02.12. 2018	Dr A K Singh, DDG, Agril Extension	Participated in the inaugural function of KVK administrative building
		Dr S S Singh, Director, ATARI	
		Dr S.K. Ambast Director, IIWM	
		Dr AK Srivastav, Director, CIWA	
		Dr Bindu, Director, CIFA	
		Dr GC Acharya, Head, CHES, Bhubaneswar	
	15.08.2018	Dr H Pathak, Director, ICAR-NRRI, Cuttack	Inaugurated fruit trees plantation programme by planting a cashew tree
	28.01.2019	Dr PC Lenka, Ex-Dean, CA, OUAT	Interacted with trainees in a skill development programme on protected cultivation of high value vegetable crops
	25.04.2018	Dr V Singh, Director, Rice Development, Patna	Reviewed the financial status of seed hub and different activities under taken under seed hub
	25.01.2019	Dr K Ray, Dy Director, IMAGE	Participated in the inaugural function of 6 days skill development training programme on protected cultivation of high value vegetable crops
		Dr R Rengalakshi, Principal Coordinator, Gender and Grassroots Institutions	Village Knowledge Centre formation in KVK campus
		Dr R Rajkumar, VRC Coordinator, MS Swaminathan Research Foundation	
Deogarh	13.03.2019	Sri P. V. Ekka, PD, DRDA	Discussion on KVK activities
Dhenkanal	18.05.2018	Mr.S.N.Jayaram,Karnataka State Council for Sc and Tech, IISc, Bangalore	Installation of solar lights in KVK adopted villages
	19.06.2018	Dr.V.S.Pahil, National Consultant, NFSM, DAC&FW, Krishi Bhawan,New Delhi	To monitor KKA activities
	14.08.2018, 24.09.2018, 25.10.2018	Dr.Subash Mohapatra, OIC, AICRP on Agroforestry	Implementation of TSP, Training programme on pisciculture under TSP, Training programme on good management practices in poultry birds and chicks distribution
	25.09.2018	Dr.U.S.Pal, Research Engg., AICRP on post harvest management of CAET,OUAT,	To hand over akola mini dal mill for demonstration programme
	13.10.2018	Girija Srinivasan, IFAD Consultant	To discuss with KVK on status of small agricultural tools and implements
Gajapati	07.05.2018	Mr. S.K. Acharya, CEO, Hi Tech Medical College & Hospital	Visit to KVK
	16.06.2018	Mr. J.N. Padhy, Asst. Director (Coordination/OS), DAC & FW, GI, Krishi Bhawan, New Delhi	Review and Monitoring of KKA activities taken up by KVK in the villages of the district

KVK	Date	Name of the person	Purpose of visit
	25.07.2018	Dr. J.K Sundaray ICAR CIFA, Kausalya Ganga, Bhubaneswar, Odisha	To participate in the Farmer-Scientist Interface meeting at Chandragiri, organized by ICAR-CIFA in collaboration with KVK
	27.07.2018	Miss Basanti Mallik MLA, Mohana, Odisha	Visited the Demo unit and enquired about the new agricultural technologies suitable for farmers of Mohana block
	02.10.2018	Mr. Pradeep Kumar Nayak BDO, R.Udayagiri	Invited as the Guest of Honour in the Swachata Divas and inauguration day of KKA Phase -II programme
	02.10.2018	Mrs Bharati Mishra Principal, Mahendra Tanaya Junior College, R.Udayagiri	Invitee in the Swachata Divas and inauguration day of KKA Phase -II programme
	24.10.2018	Dr. Saurabh Garg, Principal Secretary, Agriculture, IAS Min. of Agri. & Farmers Empowerment	Inspection of damage caused due to Cyclone-Titli in KVK Farm and in the district
	04.11.2018	Sri Rama Chandra Panda Member, S.P.B. Odisha,	Visited the Demo unit
	16.12.2018	Prof. Surendranath Pasupalak Hon'ble Vice Chancellor, OUAT, Bhubaneswar	Review and Monitoring of KVK activities and Inspection of Demo unit
Ganjam-I	29.08.2018	Prof. S.N Pasupalak, Hon'ble Vice-chancellor	Review KVK activities
	22.10.2018	Prof. S.N Pasupalak, Hon'ble Vice-chancellor	Visit to Titli affected fields
	17.12.2018	Prof. S.N Pasupalak, Hon'ble Vice-chancellor	Review KVK activities
	27.07.2018	Prof. P.K Roul, Dean, Extension Education,OUAT	Field visit ,KVK instructional farm
	30.08.2018	Prof. P.K Roul, Dean, Extension Education,OUAT	Review of KVK activities
Ganjam-II	30.08.2018	Prof. S. N. Pasupalak	F.P.O meeting
	31.08.2018	Hon'ble Vice Chancellor, OUAT	KVK Visit
	22.10.2018		FPO visit (Post Titili)
	05.02.2019		KVK Visit
	12.09.2018	Dr. G.Trivedi, Ex-Vice Chancellor , RAU, Pusa Bihar	Site selection for KVK, Ganjam-II
	12.09.2018	Dr. A. Goswami, DREF, WBUA&FS, Kolkata-37	Site selection for KVK, Ganjam-II
	12.09.2018	Dr. P.K. Roul, Dean Extension Education, OUAT	Site selection Golanthara farm for KVK, Ganjam-II
	12.09.2018	Dr.S.S.Mishra, Director(Acting), ICAR-CIFA, Bhubaneswar	Site selection Golanthara farm for KVK, Ganjam-II
	12.09.2018	Dr. S.S Singh, Director, ICAR-ATARI, Kolkata	Site selection Golanthara farm for KVK, Ganjam-II
	04.04.2018 30.08.2018	Prof. P. K. Roul Dean, Directorate of Extension Education, OUAT	KVK Visit F.P.O meeting Site selection for Golanthara farm FPO visit (Post Titili)



