2024
ANNUAL REPORT
वार्षिक प्रतिवेदन

भा.कृ.अनु.प.–कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र–IV
पटना (बिहार) – 800014
ICAR- Agricultural Technology Application Research Institute, Zone-IV
Patna (Bihar) -800014

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डॉ० अंजनी कुमार
Dr. Anjani Kumar
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PREFACE

Krishi Vigyan Kendras (KVKs) were established as pioneering institutions aimed at extending agricultural knowledge and technologies to farmers across the nation. Spearheaded by the ICAR-Agricultural Technology Application Research Institute, Zone IV, Patna, in collaboration with 68 KVKs in Bihar and Jharkhand, these centers employ a bottom-up approach. Their main goal is to ensure active farmer participation in the planning, implementation, and assessment of agricultural projects by bridging the gap between the farming and research communities through participatory technology assessment.

To effectively expand the services, the institute has implemented several flagship programs of national significance. These programs, highlighted in the annual report, encompass initiatives like crop diversification through Cluster Front Line Demonstration (CFLD) focusing on Pulses and Oilseeds, Oilseeds Model Village, Pulses Model Village the National Innovations in Climate Resilient Agriculture (NICRA) addressing the climate change on agricultural system, Seed Hub for Pulses, Promotion of Natural Farming through KVKs, Farmer FIRST Programme (FFP) for enhanced farmers-scientist interactions, Attracting and Retaining Youth in Agriculture (ARYA) to provide employment opportunities in agricultural sector, Farmer's Producer Organizations, Cereal Systems Initiative in South Asia (CSISA) etc.

In addressing the issues of low productivity and recognizing the challenges ahead the institute emphasizes the validation of improved agricultural technologies in farmers' fields. The major activities, including On-Farm Trials (OFT), Front Line Demonstrations (FLD), training programs, extension activities and mobile advisory services are also meticulously documented to showcase successful implementations and positive outcomes at grass root level.

Moreover, the document underscores the effective engagement with diverse stakeholders and evaluates the performance of Extension Education Directorates of Central and State Agricultural Universities and KVKs within the Zone's jurisdiction. It aims to provide a clear vision for organized and progressive agriculture in the region.

Heartfelt gratitude is extended to Dr. Rajbir Singh, Deputy Director General (Agricultural Extension), and Dr. R.K Singh and Dr. R.R Burman, Assistant Director Generals (Agricultural Extension) for their constant guidance for implementation of these activities and programs in this Zone. In this endeavor, our heartfelt thanks to the Vice-Chancellors, Directors of Extension Education, Scientists, Programme Coordinators of KVKs, ATIC managers, and all the KVK staff for their timely contributions. Special acknowledgment is given to scientific staff, young professionals, and data entry operators for their tireless efforts in compiling and editing the annual report, with the hope that it will benefit various stakeholders, including policymakers, researchers, developmental functionaries, and farmers.

Patna
15th July, 2025

Director


भाकृ अनुप
ICAR
भा.कृ.अनु.प. कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान
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ICAR- AGRICULTURAL TECHNOLOGY APPLICATION RESEARCH INSTITUTE
ICAR-ATARI-PATNA

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कार्यकारी सारांश

ऑन–फार्म परीक्षण

आईसीएआर–अटारी ने ऑन फार्म अध्ययनों में सभी पूर्व–स्थापित लक्ष्यों को सफलतापूर्वक पूरा किया है। बिहार और झारखंड में कुल 364 प्रौद्योगिकियों का मूल्यांकन किया गया, जिसमें 3,063 स्थान और 2,678 परीक्षण शामिल थे। फसल उत्पादन में 190 प्रौद्योगिकियों को 1,662 स्थानों में 1,527 परीक्षण किए गये। बागवानी फसला में, 70 प्रौद्योगिकियों का मूल्यांकन 465 स्थानों में 437 परीक्षणों के माध्यम से किया गया। गृह विज्ञान में 47 प्रौद्योगिकियों को 419 स्थानों में 331 परीक्षणों का योगदान दिया गया। पशुधन और मत्स्य पालन में 325 स्थानों में 260 परीक्षणों में 36 प्रौद्योगिकियाँ शामिल थीं। अन्य उद्यमों में 16 प्रौद्योगिकियों, 175 स्थान और 115 परीक्षण शामिल थे।

अग्रिम पंक्ति प्रदर्शन

हाल ही में जारी किस्मों की उत्पादन क्षमता को उजागर करने और विभिन्न फसलों जैसे अनाज, दलहन, बाजरा, तिलहन, सब्जियाँ, फल और अन्य की उपज बढ़ाने के लिए सुझाए गए तरीकों को उजागर करने के लिए कृषि विज्ञान केंद्र द्वारा अग्रिम पंक्ति प्रदर्शन किए गए हैं। खरीफ, रबी और ग्रीष्म मौसम के दौरान दलहन, तिलहन, अनाज, बागवानी और अन्य फसलों पर कुल 5693.63 हेक्टेयर भूमि को फ्रंटलाइन प्रदर्शनों के तहत शामिल किया गया है। इन प्रदर्शनों से पूरे क्षेत्र में 19168 किसानों को सीधे लाभ हुआ है। विशेष रूप से, प्रदर्शनों में अनाज (3019.30 हेक्टेयर), दलहन (563.45 हेक्टेयर), तिलहन (1515.30 हेक्टेयर), सब्जियाँ (563.56 हेक्टेयर), फल फसलें (30. 27 हेक्टेयर) और फूल (1.75 हेक्टेयर) शामिल थे, जिनमें क्रमशः 7055, 2297, 4669, 4853, 264 और 30 किसान शामिल हुए। पशुधन क्षेत्र में विभिन्न प्रदर्शन कार्यक्रम आयोजित किए गए, जिनमें 2244 किसान शामिल हुए और मुर्गीपालन सहित पशुधन पर प्रदर्शनों के लिए 13124 संख्याएँ थीं। इसके अलावा, 67 किसानों द्वारा मत्स्य पालन पर प्रदर्शन किए गए, जिसमें 36 हेक्टेयर क्षेत्र शामिल था।

समूह अग्रिम पंक्ति प्रदर्शन

समूह अग्रिम पंक्ति प्रदर्शन तिलहन और दलहन कार्यक्रम ने कई मौसमों (खरीफ, रबी और जायद) में सफलतापूर्वक कार्यान्वयन किया। चावल की परती भूमि का उपयोग करने और तिलहन और दलहन पर समूह अग्रिम पंक्ति प्रदर्शन के माध्यम से फसल की सघनता बढ़ाने पर विशेष जोर देते हुए विविध कृषि को बढ़ावा देने के लिए 55325 प्रदर्शनों के साथ कुल 22130 हेक्टेयर भूमि आवंटित की गई और तिलहन फसल पर 56387 प्रदर्शनों के माध्यम से लक्ष्य उपलब्धि 20566.4 हेक्टेयर तक पहुंच गई। 500 प्रदर्शनों के साथ कुल 200 हेक्टेयर भूमि आवंटित की गई और दलहन फसल पर 507 प्रदर्शनों के माध्यम से लक्ष्य उपलब्धि 200 हेक्टेयर तक पहुंच गई।

क्षमता विकास

किसानों, खेतिहर महिलाओं, ग्रामीण युवाओं और विस्तार कार्यकर्ताओं की क्षमता विकास की आवश्यकता को पूरा करने के लिए आवश्यक ज्ञान और कौशल प्रदान करने के लिए कुल 7195 पाठ्यक्रम आयोजित किए गए हैं, जिनसे पुरुषों और महिलाओं दोनों सहित 243229 व्यक्तियों को लाभ मिला है। प्रमुख प्रशिक्षण क्षेत्रों में ग्रामीण युवाओं का प्रशिक्षण शामिल है, कृ.वि.कें ने कुल 1223 पाठ्यक्रम आयोजित किए हैं, जिनसे 36864 ग्रामीण युवाओं को लाभ मिला है। विस्तार कार्यकर्ताओं के प्रशिक्षण के तहत, कृ. वि. कें ने कुल 667 पाठ्यक्रम आयोजित किए हैं, जिनसे 20486 विस्तार व्यक्तियों को लाभ मिला है। कुल मिलाकर 63916 प्रतिभागियों की जरूरतों को पूरा

करने वाले 1401 प्रायोजित पाठ्यक्रम भी आयोजित किए गए। इसके अतिरिक्त, कृ.वि.कें ने 18587 प्रतिभागियों के लिए कृषि और संबद्ध क्षेत्रों में 597 पाठ्यक्रमों को शामिल करने वाले व्यावसायिक प्रशिक्षण कार्यक्रम आयोजित किए।

ग्राम बीज उत्पादन कार्यक्रम

गांव के बीज उत्पादन कार्यक्रम ने विभिन्न प्रमुख फसलों के लिए कुल 13571.03 क्विंटल बीज का सफलतापूर्वक उत्पादन किया है। बीज उत्पादन मुख्य फसलों जैसे धान (6522.60 क्विंटल), गेहूं (3369.13 क्विंटल), सब्जियां (1846.53 क्विंटल), सरसों (253.10 क्विंटल), अरहर (138.77 क्विंटल), चना (106.90 क्विंटल), मसूर (89.99 क्विंटल), मक्का (37.03 क्विंटल), हल्दी (311.56 क्विंटल) और अलसी (20.01 क्विंटल) पर केंद्रित था।

मिट्टी और पानी के नमूने का विश्लेषण

मिट्टी, पौधे, खाद, पानी, उर्वरक और अन्य नमूनों के अंतर्गत, कृ. वि. कें. ने पूरे क्षेत्र में 2005 गांवों से कुल 43919 नमूनों का विश्लेषण किया है, जिससे 56946 किसान लाभान्वित हुए हैं। बिहार में 898 गांवों में 16742 नमूनों का विश्लेषण किया गया, जिससे 16383 किसान लाभान्वित हुए हैं और झारखंड में 1107 गांवों में 27177 नमूनों का विश्लेषण किया गया, जिससे 40563 किसान लाभान्वित हुए हैं।

कृ. वि. कें. की वैज्ञानिक सलाहकार समिति बैठक

कृ.वि.कें. हर साल वैज्ञानिक सलाहकार समिति (एसएसी) की बैठक बुलाते हैं, जिसमें दिन–प्रतिदिन के कामों की गहराई से समीक्षा की जाती है और स्थानीय मुद्दों पर चर्चा की जाती है, ताकि प्रगतिशील किसानों, गैर सरकारी संगठनों और अन्य एजेंसियों के साथ–साथ सभी संबंधित विभाग के सदस्यों से इनपुट लेकर अगले वर्ष के लिए कार्य योजना तैयार की जा सके। बिहार के कृ. वि. कें. द्वारा 21 SAC बैठकें आयोजित की गईं और झारखंड के कृ. वि. कें. द्वारा 08 बैठकें आयोजित की गईं, जिससे 2024 में कुल 29 SAC बैठकें हुईं ।

किसान मोबाइल सलाह

किसान मोबाइल एडवाइजरी, किसानों को सही समय पर आवश्यक और जरूरत आधारित कृषि जानकारी के प्रसार के लिए सूचना और संचार प्रौद्योगिकी (ICT) उपकरणों में से एक है। रिपोर्टिंग वर्ष के दौरान, एम–किसान पोर्टल के माध्यम से 62 कृ. वि. कें. द्वारा वितरित 236214 सलाह से कुल 1255133 किसान लाभान्वित हुए।

कृषि में युवाओं को आकर्षित करना और बनाए रखना कार्यक्रम

कृ.वि.कें. के समर्पित प्रयासों और आईसीएआर–अटारी, पटना की देखरेख में 321 उद्यमशील इकाइयों की स्थापना की गई (बिहार में 205 और झारखंड में 116), जिनमें से बिहार में मुर्गी पालन और झारखंड में बकरी पालन की अधिकतम उद्यमशील इकाईयाँ स्थापित की गईं। 69 प्रशिक्षण कार्यक्रम आयोजित किए गए (बिहार में 55 और झारखंड में 14) जिसमें 2001 ग्रामीण युवाओं को प्रशिक्षित किया गया (बिहार में 1658 और झारखंड में 343) और वर्तमान में 116 उद्यमशील इकाइयाँ क्रियाशील पाई गईं।

जलवायु अनुकूल कृषि में राष्ट्रीय नवाचार

वर्ष 2024 के दौरान, बिहार और झारखंड में 14 कृ. वि. कें ने निक्रा परियोजना के प्रौद्योगिकी प्रदर्शन घटक (TDC-NICRA) को लागू किया। बिहार और झारखंड में प्राकृतिक संसाधन प्रबंधन (NRM) में कुल 388 प्रदर्शन आयोजित किए गए, जिसमें 371.76 हेक्टेयर क्षेत्र शामिल था। फसल उत्पादन में, 947.26 हेक्टेयर

में 1,214 प्रदर्शन किए गए, जबकि पशुधन और मत्स्य पालन में 13.6 हेक्टेयर क्षेत्र में 578 प्रदर्शन किए गए। क्षमता निर्माण में 5,338 किसानों को प्रशिक्षित करने वाले 155 पाठ्यक्रम शामिल थे, और 116 विस्तार कार्यक्रम 4,462 किसानों तक पहुँचे।

फार्मर फर्स्ट कार्यक्रम

इस परियोजना में प्राकृतिक संसाधन प्रबंधन (65), कृषि फसलें (392), बागवानी फसलें (740), एकीकृत कृषि प्रणाली (18), पशुधन और मुर्गीपालन (264) से संबंधित हस्तक्षेप/प्रदर्शनों की एक विस्तृत श्रृंखला शामिल है, साथ ही 34 विस्तार गतिविधियाँ भी शामिल हैं। कार्यान्वयन संस्थानों और राज्य कृषि विश्वविद्यालयों ने इस परियोजना के माध्यम से चयनित किसानों और उनके परिवारों की समग्र आजीविका को बढ़ाने के लिए मिलकर काम किया है। अकेले वर्ष 2024 में, कुल 2910 किसान परिवारों को इस पहल से लाभ हुआ।

कृषि विज्ञान केन्द्रों के माध्यम से प्राकृतिक खेती का विस्तार

इस परियोजना के तहत आईसीएआर–अटारी क्षेत्र – प्ट में कुल 39 कृ. वि. कें. (बिहार में 28 और झारखंड में 11) इस उद्देश्य के लिए चुने गए थे। रिपोर्टिंग वर्ष के दौरान, 124634 प्रतिभागियों के साथ 305 जागरूकता कार्यक्रम, 13892 प्रतिभागियों के साथ 306 प्रशिक्षण कार्यक्रम और 391 प्रदर्शन (01 एकड़ प्रत्येक) किसानों के खेत और कृ. वि. कें. फार्म में कृ. वि. कें. द्वारा आयोजित किए गए थे।

तिलहन मॉडल गांव

तिलहन मॉडल गांव कार्यक्रम ने कई मौसमों (खरीफ, रबी और जायद) में सफलतापूर्वक कार्यान्वयन किया। विविध कृषि को बढ़ावा देने के लिए, तिलहन पर तिलहन मॉडल गांव के माध्यम से चावल की परती भूमि का उपयोग करने और फसल की सघनता बढ़ाने पर विशेष जोर दिया गया। कुल 2400 हेक्टेयर भूमि आवंटित की गई, जिसमें 6000 प्रदर्शन किए गए और तिलहन फसल पर 4879 प्रदर्शनों के माध्यम से लक्ष्य प्राप्ति 2000 हेक्टेयर तक पहुंच गई।

दलहन मॉडल गांव

दलहन मॉडल गांव कार्यक्रम ने कई मौसमों (खरीफ, रबी और जायद) में सफलतापूर्वक कार्यान्वयन किया। विविध कृषि को बढ़ावा देने के लिए, चावल की परती भूमि का उपयोग करने और दलहन पर दलहन मॉडल गांव के माध्यम से फसल की तीव्रता बढ़ाने पर विशेष जोर दिया गया। 7500 प्रदर्शनों के साथ कुल 3000 हेक्टेयर भूमि आवंटित की गई, और दलहन फसल पर 2675 प्रदर्शनों के माध्यम से लक्ष्य प्राप्ति 120.5 हेक्टेयर तक पहुंच गई।

जनजातीय उपयोजना

आदिवासी क्षेत्रों में विकास की चुनौतियों से निपटने और जनजातीय आबादी की जरूरतों को पूरा करने के लिए, इस क्षेत्र के 24 जिलों में जनजातीय उपयोजना नामक एक समर्पित कार्यक्रम लागू किया गया है। जनजातीय उपयोजना के तहत कृ. वि. कें. ने कुल 1248.29 क्विंटल विभिन्न बीजों का उत्पादन किया, जिन्हें आदिवासी क्षेत्रों में वितरित किया गया। इसके अतिरिक्त, लगभग 8990 किसानों ने अपने–अपने जिले के कृ. वि. कें. में मिट्टी, पानी, पौधे और खाद के नमूनों का परीक्षण करवाया। इसके अलावा, 533227 से अधिक किसानों को कृषि–संबंधी सलाह प्राप्त करने से लाभ हुआ, जिससे उन्हें अपनी कृषि पद्धतियों को बढ़ाने के लिए बहुमूल्य जानकारी मिली।

अनुसूचित जाति उपयोजना

यह कार्यक्रम अटारी–क्षेत्र –IV के 60 कृ. वि. कें. के अंतर्गत संचालित है। इसके अंतर्गत किसानों के लिए

742 प्रशिक्षण / प्रदर्शन कार्यक्रम आयोजित किए गए, जिसमें 20332 प्रतिभागियों ने भाग लिया, जिनमें 6405 महिला किसान थीं।

पोषण–संवेदनशील कृषि संसाधन और नवाचार

इस परियोजना के तहत, 34 कृ. वि. कें. ने महिलाओं और युवा लड़कियों के बीच पोषण साक्षरता और पोषण सुरक्षा में सुधार के लिए 101 न्यूट्री–स्मार्ट गांवों में विभिन्न गतिविधियाँ आयोजित कीं। वर्ष के दौरान, कृ. वि. कें. ने पोषण–आधारित हस्तक्षेपों पर विभिन्न प्रौद्योगिकियों पर 09 ऑन–फार्म परीक्षण और 295 अग्रिम पंक्ति प्रदर्शन आयोजित किए। इसके साथ ही 7472 कृषक महिलाओं को लाभान्वित करने वाले 271 प्रशिक्षण कार्यक्रम और 5244 लाभार्थियों के लिए 142 विस्तार कार्यक्रम भी आयोजित किए गए।

केंचुआ खाद का उपयोग करके सूक्ष्मजीवी आधारित कृषि अपशिष्ट प्रबंधन

स्वच्छता कार्य योजना (एसएपी) के तहत, कुल 06 कृ. वि.कें. (बिहार में 03 कृ. वि. कें. अर्थात् बेगूसराय, नवादा, जहानाबाद और झारखंड में 03 कृ. वि. कें. अर्थात् रांची, गोड्डा और देवघर) को किसानों के खेतों में केंचुआ खाद इकाइयों की स्थापना के लिए चुना गया था ताकि पशुधन अपशिष्ट प्रबंधन के लिए किसानों की प्रथाओं पर इस तकनीक को अपनाने और स्थिरता का अध्ययन किया जा सके। इसके साथ ही, डेयरी फार्म अपशिष्ट प्रबंधन के बारे में पशुपालकों के ज्ञान, दृष्टिकोण और प्रथाओं का आकलन करने के लिए प्रत्येक जिले से 120 किसानों का चयन किया गया।

बीज हब कार्यक्रम

नए दलहन किस्मों के लिए उच्च कोटि के बीजों के उत्पादन को सक्रिय रूप से बढ़ावा देने के लिए वर्ष 2024 के दौरान 4358.02 क्विंटल दलहन बीज के उत्पादन के माध्यम से कृ. वि. कें. द्वारा एक सराहनीय पहल की गई।

कृषि–ड्रोन परियोजना

अटारी पटना की एक नई पहल के रूप में 12 किसान ड्रोन खरीदे गए और ड्रोन प्रदर्शन के तहत 2775.30 हेक्टेयर क्षेत्र को शामिल किया गया। इस परियोजना के तहत ड्रोन पायलट के रूप में प्रशिक्षित व्यक्तियों की संख्या 20 है।