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Jagatsinghpur	24.10.2018	Member, Board of Management, OUAT, Bhubaneswar	Review of KVK Activities
	05.12.2018	Hon'ble M.P, Jagatsinghpur	Attending World Soil Day
	30.01.2019	Prof. P. K. Roul, Dean, Extension Education, OUAT	KVK Review
Jajpur	11.08.2018	Prof. Surendra Nath Pasupalak Hon'ble Vice Chancellor, OUAT	Stakeholder Interface Meeting
	11.08.2018	Prof. Pravat Ku. Roul Dean Extension Education, OUAT, BBSR	Stakeholder Interface Meeting
	11.08.2018	Sj. Amar Prasad Sathpathy Hon'ble MLA	Stakeholder Interface Meeting
Jharsuguda	31.08.2018	Sj. JuaOram, Hon'ble Minister Tribal Affairs, Govt. of India	Review of KVK activities
	29.12.2018	Prof. Pravat Kumar Roul, Dean Extension Education, OUAT	Review and monitoring of KVK activities
	17.12.2018	Sri BibhutiBhusan Pattanaik, District Magistrate and Collector, Jharsuguda	Attended 14 th SAC meeting
	29.12.2018	Dr. M.K Pani, Additional, Secretary, Ag. And FW	Review of KVK activities
Kalahandi	28-30.09.2018	Prof. Surendranath Pasupalak Vice -Chancellor,OUAT,Bhubaneswar	As chief guest at Kalahandi conclave
Kandhamal	25.09.2018	Dr. R.C. Patra, Dean of Reasearch, OUAT, Bhubaneswar Dr. P.K. Mohapatra, Ex-Dean College of Agriculture, OUAT, Bhubaneswar	For conducting training programme on RIFS, at Khajuripada block of Kandhamal district
	29.09.2018	Dr. P.K. Roul, Dean, Extension Education, OUAT, Bhubaneswar	Monitoring the KVK activities
Kendrapada	05.12.2018	Sj. Kishore Chandra Tarai, MLA, Kendrapara Sj. Dasarathi Sathpathy, Collector cum District Magistrate, Kendrapara	Celebration of World Soil Day
	01.08.2018	Prof. Surendranath Pasupalak, Hon'ble VC, OUAT	Review of KVK
Keonjhar	08.08.2018	Dr. Sumit Mishra, Joint Dir. GOI, DRD, Patna	Field visit programme on seed hub and CFLD
	05.12.2018	Sj. Abhiram Naik, Hon'ble MLA, Sadar	Celebration of World Soil Day
	08.12.2018	Prof. S. Pashupalak, V.C., OUAT	Visit to KVK
Khordha	07.03.2019	Dr. S. S.Singh, Director, ATARI, Kolkata, West bangal	To inaugurate the Consultation Meet on Institutional Convergence organised by KVK
	29.09.2018	Dr. Randhir Singh, ADG (Agril. Ext), Division of Agricultural Extension, ICAR, New Delhi	To review the activities of KVK
	08.06.2018	Prof. (Dr). S. Pasupalak, Vice Chancellor, OUAT, Bhubaneswar	To inaugurate the Farmers Innovation Fair and Workshop on Positioning farmers Innovation in Agricultural Knowledge Information System organized by KVK
	08.06.2018	Dr. Himanshu Pathak, Director, ICAR-NRRI, Cuttack	Guest for the Farmers Innovation Fair and Workshop on Positioning farmers Innovation in Agricultural Knowledge Information System organized by KVK
	27.02.2019	Dr. Biswanath, Vice-Chairman, Coconut Development Board	Launching ceremony of the Coconut Special of Krishi Jagran
	07.03.2019	Dr. B.N. Sadangi, Emeritus Professor, ICAR-CIWA, Bhubaneswar, Odisha	To inaugurate the Consultation Meet on Institutional Convergence organised by KVK

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	12.04.2018	Mrs. Ashima Pattanayak, Finance Advisor to Ministry of Agriculture, Odisha	Chief Guest for the Women in Agriculture Day
	12.04.2018	Mrs. Litty Patanayak, Plant Protection Officer, Department of Agriculture.	Guest of Honor for the Women in Agriculture Day
	27.11.2018	Mr. Martin Gummert, Senior Scientist, IRRI, Philippines	For demonstration of Solar Bubble Dryer to farmers of Khordha district
	27.11.2018	Er. Suryakanth, IRRI-India	For demonstration of Solar Bubble Dryer to farmers of Khordha district
	08.06.2018	Dr. S. S. Dey, Managing Director, APICOL, Bhubaneswar	Guest for the Farmers Innovation Fair and Workshop on Positioning farmers Innovation in Agricultural Knowledge Information System organized by KVK
	08.06.2018	Dr. S. S. Giri, Fisheries Expert, SAARC Agriculture Centre, Dhaka, Bangladesh, Dr. Vivek Kumar, State Coordinator, NIF.	Guest for the Farmers Innovation Fair and Workshop on Positioning farmers Innovation in Agricultural Knowledge Information System organized by KVK
	08.06.2018	Dr. Prabhat Kumar Roul, Dean Extension, OUAT,	Guest for the Farmers Innovation Fair and Workshop on Positioning farmers Innovation in Agricultural Knowledge Information System organized by KVK
Koraput	25.05.2018	DR Ashok Mishra, OIC, AICRP on Potato, OUAT	For TSP work
	25.10.2018	Sj. M. K. Pani, Addl. Secretary, Dept. Of Agriculture & Farmers empowerment. Govt. Of Odisha	Visited the KVK and Discuss with the economic Condition of Koraput district
	09.11.2019	Sj. Alok Kumar Anugulia, Asst. Collector & Executive magistrate cum RMC Secretary, O/o Sub-Collector, Koraput	Discuss regarding development of Gramin Hat in KKA-II programme.
	06.02.2019	Dr. Prasannajit Mishra, JDE(VP), DEE, OUAT, BBSR	Attending SAC meeting
	06-07.02.2019	Prof. S. Pasupalak, Hon'ble, Vice-Chancellor, OUAT	Attending SAC meeting and inaugurate the Turmeric Processing Unit
	06-07.02.2019	Dr. L. M. Garnayak, Dean of Research, OUAT	Attending SAC meeting and inaugurate the Turmeric Processing Unit
	06-07.02.2019	Dr. S. S. Singh, Director, ATARI, Zone-V, Kolkata	Attending SAC meeting and inaugurate the Turmeric Processing Unit
Malkangiri	07.05.2019	Sri Manish Agrawal Honorable Collector & ADM, Malkangiri	Participating as a chief guest in Akshya Tritiya ceremony of KVK, Malkangiri
	27.06.2018	Mr L. Panda IAS Sub Collector, Malkangiri	ATMA Review meeting and RE meeting
	19.06.2018	Dr. R.S Kureel Director of Oilseed Production, Govt. of India	Minikit distribution under KKA programme
	19.01.2019	Sri Rama Ch. Pattnayak DDA Malkangiri	RE Meeting
	16.11.2018	Matteo Vailati, Team Leader and Agronomist,	KVK Visit
	16.11.2018	Luciano Rovesti, Senior Agronomist,	KVK Visit
Mayubhanj-II	11.03.2019	Dr. Hemanta Ku. Sahoo, JDE, OUAT, BBSR	Attend the SAC meeting as Chairman
	11.03.2019	Dr. Tushar K. Mohanty, ADR, RRTTS, Keonjhar	Attend the SAC meeting



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Nabarangpur	02.06.2018	Dr .Ajit Mishra, Collector cum District Magistrate, Nabarangpur	KKA Covergence meeting
	25.06.2018	Dr.R.S.Kureel,Director,Crop Production Division, New Delhi	Monitoring KKA activities
	12.06.2018	Sh.Ram Sajeevan,Ministry of Agriculture, New Delhi	Monitoring KKA activities
	30.12.2018	Sh. S. Patra, Information Activist , New Delhi	Visited to see KVK activities
Nayagarh	31.05.2018	Dr. Sk. Sukla, Project Coordinator Sugarcane, IISR, Lukhnow (ICAR)	Visited Sugarcane field in KVK campus
	09.09.2018	Dr. S.S.Singh, Director, ATARI, Kolkata	Monitoring ARYA activity
Nuapada	19.05.2018	Dr.Rajendra Prasad Chowdhury, Co-Ordinator, ICRAF, New Delhi	Implementation of ICRAF Project in Nuapada district.
	04.09.2018	Dr.S.S.Singh,Director,ATARI,Kolkata	SAC Meeting
	28.09.2018	Sri Sandip Kumar Nayak, IAS, MD, NCDC, New Delhi	Monitoring of KKA Activities
	28.09.2018	Dr.(Mrs.) Poma Tudu, IAS & Collector, Nuapada	Monitoring of KKA Activities
	28.09.2018	Sri B.C.Nayak, PD DRDA, Nuapada	Monitoring of KKA Activities
	09.11.2018	Prof.C.M.Khanda, ADR, RRTTS, Bhawanipatna	Field Visit
	05.12.2018	Sj.B.K.Panda, MLA, Nuapada	Soil Day Celebration
	17.03.2019	Dr. Kailash Bihari Mohapatra Prof. Plant Pathology, GIET, Gunupur	Resource person for ASCI training.
Sambalpur	01.08.2018	Sj Sourabh Garg, Principal Secretary Agriculture and Farmer Empowerment	Review of KVK activities
	01.08.2018	Sj. Samarth Verma, Collector and District Magistrate	Review of KVK activities
Sundargarh- I	03.05.2018	Dr. S K Ambast, Director ICAR-IIWM	K.V.K Monitoring
	07.07.2018	JualOram, Hon'ble Union Misiter for Tribal Affairs	Review of K.V.K and Interaction with tribal farmers of K.V.K.
	02.08.2018	Dr. Jacob Nelithanam, Environmentalist and Farmer rights campaigner	To promote organic farming
	13.10.2018	Prof. S N Pasupalak, VC, OUAT	Review of KVK
	29.12.2018	Prof P K Roul, DEE, OUAT	Inauguration of Krishi Odisha & K.V.K monitoring
	29.12.2018	Dr. S N Mishra, Director, IMAGE	Inauguration of Krishi Odisha
	29.12.2018	Dr. M K Pani, Addl. Secy, Agril. Dept	Inauguration of Krishi Odisha
Sundargarh- II	12.10.2018	Prof. S. N, Pashupalak	KVK visit
	28.12.2018	Prof.P.K.Roul	Site Selection
West Bengal			
Bankura	15.02.2019	Mrs. DolaSen, MP	Special guest at District KisanMela 2019
	08.03.2019	Dr Pradip Mazumdar, Advisor to Honorable Chief minister on Agricultural and allied sector.	At district level meeting along with all the ADA and ADA research and KVK officials on district level development of agriculture.
	24.02.2019	Sri Ajit Roy Hon'ble M.L.A., Sonamukhi Constituency.	PM KisanSammanNidhi live telecast programme.
	26.07.2018 & 12.02.2018	DrSampadRanjan Patra DAWB & EOS	SAC meeting, District KisanMela,