दक्षिण एशिया परियोजना में अनाज प्रणाली पहल

आई.सी.ए.आर. ने CIMMYT के साथ मिलकर दक्षिण एशिया परियोजना में अनाज प्रणाली पहल परियोजना को लागू किया, ताकि कुशल और उत्पादक कृषि पद्धतियों को व्यापक रूप से अपनाकर लाखों किसान परिवारों की मुख्य फसलों की पैदावार और आय में वृद्धि की जा सके। इसमें विभिन्न पारिस्थितिकी प्रणालियों में उच्च उपज और तनाव सहने वाली अनाज की किस्मों की खेती शामिल है। जोन–IV के अंतर्गत, बिहार में 03 कृ.वि.कें. और झारखंड में 04 कृ. वि. कें. ने वर्ष के दौरान डी.एस.आर, जीरो टिलेज, पोखर में रोपे गए चावल, रोपाई और लाइन बुवाई से संबंधित तकनीकों का प्रदर्शन किया।

किसान सारथी

किसान सारथी राष्ट्रीय परिपेक्ष के साथ स्थानीय स्तर पर कृषि को समर्थन देने के लिए एक ऑनलाइन डिजिटल मंच है। वर्ष 2024 के दौरान, बिहार के 44 कृ. वि. कें. (3426447 किसानों) और झारखंड के 24 कृ. वि. कें. (601388 किसानों) द्वारा कुल 4027835 किसानों को पोर्टल पर पंजीकृत किया गया है।

एकीकृत कृषि प्रणाली

आय के स्रोतों में विविधता लाकर एकीकृत कृषि प्रणाली को बढ़ावा देने के लिए झारखंड (18) और बिहार (121) के कृषि विज्ञान केंद्रों ने विभिन्न घटकवार एकीकृत कृषि प्रणाली मॉडल स्थापित किए हैं। एकीकृत कृषि प्रणाली के तहत विभिन्न गतिविधियाँ भी आयोजित की गईं, जिनमें बिहार में 6785 किसानों के लिए 397 प्रदर्शन और 2664 किसानों के लिए 134 प्रशिक्षण कार्यक्रम शामिल हैं। झारखंड में रिपोर्टिंग अवधि के दौरान 825 किसानों के लिए 506 प्रदर्शन और 2604 किसानों के लिए 79 प्रशिक्षण कार्यक्रम आयोजित किए गए।

कृषि प्रौद्योगिकी सूचना केंद्र (ATIC)

वर्ष 2024 के दौरान, 1470 किसानों ने कृषि प्रौद्योगिकी सूचना केंद्र से संपर्क किया/उनका दौरा किया। कृषि प्रौद्योगिकी सूचना केंद्र ने किसानों के 32065 मिट्टी और पानी के नमूनों का परीक्षण किया तथा किसानों को 2698 कृषि–सलाहें प्रदान कीं।

विस्तार शिक्षा निदेशालयों द्वारा तकनीकी सहायता (DEE)

विस्तार शिक्षा निदेशालयों द्वारा तकनीकी सहायता में कई तरह की गतिविधियाँ शामिल हैं, जैसे 26 वैज्ञानिक सलाहकार समिति बैठकें, 12 कार्यशाला/सेमिनार, 4 प्रौद्योगिकी सप्ताह, 62 प्रशिक्षण कार्यक्रम, 4 किसान मेले आदि।

विशेष कार्यक्रम

वर्ष 2024 के दौरान अटारी पटना के तत्वावधान में कृ. वि.कें. ने राष्ट्रीय महत्व के विभिन्न विशेष कार्यक्रम आयोजित किए जैसे कि विकसित भारत संकल्प यात्रा, प्रौद्योगिकी सप्ताह समारोह, स्वच्छ भारत अभियान, राष्ट्रीय महिला किसान दिवस, अंतर्राष्ट्रीय योग दिवस, अंतर्राष्ट्रीय खाद्य दिवस, विश्व मृदा दिवस समारोह, सतर्कता जागरूकता सप्ताह, हिंदी पखवाड़ा, वार्षिक क्षेत्रीय कार्यशाला, आईसीएआर–अटारी का स्थापना दिवस, आर्य परियोजना की राष्ट्रीय समीक्षा सह कार्यवाही कार्यक्रम कार्यशाला, अभिविन्यास कार्यक्रम, आईसीएआर अधिकारियों के साथ इंटरेक्टिव बैठक, माननीय प्रधान मंत्री/कृषि मंत्रीभारत सरकार का लाइव टेलीकास्ट कार्यक्रम अटारी और कृ. वि. कें. द्वारा आयोजित किए गए।

मानव संसाधन विकास एवं प्रकाशन

अटारी जोन–IV ने मानव संसाधन विकास एवं कौशल संवर्धन गतिविधियों को सुगम बनाने के लिए मानव संसाधन विकास के अंतर्गत 26 प्रमुख बैठकें, कार्यशालाए/प्रशिक्षण कार्यक्रम आयोजित किए। इसके साथ ही अटारी द्वारा 07 शोध पत्र और 12 लोकप्रिय लेख प्रकाशित किए गए तथा रिपोर्टिंग वर्ष 2024 के दौरान कृषि विज्ञान केंद्रों द्वारा 161 शोध पत्र और 260 लोकप्रिय लेख प्रकाशित किए गए।

प्रबंधन सूचना प्रणाली का कार्यान्वयन

वर्ष 2024 के दौरान अटारी ने किसान सारथी, कृषि विज्ञान केंद्र (कृ. वि. कें.) ज्ञान नेटवर्क, कृषि पोर्टल, कृषि संसाधन प्रबंधन प्रणाली (ए.आर.एम.एस.), सार्वजनिक वित्त प्रबंधन प्रणाली, कृ. वि. कें. द्वारा ऑन–लाइन रिपोर्टिंग, राष्ट्रीय किसान पोर्टल, ई–ऑफिस, राष्ट्रीय किसान पोर्टल आदि का सफलतापूर्वक कार्यान्वयन किया।

EXECUTIVE SUMMARY

On Farm Trials

ICAR-ATARI has successfully met all of the pre-established goals in On Farm Trials. A total of 364 technologies were assessed across Bihar and Jharkhand, covering 3,063 locations and 2,678 trials. Crop Production was the major focus with 190 technologies, 1,662 locations, and 1,527 trials. Horticultural Crops, 70 technologies were evaluated through 465 locations and 437 trials. In Home Science contributed 47 technologies, 419 locations, and 331 trials. Livestock & Fisheries involved 36 technologies across 325 locations and 260 trials. Other Enterprises covered 16 technologies, 175 locations, and 115 trials diversified efforts in agricultural development.

Frontline Demonstrations

Frontline Demonstrations have been carried out by the KVKs to highlight the production potential of recently released varieties and suggested methods for increasing the yield of a variety of crops, such as cereals, pulses, millets, oilseeds, vegetables, fruits and others. A total of 5693.63 hectares of land has been covered under frontline demonstrations on pulses, oilseeds, cereals, horticulture and other crops during the kharif, rabi and summer seasons. These demonstrations have directly benefitted 19168 farmers across the zone. Specifically, the demonstrations covered cereals (3019.30 ha), pulses (563.45 ha), oilseeds (1515.30 ha), vegetables (563.56 ha), fruit crops (30.27 ha) and flower (1.75 ha), engaging 7055, 2297, 4669, 4853, 264 and 30 farmers, respectively. In the livestock sector, various demonstration programs were organized, involving 2244 farmers and having 13124 numbers for demonstrations on livestock including poultry. Furthermore, demonstrations on fisheries were carried out by 67 farmers, covering an area of 36 hectares.

Cluster Frontline Demonstration

The CFLD oilseeds and pulses program achieved successful implementation across multiple seasons (Kharif, Rabi and Zaid). For promotion of diversified agriculture, with a specific emphasis on utilizing rice fallow and increasing cropping intensity through CFLD on oilseeds and pulses. A total of 22130 ha of land was allocated with 55325 demonstrations and the target achievement reached 20566.4 ha through 56387 demonstrations on oilseeds crop. A total of 200 ha of land was allocated with 500 demonstrations and the target achievement reached 200 ha through 507 demonstrations on pulses crop.

Capacity Development

To address the need of capacity development of farmers, farm women, rural youth, and extension functionaries with the necessary knowledge and skills. A total of 7195 courses have been conducted benefitting 243229 individuals, including both men and women. The major training areas includes training of rural youth, the KVKs conducted a total of 1223 courses benefitting 36864 rural youths. Under training for Extension Functionaries, KVK conducted a total of 667 courses benefitting 20486 extension persons. A together 1401 sponsored courses catering to the needs of 63916 participants were also

organized. Additionally, the KVKs organized vocational training programs covering 597 courses in the areas of agriculture and allied sectors for 18587 number of participants.

Village Seed Production Programme

Village seed production programme has successfully produced a total of 13571.03 q of seeds for various major crops. The seed production focused on essential crops such as paddy (6522.60 q), wheat (3369.13 q), vegetables (1846.53 q), mustard (253.10 q), pigeon pea (138.77 q) chickpea (106.90 q), lentil (89.99 q), maize (37.03 q), turmeric (311.56 q) and linseed (20.01 q).

Analysis of Soil and Water Sample

Under soils, plants, manures, water, fertilizers and others samples, KVKs have analyzed a total of 43919 samples from 2005 villages across the zone, benefitting 56946 farmers. In Bihar 16742 samples analyzed in 898 village in which 16383 farmers are benefitted and in Jharkhand 27177 samples analyzed in 1107 village in which 40563 farmers are benefitted.

Scientific Advisory Committee Meeting

The KVKs convene the Annual Scientific Advisory Committee (SAC) meeting to go over the day-to-day work in depth and talk about local issues in order to prepare the Action Plan for the following year with input from progressive farmers, NGOs, and other agencies as well as all the line department members. A 21 SAC meeting were organized by KVKs of Bihar and 08 meetings by KVKs of Jharkhand were organized with a cumulative number of 29 SAC meeting in 2024.

Kisan Mobile Advisories

Kisan Mobile Advisory is one of the Information and Communication Technology (ICT) tools for dissemination of requisite and need based agricultural information to the farmers at the right time. During the reporting year, a total of 1255133 farmers were benefited from 236214 advisories delivered by 62 KVKs through m-Kisan portal.

Attracting and Retaining Youth in Agriculture Program

Through the dedicated efforts of the KVKs and under the supervision of ICAR-ATARI, Patna, 321 entrepreneurial units were established (205 in Bihar and 116 in Jharkhand), out of which maximum entrepreneurial units from poultry farming in Bihar and goat farming in Jharkhand were established. 69 training programs were organized (55 in Bihar and 14 in Jharkhand) in which 2001 rural youth were trained (1658 in Bihar and 343 in Jharkhand) and at present 116 entrepreneurial units were found functional.

National Innovations in Climate Resilient Agriculture

During the year 2024, 14 KVKs in Bihar and Jharkhand implemented the Technology Demonstration Component (TDC) of NICRA project. A total of 388 demonstrations were conducted in Natural Resource Management (NRM) across Bihar and Jharkhand, covering 371.76 ha. In crop production, 1,214 demonstrations were carried out on 947.26 ha, while livestock and fisheries saw 578 demonstrations with 13.6 ha area. Capacity building included 155 courses training 5,338

farmers, and 116 extension programmes reached 4,462 farmers.

Farmer FIRST Program

The project encompasses a wide range of interventions/demonstrations related to natural resource management (65), agronomical crops (392), horticultural crops (740), integrated farming systems (18), livestock and poultry (264) along with 34 extension activities. The implementing Institutes and State Agricultural Universities have worked together to enhance the overall livelihood of selected farmers and their families through this project. In the year 2024 alone, a total of 2910 farm families benefitted from this initiative.

Out-scaling of Natural Farming through KVKs

In ICAR-ATARI Zone- IV under this project a total 39 KVKs (28 in Bihar and 11 in Jharkhand) were selected for this purpose. During the reporting year, 305 awareness programs with 124634 participants, 306 training programs with 13892 participants and 391 demonstrations (01 acre each) were conducted by KVK in farmer's field and KVK farm.

Oilseeds Model Village

The OMV program achieved successful implementation across multiple seasons (Kharif, Rabi and Zaid). For promotion of diversified agriculture, with a specific emphasis on utilizing rice fallow and increasing cropping intensity through OMV on oilseeds. A total of 2400 ha of land was allocated with 6000 demonstrations and the target achievement reached 2000 ha through 4879 demonstrations on oilseed crop.

Pulses Model Village

The PMV program achieved successful implementation across multiple seasons (Kharif, Rabi and Zaid). For promotion of diversified agriculture, with a specific emphasis on utilizing rice fallow and increasing cropping intensity through PMV on pulses. A total of 3000 ha of land was allocated with 7500 demonstrations, and the target achievement reached 120.5 ha through 2675 demonstrations on pulse crop.

Tribal Sub Plan

To tackle the challenges of under development in tribal regions and cater to the needs of the tribal population, a dedicated program called the TSP has been implemented across 24 districts within this area. KVKs under the TSP project, a total of 1248.29 q of various seeds were produced which were distributed in tribal areas. Additionally, approximately 8990 farmers had their soil, water, plant, and manure samples tested at their respective district at KVKs. Furthermore, over 533227 farmers benefited from receiving farm-related advisories, providing them with valuable information to enhance their agricultural practices.

Scheduled Caste Sub Plan

This programme is operational under 60 KVKs of ATARI-zone-IV. Under these 742 training/demonstration programs for farmers were organized with 20332 participants with 6405 for women farmers.

Nutri-Sensitive Agricultural Resources and Innovations

Under this project, 34 KVKs conducted various activities in 101 Nutri-smart villages for improving the nutrition literacy and nutritional security among the women and young girls. During the year, KVKs conducted 09 OFTs and 295 FLD on various technologies on nutrition-based interventions. Along with this 271training program benefitting 7472 farm women and 142 extension programs for 5244 beneficiaries were also organized.

Microbial based Agricultural Waste Management using Vermicomposting

Under Swachata Action Plan (SAP), a total 06 KVKs (03 KVKs in Bihar namely Begusarai, Nawada, Jehanabad and 03 KVKs in Jharkhand namely Ranchi, Godda and Deoghar) were selected for establishment of vermicomposting units in farmer's field in order to study the adoption and sustainability of this technology over the farmer's practices for livetcok waste management. Along with this the selection of 120 farmers from each district were done to assess the knowledge, attitude and practices followed by the livestock farmers from dairy farm waste management.

Seed Hub Program

To actively promote the production of top-notch seeds for new pulse varieties, a commendable initiative was undertaken by the KVKs through production of 4358.02 quintal pulse seed during the year.

Agri- Drone Project

As a new initiative of ATARI Patna 12 number of kisan drones were purchased and an area covered of 2775.30 ha under drone demonstration. Number of persons trained as drone pilot is 20 under this project.

Cereal System Initiative in South Asia project

ICAR collaboration with CSISA of CIMMYT has implemented this project to increase the staple crops yields and incomes of millions of farms families through wide spread adoption of efficient and productive agronomic practices. This includes cultivation of high yielding and stress tolerant cereal cultivar across ecologies. Under zone-IV, 03 KVKs in Bihar and 04 KVKs in Jharkhand demonstrated technologies related to DSR, zero tillage, puddled transplanted rice, transplantation and line sowing during the year.

Kisan Sarathi

Kisan Sarathi is an online digital platform for supporting agriculture at local niche with national perspective. During the year 2024, a total 4027835 farmers have been registered on the portal by the 44 KVKs of Bihar (3426447) and 24 KVKs of Jharkhand (601388).

Integrated Farming System

Under promotion of integrated farming system by diversifying its sources of income KVKs of Jharkhand (18) and Bihar (121) have established various component wise IFS models. Various activities were also organized under IFS which includes 397 demonstrations for 6785 farmers and 134 training programs for 2664 number of farmers in Bihar. In Jharkhand 506 demonstration for 825 farmers and 79

training programs for 2604 farmers during the reporting period.

Agriculture Technology Information Centre (ATIC)

During the year 2024, 1470 number of farmers visited ATIC. ATICs also facilitated the testing of 32065 soil and water samples of farmers and provided 2698 number of agro-advisories to the farmers.

Technological Backstopping by Directorates of Extension Education (DEE)

Technological Backstopping by Directorates of Extension Education encompasses a wide range of activities including participation in 26 SAC meetings, 12 workshop/seminars, 04 technology weeks, 62 training programs, 04 Kisan mela, etc.

Special Programme

During the year KVKs under the aegis of ATARI, Patna organized various special programs of national importance like Viksit Bharat Sankalp Yatra, Technology Week Celebration, Swachh Bharat Abhiyan, Rastriya Mahila Kisan Diwas, International Yoga Day, International Food Day, World Soil Day celebration, Vigilance Awareness Week, Hindi Pakhwada, Annual Zonal Workshop, Foundation Day of ICAR-ATARI, Workshop of the ARYA Project, Orientation Program, Interactive Meeting with ICAR Officials, Interaction/Live Telecasted Program of Hon'ble Prime Minister/Agriculture Minister/Govt. of India were organized by ATARI and KVKs.

Human Resource Development and Publications

ATARI zone-IV conducted 26 major meetings, workshops/training programmes under HRD to facilitate human resource development and review activities. Along with these, 07 research papers and 12 popular articles were published by ATARI Scientists and 161 research papers and 260 popular articles were published by the KVK personnel during the reporting year 2024.

Implementation of Management Information System

During the year ATARI successfully implemented Kisan Sarathi, Krishi Vigyan Kendra (KVK) Knowledge Network, KRISHI Portal, Agricultural Resource Management System (ARMS), Public Finance Management System, On-line reporting by KVKs, National Farmers' Portal, E-office, National Farmers' Portal etc.

INTRODUCTION

The ICAR-Agricultural Technology Application Research Institute (ATARI) was established on August 19, 2015, with its office located at Garbhuchak, Jagdeo Path, Patna. The KVKs act as Single Window Agricultural Knowledge, Resource and Capacity Development Centre under the supervision of ATARI . In addition to this, ATARI oversee and assess the programs undertaken by Krishi Vigyan Kendras (KVKs) in Bihar and Jharkhand

Over the years, ATARI has successfully implemented a number of programs and greatly expanded the range of services it offers. These initiatives encompass ARYA, Farmer's FIRST Program, Cluster Front Line Demonstrations focusing on Pulses and Oilseeds under the NFSM, Seed Hub on Pulses, Oilseeds Model Village Project (OMV), Pulses Model Village Project (PMV) New Extension Methodology and Approaches, Cereal Systems Initiative for South Asia, National Innovations in Climate Resilient Agriculture, Swachh Bharat Abhiyan, Tribal Sub Plan and Out Scaling of Natural Farming. These initiatives have been carried out with remarkable success contributing to the agricultural development of the region.

Mandate

1. Coordination and monitoring of technology application and frontline extension education programmes.
2. Strengthening agricultural extension research and knowledge management.

Salient Achievements

The Institute diligently monitored the activities of KVKs across Bihar and Jharkhand and successfully achieved all the predetermine targets in areas such as training, demonstration, and capacity building. A total of 364 on-farm trials were conducted, along with cluster front line demonstrations covering 200 ha for pulses crops and 20566.4 ha for oilseed crops. Additionally, 523 front line demonstrations were conducted for field crops (covering 5693.63 hectares), horticultural crops (595.58 hectares). 56 number of demonstrations on livestock covering 2244 farmers were also the major FLD achievements of the Institute.

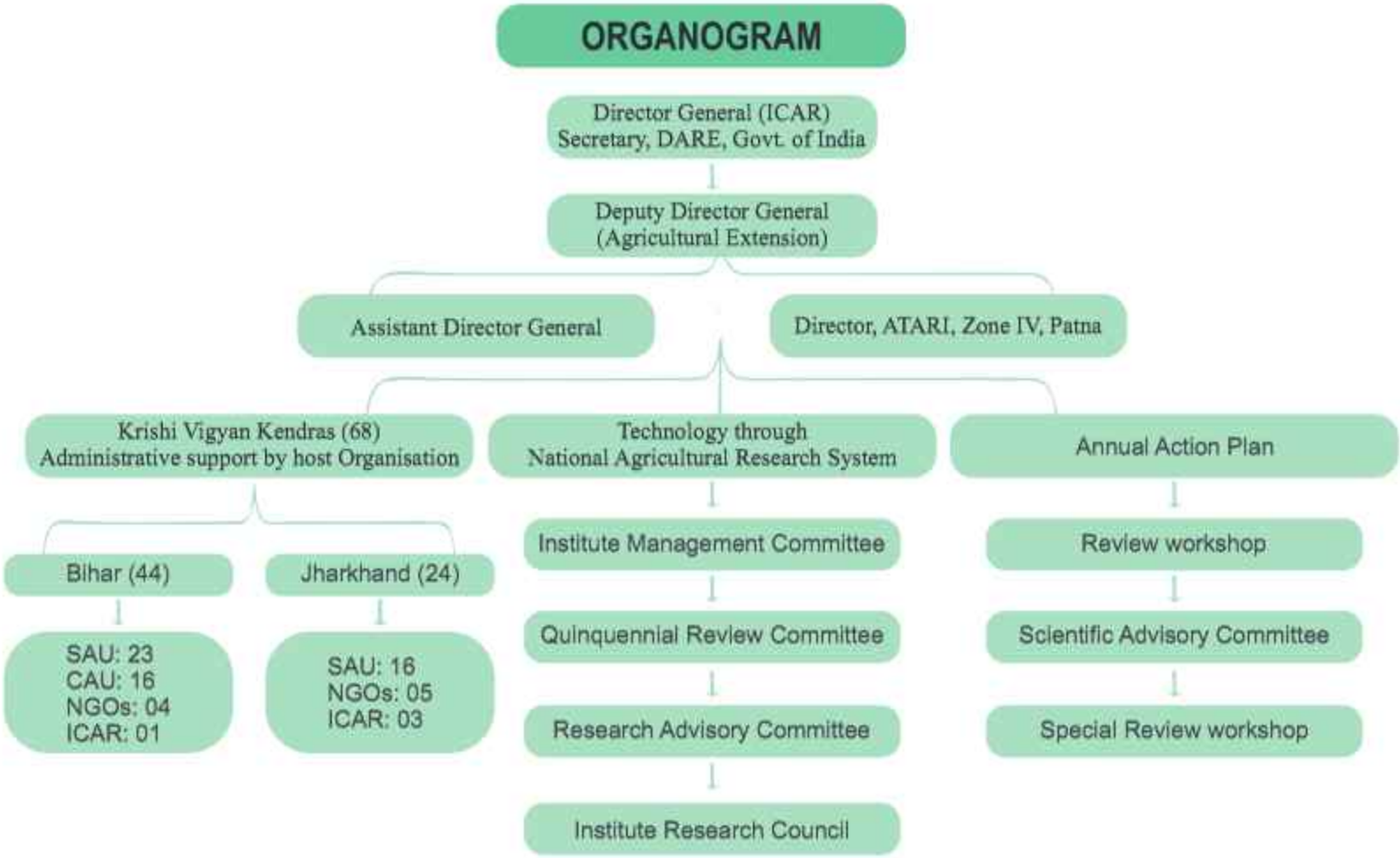
In terms of training, the Institute organized 7195 courses and training programs, benefitting around 243229 farmers. Moreover, it produced 13571.03 quintals of high-quality seeds for major field and more than 31.49 lakhs planting materials for horticultural crops. Under Soil, Water and Plant analysis KVK of the zone IV tested 43919 soil, plant and manure, etc. sample tested benefitting 56946 number of farmers and total 2005 village covered. To review ongoing work and finalize action plans for the following year, 29 Scientific Advisory Committee meetings were successfully organized.

Furthermore, the Institute contributed to significant number publications of scientific literature during the year. The ATARI team accomplished numerous meetings, workshops, conferences and training programs, both online and offline, aimed at human resource development and skill enhancement activities.

Infrastructure and the Organization

The Agricultural Extension Division Indian Council of Agricultural Research (ICAR) is responsible for overseeing the operations of 731 KVKs located throughout the country. The Deputy Director General (Agricultural Extension) is responsible for managing the administrative, financial, and overall functioning of this division. At the state and district level, the ATARIs monitor the activities of KVKs within their respective zones. In Zone IV, which encompasses Bihar and Jharkhand states, ICAR-ATARI Patna is responsible for monitoring the operations of 68 KVKs.

ORGANOGRAM


Director General (ICAR)
Secretary, DARE, Govt. of India
Deputy Director General
(Agricultural Extension)
Assistant Director General
Director, ATARI, Zone IV, Patna
Krishi Vigyan Kendras (68)
Administrative support by host Organisation
Technology through
National Agricultural Research System
Annual Action Plan
Bihar (44)
Jharkhand (24)
SAU: 23
CAU: 16
NGOs: 04
ICAR: 01
SAU: 16
NGOs: 05
ICAR: 03
Institute Management Committee
Quinquennial Review Committee
Research Advisory Committee
Institute Research Council
Review workshop
Scientific Advisory Committee
Special Review workshop

Scientific Staff at ATARI, Patna

ICAR-ATARI HQ in Patna is having sanctioned post 14, out of which only 11 are filled by December 2024.

Table 01: Staff strength of ATARI, Patna

Category	Sanction	Filled	Vacant
Director (RMP)	01	01	00
Principal Scientist	01	02	00
Scientist	02	02	00
Administrative	08	06	02
Technical	02	00	02
SSS	00	--	--

Krishi Vigyan Kendra

The main objective of KVK, a district-level organization, is to plan, carry out, and support frontline extension initiatives. KVKs play a crucial role in supplying necessary agricultural supplies and giving one-point solutions to the various farming problems that farmers encounter. They also provide State and Central Government Agencies engaged in agricultural research, development, and extension with technical assistance. KVKs also actively take part in the execution of carrying out a number of National Flagship Programs, which has further increased their influence and scope. Under the aegis of ATARI Patna, 68 Krishi Vigyan Kendras (KVKs) serving as focal points for carrying out following activities.

- Assessment and demonstration of agricultural technologies on the farmers' field for their application and feedback.
- Capacity development through skilling and training of farmers, farm women, youth and extension functionaries.
- Act as an information and knowledge centre for providing diagnostic and farm advisories to farmers and other stakeholders.
- Production of quality seeds, planting materials and other technological inputs for availability to the farmers.
- Develop convergence and partnership with agriculture related ongoing schemes and programs of different departments and organizations on national priorities.
- Awareness creation and community mobilization on various issues related to agriculture & allied sectors through innovative extension activities including use of ICT and other Media

State-Wise Distribution of KVKs

There are total of 68 KVKs, with 44 located in Bihar and 24 in Jharkhand within this zone. When categorized by host organizations, the distribution reveals that 55 KVKs operate under State Agricultural Universities (SAU) and Central Agricultural University (CAU), 04 KVKs operate under the Indian Council of Agricultural Research (ICAR), 09 KVKs are managed by Non-Governmental Organizations (NGOs), and 01 KVK is under the supervision of a State Government undertaking., as detailed below in the following (Table 02).

Table 02: State wise distribution of KVKs

Name of States	No. of Districts	No. of KVKs					Total
		SAU	CAU	ICAR	NGO	SDA	
Bihar	38	23	16	01	04	-	44
Jharkhand	24	16	-	03	05	01	24
Total	62	39	16	04	09	01	68

ICAR – Indian Council of Agricultural Research, SAU – State Agricultural University, CAU- Central Agricultural University, NGO– Non-Governmental Organization, SDA- State Department of Agriculture, DU- Deemed University, NGOs are S.K. Chaudhary Educational Trust, Madhubani, Vanavasi Seva Kendra, Bhabhua, Kaimur, Gram Nirman Mandal, Nawada, Samata Seva Kendra, Sitamarhi, Ram Krishna Mission Ashram, Ranchi, Holy Cross, Hazaribag, Vikas Bharati, Gumla, Santhal Paharia, Deoghar, Garmin Vikas Trust, Godda.

Manpower

Every KVK is allocated a staff strength of 16, which comprises 01 Senior Scientist and Head, 06 Subject Matter Specialists (SMS), 03 Programme Assistants, 02 Administrative Staff, 02-Drivers and 02 Supporting Staff. Consequently, the total sanctioned staff for all 68 KVKs accounts to 1088, out of which only 60 percentage positions are filled presently.

Table 03: Staff position of KVKs

Sl.	Sanctioned Posts	Bihar		Jharkhand		Grand Total	
		No. of Sanctioned Post	No. of Filled Post	No. of Sanctioned Post	No. of Filled Post	No. of Sanctioned Post	No. of Filled Post
1	Senior Scientist & Head	44	41	24	10	68	51
2	Subject Matter Specialist	264	173	144	78	408	251
3	Programme Assistant	44	23	24	11	68	34
4	Computer Programmer	44	25	24	8	68	33
5	Farm Manager	44	20	24	14	68	34
6	Accountant / Superintendent	44	36	24	4	68	40
7	Stenographer	44	31	24	6	68	37
8	Driver	88	74	48	15	136	89
9	Supporting Staff	88	40	48	11	136	51
	Total	704	463	384	157	1088	620

Budget Provision

Based on the assessment of the submitted budget requirements, the process of budget provisions involves placing a demand for funds, receiving the allocated funds, and subsequently releasing them. In the financial year 2024-25, an amount of Rs. 11183.11 Lakh was released to this Institute from the Indian Council of Agricultural Research (ICAR) Headquarters (as shown in Table 04). These funds were allocated for the functioning of 68 KVKs and 04 Directorates of Extension Education (DEE) affiliated with the State Agricultural Universities (SAUs) in this Zone.

Table 04: Budget details of ATARI Zone IV during 2024-25 (Rs. in lakhs)

S.No	KVK Name	Salary	General			Total	Capital			Total	G. Total
			Main	TSP	SCSP		Main	TSP	SCSP		
1	BAU Sabour	3495.53	229.12	23.79	118.64	371.55	35.20	14.19	23.13	72.53	3939.61
2	DRPCAU Pusa	1946.74	166.57	9.00	84.85	260.42	17.60	5.00	20.87	43.47	2250.63
3	BASU Patna	182.31	11.68	12.00	6.00	29.68	0.00	6.99	1.20	8.19	220.17
4	Buxar	136.25	9.05	0.00	7.22	16.27	8.80	0.00	1.14	9.94	162.47
5	ICAR-RCER, Patna	0.00	0.00	0.00	12.50	12.50	0.00	0.00	0.00	0.00	12.50
6	Nawada	141.33	9.79	0.00	14.00	23.79	8.80	0.00	1.20	10.00	175.13
7	Sitamarhi	180.67	15.00	0.00	9.65	24.64	0.00	0.00	1.20	1.20	206.52
8	Kaimur	203.20	13.22	0.00	10.00	23.22	0.00	0.00	1.20	1.20	227.63
9	MGIFRI, Motihari	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
10	DEE Sabour	0.00	13.84	0.00	2.00	15.84	0.00	0.00	0.00	0.00	15.84
11	DEE Pusa	0.00	7.29	0.00	2.00	9.29	0.00	0.00	0.00	0.00	9.29
12	DEE Basu	0.00	2.91	0.00	0.00	2.91	0.00	0.00	0.00	0.00	2.91
Total Bihar		6286.04	478.49	44.79	267.85	791.13	70.40	26.18	49.95	146.53	7223.69
1	BAU Ranchi	1672.57	90.87	110.92	42.59	244.39	52.80	82.95	4.80	140.54	2057.50
2	Koderma	146.49	5.21	0.00	6.03	11.24	8.80	0.00	0.64	9.44	167.17
3	Ramgarh	90.30	12.35	12.00	8.00	32.35	0.00	8.00	1.07	9.07	131.72
4	Khunti	111.35	10.84	20.00	3.00	33.84	0.00	14.80	0.00	14.80	159.99
5	Deoghar	77.05	5.87	9.00	5.47	20.34	0.00	7.00	1.19	8.19	105.59
6	Godda	177.54	8.34	11.89	4.50	24.72	0.00	13.40	2.00	15.40	217.67
7	Gumla	223.01	8.35	16.00	3.00	27.35	0.00	13.50	2.00	15.50	265.86
9	Ranchi	227.23	8.75	18.00	3.00	29.75	0.00	13.38	2.00	15.38	272.36
10	DEE Ranchi	-42.85	4.89	5.00	0.00	9.89	0.00	0.00	0.00	0.00	-32.97
Total Jharkhand		2682.69	155.47	202.81	75.59	433.87	61.60	153.03	13.70	228.33	3344.89
	RE	9350.11	760.00	250.00	350.00	1360.00	228.00	180.00	65.00	473.00	11183.11
	KVK RE	8968.73	633.95	247.60	343.44	1225.00	132.00	179.21	63.65	374.86	10568.58
	Institute RE	381.38	126.05	2.40	6.56	135.00	96.00	0.79	1.35	98.14	614.53

Revolving Fund

In order to ensure the self-sufficiency of KVK farms in terms of resource generation, a revolving fund has been provided to all KVKs as initial seed money. This fund empowers them to undertake various income-generating activities, including seed and sapling production, fish farming in ponds, establishment of horticulture orchards, and other initiatives aimed at enhancing the overall capabilities of the farms. In Zone-IV, where the revolving fund scheme is implemented, the 68 KVKs reported a net balance of Rs. 2398.68 lakhs as of March 31, 2025. In terms of state distribution, the KVKs in Bihar reported a net balance of Rs. 1918.07 lakh, while the KVKs in Jharkhand reported a net balance of Rs. 480.61 lakhs through this scheme in 2024-25. A detailed status of the revolving fund of KVKs under Zone IV is presented in Table 05.

Table 05: Status of operating revolving scheme by the KVKs (Rs. in lakhs)

State	Year	Opening balance in lakh on 1st April 2024	Income in lakh during Year	Expenditure in lakh during Year	Net balance in lakh (as on 31st March 2025)
Bihar	2024-25	1648.52	1084.37	814.83	1918.07
Jharkhand		384.74	329.43	233.56	480.61
Total		2033.26	1413.81	1048.39	2398.68

Infrastructure details

A variety of infrastructure amenities have been installed in the KVKs to help them accomplish their stated objectives. The administrative building, farmers' hostel, staff quarters, demonstration units, soil and water testing labs, rainwater harvesting structures with micro-irrigation facilities, IFS models, E-connectivity, technology information units, cars and more are among them. The KVKs primarily utilize these facilities to enhance the skills and knowledge of farmers, showcasing the advantages of effective management practices. The details of infrastructure facilities available with the KVKs are given in Table 06.

Table 06: State-wise details of infrastructure available with KVKs

Name of Infrastructure	Bihar	Jharkhand	Total
Administrative Building	42	19	61
Farmer's hostel	44	19	63
Demonstration units	389	99	488
Staff quarters	167	98	265
IFS unit	31	17	48
Soil water testing labs	24	14	38
Rainwater harvesting structure	07	16	23
Solar panel	62	24	86
Minimal processing facilities	13	10	23
Carp hatchery	03	00	03
Micro nutrient analysis facilities	07	08	15
Technology formation unit	01	02	03
Grand Total	790	326	1116

Scientific Advisory Committee Meeting of KVKs

The Krishi Vigyan Kendras (KVKs) organize the annual Scientific Advisory Committee (SAC) meetings to conduct an in-depth review of their ongoing activities and to discuss region-specific agricultural challenges. These meetings serve as a platform to formulate the Action Plan for the upcoming year, incorporating valuable inputs from progressive farmers, NGOs, allied agencies and representatives from all relevant line departments. As per the guidelines of the Indian Council of Agricultural Research (ICAR), the SAC comprises representatives from ICAR-ATARI Patna, the Host Organizations, nearby ICAR Institutes, State Agricultural Universities (SAUs), district development departments, media personnel, financial institutions, progressive farmers,

farm women and other stakeholders.

In 2024, a total of 29 SAC meetings were successfully conducted by 21 KVKs in Bihar and 8 KVKs in Jharkhand ensuring collaborative planning and stakeholder engagement for agricultural development in the region.

SAC meeting of KVKs

Table 07: State wise details of scientific advisory committee

State	No. of SAC	No of participants	Total statutory members present
Bihar	21	806	295
Jharkhand	8	297	128
Grand Total	29	1103	423

Flagship Programmes

KVKs are encouraged to participate in other initiatives in addition to their usual mandated operations, depending on the district's farmer needs and their technical capacity to support the expansion of agriculture and related industries. Some of the flagship Programs which were undertaken by different KVKs of the zone are as follows:

- National Initiatives Climate Resilient Agriculture-Technology Demonstration component (NICRA-TDC)
- Attracting and Retaining Youth in Agriculture (ARYA)
- Oilseeds Model Village Project (OMV)
- Pulses Model Village Project (PMV)
- Cluster Front Line Demonstration (CFLD) on Pulses and Oilseeds
- Farmer FIRST Programme (FFP)
- Out Scaling of Natural Farming through Krishi Vigyan Kendra's
- Tribal Sub Plan (TSP)
- Scheduled Caste Sub Plan (SCSP)
- Seed Hub
- Agri-Drone project
- New Extension Methodology and Approaches (NEMA)
- Nutri-Sensitive Agricultural Resources and Innovation (NARI)
- Microbial based Agricultural Waste Management using Vermicomposting (SAP)
- Augmenting Rapeseed-Mustard Production for Sustainable Livelihood Security of Tribal Farmers in Jharkhand under the Scheduled Tribe Component
- CSISA-ICAR Collaborative Project (CSISA)
- Kisan Sarathi Programme

ON FARM TRIALS (OFTs)

The one of the important mandates of Krishi Vigyan Kendra (KVK) is to evaluate technologies in farmers' fields. All 68 KVKs in this Zone strive to access proven technologies that may be successfully applied in agriculture and related fields. The sector-wise assessment of agricultural technologies across Bihar and Jharkhand highlights a comprehensive effort toward enhancing productivity, sustainability, and livelihoods. A total of 364 technologies were assessed across 3063 locations with 2678 trials conducted jointly by both the states. Bihar accounted for 262 technologies, 2386 locations, and 2059 trials, while Jharkhand contributed with 102 technologies across 677 locations and 619 trials (Table 08).

In the Crop Production sector, which saw the highest activity, 190 technologies were assessed across 1662 locations with 1527 trials. Bihar played a dominant role with 140 technologies, particularly in Integrated Nutrient Management, Resource Conservation Technology, and Integrated Pest Management. Jharkhand's contributions were also notable, especially in varietal evaluation and integrated pest and disease management. The Horticultural Crops, 70 technologies were tested at 465 locations, with 437 trials in Bihar showing greater intensity in disease management and post-harvest practices. Jharkhand's participation was meaningful in integrated pest management and post-harvest handling.

In Home Science sector had 47 technologies assessed at 419 locations and 331 trails. Bihar focusing more on health and nutrition and value addition, whereas Jharkhand emphasized drudgery reduction and household food security. The Livestock and Fisheries sector saw 36 technologies assessed across 325 locations and 260 trials. Focusing on disease and health management, feed and fodder, nutrition, and breeding practices. Bihar again led with higher trials and locations, while Jharkhand maintained steady progress across sub-themes.

Under Other Enterprises, 16 technologies were assessed across 175 locations and 115 trials. Focus on entrepreneurship development and small-scale income-generating activities. Bihar and Jharkhand both explored storage techniques and agro-forestry management to a limited extent. In the Extension category, only five technologies were assessed at 17 locations with 08 trials in Bihar and Jharkhand contributing three and two respectively.

Overall, Bihar demonstrated a more extensive outreach and implementation of technological interventions across all sectors, while Jharkhand made consistent contributions in key areas. The data reflects the continued efforts of Krishi Vigyan Kendras in both states to test and promote need-based, location-specific technologies to improve agricultural outcomes and rural livelihoods.