KVK	Date	Name of the person	Purpose of visit
Birbhum	18.08.2018	Mr. Meaoja Sri Ranjan, Teacher, Hillwood College, Kandy, Sri Lanka	To know about the nitty-gritty of the modus operandi of the Rathindra KVK as well as the uniqueness of the concept of the Krishi Vigyan Kendras as a whole.
	16.09.2018	Sri Chhabilendra Roul, Special Secretary, DARE and Secretary, ICAR, New Delhi	To know about the procedures of research, demonstration and extension of agricultural and related field technologies adopted by the Rathindra KVK
	12.10.2018	Dr. S. Roy Chowdhury, Head and Soil Survey Officer, SLUSI, Kolkata Centre, B - P Township, Kolkata	To know about the nitty-gritty of the modus operandi of the Rathindra KVK as well as the uniqueness of the concept of the Krishi Vigyan Kendras as a whole and to know about the procedures of research, demonstration and extension of agricultural and related field technologies adopted by the Rathindra KVK
Burdwan	24.02.2019	Shri Sunil Mandal, Hon'ble MP, Bardhaman Purba	District Kisan Mela
	24.02.2019	Dr. Mrs. Mamta Sanghamita, Hon'ble MP, Bardhaman Durgapur	District Kisan Mela
	24.02.2019	Shri Alok Maji, MLA, Galsi	District Kisan Mela
Coochbehar	31.07.2018	Dr. U.K Sarkar, Head, ICAR-CIFRI	To monitor the activity of KVK
	29.08.2018	Dr. H.K.Senapati, Former Dean, OUAT, Bhubaneswar, Chairman, NICRA-ZMC	Monitoring team visit of the NICRA project
	29.08.2018	Dr. S.S. Singh, Director, ICAR-ATARI, Kolkata	Monitoring team visit of the NICRA project
	18.09.2018	Mr. R.K. Malik, CSISA project, CIMMYT, Patna	To monitor the activity of KVK
	04.10.2018	Saptarshhee Singha Roy, Member, Task Force, WBVET & SD	To monitor the activity of KVK
	05.12.2018	Dr. C Chattopadhyay, VC, UBKV	Participated on World Soil Day and monitored various KVK activities
	05.12.2018	Dr. H. Shivanna, Ex. VC, UAS, Bglru	Participated on World Soil Day and monitored various KVK activities
	05.12.2018	Dr. V.K Shrivastava, Ex Dean, GBPUAT	Participated on World Soil Day and monitored various KVK activities
	05.12.2018	Dr. J.P Tiwari,	Participated on World Soil Day and monitored various KVK activities
	05.12.2018	Dr. C.R Annanda Kumar, Ex Registrar, TNAU	Participated on World Soil Day and monitored various KVK activities
	05.12.2018	Dr. S. Bandhopadhyay, Registrar, UBKV	Participated on World Soil Day and monitored various KVK activities
	05.12.2018	Prof. P.K Paul, DEE, UBKV	Participated on World Soil Day and monitored various KVK activities
	05.12.2018	Prof. A. Choudhary, Dir. of Res. UBKV	Participated on World Soil Day and monitored various KVK activities
Dakshin Dinajpur	14.05.2018	Dr. Deepap Priya P., District Magistrate, Dakshin Dinajpur	To visit the KVK and demonstration unit
	05.06.2018	Shri Mrinmay Biswas, Additional District Magistrate, Dakshin Dinajpur	To visit the KVK
	08.08.2018	Dr. Arun Kumar Barik, Professor and Head, Dept. of Agronomy, Visva-Bharati	To visit the KVK
	14.12.2018	Dr. Manas Ghosh, Director, SAMETI, West Bengal	Visit to KVK for DAESI programme