Table 08 :State wise details of On Farm Trials (OFTs) conducted by KVKs under Zone-IV

Sector wise Thematic Area	Bihar			Jharkhand			Total		
	No. of technologies assessed	No. of Locations	No. of trials	No. of technologies assessed	No. of Locations	No. of trials	No. of technologies assessed	No. of Locations	No. of trials
A) Crop Production									
Integrated Crop Management	15	88	99	4	36	23	19	124	122
Integrated Disease Management	16	89	120	4	23	41	20	112	161
Integrated Nutrient Management	29	415	363	11	96	73	40	511	436
Integrated Pest Management	14	134	119	7	43	76	21	177	195
Resource Conservation Technology	27	208	217	9	49	31	36	257	248
Varietal Evaluation	10	107	61	8	68	34	18	175	95
Weed Management	15	106	103	4	12	4	19	118	107
Farm Mechanization	14	177	147	3	11	16	17	188	163
Sub Total (A)	140	1324	1229	50	338	298	190	1662	1527
B) Home Science									
Drudgery Reduction	8	52	59	2	20	18	10	72	77
Health and Nutrition	11	144	71	3	14	30	14	158	101
Value Addition	14	104	90	7	64	31	21	168	121
Household food security	1	11	22	1	10	10	2	21	32
Sub Total (B)	34	311	242	13	108	89	47	419	331
C) Horticultural Crops									
Integrated Crop Management	9	41	48	2	9	5	11	50	53
Integrated Disease Management	15	127	80	5	18	30	20	145	110
Integrated Nutrient Management	7	38	39	2	23	3	9	61	42
Integrated Pest Management	14	109	98	4	28	34	18	137	132
Post-Harvest Management	6	40	34	6	32	66	12	72	100
Sub Total (C)	51	355	299	19	110	138	70	465	437
D) Livestock & Fisheries									
Disease & Health Management	8	130	89	5	26	37	13	156	126
Feed and Fodder management	6	57	48	3	19	23	9	76	71
Fisheries management	2	14	10	2	4	7	4	18	17
Nutrition Management	2	20	20	1	10	1	3	30	21
Production and Management	4	30	13	1	4	2	5	34	15
Breeding management/Evaluation of Breeds	1	7	7	1	4	3	2	11	10
Sub Total (D)	23	258	187	13	67	73	36	325	260
E) Other Enterprises									
Entrepreneurship Development	3	42	13	1	20	2	4	62	15
Small Scale Income Generation Enterprises	6	81	83	1	5	3	7	86	86
Storage techniques	1	0	0	2	20	11	3	20	11
Agro-forestry management	1	2	2	1	5	1	2	7	3
Sub Total (E)	11	125	98	5	50	17	16	175	115
F) Extension	3	13	4	2	4	4	5	17	8
Grand Total (A+B+C+D+E+F)	262	2386	2059	102	677	619	364	3063	2678

Krishi Vigyan Kendra: Jamui, Aurangabad, Bhojpur, Jehanabad, Khagaria, Munger, Purnea and Nawada

Thematic area: Integrated Nutrient Management

Problem diagnosed: Low yield of lentil due to poor nutrient management

Technology Assessed: Integration of fertilizer for yield improvement in lentil

Technological Option:

FP: RDF and seed treatment

TO_1: 50% of RDF + Wettable Sulphur (18:18:18) @ 5g/lit. water (at pre flowering stage)

TO_2: Seed treatment with PSB+ Rhizobium; 50% RDF+ Wettable Sulphur (18:18:18) @ 5g/lit. water (at pre flowering stage)

Results: An on-farm testing was conducted in 8 districts in Bihar covering 56 locations for assessing the integration of secondary nutrient (sulphur) with variety IPL 220. Results revealed that highest yield (14.60q/ha) followed by 13.50 q/ha, 13.10q/ha were harvested in TO_2 in Munger, Nawada and Purnea district respectively. However, in case of farmer practices yield varied between 8.07 to 10.60 q/ha with average yield of 9.34 q/ha across the district. Percent increase (57) over farmers practices was recorded in Khagaria under TO_2 (Seed treatment with PSB+ Rhizobium; 50% RDF + Wettable Sulphur) followed by 44.55% and 42.11% respectively in Munger and Nawada. Average cost of cultivation in Bihar is Rs. 23589 under farmers practices which is Rs. 690 lower than the best technological options i.e., TO_2. Net return varied between Rs. 24630 to 72863 under both technological options. Highest B:C ratio (3.45) was recorded in TO_2 at Munger and lowest B:C ratio (1.02) in Jamui under TO_2.

Table 09: Integration of fertilizer in different form on yield of lentil on yield and economics

Name of KVK	Variety	Yield (q/ha)			% increase/ decrease over FP		Cost of cultivation(q/ha)			Net return (Rs. /ha)			B:C		
		FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Jamui	IPL-220	8.40	10.90	7.60	29.76	-9.52	22400	22600	24200	31570	47432	24630	1.41	2.10	1.02
Aurangabad	IPL-220	8.42	10.57	11.89	25.53	41.21	21190	22450	23150	25962	36742	43434	1.23	1.64	1.88
Bhojpur	IPL-220	9.23	10.86	12.01	17.66	30.12	22260	20140	20810	33120	45020	51250	1.49	2.24	2.46
Jehanabad	IPL-220	10.40	11.60	12.70	11.54	22.12	27960	27960	28900	34740	42040	48750	1.24	1.50	1.69
Khagaria	IPL-220	8.07	10.90	12.67	35.07	57.00	20250	22450	24650	20907	33140	39967	1.03	1.48	1.62
Munger	IPL-220	10.10	12.30	14.60	21.78	44.55	23860	20850	21120	41124	58091	72863	1.72	2.79	3.45
Purnea	IPL-220	10.60	11.70	13.10	10.38	23.58	25360	25540	26480	40740	47160	54620	1.61	1.85	2.06
Nawada	IPL-220	9.50	12.30	13.50	29.47	42.11	25432	23870	24920	31568	49930	56080	1.24	2.09	2.25
Average		9.34	11.39	12.26	22.65	31.40	23589	23233	24279	32466	44944	48949	1.37	1.96	2.05

Fig. 01: Assessment of integration of fertilizer for yield improvement in lentil

Krishi Vigyan Kendra: Dhanbad, Palamu, Jamui, Khagaria and Muzaffarpur-I

Thematic area: Integrated Nutrient Management

Problem diagnosed: Excessive use of chemical fertilizers and spiralling price of urea leads to increase in cost of cultivation

Technology Assessed: Increasing nitrogen use efficiency in rice

Technological Option:

FP: RDF (100:40:20) Kg/ha

TO_1: 50% of RDN & 100% PK + Nano urea @4ml/litre (at 35 DAS)

TO_2: 50% of RDN & 100% PK + 2 sprays of nano urea @ 4ml/litre (35 and 60-65 DAS)

Results: On-farm testing was conducted in 5 districts of Bihar and Jharkhand for assessing the increasing nitrogen use efficiency in rice. Results revealed that highest yield (41.50 q/ha) followed by 40.65 q/ha were harvested in TO_2 in Muzaffarpur-I and Khagaria district respectively. However, in case of farmer practices yield varied between 24.80 to 39.60 q/ha across the district. Percent increase (50) over farmers practices was recorded in Jamui under TO_2 (50% of RDN & 100% PK + 2 sprays of nano urea @ 4ml/litre). Net return varied between Rs. 38674 to 57595 under both technological options. Highest B:C ratio (1.73) was recorded in TO_1 at Dhanbad and lowest B:C ratio (1.06) in Palamu under TO_1.

Table 10: Improvement of nitrogen use efficiency in rice on yield and economics

Name of KVK	Yield (q/ha)			% increase/ decrease over FP		Cost of cultivation (q/ha)			Net return (Rs. /ha)			B:C		
	FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Dhanbad	30.67	34.99	31.89	14.09	3.98	27900	29500	28200	42641	50977	45147	1.53	1.73	1.60
Palamu	39.00	33.00	40.50	-15.38	3.85	37500	37200	38000	52200	39400	55150	1.39	1.06	1.45
Jamui	24.80	30.70	37.20	23.79	50.00	31700	32550	32700	25836	38674	53604	0.82	1.19	1.64
Khagaria	39.30	40.10	40.65	2.04	3.44	35500	35600	35900	54890	56630	57595	1.55	1.59	1.60
Muzaffarpur-I	39.60	38.85	41.50	-1.89	4.80	42500	36500	37500	43946	42524	53094	1.03	1.17	1.42

Fig. 02: Assessment of nitrogen use efficiency in rice

Krishi Vigyan Kendra: Bhojpur, Aurangabad, Jehanabad, Kishanganj, Lakhisarai, Purnea, Supaul, Madhubani - II, Sitamarhi and Nawada

Thematic area: Integrated Nutrient Management

Problem diagnosed: Excessive use of chemical fertilizers and spiralling price of urea leads to increase in cost of cultivation

Technology assessed: Improvement of nitrogen use efficiency in wheat

Technological options:

FP: RDF (100:40:20) Kg/ha;
TO_1: 50% of RDN & 100% PK + Nano urea @4ml/lt. water (Single spray at 35 DAS)
TO_2: 50% of RDN & 100% PK + 2 spray of nano urea at 35 DAS) and (60-65 DAS) @ 4ml/lt. water
Results: An OFT was conducted in 10 districts in Bihar for assessing the improvement of nitrogen use efficiency in wheat. Farmers cultivated paddy variety of their choice in the demonstration in FP and technological options. Results revealed that highest yield (42.30 q/ha) followed by 40.90 q/ha, 40.20 q/ha were harvested in TO_2 in Purnea, Sitamarhi and Nawada district respectively. However, in case of farmer practices yield varied between 21.30 to 39.25 q/ha across the district. Percent increase of yield over FP varied between 0.45 to 21.74% in Supaul and Aurangabad respectively under TO_2. Economic analysis showed that highest B:C ratio (2.20) was recorded in TO_2 in Lakhisarai and minimum B:C ratio (0.71) in Kishanganj under TO_1.

Table 11: Improvement of nitrogen use efficiency in wheat on yield and economics

Name of KVK	Yield (q/ha)			% increase/ decrease over FP		Cost of cultivation (q/ha)			Net return (Rs. /ha)			B:C		
	FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Bhojpur	39.25	38.75	39.68	-1.27	1.10	31200	30960	31200	39450	38790	40224	1.26	1.25	1.29
Aurangabad	29.90	32.60	36.40	9.03	21.74	31900	32700	33200	30890	35760	43240	0.97	1.09	1.30
Jehanabad	30.60	33.00	35.20	7.84	15.03	39550	40550	41658	47890	56650	41550	1.21	1.40	1.00
Kishanganj	21.30	24.80	25.70	16.43	20.66	31500	33000	33750	16958	23420	24718	0.54	0.71	0.73
Lakhisarai	34.60	35.40	36.80	2.31	6.36	28600	27400	27600	55200	58100	60600	1.93	2.12	2.20
Purnea	37.70	39.80	42.30	5.57	12.20	34430	34890	35740	59165	63640	68665	1.72	1.82	1.92
Supaul	33.50	32.57	33.65	-2.78	0.45	42039	41924	42500	42680	57500	68500	1.02	1.37	1.61
Madhubani -II	38.11	36.29	38.63	-4.78	1.36	39353	39842	41008	47348	42718	46875	1.20	1.07	1.14
Sitamarhi	39.10	36.50	40.90	-6.65	4.60	40950	39750	41600	42137	37812	45312	1.02	1.03	0.95
Nawada	36.30	38.90	40.20	7.16	10.74	38970	37420	37780	68400	74017	77286	1.75	1.76	1.98


Fig. 03: Assessment of nitrogen use efficiency in wheat

Krishi Vigyan Kendra: Jamtara, Chatra and Gumla

Thematic area: Natural Resource Management

Problem diagnosed: More number of irrigation and bed making resulted high cost of cultivation
Technology assessed: Assessment of different methods of irrigation on productivity of tomato in medium land
Technological options:
FP: Furrow/ bed irrigation

TO_1: Drip irrigation with crop residue mulch
TO_2: Drip irrigation with plastic mulching
Results: An on-farm testing was conducted in 3 districts in Jharkhand for assessing different methods of irrigation on productivity of tomato in medium land. Results revealed that highest yield of tomato (450q/ha) were harvested in TO_2 in Chatra district. However, in case of farmer practices yield varied between 142 to 280 q/ha only. Highest percent increase (60.71) was recorded in TO2 under Chatra district agro-climatic condition whereas, minimum (38.89) was recorded in Gumla under same technological options. Economic analysis showed that highest B:C ratio (2.99) was recorded in TO_2 at Chatra and lowest B:C ratio (1.47) in Jamtara under TO_1.

Table 12: Assessment of different methods of irrigation on productivity of tomato in medium land on yield and economics

Name of KVK	Yield (q/ha)			% increase / decrease over FP		Cost of cultivation(q/ha)			Net return (Rs. /ha)			B:C		
	FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Jamtara	142	182	217	28.17	52.82	60100	81200	92100	81900	119200	168300	1.36	1.47	1.83
Chatra	280	335	450	19.64	60.71	96500	101600	135300	239500	300400	404700	2.48	2.96	2.99
Gumla	198	264	275	33.33	38.89	72500	68600	65300	86332	142880	155212	1.19	2.08	2.38


Fig. 04: Assessment of different methods of irrigation in tomato

Krishi Vigyan Kendra: Aurangabad, Patna, Sahibganj and Gumla

Thematic area: Integrated Nutrient Management

Problem diagnosed: Excessive use of chemical fertilizer and spiralling price of urea leads to increase in cost of cultivation
Technology assessed: Assessment of foliar application of nano urea
Technological options:
FP: RDF (NPK @ 100-40-20 kg/ha)
TO_1: 50% RDN & 100% PK + Nano urea @ 4 ml/l (single spray at pre flowering stage)
TO_2: 50% RDN & 100% PK + Two spray of nano urea at 25 to 30 days and 60 to 65 days after transplanting @ 4 ml/l
Results: An OFT was conducted in 4 districts of Bihar and Jharkhand for assessment of foliar application of nano urea. Results revealed that highest yield (53.57 q/ha) followed by 50.72 q/ha were harvested in TO_2 in Patna and Aurangabad district respectively. However, in case of farmer practices yield varied between

31.94 to 48.79 q/ha across the district. Higher increase (16.16 %) over farmers practices was recorded in Gumla under TO_2 (50% RDN & 100% PK + Two spray of nano urea at 25 to 30 days and 60 to 65 days after transplanting @ 4 ml/l). Net return varied between Rs. 40073 to 96048 under both technological options. Highest B:C ratio (2.14) was recorded in TO_2 at Patna and lowest B:C ratio (1.09) in Sahibganj under TO_1.

Table 13: Assessment of foliar application of nano urea

Name of KVK	Yield (q/ha)			% increase/decrease in yield		Cost of cultivation (q/ha)			Net return (Rs. /ha)			B:C Ratio		
	FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Aurangabad	47.40	49.03	50.72	3.44	7.00	41019	42205	42645	63662	66077	69347	1.55	1.57	1.63
Patna	48.49	41.13	53.57	-15.18	10.48	43400	42200	44800	84097	65950	96048	1.94	1.56	2.14
Sahibganj	38.20	39.10	39.80	2.36	4.19	44000	43000	43200	43860	46930	48340	1.00	1.09	1.12
Gumla	31.94	34.31	37.10	7.42	16.16	34500	35500	36500	35856	40073	45235	1.04	1.13	1.24

Fig. 05: Assessment of foliar application of nano urea

Krishi Vigyan Kendra: Rohtas

Thematic area: Weed Management

Problem diagnosed : Weedy rice

Technology assessed: Assessment of the Impact of weedy rice on soil status & profitability of rice

Technological options:

FP: Manual Removal of weedy rice

TO_1: 20 days before transplanting pre germination application of herbicide (Pretilachlore 1.5 L/ha)

TO_2: Pre-Transplanting (20 DBT) herbicide Glyphosate 1.5 L/ha + oxyfluorefen 0.8 L/ha at 25 DAT

TO_3: Bispyribac- Sodium 25-30 gm ai/ha (10-15 DAT) + Pyrazosulfuron-ethyl 20 gm ai/ha (10-15 DAT)

Result: The study demonstrated that TO_3 was the most effective treatment for managing weedy rice, significantly reducing its density to 3.67/m² compared to 16.24/m² in FP. This reduction contributed to improved growth attributes, including higher effective tillers and panicle length. Enhanced weedy rice control under TO_3 also translated into the highest grain ($65.27 q ha^{-1}$) among the treatments. Economically, TO_3 outperformed others with the greatest net returns (Rs. 108663) and BC ratio (3.62). Overall, TO_3 not only suppressed weedy rice effectively but also optimized rice productivity and profitability.

Table 14: Physico-chemical properties of experimental soil

Treatments	Parameters											
	pH (1:2.5)		ECe (d Sm^{-1})		OC (%)		N		P		K	
							(Kg ha^{-1})					
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
FP	6.85	6.84	0.05	0.05	0.45	0.45	204.3	195.6	33.3	33.39	173.4	173.5
TO_1	6.85	6.85	0.05	0.05	0.45	0.45	204.3	201.5	33.3	38.15	173.4	173.4
TO_2	6.85	6.55	0.05	0.06	0.45	0.44	204.3	201.4	33.3	33.66	173.4	173.3
TO_3	6.85	6.55	0.05	0.05	0.45	0.45	204.3	200.2	33.3	33.27	173.4	172.4

Table 15: Effect of treatments on growth attributes of rice

Name of KVK	Panicle length (cm)				Yield (qt/ha)				Cost of cultivation (q/ha)				Net return (Rs. /ha)				B:C Ratio			
	FP	TO_1	TO_2	TO_3	FP	TO_1	TO_2	TO_3	FP	TO_1	TO_2	TO_3	FP	TO_1	TO_2	TO_3	FP	TO_1	TO_2	TO_3
Rohtas	19.25	22.64	23.58	23.65	43.64	59.48	62.07	65.27	43600	41200	41370	41450	56765	95610	101393	108663	2.30	3.32	3.45	3.62



Fig. 06: Impact of weedy rice on soil status and profitability of rice

Krishi Vigyan Kendra: Bhagalpur, Ramgarh and Madhepura

Thematic area: Fruit Production

Problem diagnosed: Low fruit yield due to poor nutrient management in mango and moisture conservation

Technology assessed: Assessment of different mulching material in mango

Technological options:

FP: No Mulching/ Liter fall of trees.

TO_1: Tephrosia (*Tephrosia purpurea* L.) @1 kg dry biomass/ m^2 Canopy (Plant spread)

TO_2: Grass/ Paddy straw/ Any local available mulching 15 cm thick (Plant spread) + Greece band 30 cm from GL

Results: On farm testing was conducted for assessing the performance of different mulching material in mango against moisture conservation and improving fertility status within the root zone of plant. Trial was conducted in 3 districts of Bihar and Jharkhand. The result showed that highest soil moisture retention was recorded in TO_1 (21.86 %) followed by (20.33%) in TO_2 in Ramgarh district. However, in situation (Madhepura and Bhagalpur) values are quite closer to FP. Lower weed infestation recoded in Ramgarh condition whereas highest weed population in FP found in Bhagalpur agro-situations. Highest weed control efficiency (10.00) recorded in TO_1 (Tephrosia (*Tephrosia purpurea* L.) @1 kg dry biomass/ m^2 Canopy) in Ramgarh district. Highest fruit yield (97.67 kg/ha) obtained in Madhepura district followed by (97.12 kg/ha) in Ramgarh district with highest percent increase in case of TO_1 in Bhagalpur district (90.00). Economic analysis showed that maximum B:C ratio (3.09) recorded in Madhepura district under TO_1.

Table 16: Performance of different mulching material in mango

Name of KVKs	Soil Moisture (%)			% increase/ decrease SM over FP		Weed infestation (weed/m²)			Yield (kg/plant)			% increase/ decrease in yield over FP		BC ratio		
	FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2
Bhagalpur	9.95	11.44	10.94	14.97	9.95	125.00	25.00	60.00	50.00	95.00	65.00	90.00	30.00	0.83	2.17	1.17
Ramgarh	14.23	21.86	20.33	53.62	42.87	29.00	10.00	12.00	80.60	97.12	94.96	20.49	17.81	1.73	2.08	2.08
Madhepura	7.70	8.87	8.42	15.19	9.35	46.95	32.04	38.96	86.62	97.67	95.10	12.75	9.78	2.75	3.09	3.07

Fig. 07: FP: No mulching/ litter fall of trees

Fig. 08: TO_1: Mulching with tephrosia

Fig. 09: TO2: Mulching with grass/ paddy straw

Krishi Vigyan Kendra: Gumla and Ranchi

Thematic area: Varietal Evaluation

Problem diagnosed: Low yield of onion in kharif season.

Technology assessed: Evaluation of nnion varieties for kharif season.

Technological options:

FP: Nasik-53 (N-53)

TO_1: Agrifound Dark Red

TO_2: Arka Kalyan.

Results: An OFT was undertaken for assessing the varietal suitability of onion during Kharif cultivation Gumla and Ranchi. During early winter months rates of onion in market is very high due to poor supply and high demand. The result showed that higher onion bulb diameter (6.24 cm) and bulb weight (110.30g) were recorded in Arka Kalyan in Gumla and Ranchi, respectively. Yield is highest in Gumla (305 q/ha) in TO_2. Net return was maximum in Gumla (Rs. 484980) district. Highest B:C ratio (4.86) was recorded in TO_2at Gumla and lowest B:C ratio (3.48) in Ranchi under TO_1.

Table 17: Physio character of kharif season onion

Name of KVKs	Bulb diameter (cm)			Bulb weight (g)			Yield (q/ha)		
	N-53	AFDR	Arka Kalyan	N-53	AFDR	Arka Kalyan	N-53	AFDR	Arka Kalyan
Gumla	4.26	5.15	6.24	65.00	82.50	95.00	205	285	305
Ranchi	4.94	5.31	6.09	81.20	87.40	110.30	148	160	178

Table 18: Economics of kharif season onion

Name of KVKs	Cost of cultivation (Rs/ha)			Net return (Rs. /ha)			BC ratio		
	N-53	AFDR	Arka Kalyan	N-53	AFDR	Arka Kalyan	N-53	AFDR	Arka Kalyan
Gumla	105000	122500	12550	305640	447820	484980	3.91	4.65	4.86
Ranchi	113657	114893	117187	256343	285107	327813	3.25	3.48	3.79

Fig. 10: Onion after 60 days of transplanting

Krishi Vigyan Kendra: Arwal and Kishanganj

Thematic area: Fruit Production

Problem diagnosed: Poor fruit quality due to fruit fly infestation & anthracnose infection

Technology assessed: Assessment of fruit bagging in guava for quality improvement

Technological options:

FP: No bagging

TO_1: Perforated polythene bag cover

TO_2: Paper bagging cover

Results: For improving the quality of fruit and physical appearance an OFT was conducted by Arwal and Kishanganj KVK. Rainy season fruiting is quite common in the areas in spite of bearing regulation techniques availability. Farmers loses the premium price due to fruit fly infestation and anthracnose disease. To overcome this problem an OFT has been designed with 02 technological options. The result revealed that fruit fly damage was lowest in (4.25%) in Kishanganj. Disease incidence % was less in case of TO_1 i.e. (6.40 %) Arwal district. Less physical damage of fruit (6.90 %) was observed in TO_1 coupled with highest yield (230 q/ha) under Kishanganj. Higher percentage yield increases 168.64 was noted under TO_1 in Arwal district followed by139.88. Highest B:C ratio (6.50) was recorded in TO_1 at Kishanganj.

Table 19: Performance of fruit bagging in guava in fruit fly, anthracnose, yield and economics

Name of KVKs	Fruit fly infestation (%)			Anthracnose incidence %			Physical damaged (%)			Yield (q/ha)			% increase/ decrease over FP		BC ratio		
	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	TO_1	TO_2	FP	TO_1	TO_2
Arwal	55.73	5.50	6.25	45.49	6.40	6.70	37.70	6.90	8.70	66	177	158	168.64	139.88	2.82	5.73	4.79
Kishanganj	91.05	4.25	5.71	84.6	8.50	9.46	89.52	9.62	10.27	187	230	211	22.82	12.31	4.00	6.50	5.74

Fig. 11: Assessment of fruit bagging in guava

Krishi Vigyan Kendra: Khagaria

Thematic area: Integrated Crop Management

Problem diagnosed: Poor quality of banana results in low yield as well as poor market value

Technology assessed: Banana bunch covering technology for quality banana production

Technological options:

FP: No covering used in banana bunches

TO_1: Cover the banana bunches with non-woven polypropylene bag

TO_2: Cover the banana bunches with blue ventilated (4%) polythene sleeves

Results: On farm testing was undertaken for assessing the banana bunch covering technology for quality banana production. Farmers loses the premium price due to poor quality of banana bunch due to scarring beetle infestation and fruit appearance deteriorated. To overcome this problem, covering of banana bunch for improving quality and appearance. To overcome this problem an OFT has been designed with 03 technological options. The bunch weight is better in case of TO_1 (19.46 kg) compared to TO_2 (19.22). Highest yield 584 q/ha recorded in TO_1 which is 21 q higher than farmer practices. Net return is also higher in TO_1(356400) with higher BC ratio (2.48) under TO_1. Almost no scaring beetle infestation recorded in polypropylene bag covered.

Table 20: Physio and economics of banana bunch covering technology

Parameters	Technological options		
	FP	TO_1	TO_2
Bunch weight (kg/fruit)	18.12	19.46	19.22
Finger weight (g)	105.60	124.20	119.00
No. of Hands	5	7	6
Yield (q/ha)	563	584	576
Scaring beetle infestation	Severe	Very less	Less
Cost of cultivation (Rs./ha)	252600	239000	235000
Net return (Rs./ha)	249400	356400	308380
BC ratio	1.98	2.48	2.30

Fig. 12: Assessment of banana bunch covering technology for quality banana production

Krishi Vigyan Kendra: Nalanda

Thematic area: Resource Conservation Management

Problem diagnosed: Lower yield due to late sowing of potato

Technology assessed: Ex-situ residue management in potato cultivation

Technological options:

FP: Sowing in ridge and furrow method

TO_1: Sowing of potato seed with FYM and paddy straw (15 cm)

TO_2: Sowing of potato seed with FYM and water hyacinth (15 cm)

Results: An OFT on assessment of ex-situ crop residue management in potato was conducted in Nalanda district as plenty of locally available crop residues or common water bodies weed (water hyacinth) were available. After paddy harvesting soil condition usually not suitable for field preparation. It requires additional time and sowing of potato became delayed. Since, Potato is a photothermal crop which require lower temperature for tuberization. Potato has been sown without tillage operation just after harvesting of the paddy. In technological options 1 and 2 after sowing plot was mulched with paddy straw and water hyacinth. Result revealed that the highest germination percent (94.52%) has been recorded in TO_1 which is 13.12% higher than the farmer practices. In case of weed infestation lowest weed count 21.80 was recorded in TO_1 which has 74.11% lower weed than farmer practices. Lower disease incidence (5.25%) is found in TO_1 whereas 16.80% in FP. Highest tuber yield (310.18 q/ha) has been recorded in TO_1 followed by TO_2. Cost benefit analysis depict that (3.11) BC ratio obtained under TO_1.

Table 21: Assessment of ex-situ residue management in potato cultivation

Parameters	Technological options		
	FP	TO 1	TO 2
Germination (%)	83.56	94.52	90.82
% increase in germination	-	13.12	8.69
Weed count/m^2	84.20	21.80	45.80
% weed minimization	-	74.11	45.61
Disease incidence (%)	16.80	5.25	7.80
% decrease in disease incidence	-	68.75	53.57
Yield (q/ha)	265.36	310.18	295.67
BC ratio	2.49	3.11	2.88

Fig. 13: Ex-situ residue management in potato

Krishi Vigyan Kendra: Gaya-II, Jehanabad, Katihar, Lakhisarai, Madhepura, West Champaran-I

Thematic area: Integrated Disease Management

Problem diagnosed: Farmers lacking awareness regarding the management of soil-borne diseases in rice. yield loss in rice cultivation due to severe sheath blight during pre-panicle emergence stage of the crop.

Technology assessed: Assessment of fungicides for the management of sheath blight of rice

Technological option:

FP: Spray of hexaconazole 5 EC @800ml/ha

TO_1: Spray of Propiconazole 13.9% + Difenoconazole 13.9% EC @500ml/ha.

TO_2: Spray of Thifluzamide 24 SC @ 1ml /liter of water (45 days after transplanting)

Results: A study was conducted across six Krishi Vigyan Kendras (KVKs) Gaya-II, Jehanabad, Katihar, Lakhisarai, Madhepura, and West Champaran-I focusing on the thematic area of integrated disease management, specifically targeting the management of sheath blight in rice caused by soil-borne pathogens. The problem identified was a lack of awareness among farmers about managing such diseases, which often leads to significant yield losses, particularly during the pre-panicle emergence stage. To address this, an assessment of fungicidal technologies was carried out. The farmer's practice (FP) involved spraying Hexaconazole 5 EC @800ml/ha, while two technological options were tested: TO_1 — a spray of Propiconazole 13.9% + Difenoconazole 13.9% EC @500ml/ha, and TO_2 — a spray of Thifluzamide 24 SC @1ml/liter of water, applied 45 days after transplanting. Across all KVKs, both TO_1 and TO_2 outperformed the farmer's practice in terms of yield, gross return, and benefit-cost (B:C) ratio. Notably, the highest yield (49 q/ha) and B:C ratio (2.48) were recorded in Lakhisarai under TO_1. TO_2 also showed consistent improvements in net returns and economic efficiency, particularly in Gaya-II and Madhepura. These results indicate that both tested fungicidal options, especially TO_1, are effective in enhancing rice productivity and profitability through better management of sheath blight.

Table 22: Assessment of fungicides for the management of sheath blight of rice

Name of KVKs	Yield(q/ha)			Cost of cultivation (q/ha)			Gross return			Net Return			B:C		
	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Gaya-II	26.80	29.64	33.50	33675	34480	36000	61640	68172	77050	27965	33692	41050	1.83	1.98	2.14
Jehanabad	40.50	42.80	43.50	42000	43000	43000	88412	93432	94961	46412	50434	51961	2.11	2.17	2.21
Katihar	40.50	42.50	42.80	40000	41200	41500	93150	97750	98440	53150	56550	56940	2.32	2.37	2.37
Lakhisarai	42.00	49.00	46.00	41500	41500	41600	88200	102900	96600	46700	61400	55000	2.13	2.48	2.32
Madhepura	34.25	37.72	36.28	33234	34130	34118	74768	82343	79199	71364	98873	93558	2.24	2.41	2.32
West Champaran-I	30.5	42.88	34.12	46000	46980	47270	54900	77184	61416	18375	35484	25652	1.19	164	1.39

Fig. 14: Assessment of fungicides for the management of sheath blight of rice

Krishi Vigyan Kendra: Khagaria, Madhepura, East Champaran-II, Muzaffarpur-II, West Champaran-I

Thematic area: Integrated Pest Management

Problem diagnosed: Major yield losses due to wilt disease and fruit borer, heavy Infestation level and marketability

Technology assessed: Assessment of management practices for red banded caterpillar in mango

Technological option:

FP: Spray of Chlorpyriphos 20 EC @2 ml/lit as and when symptoms appear

TO_1 : Collection and destruction of all fallen fruits

Spray Deltamethrin 2.8 EC@ 1ml/lit of water at marble size and repeat after two weeks

TO_2: Two sprays of Thiacloprid 21.7 SC @ 2ml/lit at 25-30 days interval.

Result: An on-farm assessment was carried out across five Krishi Vigyan Kendras (KVKs) Khagaria, Madhepura, East Champaran-II, Muzaffarpur-II, and West Champaran-I to evaluate integrated pest management strategies for controlling the red banded caterpillar in mango, a major pest contributing to significant yield losses, wilt disease, reduced fruit marketability, and heavy infestation levels. The study compared the existing farmer practice of spraying Chlorpyriphos 20 EC @2 ml/lit upon symptom appearance with two improved technological options. TO_1 involved integrated cultural and chemical practices — collection and destruction of fallen fruits and spraying Deltamethrin 2.8 EC @1 ml/lit at marble-sized fruit stage, followed by a repeat spray after two weeks. TO_2 consisted of two sprays of Thiacloprid 21.7 SC @2 ml/lit at 25–30-day intervals. The results clearly demonstrated that both TO_1 and TO_2 significantly improved yield, net returns, and benefit-cost (B:C) ratios compared to the farmer's practice, with TO_2 showing the most promising outcomes. The highest yield (255.54 q/ha) and B:C ratio (2.93) under TO_2 were recorded in Khagaria, while West Champaran-I reported the highest B:C ratio overall at 6.00 under TO_1, indicating exceptional economic returns. TO_2 also consistently outperformed in other districts such as East Champaran-II (B:C ratio 4.45) and Madhepura (2.44), highlighting its efficacy. These findings suggest that the adoption of TO_2, and to some extent TO_1, can substantially enhance productivity and profitability in mango cultivation by effectively managing red banded caterpillar infestations.

Table 23: Assessment of management practices for red banded caterpillar in mango

Name of KVKs	Yield(q/ha)			Cost of cultivation (q/ha)			Gross return			Net Return			B:C		
	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Khagaria	159.58	211.14	255.54	41580	39850	38950	127664	126684	153324	86084	86834	114374	2.07	2.17	2.93
Madhepura	49.61	56.99	66.82	49089	49593	49797	97902	113492	133058	48811	63914	83296	1.82	2.09	2.44
Muzaffarpur-II	65.60	95.80	87.50	85000	88650	87500	196800	287400	262500	111800	198750	175000	2.30	3.20	3.00
West Champaran-I	85.00	160.00	120.00	95000	105000	120000	340000	640000	480000	255000	560000	360000	3.50	6.00	4.00
East Champaran-II	88.12	116.4	137.04	55500	59300	61500	176260	232800	274120	120760	173500	212620	3.17	3.92	4.45

Fig. 15: Assessment of management practices for red banded caterpillar in mango

Krishi Vigyan Kendra: Ranchi, Godda and Kaimur

Thematic area: Integrated Pest Management

Problem diagnosed: Low yield of paddy due to moderate to severe infestation of brown plant Hopper at maturity stage

Technology assessed: Management of brown plant hopper (BPH) in rice

Technological option:

FP: Imidacloprid 17.8 SL

TO_1: Insect Growth Regulator Buprofezin 25 SC @ 800 ml/ ha or Buprofezin 22. 0% + Fipronil 3 % SC @ 500 ml/ha

TO_1: Chlorantraniliprole 0.50% + Thiamethoxam 1.0% @6 kg/ha

Results: A field assessment was conducted by Krishi Vigyan Kendras (KVKs) in Ranchi, Godda, and Kaimur to evaluate effective management strategies for Brown Plant Hopper (BPH), a key pest responsible for moderate to severe yield losses in paddy, especially at the maturity stage. The study aimed to compare the efficacy of farmer's current practice — the use of Imidacloprid 17.8 SL — with two advanced technological options. TO_1 included the application of Insect Growth Regulator Buprofezin 25 SC @800 ml/ha or a combination of Buprofezin 22.0% + Fipronil 3% SC @500 ml/ha, while TO_2 involved the use of Chlorantraniliprole 0.50% + Thiamethoxam 1.0% at 6 kg/ha. The results across all three KVKs demonstrated a clear advantage of both TO_1 and TO_2 over the traditional farmer practice, with TO_2 showing the highest yield and economic returns. In Ranchi, the yield increased from 31.50 q/ha under FP to 38.20 q/ha under TO_2, along with a higher net return (Rs. 49,160) and benefit-cost (B:C) ratio of 2.27. Similarly, Godda and Kaimur reported yield improvements and higher profitability under TO_2, with Kaimur achieving the highest yield (49.17 q/ha) and B:C ratio (2.33). These findings confirm that the use of modern insecticidal combinations, especially those in TO_2, significantly improves BPH management, leading to better productivity and higher economic returns for rice farmers.

Table 24: Management of brown plant hopper in rice

Name of KVKs	Yield (q/ha)			Cost of cultivation (Rs. /ha)			Gross return (Rs. /ha)			Net Return (Rs. /ha)			B:C		
	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2	FP	TO_1	TO_2
Ranchi	31.50	35.60	38.20	35600	37300	38700	72450	81880	87860	36850	44580	49160	2.03	2.19	2.27
Godda	30.40	34.80	37.60	34040	34680	36320	51680	59160	63920	17640	24480	27600	1.52	1.71	1.76
Kaimur	41.07	47.09	49.17	46500	48000	48500	94461	108307	113091	47961	60307	64591	2.03	2.25	2.33

Fig. 16: Management of brown plant hopper in rice

Krishi Vigyan Kendra: East Champaran-I, Gopalganj and Muzaffarpur-II

Thematic area: Integrated Pest Management

Problem diagnosed: Pest infestation leads to fruit drop and poor quality of fruit

Technology assessed: Integrated pest management of litchi fruit borer (*Conopomorpha sinensis*)

Technological option:

FP: untreated or spray of any insecticide as per suggestion of other farmer or input dealers.

TO_1: Two sprays of systemic insecticide viz., Imidacloprid 17.8 SL @ 0.5-0.7 ml/lit of water during September at 15 days interval on emerging shoots.

Spray of NSKE before flowering to avoid egg laying.

Spray of Novaluron 10 EC @1.5 ml/lit of water at clove size.

Spray of Emamectin Benzoate 5 SG @0.4g/lit of water during aril (pulp) development stage.

Last spray of Novaluron 10 EC @1.5 ml/l at about 10 days before expected fruit harvesting.

TO_2: Deep ploughing of orchard twice a year (just after fruit harvest and in the month of November / December).

Pruning and destruction of affected twigs twice a year (at fruit harvest stage and at new flush stage i.e., September / October).

Soil application of 4 kg Castor cake + 1 lit NSKE/tree in first fortnight of July.

Spraying of Spinosad 45 SC at new flush stage (September / October) and at fruit colour break stage (Last week of April).

Results: An on-farm assessment was undertaken by Krishi Vigyan Kendras (KVKs) in East Champaran-I, Gopalganj, and Muzaffarpur-II to evaluate integrated pest management (IPM) strategies for controlling the litchi fruit borer (*Conopomorpha sinensis*), a major pest causing fruit drop and deterioration in fruit quality. The prevailing farmer practice involved either no treatment or the use of insecticides based on informal advice from fellow farmers or input dealers. Two scientifically formulated technological options were assessed. TO_1 consisted of a comprehensive spray schedule including systemic insecticides (Imidacloprid, NSKE, Novaluron, and Emamectin Benzoate) applied at critical crop stages from shoot emergence to fruit maturity. TO_2 emphasized a combination of cultural practices such as deep ploughing, pruning of affected twigs, soil application of castor cake with NSKE, and two timely sprays of Spinosad 45 SC. Across all locations, both TO_1 and TO_2 demonstrated significant improvements in yield and economic returns over the farmer practice. Gopalganj recorded the highest yield (77.25 q/ha) and benefit-cost (B:C) ratio (4.54) under TO_1, indicating superior effectiveness. TO_2 also showed commendable results, with B:C ratios of 4.33 in Gopalganj and 3.50 in Muzaffarpur-II. East Champaran-I reported the highest net return (Rs. 278,723) under TO_1. These findings highlight that while both IPM strategies are economically viable and effective in managing litchi fruit borer, TO_1, with its structured insecticide application at critical stages, provided the most substantial improvements in yield, fruit quality, and profitability.

Table 25: Assessment of integrated pest management of litchi fruit borer

Name of KVKs	Yield(q/ha)			Cost of cultivation (q/ha)			Gross return			Net Return			B:C		
	FP	TO1	TO2	FP	TO1	TO2	FP	TO1	TO2	FP	TO1	TO2	FP	TO1	TO2
East Champaran-I	60.20	73.94	68.65	90234	93564	94640	303229	372287	345652	212995	278723	251012	2.36	2.98	2.65
Gopalganj	60.13	77.25	70.50	62000	68000	65000	240520	309000	282000	178520	241000	217000	3.87	4.54	4.33
Muzaffarpur-II	56.90	70.30	62.50	69890	71240	70170	207480	281240	249960	166590	213000	186790	2.90	3.90	3.50

Fig. 17: Assessment of integrated pest management of litchi fruit borer

Krishi Vigyan Kendra: Bhagalpur

Thematic area: Weed Management.

Problem diagnosed: Farmers generally use cone nozzle for spraying weedicide which is not efficient in eradication of weeds as proper amount of weedicide does not reach the target site due to low water discharge efficiency per unit time.

Technology Assessed: Influence of nozzle type and spray volume on herbicide efficacy in paddy cultivation.