KVK	Date	Name of the person	Purpose of visit
	14.12.2018	Dr. Amitava Bhattacharya, Joint Director. Training Govt. of WB	Visit to KVK for DAESI programme
	04.01.2018	Dr Sujay Rakshit, Director, Indian Institute of Maize Research, PAU Campus, Ludhiana, Punjab-141004	To visit the KVK
	10.10.2018	Sh. A. W. Maria Joseph, Officer In-Charge, KKA and Officer Soil Survey of India	To visit the DDKVK, UBKV for KKA-II
	16.01.2019	Dr. C Chattopadhyay, Vice Chancellor, UBKV	To visit the KVK and attend COBACAS conference
	16.01.2019	Dr.P K Saha, National consultant, NFSM	To visit the KVK and attend COBACAS conference
	28.03.2019	Dr. Subrata Mondal, MD and CEO, Pick N Serve Foods Pvt. Ltd.	HRD programme
	28.03.2019	Prof. S Bandopadhyay, Registrar, UBKV	HRD programme
	28.03.2019	Dr. P Pal, DEE, UBKV	HRD programme
	17.11.2018	DDG (Agril. Extn)	Silver Jubilee Celebration
	17.04.2018	ADG (Agil. Extn)	Parliamentary Committee visit
	17.11.2018	Dr. S. S. Singh	Silver Jubilee Celebration
	19.11.2018	Dr. V. V. Sadamate	Formar adviser to Agriculture Planning Commission
Hooghly	23.02.2019	Dr. Ratna De Nag, MP, Hooghly	Pre-Rabi Krishak Sammelan & Kishan Mela
	23.02.2019	Shri Tapan Das Gupta, MIC, Deptt. of Agricultural Marketing, Govt. of West Bengal	Pre-Rabi Krishak Sammelan & Kishan Mela
	23.02.2019	Shri Asit Majumder, MLA, Chinsurah	Pre-Rabi Krishak Sammelan & Kishan Mela
	24.09.2018 & 23.02.2019	Prof. Pintu Bandyopadhyay Director, Directorate of Extension Education, BCKV	SAC Meeting, Pre-Rabi Krishak Sammelan & Kishan Mela
	23.02.2019	Prof. Srikanta Das, Dean, Faculty of Agriculture, BCKV	Pre-Rabi Krishak Sammelan & Kishan Mela
	25.02.2019	Prof. Koushik Brahmachari, In-Charge, FACC, BCKV	Pre-Rabi Krishak Sammelan & Kishan Mela
	24.08.2018	Mr. Kempahonnaiah, IAS, Assistant Magistrate, Hooghly District	Different Activities of KVK
	09.08.2018	Mr. Sampot Ranjan Patra, Director of Agriculture, Govt. of WB	Different Activities of KVK
	23.02.2019	Dr. D.D. Patra, Vice- Chancellor, BCKV	Pre-Rabi Krishak Sammelan & Kishan Mela
	06.03.2019	Dr. S. S. Singh, Director, ICAR-ATARI	KVK Visit
Howrah	19.07.2018	Prof. Srikanta Das, D.E.E, B.C.K.V, Principal Scientist, ICAR, ATARI	SAC meeting
	16.01.2019	Dr. P. Bandopadhyay, DEE, BCKV, Dr. .S. Singh, Director, ZPD, Zone-V	Technology Week
	18.01.2019	Dr. P. Bandopadhyay, DEE, BCKV	Technology Week
	05.06.2018	Mrs. Silpa Gourisaria. District Magistrate, Jalpaiguri	Participation in World Environment Day and Interact with all SMSs and visit different activities of Jalpaiguri KVK
	05.06.2018	Mrs. Shreyashi Ghosh, Block Development Officer, Maynaguri	
	18.06.2018	Dr. Mrinal Kanti Roy, Divisional Forest Officer, Jalpaiguri Soil Conservation, Jalpaiguri	Training & Exposure Visit

KVK	Date	Name of the person	Purpose of visit
	29.06.2018	Mr. Sumit Kr. Chakraborty, Programme Executive, All India Radio, Siliguri	Media Coverage of KVK activities
	26.07.2018	Dr. P.K.Saha, National Consultant, Govt. Of India, NFSM	Review & Monitoring of Govt. Flagship Programme
	30.08.2018	Dr. S.S.Singh, Director, ATARI, ICAR, Kolkata	Visit of KVK adopted village & interact with all the KVK staff
	19.09.2018	Dr. Pattukumari Velliyam, Pondichery	Training & distribution of Fishery
	29.11.2018	Dr. Manas Ghosh, Director, SAMETI, Narendrapur, Kolkata	DAESI Inaugural Programme
	16.01.2019	Mr. Ananta Deb Adhikary, Member of Legislative Assembly, Maynaguri	Visit for proposed Veterinary College
		Prof. Bipul Kumar Das, Dean, Faculty of Fishery Sciences, WBUAFS, Kolkata	
		Mrs. Nupur Banerjee, Chief Govt. Architect, PWD, West Bengal	
		Vincet Gupta, Superintending Architect, PWD	
		Mr. Subrata Kr. , Superintending Engineer, PWD, WBCC-ii	
	09.03.2019	Ashoka Reddy, Co nsultant, MANAGE, Hyderabad	DAESI
		Mr. Ramesh Topdar, Consultant, DAESI, SAMETI, Narendrapur	
Malda	04.04.2018	Prof. B. Bandyopadhyay, Ex-VC, UBKV	To see the activities of KVK, Malda
	30.06.2018	Dr. Mohammad Osman, Principal Scientist & National Co-ordinator, NICRA, ICAR-CRIDA, Hyderabad	Visit of NICRA Project & KVK, Malda
	30.06.2018, 16.01.2019	Dr. Chirantan Chattopadhyay, VC, UBKV	Monitoring of KVK, Malda
	13.07.2018, 28.08.2018, 21-22.12.2018, 29.03.2019	Prof. Pravat Kumar Pal, DEE, UBKV	Regular monitoring and workshop at Malda KVK
	08.08.2018, 23.08.2018, 30.01.2019, 11-13.02.2019, 18.02.2019, 06.03.2019	Mr Satish Kumar Singh, DDM, NABARD, Malda	Technology week, Soil day celebration, Training, demonstration, field day, etc
	28.08.2018	Dr. H K Senapati, Chairman of ZMT team of NICRA	ZMC visit at NICRA villages and Malda KVK
	28.08.2018 & 21.12.2018	Dr. SS Singh, Director, ICAR-ATARI, KOLKATA	ZMC visit at NICRA villages and Malda KVK, Review workshop of Seed Hub, NICRA, CSISA project
	28.08.2018	JVNS Prasad, Principal Scientist & National Co-ordinator, NICRA, ICAR-CRIDA, Hyderabad	ZMC visit at NICRA villages and Malda KVK
	07-11.10.2018 & 04-05.12.2018	Mr. Sanjay A. Dhale, Asst. Soil Chemist, MIC-Agri, Govt of India, Noida, UP	Monitoring of KKA activities
	18.10.2018, 12.11.2018, 30.01.2019	Mr. Arjun Pal, BDO, Ratua-I block	Soil Day celebration, Mushroom trg., etc