Technological option:

FP: Spray of weedicide using cone type nozzle with spray volume 500 l/ha

TO_1: Spray of weedicide using flat fan nozzle with spray volume 500 l/ha

TO_2: Spray of weedicide using flood jet nozzle with spray volume 500 l/ha

Results: Weed management trials compared different nozzles with 500 l/ha spray volume. All were applied on 0.536 ha (actual 0.528 ha). The flat fan nozzle (TO_1) and flood jet nozzle (TO_2) showed higher actual field capacity (0.082 and 0.085 ha/h) and field efficiency (80.38% and 80.89%) compared to the hollow cone nozzle (F.P.) at 0.080 ha/h and 79.50%. Yield improved from 37.85 q/ha (F.P.) to 40.25 q/ha (TO_1) and 42.63 q/ha (TO_2). Despite similar cultivation costs (~Rs. 30,120–30,135/ha), gross returns rose with TO_1 (Rs. 88,570) and TO_2 (Rs. 93,665) over F.P. (Rs. 83,225), increasing net returns and B:C ratio to 2.94 (TO_1) and 3.11 (TO_2) against 2.76 in F.P. SEm was 0.90, CD 2.66, and CV 7.0%.

Table 26: Performance of the technology with performance indicators

Technology options with detailed treatments	Area (ha in crop)		Actual Field Capacity (ha/h)	Avg. Field Efficiency (%)	Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	B:C ratio
	Proposed	Actual							
F.P. :Spray of weedicide using Hollow cone type nozzle with spray volume 500 l/ha	0.536	0.528	0.080	79.50	37.85	30135	83225	53395	2.76
TO1:Spray of weedicide using flat fan nozzle with spray volume 500 l/ha	0.536	0.528	0.082	80.38	40.25	30130	88570	58670	2.94
TO2:Spray of weedicide using flood jet nozzle with spray volume 500 l/ha	0.536	0.528	0.085	80.89	42.63	30120	93665	63840	3.11

Fig. 18: Farmer Practice- Hollow Cone Nozzle

Fig. 19: TO_1- Flat Fan Nozzle

Fig. 20: TO_2- Flood Jet Nozzle

Krishi Vigyan Kendra: Jehanabad

Thematic area: Water Conservation

Problem diagnosed: Water scarce situation during rabi season

Technology Assessed: Assessment of cut off ratio in wheat irrigation

Technological option:

FP: 100% irrigation

TO_1: Irrigation at 90% cut off

TO_2: Irrigation at 80% cut off

Results: Result depicted that TO_2 (Irrigation at 80 % cut-off) performed best in terms of B:C ratio as 2.67 (wheat var. HD 2967 Yield 41.8 q/ha) followed by TO1 (Irrigation at 90% cut off) with yield 42.2 q/ha and B:C ratio 2.58 as compared to 39.1 q/ha yield with B:C ratio 2.30 in Farmer's practice.

Table 27: Effect of different irrigation cut-off ratio in wheat

Technology options with detailed treatments	Area (ha in crop & Fodder)/ Nos (in livestock)		Water applied (Cubic meter/ha)	Water saving (Cubic meter/ha)	Yield (q/ha)	Water Use Efficiency (Kg/ha-cm)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
	Proposed	Actual								
FP: 100% irrigation	0.4	0.4	2088.2 (20.88 cm)	-	39.1	187.26	38600	88953.0	50353.0	2.30
TO_1: Irrigation at 90% cut off	0.4	0.4	1926.4 (19.26 cm)	161.8	42.2	219.10	37200	96005.0	58805.0	2.58
TO_2: Irrigation at 80% cut off	0.4	0.4	1814.0 (18.14 cm)	274.2	41.8	230.42	35600	95095.0	59495.0	2.67

**No. of irrigation: 3*

Fig. 21: Farmer practice (100% irrigation)

Fig. 22: TO_1 (Irrigation at 90% cut off)

Fig. 23: TO_2 (Irrigation at 80 % cut-off)

Krishi Vigyan Kendra: Saharsa

Thematic area: Application of small tools/ Implements

Problem diagnosed: Growth of weeds in paddy fields during kharif season resulted into low productivity

Technology Assessed: Performance assessment of different weeding tools in paddy crop cultivation

Technological option:

FP: Manual weeding

TO_1: Manual inter culturing with a grubber

TO_2: Inter culturing with a cono weeder

Results: The trial for controlling weeds in paddy crop fields had been conducted in DSR method of cultivation in paddy. A grubber and a cono weeder had been applied for inter culturing operation as two technology options

for mechanical control of weeds against the farmers practice i.e. manual weeding. It was found that with the highest weeding efficiency of 97.34 % (field capacity 68.14 m^2/hr), the cono weeder was the most suitable option than that with a grubber weeding efficiency 86.24 % (field capacity 48.93 m^2/hr) and where manual weeding was practiced with weeding efficiency 92.11 % (field capacity 43.72 m^2/hr. It was also observed that there was an increase of 5.1 % in yield with 12.2 % reduction in cost of cultivation where a cono weeder was applied for inter culturing operation in comparison to the fields where manual weeding was practiced.

Table 28: Performance of the technology with performance indicators

Technology options with detailed treatments	Area (ha in crop & Fodder)/ Nos (in livestock)		Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	B:C ratio
	Proposed	Actual					
FP: Manual weeding	0.3	0.3	41.2	44982	94760	49778	2.11
TO_1: Manual inter culturing with a grubber	0.3	0.3	41.8	42132	96140	54008	2.28
TO_2: Inter culturing with a cono weeder.	0.3	0.3	43.3	39456	99590	60134	2.52

Fig. 24: Performance of the different weeding tools in paddy cultivation

Krishi Vigyan Kendra: East Champaran-II

Thematic area: Farm Mechanization

Problem diagnosed: High cost of cultivation and time consumption, low yield

Technology Assessed: Assessment of multi crop planter for sowing of pulses in different field

Technological option:

FP: Broad casting in tilled condition

TO_1: Sowing with Zero tillage multi crop planter (No till condition)

TO_2: Sowing with multi crop planter (Tilled condition)

Results: Result has been revealed that the Sowing of lentil crop with zero tillage multi crop planter (No till condition) given maximum yield 11.82 fingerling with high B:C

Fig. 25: Sowing of lentil in no-till condition

Fig. 26: Sowing of lentil in tilled condition

Fig. 27: Growth of lentil crop at farmer field

Table 29: Performance of the technology with performance indicators

Treatments	Effective field capacity (ha/h)	Field Efficiency (%)	Yield (q/ha)	Increase in yield (%)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net Return (Rs./ha)	BC Ratio
FP	0.2	-	9.18	-	22490	55080	32590	2.45
TO_1	0.48	76.19	11.82	28.76	19880	70920	51040	3.57
TO_2	0.52	82.54	10.68	16.34	21140	64080	42940	3.03

Krishi Vigyan Kendra: East Champaran-II

Thematic area: Post Harvest Technology

Problem diagnosed: Shelf life of oyster mushroom

Technology Assessed: Assessment of different packaging materials on the shelf life of oyster mushroom

Technological option:

FP: Sun drying

TO_1: Suitable Punnet (wash in plain water, pre-treated with 0.05% KMS and dried in solar dryer)

TO_2: Biodegradable LDPE bag (40-60 micron or 100-150 gauge) (wash in plain water, pre-treated with 0.1% Citric acid and 0.05 % KMS)

Results: The results demonstrated that technology option 2 (TO_2) showcased superior outcomes. It achieved higher rehydration ratios of 3.73, 3.68, 3.55, and 3.50 for initial, 30 days, 60 days, and 90 days, respectively as well as better colour and overall acceptability compared to technology option 1 (TO_1). Although no significant difference was observed between TO_1 and TO_2 in rehydration ratio, yet statistically differences in terms of colour and overall acceptability when compared not only to farmer practices but also to each other. Among the options, TO_2 emerged as the preferred choice in terms of overall acceptability.

Fig. 28: Assessment of different packaging materials on the shelf life of mushroom

Table 30: Assessment of different packaging materials on the shelf life of oyster mushroom

Technology options with detailed treatments	Area (ha in crop & Fodder)/ Nos (in livestock)		Rehydration Ratio				Colour				Overall acceptability			
	Proposed	Actual	Initial	30 days	60 days	90 days	Initial	30 days	60 days	90 days	Initial	30 days	60 days	90 days
FP: Sun drying	0.4	0.4	2.83^{b}	2.60^{b}	2.30^{b}	2.19^{b}	6.1^{c}	6.0^{c}	5.8^{c}	5.6^{c}	6.3^{c}	6.1^{c}	5.6^{c}	5.2^{c}
TO_1: Suitable Punnet (wash in plain water, pre -treated with 0.05% KMS and dried in solar dryer)			3.64^{a}	3.60^{a}	3.52^{a}	3.42^{a}	7.2^{b}	7.0^{b}	6.7^{b}	6.6^{b}	7.2^{b}	6.7^{b}	6.6^{b}	6.4^{b}
TO2: Biodegradable LDPE bag (40 -60 micron or 100 - 150 gauge) (wash in plain water, pre -treated with 0.1% Citric acid and 0.05 % KMS)			3.73^{a}	3.68^{a}	3.55^{a}	3.50^{a}	8.5^{a}	8.4^{a}	8.1^{a}	7.7^{a}	8.5^{a}	8.3^{a}	8.1^{a}	7.7^{a}
SEm ±			0.29	0.35	0.41	0.42	0.66	0.64	0.67	0.62	0.63	0.64	0.70	0.71
CD at 5%			0.240	0.176	0.273	0.219	0.299	0.360	0.410	0.264	0.227	0.360	0.346	0.372

Krishi Vigyan Kendra : Samastipur-I

Thematic area: Farm Mechanization

Problem diagnosed: Manual harvesting, drudgery in operation, labour intensive operation, shortage of labour

Technology Assessed: Assessment of different harvesting techniques for paddy crop

Technological option:

FP: Manual harvesting (local Sickle)

TO_1: Harvesting of Paddy by Self operated reaper cum binder

TO_2: Harvesting of paddy by Brush cutter

Results: Based on the conduction of OFT, T.O_2 i.e., harvesting of paddy by brush cutter is found the best among the selected technology options. Effective field capacity in case of found maximum for the harvesting of paddy i.e., 0.30 ha/hr. Fuel consumption was found 69.56 per cent lower than the TO_1. Harvesting loss was observed minimum among the selected technologies. Harvesting cost was also minimum in case of TO_2 i.e., 600 Rs/ha which is the lowest cost among the selected technologies.

Table 31: Performance of the technology with performance indicators

Technology options with detailed treatments	Area (ha)		Effective Field Capacity (ha/hr)	Theoretical Field Capacity (ha/hr)	Field efficiency	Harvesting loss (gm/m^2)	Fuel consumption (Lit/hr)	Harvesting Cost (Rs/ha)
	Proposed	Actual						
FP: Manual harvesting (local Sickle)	1 ha	0.35	0.013	0.018	72.22%	6.36	Manual	8500.00
TO_1: Harvesting of Paddy by Self operated reaper cum binder		0.35	0.20	0.30	66.66%	9.50	1.15	3000.00
TO_2: Harvesting of paddy by Brush cutter		0.35	0.30	0.35	85.71%	4.98	0.35	600.00

Fig. 29: Assessment of different harvesting technique for paddy crops

Krishi Vigyan Kendra : Palamu

Thematic area: Water use efficiency

Problem diagnosed: Low production of wheat due to improper method of irrigation

Technology Assessed: Assessment of border width for management of irrigation water in wheat

Technological option:

FP: Farmer's practice of traditional flood irrigation (irrigating wheat crop without making any subsidiary ridges in the field)

TO_1: irrigation with 5-meter width of border

TO_2: irrigation with 3-meter width of border

Results: Result revealed that the higher yield of wheat and Net return was recorded under treatment TO_2 where border width is 3 meters. The highest WUE is also recorded under Treatment TO_2. Thus, it is recommended that for getting higher water use efficiency and net return, farmers can sow wheat with border width of 3 meter of treatment TO_2.

Table 32: Performance of the technology with performance indicators

Treatment	1000 grain weight (Gram)	Yield (q/ha)	WUE (q/ha/cm)	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	B:C Ratio
FP: Farmer's practice of traditional flood irrigation (irrigating wheat crop without making any subsidiary ridges in the field)	47.43	16.72	0.93	18045	25080	7035	1.39
TO_1: Irrigation with 5-meterwidth of border.	54.57	25.05	1.39	22500	37575	15075	1.67
TO_2: Irrigationwith 3-meterwidth of border.	56.15	30.07	1.67	24120	45105	20985	1.87

Fig. 30: Assessment of border width for management of irrigation water in wheat

Krishi Vigyan Kendra: Bhojpur, Gaya -II and Nawada

Thematic area: Technology Dissemination

Problem diagnosed: Imbalance uses of fertilizer due to lack of knowledge

Technology assessed: Assessing the extension education methods for awareness and use of soil health card

Technological options:

FP: Without extension education method

TO_1: Farmers having SHC with training literature

TO_2: Farmers having SHC with customized social media advisory

TO_3: Farmers having SHC with training literature and customized social media advisory

Results: Farmers of Bhojpur, Gaya and Nawada are facing problem to accept latest technology to enhance the crop yield. KVK, Bhojpur, Gaya and Nawada has designed a technology dissemination concept to disseminate latest technology at farmer's field in the shortest time period.

TO_1: Farmers having SHC with training literature; TO_2: Farmers having SHC with customized social media advisory; and TO_3: Farmers having SHC with training literature and customized social media advisory were designed. Result revealed that use of SHL % highest Nawada (40%) and lowest in Gaya 2 (36.5%) in technological option 3 (TO_3).

Table 33: Distribution of Respondents According to Level of Knowledge, Awareness & Adoption of SHC

Name of KVK	Technological option	Level of Knowledge						Extent of Adoption						Awareness about SHC			Use of SHL
		Low		Medium		High		Low		Medium		High		Fully aware	Aware	Not aware	
		R	%	R	%	R	%	F	%	F	%	F	%	%	%	%	(%)
Bhojpur	FP:	13	86.67	2	13.33	0	0	13	86.67	2	13.33	0	0	12.25	20.25	67.5	15.5
Gaya II		18	90	2	10	0	0	17	85	3	15	0	0	5.25	18.5	76.25	12.5
Nawada		11	73.33	4	26.66	0	0	14	93.33	1	6.67	0	0	13.33	20	66.67	13.33
Bhojpur	TO1	4	26.67	9	60	2	13.33	4	26.67	10	66.67	1	6.66	22.75	39.5	37.75	20
Gaya II		6	30	11	55	3	15	5	25	12	60	3	15	16.25	35.5	45.25	21.25
Nawada		5	33.33	7	46.66	3	20	5	33.33	8	53.33	2	13.33	20	40	40	20
Bhojpur	TO2	2	13.33	10	66.67	3	20	3	20	9	60	3	20	35.25	42.25	22.5	23
Gaya II		3	15	12	60	5	25	3	15	13	65	5	25	25.5	48.75	25.75	28.5
Nawada		2	13.33	8	53.33	5	33.33	3	20	10	66.67	2	13.33	40	40	20	26.67
Bhojpur	TO3	2	13.33	3	20	10	66.67	2	13.33	4	26.67	9	60	65.75	29	4.75	38.5
Gaya II		3	15	3	15	14	70	3	15	7	35	11	55	58.75	27.5	13.75	36.5
Nawada		2	13.33	4	26.66	9	60	2	13.33	4	26.67	9	60	53.33	33.33	13.33	40



Fig. 31: Assessing the extension education methods for awareness and use of SHC

Krishi Vigyan Kendra :West Champaran-II

Thematic area: Feed and Fodder Management

Problem diagnosed: Poor availability and high cost of good quality of concentrate feeds. Fodder cultivation practice is poor.

Technology assessed: Assessment of *azolla* feeding on milk production in dairy cow

Technological options:

FP: Indiscriminate feeding of wheat and paddy straw with concentrate and mineral mixture

TO_1: Use of *Azolla* @ 1.5 kg per animal per day + 80% of required quantity of concentrate with existing fodder

TO_2: Use of *Azolla* @ 2.0 kg per animal per day + 75% of required quantity of concentrate with existing fodder

Results: TO_2 had maximum milk production 17.5% higher than F.P. while TO_1 was 15% higher than FP. TO_1 & TO_2 had similar 4% increase in fat percent in milk. B:C ratio 1.85 was found highest in TO_2. Therefore, azolla feeding in dairy cattle @ 2.0 kg per animal per day with 75% of required quantity of concentrate and fodder.

Table 34: Performance of azolla feeding on milk production in dairy cow

Technology options with detailed treatments (For Sixty Days)	Nos (in livestock)		Yield (Milk) (Kg/Cow)	Cost of production Rs./Cow)	Gross return (Rs/Cow)	Net return (Rs/Cow)	B:C ratio
	Proposed	Actual					
FP	10	10	6.15	11707	14760	3053	1.26
TO_1	10	10	7.07	9834	16968	7134	1.72
TO_2	10	10	7.22	9366	17328	7962	1.85

Fig. 32: Assessment of azolla feeding on milk production in cow

Krishi Vigyan Kendra : Jehanabad

Thematic area: Diseases Management

Problem diagnosed: Bacterial infection of reproductive system

Technology assessed: Effect of intrauterine antimicrobials treatment in repeat breeding cross bred cows.

Technological options:

FP:1.5-2.0 kg spouted wheat/gram for 5-6 days +6-7 kg green grass (Tradition feeding) and 1-1.5kg concentrate mixture

TO_1: FP+Ciprofloxacin & Tinidazole combination@30ml daily for 5days + GnRh prepration@5ml I/M route 12 hrs before insemination

TO_2: FP + Ciprofloxacin & Tinidazole combination @30ml daily for 5 days + D0: GnRh (Buserelin) 10 microgram +D7: PGF_2alfa 500 microgram+D9: GnRh (Buserelin) 10 microgram and D10 fixed time A.I.

TO_3:TO + Ciprofloxacin & Tinidazole combination @30ml daily for 5 days + D0: GnRh (Buserelin) 10 microgram +D7: PGF_2alfa, 500 microgram + D9: Oestradol 1 milligram of therapeutic trial and D10 fixed time A.I.

Results: The better conception and pregnancy rate found in repeat breeding cross breed cows can be obtained by TO_3 (Ciprofloxacin & Tinidazole combination @30ml daily for 5 days + D0: GnRh (Buserelin) 10 microgram +D7: PGF2alfa,500microgram+ D9: Oestradol 1 milligram of therapeutic trial and D10 fixed time A.I.) treatment through the cost of intervention seems to be higher than other treatment groups.

Fig. 33: Effect of intrauterine antimicrobial treatment in repeat breeding cross bred cow

Table 35: Effect of intrauterine antimicrobials treatment in repeat breeding cross bred cows

Technology options with detailed treatments	Nos (in livestock)		Conception/Pregnancy rate (%)	Cost of production (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
	Proposed	Actual					
FP	10	10	30	205850	240000	34150	1.1
TO_1	10	10	40	210350	270000	59650	1.2
TO_2	10	10	50	215350	300000	84650	1.3
TO_3	10	10	50	213950	300000	86050	1.4

Krishi Vigyan Kendra : Garhwa

Thematic area: Feed and Fodder Management

Problem diagnosed: Low milk yield, poor health condition

Technology assessed: Assessment of feeding different hydroponic fodder on milk production in dairy cows.

Technological options:

FP: Grazing + paddy straw + concentrate feed @ 1 kg/3 liter of milk

TO_1: FP + Maize hydroponic fodder

TO_2: FP Wheat hydroponic fodder

Results: Maize Hydroponic Fodder gave better milk production value as compared to wheat hydroponic fodder. Feed cost was less in hydroponic maize

Table 36: Effect of feeding different hydroponic fodder on milk production in dairy cows

Technology options with detailed treatments	Nos (in livestock)		Milk Yield (Liter/cow/day)	Total Cost of per cow (Rs/cow/day)	Gross return (Rs/cow/day)	Net return (Rs./cow/day)	BC ratio
	Proposed	Actual					
FP	8	8	9.76 + 1.07	223.206 +0.03	686 + 62.13	444 + 65.80	3.16
TO1	8	8	11.35 + 1.12	196.53 +0.058	712 + 70.82	616 + 76.25	3.63
TO2	8	8	10.18 + 1.10	220.92+0.075	964 + 76.55	744 + 78.46	4.38

Fig. 34: Assessment of feeding different hydroponic fodder on milk production in cow

Krishi Vigyan Kendra: Gaya-I

Thematic area: Disease Management

Problem diagnosed: High incidence of subclinical mastitis affecting milk yield and quality.