KVK	Date	Name of the person	Purpose of visit
	18.01.2019, 11.02.2019, 29.01.2019	Dr Saikat Mukherjee, Deputy DEE, UBKV	SAC Meeting, Soil day celebration, District Kisan Mela
	12.02.2019	Smt. Mausam Noor, MP Uttar Malda	District Kisan Mela
	12.02.2019	Sri Samar Mookherjee, MLA, Ratua	District Kisan Mela
	06-07.03.2019	Mr. Asoke Reddy, DAESI-Coordinator, MANAGE, Hyderabad	Daesi programme
	06-07.03.2019	Mr. Ranesh Topdar, SAMETI, Narendrapur	Daesi programme
	29.03.2019	Dr. Subhendu Bandyopadhyay, Registrar, UBKV	Review workshop and Seminar
	29.03.2019	Shri R.N.Datta, Director & CRC, PCRA-ER	Seminar
Murshidabad	09.08.2018	Mr. G. Kesav Rao, DDM, NABARD, MSD	FPO review meeting
	30.11.2018	Prof. Purnendu Biswas, Vice Chancellor, WBUAFS, Kolkata	Innauguration of 2 nd & 3 rd batch of DAESI programme
	30.11.2018	Dr. S. S. Singh, Director of ICAR-ATARI, Kolkata	Innauguration of 2 nd & 3 rd batch of DAESI programme
	30.11.2018	Prof. Arunasis Goswami, DREF, WBUAFS, Kolkata	Innauguration of 2 nd & 3 rd batch of DAESI programme
	30.11.2018	Swami Biswamayananda Maharaj, Rama Krishna Mission Ashram, Sargachi, Msd	Innauguration of 2 nd & 3 rd batch of DAESI programme
	05.12.2018	Md. Badaruddoza Khan, MP of Murshidabad	Programme of World Soil Day
	22.01.2019	Prof. Arunasis Goswami, DREF, WBUAFS, Kolkata	Programme of SAC meeting
	22.01.2019	Mr. Kusal Kumar Singh, DDM, NABARD, MSD	Programme of SAC meeting
	20.02.2019	Md. Badaruddoza Khan, MP of Murshidabad	Programme of District Kisan Mela
	20.02.2019	Mr. Kusal Kumar Singh, DDM, NABARD, MSD	Programme of District Kisan Mela
Murshidabad (Addl.)	28.12.2018	Dr Ashis Mukherjee, MIC, Agriculture, Murshidabad	Chief Guest of inaugural ceremony of Krishi Samriddhi Mela
	28.12.2018	Dr A K Singh, ADG (Extension), ICAR	Chief Guest of inaugural ceremony of Krishi Samriddhi Mela
	28-30.12.2018	Dr. P. K. Chakrabarty Assistant Director General (PP&B)	Honoured Guest of inaugural ceremony of Krishi Samriddhi Mela and Expert of National Workshop
	28.12.2018	Dr. S. S. Singh, ICAR-ATARI, Salt lake, Kolkata	Honoured Guest of inaugural ceremony of Krishi Samriddhi Mela
	28.12.2018	Dr. Chirantan Chattopadhyay, Vice Chancellor, UBKV	Honoured Guest of inaugural ceremony of Krishi Samriddhi Mela
	28.12.2018	Dr. Dharani Dhar Patra, Vice Chancellor, BCKV	Honoured Guest of inaugural ceremony of Krishi Samriddhi Mela
	29.12.2018	Dr. B. P. Bhat, Director, ICAR Research Complex for Eastern Region, Patna, Bihar	Expert of National Workshop organized during Krishi Mela
	29.12.2018	Dr. B. K. Das, Director, ICAR- Central Inland Fisheries Research Institute	Expert of National Workshop organized during Krishi Mela
	29.12.2018	Dr. S. K. Chakroborty, Director, ICAR- Central Potato Research Institute	Expert of National Workshop organized during Krishi Mela

KVK	Date	Name of the person	Purpose of visit
	30.12.2018	Dr. A. S. Panwar, Director, Indian Institute of Farming System Research	Expert of National Workshop organized during Krishi Mela
	28.12.2018	Dr. S. Ranjan, Director, ICAR-Central Institute for Subtropical Horticulture	Honoured Guest of inaugural ceremony of Krishi Samriddhi Mela and Expert of National Workshop
	28.12.2018	Dr. A. N. Roy, Director, National Institute of Research on Jute and Allied Fiber	Honoured Guest of inaugural ceremony of Krishi Samriddhi Mela and Expert of National Workshop
	30.12.2018	The District Development Manager, NABARD, Berhampore, Murshidabad	Expert of National Workshop organized during Krishi Mela
Nadia	05.12.2018	Dr. Pinto Bandopadhyay, Ditector, Directorate of Extension Education, BCKV	World soil day
	28.12.2018	Dr.A. K. Singh, DDG, ICAR, New Delhi Dr. S. S. Singh, Ditector, ICAR-ATARI, Kolkata Dr. S. Rajan, Director, ICAR-CISH, Lucknow Dr. Pinto Bandopadhyay, Director of Extension Education, BCKV	Field visit of Hon'ble DDG, ICAR, New Delhi
	13.09.2018	Prof. T.K. Bose, Advisor, Vocational Board, Govt. of WB	To see the KVK activities
	21.07.2018	Dr. M. V. Rao, Principal secretary, Co-operative & Marketing, Govt. of WB	To see the KVK activities
	12-15.01.2019	Dr. D. D. Patra, Hon'ble Vice-Chancellor, BCKV Dr. S.S.Singh, Director, ICAR-ATARI, Kolkata Dr. Tapas Mandal Hon'ble Member of Parliament of Ranaghat Lok Sabha Prof. Pranab Hazra, Dean, P.G. Studies, BCKV Prof. S. Das, Dean, Faculty of Agriculture, BCKV	Krishi Parbon-2019 (Technology Week-2019)
South 24 Pgs. (Narendrapur)	18.03.2018	Ms. Rupa Ganguly, Hon'ble MP, Rajyasabha	Observed different activities of KVK
	11.04.2018	Mr. Sisir Kumar Das, Repetitive of World Bank	Observed different activities of KVK
	26.04.2018	Dr. Sujay Rakshit, Director, ICAR-IIMR, PAU Campus, Ludhiana, Punjab	Visited the field trials on maize varieties funded by ICAR-IIMR
	15.05.2018	Dr. K. Manoharan, Director, Jute Development, Ministry of Agriculture, GOI	Monitored the seed production programme on pulses under Seed Hub Project.
	02.06.2018	Dr. Gokul Debnath, Deputy Director General, IMD and Head of the Meteorological Center of Netaji Subhash Chandra Bose International Airport	Delevered lecture as resource person in the workshop of agriculture in the District Krishi Mela 2018-19 at SSKVK, Arapanch, Sonarpur
	27.07.2018	Dr. Pradip Dey, Principal Scientist and Project Coordinator (STCR), ICAR-IISS, Bhopal, MP	Observed different activities of KVK
	02.08.2018	Swami Sarvalokananda, Secretary, R K Mission Ashrama, Narendrapur	He visited the construction works, different demonstration units, newly constructed training hall, seed processing infrastructure and seed hub in the KVK
	05.10.2018	Dr. S. S. Singh Director, ICAR-ATARI, Zone V, Kolkata	Observed different activities of KVK and discussed about the initiatives to be taken by the KVK personnel for its betterment



KVK	Date	Name of the person	Purpose of visit
	19.12.2018	Mr. Anil Kumar Mahato, Co-ordinator, CSR Rail Vikas Nigam Limited, New Delhi - 110066	Observed different activities of KVK
	20.01.2019	Mr. Asoke Kumar Panda, Deputy Secretary, Agriculture Dept., Writers' Bulding, Govt. of West Bengal	Visited SSKVK Stall at Sri Ramakrishna Mela and Exhibition 2019
	24.01.2019	Dr. Tapan Kr. Ghosh, Regional Director, NCOF	Visited SSKVK Stall at Sri Ramakrishna Mela and Exhibition 2019
	24.02.2019	Shri Ramvilash Paswan, Hon'ble Minister for Consumer Affairs, Food and Public Distribution, Govt. of India; Mrs. Rupa Ganguly, Hon'ble MP, Rajyasabha; Dr. S. K. Malhotra, Agriculture Commissioner, Govt. of India; Dr. S. S. Singh, Director, ICAR-ATARI, Kolkata	Attended the live telecast of the launching of "Pradhan Mantri Kisan Samman Nidhi Yojana" 2019
South 24 Pgs. (Nimpith)	28.06.2018	Dr. J. S. Samra, Former- DDG (NRM) -ICAR	To observe KVK activities
	08.07.2018	Dr. Chirantan Chattopadhyay, Vice Chancellor, Uttar Banga Krishi Viswavidyalaya, west Bengal	To visit the KVK
	06-07.12.2018	Dr. B.M.C. Reddy, Retd. VC, Dr.YSRHU Horticultural University, Andhra Pradesh	Meeting on Reassessment of Potential areas for Oil Palm Cultivation in India
	06-07.12.2018	Dr. S Arulraj, Retd. Director, ICAR-IIOPR, Pedavegi	Do
	06-07.12.2018	Dr. Anupam Barik, Additional Commissioner, DoAC, Govt. of India	Do
	06-07.12.2018	Dr. R K Mathur, Director, ICAR-IIOPR	Do
	06-07.12.2018	Dr. S. S. Ray, Director, Mahalanobis Crop Forecast Centre, Pusa Campas, New Delhi	Do
	16.12.2018	Dr. K. Manoharan, Director, Directorate of Jute Development, Govt. of India, Ministry of Agriculture & Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare	Swachhata Rally Programme
	29.01.2019	Smt. Pratima Mondal, Member of Parliament, Joynagar Constituency	District Kisan Mela
	24.02.2019	Mr. Biswanath Das, MLA, Joynagar Assembly	Pradhan Mantri Kisan Samman Nidhi
	18.03.2019	Dr. Anupam Barik, , Additional Commissioner, DoAC, Govt. of India	State Oilseed Kisan Mela
	19.03.2019	Dr. Sampad Ranjan Patra, Director, Dept. of Agriculture, GoWB	State Oilseed Kisan Mela