Technology assessed: Assessment of herbal medicine on subclinical mastitis

Technological options:

FP: Hot fomentation + Aconite 30 @10 pills at 30-minute Interval 4 times

TO_1: Eucalyptus leaves+ Curcuma longa+ Aloe vera paste (1:1:1)

TO_2: Green coriander leaves 250gm orally for 5 days

Results: Eucalyptus leaves+ Curcuma longa+ Aloe vera paste (1:1:1) is more beneficial in comparison to other technical option for treatment of subclinical mastitis.

Table 37: Effect of herbal medicine on subclinical mastitis in dairy cows

Technology options with detailed treatment	Nos (in livestock)		Yield (q/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
	Proposed	Actual					
FP	7	7	6.3	4250	8250	8250	1.94
TO_1	7	7	7.0	4050	8850	8850	2.19
TO_2	7	7	6.7	4215	8750	8750	2.08

Fig. 35: Assessment of herbal medicine on subclinical mastitis

Krishi Vigyan Kendra : Gumla

Thematic area: Animal Production and Management

Problem diagnosed: Low body weight gain in goat

Technology assessed: Assessment of saccharomyces and lactobacillus based probiotics as growth promoters in goats

Technological options:

FP: Natural grazing with use of anthelmintic (Oxyclozanide@ 10 mg/kg body weight and Fenbendazole @ 7.5 mg/kg body weight) at pre and post rainy season

TO_1: FP + use of probiotics @ 5 gm daily

TO_2: Natural grazing with use of probiotics @ 5 gm daily and anthelmintic (Oxyclozanide@ 10 mg/kg body weight and Fenbendazole @ 7.5 mg/kg body weight) at 3 months interval

Results: Natural foraging with use of probiotics @ 5gm daily and anthelmintics (Oxyclozanide @ 10 mg/kg body weight and Fenbendazole @ 7.5 mg/kg body weight) at 3 months interval give better performance as compared to farmer's practices.

Fig. 36: Assessment of saccharomyces and lactobacillus based probiotics as growth promoters in goats

Tabel 38: Effect of herbal medicine on subclinical mastitis

Technology options with detailed treatments	Nos (in livestock)		Yield (kg/goat)	Cost of production (Rs./year)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
	Proposed	Actual					
FP	10	10	12.60	3660	10080	6480	2.8
TO_1	10	10	14.50	3720	11600	7880	3.12
TO_2	10	10	16.30	3880	13040	9160	3.36

Krishi Vigyan Kendra : Ranchi

Thematic area: Disease Management

Problem diagnosed: Occurrence of external parasite , disease transfer, poor growth rate in goats.

Technology assessed: Assessment of karanj oil to control external parasites in goats

Technology options

FP: Use of karanj oil/ neem oil

TO_1: Amitraj 10ml/ lit of water for 2 alternative days.

TO_2: Karanj Oil 100ml + Sulphur 10g +

camphor 5g for 3 alternative days

Results: As per the data presented in the following table, use of karanj oil with sulphur and camphor (TO_2) was found most effective in terms of percentage efficacy i.e., 100 per cent on 15 days. Further, as per the result, TO_2 is an economical treatment of the external parasites also in goats.

Tabel 39: Effect of karanj oil on external parasites in goats

Technology options with detailed treatments	Av. total mites count in 6 cm^2 area on 0 day	Means post treatment mite count and percentage efficacy			Cost of treatment/goat (Rs.)
		3nd day	7th day	15th day	
FP	129.00	125.9 (22.38%)	121.45 (5.85%)	94.37 (26.84%)	40.00
TO_1	134.00	113.21 (15.72%)	17.08 (87.25%)	00.00 (100%)	98.50
TO_2	132.00	120.83(8.46%)	45.10(65.83%)	00.00(100%)	55.00

Fig. 37: Assessment of karanj oil to control external parasites in goats

Krishi Vigyan Kendra : Simdega

Thematic area: Animal Production Management

Problem diagnosed: High mortality rate in piglet during winter season due to pneumonia

Technology assessed: Assessment of management practice to control piglet mortality during winter season

Technology options

FP: Using of smoke practice by fired wood or cow dung

TO_1: FP+ Using of smoke practice by fire of carom seed

TO_2: Amoxicillin + Clavenic acid@ 1.5 mg/body w.t caflon@1 mg/piglet.

Results: The experiment was conducted on the farm field among 10 farmers of village Pabura (Girja Toli), Simdega (Pahan Toli), Bano (Ban Toli) an objective to overcome the mortality present piglet. The data recorded during the trail clearly revealed that the lowest mortality percentage (10) and maximum body weight gain (30.92 kg) after 3 months was recorded under TO_2 (Amoxicillin+ Clavenic acid@ 1.5 mg/body wt. caflon@1 mg/piglet) The maximum net return (Rs. 5030/Piglet) and BC ratio (2.86) was found under the same treatment (TO_2).

Fig. 38: Assessment of management practice to control piglet mortality during winter season

Table 40: Effect of management practice to control piglet mortality during winter season

Technology option	No. of trials	Yield component			No. of piglet Mortality	Average mortality %	Cost involved (Rs.)	Gross income (Rs) /piglet	Net income (Rs.)/ piglet	BC ratio
		Average no. of piglet/ farmer	Average initial body wt.(kg)	Average body wt. gain after3 months (kg)						
FP	10	10	1.100	21.54	4	10	2500	5385	2885	2.15
TO_1	10	10	1.102	26.00	3	30	2860	6500	3640	2.27
TO_2	10	10	1.106	30.92	1	10	2700	7730	5030	2.86

Krishi Vigyan Kendra : East Champaran-II

Thematic area: Fish Production

Problem diagnosed: High mortality rate recorded in fish seed rearing ponds

Technology assessed: Assessment on quality fingerling production in carp culture

Technology options

FP: Stocking density (not specific) with irregular feeding

TO_1: Use of cow dung 10 tonnes/ha, urea @ 200 kg/ ha/yr and SSP @ 300 kg/ ha/yr with stocking density of 1 lakh/ha fry

TO_2: Use of cow dung 5 tonnes/ha, urea @ 100 kg/ ha/yr and SSP @ 150 kg/ha/yr with stocking density of 1 lakh/ha fry

Results: It has been revealed that application of cow dung 10 tonnes/ha, urea @ 200 kg/ ha/yr and SSP @ 300 kg/ ha/yr with stocking density of 1 lakh/ha fry given maximum yield 83356 /ha fingerling with high B:C ratio of 3.45.

Fig. 39: Assessment of quality fingerlings production in carp culture

Table 41: Effect of on quality fingerling production in carp culture

Technology options with detailed treatments	Area (ha)		Yield (No/ha)	Cost of cultivation (Rs./ha)	Gross return (Rs/ha)	Net return (Rs./ha)	BC ratio
	Proposed	Actual					
FP	1.5	1.5	63867	31000	102187	71187	2.30
TO_1	1.5	1.5	81833	40500	180033	139533	3.45
TO_2	1.5	1.5	75167	35500	150333	114833	3.23

Krishi Vigyan Kendra : Rohtas

Thematic area: Fish Production

Problem diagnosed: Monoculture fish farming system, high risk farming

Technology assessed: Assessment of yield and economics of pangassius-carp poly culture fish farming system

Technology options:

FP: Pangassius fish monoculture (@ 75000/acre stocking density (SD))

TO_1: Pangas (SD @ 73000/ha)+Rohu (SD @ 300/ha)+Catla (SD @ 400/ha)

TO_2: Pangas (SD @ 70000/ha)+Rohu (SD @ 300/ha)+Catla (SD @ 400/ha)+Amur carp (SD @ 250/ha)

Results: The fish seed has been provided to beneficiaries. Stocking of fish seed has been done during July 2025. This is observed that the yield in all three trials is insignificant but the BC ratio was found to be significant in both TO_2 & TO_3 as compared to FP. yield significance (p-value = 0.9784): The p-value is very high, meaning there is no significant difference in yield among FP, TO_1, and TO_2. B:C Ratio significance (p-value = 0.0): The p-value is extremely low, indicating a highly significant difference in B:C ratio among FP, TO_1, and TO_2

Table 42: Performance of pangassius-carp poly culture fish farming system

Treatments	Yield (q/acre)	Cost of Cultivation (Rs acre^{-1})	Gross Income (Rs acre^{-1})	Net Income (Rs acre^{-1})	B:C ratio
FP	9308.02	5,10,000	11,16,982.28	6,06,982.28	2.19
TO_1	9273.42	4,75,000	11,75,576.71	7,00,576.71	2.47
TO_2	9291.82	4,75,000	11,87,886.54	7,12,886.54	2.50

Fig. 40: Assessment of yield and economics of pangassius-carp poly culture fish farming system

Krishi Vigyan Kendra : Lakhisarai

Thematic area: Value Addition

Problem diagnosed: Lack of knowledge about tomato pulp preparation and its preservation

Technology assessed: Assessment of preparation methods of tomato (*Solanum lycopersicum L.*) pulp for increasing shelf life and instant use

Technological options:

FP: Not in practice to prepare tomato pulp for instant use

TO_1: Tomato puree preparation (with extraction of seed and skin)

TO_2: Tomato crush preparation (from whole fruits)

Results: Farmers of Lakhisarai is facing problem to accept latest technology to enhance the shelf life of tomato. KVK Lakhisarai has designed a technology value addition latest technology at farmer's home in the shortest time period. It is apparent from the table,

overall acceptability score of TO_2 is more than that of TO_1 at 0 days as well as over the period of 15, 30, 45, 60 and 75 days. The product recovery from the TO_2 i.e., tomato crush (from whole fruits) is about 86.25 percent more than that of TO_1. Therefore, TO_2 is recommended for farmers for preparation and preservation of tomato pulp.

Table 43: Product recovery and sensory analysis of technologies at different time interval

Thematic area	Product Recovery (gm/kg raw potato)			Sensory characteristics	Taste		Texture		Colour		Flavour		Overall acceptability	
Value Addition	FP	TO_1	TO_2	Duration	TO_1	TO_2	TO_1	TO_2	TO_1	TO_2	TO_1	TO_2	TO_1	TO_2
	100	160	298	0 Days	4.3	4.5	4.7	4.5	4.7	4.8	4.4	4.5	4.52	4.57
				15 Days	4.3	4.5	4.6	4.5	4.7	4.8	4.3	4.5	4.47	4.57
				30 Days	4.3	4.4	4.6	4.4	4.7	4.8	4.3	4.5	4.47	4.52
				45 Days	4.3	4.4	4.5	4.2	4.6	4.7	4.2	4.4	4.4	4.42
				60 Days	4.2	4.3	4.4	4.2	4.5	4.6	4.2	4.3	4.32	4.35
				75 Days	4.1	4.3	4.3	4.2	4.4	4.5	4.1	4.3	4.22	4.32

**Respondents feedback (5-point scale Hedonic Scale)*

Fig. 41: Assessment of preparation methods of tomato pulp for increasing shelf life and instant use

Krishi Vigyan Kendra : Godda

Thematic area: Nutritional Security

Problem diagnosed: Lack of dietary knowledge which leads poor choice of food leads to poor health of children

Technology assessed: Impact of ready to use infant food on anthropometric parameters of malnourished children (6 months to 2 years)

Technological options:

FP: Normal homemade food (The children are not being provided nutrient rich food. No ready to eat food is being practiced by majority of the children)

TO_1: Standard ingredients: Ragi (85:15)

TO_2: Standard Ingredients: Wheat (85:15). (Standard Ingredients: The ready to use infant food mixes were developed by using different cereals/millets. For this, a standard combination of peanut: sugar: milk powder and ghee had been made in the ratio of 2:3:2.5:1. The food mixes from cereals /millets had been developed by taking the standard combination and processed cereals /millets powder in the ratio of 85:15)

Results: Farmers of Godda is facing problem to accept latest technology to enhance the nutrition among the farmers. KVK Godda has designed a technology nutritional security latest technology among the farmers in the shortest time period. On farm trial on the topic "Impact of ready to use infant food on anthropometric parameters of malnourished children (6 months to 2 years)" was conducted during the year 2024-25 with 03 treatments and 10 replications. All the treatments are nutritive and easily acceptable in comparison to farmer's

practice. Among the options tested, standard ingredients (peanut: sugar: milk powder and ghee had been made in the ratio of 2:3:2.5:1): Ragi (85:15) is more nutritive and acceptable by the children because of its organoleptic and anthropometric properties.

Table 44: Impact of ready to use infant food on anthropometric parameters of malnourished children (6 months to 2 years)

Technology options with detailed treatments	Area (ha in crop & Fodder)/ Nos (in livestock)		Organoleptic properties				Nutritional Content (Per 100 g)			
	Proposed	Actual	Taste	Sight	Odour	Texture	Carbohydrate (g)	Protein (g)	Fat (g)	Fiber (g)
Farmer's practice (FP): Normal homemade food (The children are not being provided nutrient rich food. No ready to eat food is being practiced by majority of the children)	10	10	Good (60%)	Average (100%)	Average (90%)	Soft (90%)	-	-	-	-
TO_1: Standard ingredients: Ragi (85:15).	10	10	Very Good (90%)	Good (80%)	Very Good (100%)	Soft (100%)	55.46	12.86	24.73	1.16
TO_2: Standard Ingredients: Wheat (85:15). (Standard Ingredients: The ready to use infant food mixes were developed by using different cereals/millets. For this, a standard combination of peanut: sugar: milk powder and ghee had been made in the ratio of 2:3:2.5:1. The food mixes from cereals /millets had been developed by taking the standard combination and processed cereals /millets powder in the ratio of 85:15)	10	10	Very Good (70%)	Very Good (100%)	Good (90%)	Soft (80%)	55.07	13.56	24.89	0.905

Table 45: Impact of ready to use infant food on anthropometric parameters of malnourished children (6 months to 2 years) (Anthropometric measurements)

Technology option	No. of trials	Age	Anthropometric measurements						As per ICMR Norms*	
			Initial Wt. (Kg) (Av.)	Wt. after 3 months (Av.)	% Increased (Av.)	Initial Ht (cm) (Av.)	Ht. after 3 months (cm) (Av.)	% Increased (Av.)	Weight (kg) (Av.)	Height (cm) (Av.)
Farmer's practice (FP): Normal homemade food (The children are not being provided nutrient rich food. No ready to eat food is being practiced by majority of the children)	10	6 months to 2 years	10.05	10.75	6.96	78.2	78.9	0.89	12.36	85.53
TO_1: Standard ingredients: Ragi (85:15).			9.25	10.35	11.89	74.8	75.9	1.47		
TO_2: Standard Ingredients: Wheat (85:15). (Standard Ingredients: The ready to use infant food mixes were developed by using different cereals/millets. For this, a standard combination of peanut: sugar: milk powder and ghee had been made in the ratio of 2:3:2.5:1. The food mixes from cereals /millets had been developed by taking the standard combination and processed cereals /millets powder in the ratio of 85:15)			9.37	10.25	9.39	74.5	75.4	1.20		

Fig. 42: Impact of ready to use infant food on anthropometric parameters of malnourished children

Krishi Vigyan Kendra : Godda

Thematic area: Value Addition

Problem diagnosed: Distress sale due to surplus production during peak time

Technology assessed: Assessment of different methods for preservation of tomato

Technological options:

FP: (no standard proportion)

TO_1: Tomato (1kg) + Salt (12%) + Vinegar (20%) + Mustard oil (10%) + Spices (150g)

TO_2: Tomato (1kg) +Salt (12%) + Tamarind (20%) + Mustard oil (10%) + Spices (150g)

Results: Farmers of Godda is facing problem to accept latest technology to enhance the shelf

life. KVK Godda has designed a technology value addition latest technology at farmer's home in the shortest time period. On farm trial on the topic "Assessment of different methods for preservation of Tomato" was conducted during the year 2024-24 with 03 treatments and 10 replications. All the treatments gave soft texture in comparison to farmers practice. among the options tested, maximum shelf life, very good colour, texture, taste and maximum gross return (Rs. 50/ 500g) with a B: C ratio (1.51:1) was observed when tomato (1kg) was preserved with Salt (12%) + vinegar (20%) + mustard oil (10%) + spices (150g).

Table 46: Impact of different method for preservation of tomato

Thematic area	Technology options with detailed treatments	No. of trials		Cost of Preparation (Rs/500 g)	Gross return (Rs/500 g)	Net return (Rs/500 g)	BC ratio
		Proposed	Actual				
Value addition	FP: (no standard proportion)	10	10	30	Not Marketable		
	TO_1: Tomato (1kg) + Salt (12%) + Vinegar (20%) + Mustard oil (10%) + Spices (150g)	10	10	33	50	17	1.51:1
	TO_2: Tomato (1kg) +Salt (12%) + Tamarind (20%) + Mustard oil (10%) + Spices (150g)	10	10	36	50	14	1.38:1

Table 47: Impact of different method for preservation of tomato

Technology option	No. of trials	Preservation component				
		Shelf life (days)	Colour	Texture	Taste	Preparation time (days)
Farmers' practice: (no standard proportion)	10	110	Dull	Semi Soft	Average	20
TO_1: Tomato (1kg) + Salt (12%) + Vinegar (20%) + Mustard oil (10%) + Spices (150g)		150	Very Good	Soft	Very Good	1
TO_2: Tomato (1kg) +Salt (12%) + Tamarind (20%) + Mustard oil (10%) + Spices (150g)		120	Good	Soft	Good	1

Fig. 43: Assessment of different methods for preservation of tomato

Krishi Vigyan Kendra : Ranchi

Thematic area: Value Addition

Problem diagnosed: Due to lack of processing, it remains under-exploited to meet growing domestic and commercial needs

Technology assessed: Preparation of candy from tamarind

Technological options:

FP: Consumption of raw pulp.

TO_1: Formulation of tamarind candy with sugar.

TO_2: Formulation of tamarind candy with jaggery

Results: Farmers of Ranchi is facing problem to accept latest technology to enhance the shelf life KVK Ranchi has designed a technology value addition latest technology at farmer's field in the shortest time period. On farm trial on the topic "preparation of candy from tamarind" was conducted during the year 2024-25. The result reveled that TO_2 (Formulation of tamarind candy with jiggery) is better perform in all cases like Texture, consistency and overall acceptability than TO_1(Formulation of tamarind candy with sugar).

Table 48: Performance of different technological option

Technology Option	No. of trials	Organoleptic assessment						
		Appearance	Colour	Flavor	Taste	Texture	Consistency	Over all acceptability
FP: Consume pulp in raw form	10	6	5	7	6	6	4	5
TO_1: Formulation of tamarind candy with sugar		8	8	9	9	7	8	8
TO_2: Formulation of tamarind candy with jaggery		8	9	9	9	8	9	9

Fig. 44: Input distribution under OFT on Preparation of Candy from tamarind

Fig. 45: Preparation of tamarind candy under OFT on Preparation of Candy from tamarind

Fig. 46: Developed product of TO_1 and TO_2 under OFT on Preparation of Candy from tamarind

Fig. 47: Developed product of TO_1 and TO_2 under OFT on Preparation of Candy from tamarind

Krishi Vigyan Kendra : Gumla

Thematic area: Value Addition

Problem diagnosed: Spoilage of mushroom due to poor shelf life

Technology assessed: Assessment of different treatment preservation methods on preparation of oyster mushroom powder for enhancing the shelf-life

Technological options:

FP: Drying & Powdering of mushroom without any treatment

TO_1: Drying & Powdering of mushroom by pre-treating with 0.5% citric acid

TO_2: Drying & Powdering of mushroom by pre-treating with 1% KMS

Results: Farmers of Gumla is facing problem to accept latest technology to enhance the shelf life. KVK Gumla has designed a technology value addition latest technology at farmer's field in the shortest time period. On farm trial on the topic "assessment of different treatment preservation methods on preparation of oyster mushroom powder for enhancing the shelf-life" was conducted during the year 2024-25.