KVK	Date	Name of the person	Purpose of visit
North 24 Pgs.	15.02.2019	Mrs Mamata Thakur, MP	Inauguration the Mela
	15.02.2019	Mr. Surajit Biswas, MLA	Inauguration the Mela
	25.02.2019	Prof. P. Biswas, Hon'ble VC	Monitoring the activity
North 24 Pgs. (Addl.)	24.02.2019	Sri Keshari Nath Tripathi , Governor of West Bengal	Webcasting of Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) launching Programme
	20.02.2019	Dr. DharaniDharPatra	Attend the Technology week
	20.02.2019	Prof. PintooBandopadhyay	Attend the Technology week
	27.02.2019	Prof. Pintoo Bandopadhyay, DEE, BCKV	Official
	27.02.2019	Dr. J.K. Chatterjee, Vice-Principal, PSB, Visva-Bharati	Official
	20.02.2019	Sri MrigankaMahato, MP, Purulia	District Kisan Mela-2019
	20.02.2019	Mr. Sajal Bhowmik, Project Director, ATMA, Purulia	District Kisan Mela-2019
	02.02.2019	Mr. Kanchan Bhattacharya, DDM (NABARD)	Sarad Mela-2019
Uttar Dinajpur	02.02.2019	Sri ShantiramMahato, MIC (PashchimanchalUnnayan Parshad, Govt. Of West Bengal)	Sarada Mela-2019
	10.04.2018	Dr. Somnath Jha, S.D.P.O, Islampur, Uttar Dinajpur	KVK visit
	19.04.2018	Director, Dr. S.S. Singh, ICAR-ATARI, Kolkata	KVK visit
	26.04.2018	Shri Saptarsho Nag, WBCS (Exc.), Observer, Panchayat Elections	KVK visit
	25.07.2018	Dr. P.K. Saha, National Consultant, (NFSM)	KVK visit for Seed Hub Inspection
	31.08.2018	Director, Dr. S.S. Singh, ICAR-ATARI, Kolkata	KVK visit
West Midnapore	29.09.2018	Dr. Jitendra Singh Chauhan, Advisor to Agriculture Minister, Govt. of India	KVK visit
	06.12.2018	Mr. Chandan Das, Manager in chrg, DIC Jhargram	Aroma Project
	06.12.2018	Mr.V.V.Rama Rao ,OIC,MSME ,Govt Of India	Aroma Project
	06.12.2018	Mrs. A.Rani ,DM,Jhargram	Aroma Project
	06.12.2018	Mr. Debabrata Roy,GM,DIC,Paschim Medinipur	Aroma Project
	06.12.2018	Yasmin Bari,Director of SHG,Jhargram	Aroma Project
	06.12.2018	Dr. Vijay Bharati, IAS,Director,MSME	Aroma Project
	29.01.2019	Selima Khatun(Bibi),MLA, Debra	District Kisan Mela19
	29.01.2019	Sk Samir Ikbal	District Kisan Mela19
	29.01.2019	Mr. Madhab Murmu	District Kisan Mela19
	29.01.2019	Jayanti Laru, Member of Bakalsa Panchyat	District Kisan Mela19
	29.01.2019	Mr. M.K. Mitra,G.M, Rungta Irrigation Ltd	District Kisan Mela19
	29.01.2019	Dr. Bibekananda Mohanty,ADA,Midnapore	District Kisan Mela19
	29.01.2019	Mr. Prasad Kumar Guin, IDO Jhargram	District Kisan Mela19



27.0 Personnel (As on 31.03.2019)

Existing staff position of ICAR-ATARI Kolkata as on 31.03.2019 has been presented in the table below:

Sl. No.	Name	Designation
1	Dr. S.S. Singh	Director
2	Dr. S.K. Roy	Principal Scientist
3	Dr. P.P. Pal	Principal Scientist
4	Dr. A. Haldar	Principal Scientist
5	Dr. S.K. Mondal	Principal Scientist
6	Dr. F.H. Rahman	Principal Scientist
7	Dr. K.S. Das	Principal Scientist
8	Shri D. Debnath	Driver (T-2)
9	Shri B.D. Mallick	Asstt. Finance & Accounts Officer
10	Shri S. Mukherjee	Junior Accounts Officer
11	Shri Prabhu Kumar	Asstt. Administrative Officer (Since 16.04.2018)
12	Smt. S. Pal	Private Secretary
13	Shri A.D. Banik	Assistant
14	Shri S. Saha	UDC
15	Smt. A. Roy	SSS
16	Shri N. Dutta	YP-II, MIS-FMS (16.05.2018 - 14.03.2019)
17	Ms. B. Ghosh	SRF, CFLD-Oilseeds (upto 31.03.2019)
18	Ms. J. Basak	SRF, CFLD-Pulse
19	Ms. S. Halder	SRF, ARYA

Sl. No.	Name	Designation
20	Ms. R. Bhattacharya	SRF, NICRA
21	Dr. S. Das	SRF, Farmers FIRST (since 29.08.2018)
22	Shri S. Das	DEO, CFLD-Oilseeds (upto 16.03.2019)
23	Shri S. Khutia	DEO, CFLD-Pulse
24	Shri S. Nandi	DEO, CSISA

Joining / Relieving / Promotion:

1. Shri A.D. Banik was promoted to the post of Assistant w.e.f. 10.04.2018
2. Shri S. Saha was promoted to the post of UDC w.e.f. 05.01.2019
3. Shri N. Dutta joined this Institute on 16.05.2018 and resigned on 14.03.2019
4. Dr. Suddhasuchi Das joined on 29.08.2018
5. Shri S. Das resigned on 16.03.2019
6. Ms. B. Ghosh resigned on 31.03.2019



ICAR - Agricultural Technology Application Research Institute Kolkata

भाकृअनुप - कृषि तकनीकी अनुप्रयोग संस्थान कोलकाता

Bhumi Vihar Complex, Salt Lake, Kolkata - 700097

भूमि विहार परिसर, सॉल्ट लेक, कोलकाता - 700097