The trial was conducted in helta, kubbatoli and bendi village. The farm women were grouped into 3 categories that is farmer's practice, Technology option 1and Technology option 2. The mushroom was blanched for 2 minutes with specified amount of citric acid and KMS respectively, dried for 7 to 10 days and powdered. The powder was kept for 6 months for its quality analysis. The mushroom powder under TO_2 was found very good in color and taste and the texture of dried mushroom was found soft. So mushroom powder treated with KMS was having good shelf life and recommended for storing dehydrated mushroom long period.

Recommendation: The mushroom powder under TO_2 was found very good in color and taste and the texture of dried mushroom was found soft. So mushroom powder treated with KMS was having good shelf life and recommended for storing dehydrated mushroom long period

Table 49: Assessment of different treatment preservation methods on preparation of oyster mushroom powder for enhancing the shelf-life after 6 months

Technological options	No. of trials	Shelf Life (Days)	Colour	Texture	Taste
FP: Drying & Powdering of mushroom without any treatment.	10	94	Dull	Semi soft	Average
TO_1: Drying & Powdering of mushroom by pre-treating with 0.5% citric acid	10	131	Good	Soft	Good
TO_2: Drying & Powdering of mushroom by pre-treating with 1% KMS	10	163	Very Good	Soft	Very Good

Table 50: Economics of preparing oyster mushroom powder prepared through different treatment methods

Technological options	No. of trials	Cost of Preparation (Rs/Kg)	Gross return (Rs/kg)	Net return	B:C ratio
FP: Drying & Powdering of mushroom without any treatment.	10	1000	1200	200	1.20
TO_1: Drying & Powdering of mushroom by pre-treating with 0.5% citric acid.	10	1250	1500	250	1.20
TO_2: Drying & Powdering of mushroom by pre-treating with 1% KMS	10	1250	1550	300	1.20

Fig. 48: Assessment of different treatment prservation methods on preparation of oyster mushroom powder for enhancing the shelf life

Krishi Vigyan Kendra : Koderma

Thematic area: Post Harvest Management

Problem diagnosed: Wastage of lemon in season.

Technology assessed: Enhancement of post-harvest quality of fresh lemon based on edible coating

Technological options:

FP: Storing the lemon in gunny bags without any treatment

TO_1: Coating treatments with edible

waxing/coating

TO_2: Coating with cinnamon bark oil / bee wax & coconut oil.

Results: Koderma district farmers facing the problem wastage of lemon in season. KVK scientist designs the OFT against wastage of lemon in season for storage shelf life and increase storage shelf life. Result reveled that TO_2(Coating with cinnamon bark oil/bee wax & coconut oil) better perform to increase storage shelf life (26-26 days) than TO_1 (Coating treatments with edible waxing/coating).

Table 51: Assessment of enhancement of post-harvest quality of fresh lemon based on edible coating

Technology options with detailed treatments	Storage Shelf Life (Days)	Peel Thickness (mm)	Juice Content (%)	Peel Colour (Visual Score)	Storage Shelf Life (Days)
FP: Storing the lemon in gunny bags without any treatment	10-12 Days	2.1 mm	35%	Yellowing & Shrinkage	10-12 Days
TO_1: Coating treatments with edible waxing/coating	20-22 Days	2.4 mm	40%	Uniform Yellow & Smooth	20-22 Days
TO_2: Coating with cinnamon bark oil/bee wax& coconut oil.	26-27 Days	2.5 mm	42%	Shiny Green - Yellow	26-27 Days

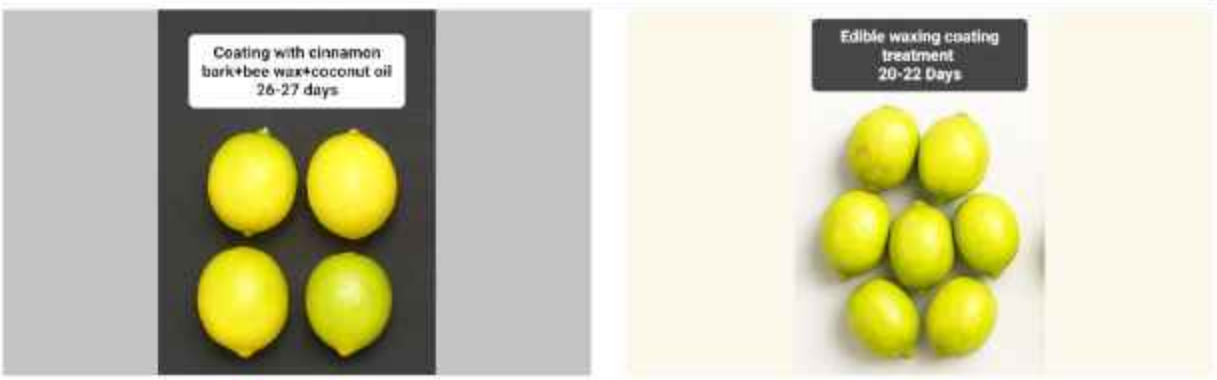


Fig. 49: Enhancement of post harvest quality of fresh lemon based on edible coating

Krishi Vigyan Kendra : Gopalganj

Thematic area: Drudgery Reduction

Problem diagnosed: Injuries to workers in sugarcane stripping operation

Technology Assessed: Evaluation of sugarcane stripper in drudgery reduction

Technological Option:

Farmers Practice (FP): People use local made sickles for stripping operation often causing injury

TO_1: Sugarcane stripper (IISR, Lucknow)

TO_2: Sugarcane detrassing tool (ICAR-Sugarcane breeding institute Coimbatore)

Results: Evaluation of sugarcane stripper revealed that TO_1 and TO_2 significantly reduced drudgery compared to Farmers' Practice (FP). FP required 12 person-days, yielding 14 quintals with a B:C ratio of 38.5. TO_1 reduced labor to 5 person-days, increased yield to 31.5 quintals, and achieved the highest B:C ratio of 57.7. TO_2 completely eliminated manual drudgery (0 person-days), gave the highest yield of 38.5 quintals, and a return of ₹10,587.5, though with a lower B:C ratio of 18.5 due to higher cost. Thus, TO_1 was most efficient in cost-benefit and labor reduction.

Table 52: Evaluation of sugarcane stripper in drudgery reduction

Thematic area	Technology options with detailed treatments	Area (ha)		Amount (q)	Gross Cost	Gross Return	Incidence rate/ person/day (6hr.)	B:C ratio
		Proposed	Actual					
Drudgery reduction	FP	0.07	0.07	14	100	3850	12	38.5
	TO	0.16	0.16	31.5	150	8662.5	5	57.7
	TO	0.20	0.20	38.5	570	10587.5	0	18.5

Fig. 50: Evaluation of sugarcane stripper in drudgery reduction

Krishi Vigyan Kendra : Siwan

Thematic area: Ergonomics Problem and Drudgery Reduction

Problem diagnosed: Different ergonomics problem faced by animal husbandry workers in milking activities

Technology Assessed: Assessment of revolving milking stool and stand for milking activities in animal husbandry

Technological Option:

Farmer Practice: Traditional bucket

TO_1: Revolving milking stool and stand

TO_2: Milking stand with stool

Results: Use of improved milking technologies (TO_1, TO_2) significantly reduced overall discomfort (ODR), musculo-skeletal problems (MSP), and perceived exertion (RPE) compared to traditional methods (FP). TO_1 and TO_2 showed moderate to light MSP and moderate RPE, while FP caused severe pain and heavy exertion. Physiological indicators (BP, heart rate) remained stable, with TO_2 being highly accepted, TO_1 moderately accepted, and FP not accepted by farmers.

Table 53: Mean value of overall discomfort rating (ODR), responses on musculo-skeletal problems and perceived exertion experienced by respondents

Technology	ODR	MSP	RPE
FP: Traditional bucket	8.3	Severe pain in Heavy shoulders, upper back, hands and fingers	Heavy
TO_1: Revolving Milking Stool and Stand	4.1	Moderate to light Moderate pain in shoulder, hands and arms.	Moderate
TO_2: Milking Stand with Stool	4.8	Moderate to light Moderate pain in shoulder, hands and arms.	Moderate

ODR=Mean value of overall discomfort rating MSP=Musculo-skeletal problem RPE=Rating of perceived exertion

Table 54: Perception and acceptability of revolving milking stand and stool by farmers for milking activity

Technology	Perception				Acceptability
	Blood Pressure (mm Hg)		Heart beat/ minute		
	Before starting of work	After completion of work	Before starting of work	After completion of work	
FP	120/80	120/85	73	77	Not accepted
TO_1	120/80	120/83	73	75	Moderately accepted
TO_2	120/80	120/82	73	74	Highly accepted

Fig. 51: Milking stand and stool (T1 & T2)

Fig. 52: Milking activity through traditional method

Fig.53: Milking activity done by both (T1 & T2) technology

FRONT LINE DEMONSTRATIONS (FLDs)

Front Line demonstrations (FLDs) is a unique approach to provide a direct interface between researcher and farmers as the scientists are directly involved in planning, execution and monitoring of the demonstrations for the technologies developed by them and get direct feedback from the farmers' field. This enables the scientists to improvise upon the research programme accordingly. Its main goals are to evaluate production limitations, pinpoint elements that lead to increased output, and produce insightful production and feedback data. FLDs are carried out in a variety of sectors, including agricultural production, horticulture, animal science and home science are not exclusive to any one industry. FLDs function as a type of applied research in which a limited number of farmers' fields are used to test the most recent varieties, together with certain parts or complete packages of methods. In 2024, KVKs engaged in Front Line Demonstrations covering 5693.63 ha, benefitting 19168 farmers in this particular zone (Table 55).

Table 55: State wise details of front line demonstration on field crops

State	Oilseed			Pulse			Cereals			Vegetable			Fruit			Flower			Total		
	No. of FLDs	Area (ha)	No. of farmers	No. of FLDs	Area (ha)	No. of farmers	No. of FLDs	Area (ha)	No. of farmers	No. of FLDs	Area (ha)	No. of farmers	No. of FLDs	Area (ha)	No. of farmers	No. of FLDs	Area (ha)	No. of farmers	No. of FLDs	Area (ha)	No. of farmers
Bihar	21	338.8	1180	38	353.45	1524	163	1592.3	4905	128	353.76	3316	19	29.07	258	2	1.25	25	369	2668.63	11208
Jharkhand	37	1176.5	3489	22	210	773	42	1427	2150	52	209.8	1537	3	1.2	6	1	0.5	5	154	3025	7960
Total	58	1515.3	4669	60	563.45	2297	205	3019.3	7055	180	563.56	4853	22	30.27	264	3	1.75	30	523	5693.63	19168

Oilseed Crops

Front Line demonstrations were laid out for various oilseed crops including mustard, groundnut, niger, linseed, sesame and soybean to establish production potential of latest technologies at farmer field and minimize the yield gap. Total 58 FLDs were laid out in 1515.30 ha area with the involvement of 4669 farmers. Mustard cultivation received particular focus, encompassing 804.00 ha and engaging 2212 farmers. On the other hand, niger cultivation showed the highest percentage increase in yield (35.66 %) under front line demonstrations on different oilseed crops in the zone. (Table 56).

Fig. 54: Front line demonstration on niger

Table 56: Details of front line demonstration on oilseeds

Crop	State	No of FLDs	Area (ha)	No. of Farmers	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Ground nut	Bihar	9	20.00	121	0.00	12.78	0.00	0	0	0	0.00	45228	86686	41458	1.92
	Jharkhand		177.00	791	23.84	34.55	33.85	41400	74127	32727	1.80	45592	104159	58568	2.38
	Total		197.00	912	23.84	23.66	33.85	41400	74127	32727	1.80	45410	95422	50013	2.15
Linseed	Bihar	8	19.40	138	7.40	10.50	41.80	28750	45650	16900	1.60	29500	65580	36000	2.20
	Jharkhand		116.00	206	9.18	11.28	22.87	20800	45900	25100	2.20	21600	56400	34800	2.61
	Total		135.40	344	8.29	10.89	32.33	24775	45775	21000	1.90	25550	60990	35400	2.40
Mustard	Bihar	21	277.00	855	11.55	14.30	22.68	27347	61022	33675	2.23	28637	73808	45171	2.14
	Jharkhand		527.00	1357	9.92	14.35	44.29	24775	47821	23046	2.32	27436	68334	40898	2.52
	total		804.00	2212	10.73	14.32	33.48	26061	54421	28360	2.27	28036	71071	43034	2.33
Niger	Jharkhand	6	198.00	514	77.98	108.70	35.66	14582	31730.6	17155	2.21	15288	37881	22593	2.53
	Total		198.00	514	77.98	108.70	35.66	14582	31731	17155	2.21	15288	37881	22593	2.53
Sesame	Bihar	8	22.40	66	7.77	10.03	24.60	22696	70546	47850	3.23	24709	91164	66455	3.71
	Jharkhand		77.00	153	4.56	6.40	41.87	19590	41864	25022	2.15	18588	45768	30575	2.46
	Total		99.40	219	6.16	8.21	33.23	21143	56205	36436	2.69	21648	68466	48515	3.08
Soybean	Jharkhand	3	51.50	375	11.80	14.27	21.38	36167	70867	31367	2.03	34167	61863	27697	1.83
	Total		51.50	375	11.80	14.27	21.38	36167	70867	31367	2.03	34167	61863	27697	1.83
Sun flower	Jharkhand	3	30.00	93	7.18	8.28	29.70	26950	46583	19633	1.59	27450	50320	23710	1.86
	Total		30.00	93	7.18	8.28	29.70	26950	46583	19633	1.59	27450	50320	23710	1.86
Grand Total		58	1515.30	4669	20.85	26.90	31.37	27296	54244	26668	2.07	28221	63716	35851	2.31

Pulse Crops

Front Line demonstrations were laid out for various pulses crops including black gram, chickpea, cowpea, gram, green gram, kulthi, lentil, moong, pea, pigeon pea to establish production potential of latest technologies at farmer field and minimize the yield gap. Total 60 FLDs were laid out in 563.45 ha area with the involvement of 2297 farmers. In Bihar, demonstrations were laid out in 353.45 ha with the involvement of 1524 farmers, while in Jharkhand, demonstrations were laid out in 210.00 ha with the involvement of 773 farmers in different pulse crops. Among the pulses, green gram occupied the top position in terms of maximum number of farmers involved (690) and green gram occupied the top position in terms of area covered (218.90 ha). This was followed by chickpea, with a total of 587 farmers and the second maximum area covered in lentil (123.00 ha) under front line demonstrations on different pulse crops in the zone (Table 57).

Fig. 55: Front line demonstration on chickpea

Table 57: Details of front line demonstration on pulse crops

Crop	State	No of FLDs	Area (ha)	No. of Farmers	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Black Gram	Bihar	2	0.40	15	8.50	11.50	35.29	19600.00	62900.00	43300.00	2.20	22500.00	85100.00	82600.00	2.78
	Jharkhand		10.00	37	8.45	9.14	8.20	27400.00	62530.00	35130.00	2.28	29000.00	67636.00	38636.00	2.33
	Total		10.40	52	8.47	10.32	21.74	23500.00	62715.00	39215.00	2.24	25750.00	76368.00	60618.00	2.55
Chickpea	Bihar	17	53.00	448	12.99	16.88	30.96	31637.00	69146.00	37509.00	2.14	35444.00	91954.00	58508.00	2.70
	Jharkhand		22.00	139	16.00	18.00	7.00	29000.00	87040.00	58040.00	1.49	33000.00	97920.00	64000.00	1.53
	Total		75.00	587	14.49	17.44	18.98	30318.50	78093.00	47774.50	1.82	34222.00	94937.00	61254.00	2.12
Cowpea	Jharkhand	6	1.00	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total		1.00	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Green gram	Bihar	9	140.90	416	7.00	8.94	26.37	24005.00	58973.00	34968.00	2.39	22160.00	76115.50	53949.50	3.37
	Jharkhand		78.00	274	7.56	9.76	28.17	32873.50	51902.00	19028.5.00	1.65	37780.00	70229.50	25227.00	1.96
	Total		218.90	690	7.28	9.36	27.27	28439.00	55437.00	26998.00	2.02	29970.00	73172.50	39588.00	2.67
Kulthi	Bihar	1	7.50	40	4.35	5.56	0.00	11700.00	52200.00	40500.00	4.46	12200.00	66720.00	54520.00	5.46
	Total		7.50	40	4.35	5.56	0.00	11700.00	52200.00	40500.00	4.46	12200.00	66720.00	54520.00	5.46
Lentil	Bihar	12	103.00	358	12.39	15.27	26.27	30297.00	72354.00	42057.00	2.37	30900.00	88121.00	57220.00	2.84
	Jharkhand		20.00	55	12.00	13.00	44.00	23000.00	77100.00	54100.00	1.42	28500.00	83525.00	55025.00	1.50
	Total		123.00	413	12.19	14.13	35.13	26648.00	74727.00	48078.00	1.89	29700.00	85823.00	56122.50	2.17
Pea	Jharkhand	1	24.00	52	12.53	16.39	39.75	50250.00	72560.00	22310.00	1.67	52600.00	95265.00	42665.00	2.12
	Total		24.00	52	12.53	16.39	39.75	50250.00	72560.00	22310.00	1.67	52600.00	95265.00	42665.00	2.12
Pigeon pea	Bihar	12	48.65	247	10.63	12.30	18.44	24014.00	73015.00	49000.00	3.00	25525.00	84217.00	58692.00	3.28
	Jharkhand		55.00	176	8.12	10.87	33.86	45290.00	61306.00	16016.00	1.41	50340.00	82068.00	31728.00	1.63
	Total		103.65	423	9.37	11.58	26.15	34652.00	67160.00	32508.00	2.20	37932.00	83142.00	45210.00	2.45
Grand Total		60	563.45	2297	9.81	12.11	28.17	29358.21	66127.43	36769.07	2.33	31767.71	82203.93	51425.36	2.79

Cereal Crops

Front Line demonstrations were laid out for various cereal crops barley, boro paddy, maize, oat, paddy, wheat and millets to establish production potential of latest technologies at farmer field and minimize the yield gap. Total 205 FLDs were laid out in 3019.30 ha area with the involvement of 7055 farmers. In the case of paddy, the demonstrations conducted by the KVKs of Bihar and Jharkhand covered an area of 1363.30 ha, with the participation of 2936 farmers. These demonstrations resulted in increase of 10.19 % and 27.22 % yield compared to the local check in Bihar and Jharkhand respectively. For Millet, the demonstrations covered 828.50 ha and involved 1542 farmers from Bihar and Jharkhand. Wheat demonstrations were conducted in 2054 farmers' fields, covering an area of 615.48 ha by the KVKs of Bihar and Jharkhand. Among the cereals, paddy occupied the highest area coverage in Bihar and Jharkhand in terms of farmer involvement (2936 farmers) and area covered (1363.30 ha) under front line demonstrations on different cereal crops in the zone. (Table 58).

Fig. 56: Front line demonstration on maize

Fig. 57: Front line demonstration on paddy

Table 58: Details of front line demonstration on cereal crops

Crop	State	No of FLDs	Area (ha)	No. of Farmers	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Barley	Bihar	6	8.00	23	35.21	43.05	22.34	29900	72350	42450	2.39	31011	72452	41441	2.34
	Jharkhand		10.00	27	19.60	24.00	22.40	31000	39006	8006	1.26	33000	47640	14640	1.44
	Total		18.00	50	27.40	33.52	22.37	30450	55678	25228	1.82	32005	60046	28040	1.89
Boro Paddy	Bihar	1	8.00	21	61.00	70.00	14.75	29500	103700	74200	3.50	30400	119000	88600	3.90
	Total		8.00	21	61.00	70.00	14.75	29500	103700	74200	3.50	30400	119000	88600	3.90
Maize	Bihar	18	107.70	305	54.30	64.78	19.10	51033	109497	58464	2.18	50965	129760	78792	2.57
	Jharkhand		75.00	107	33.91	48.20	44.65	35000	73770	35620	2.21	44220	87430	62810	2.44
	Total		182.70	412	44.10	56.49	31.87	43016	91633	47042	2.19	47592	108595	70801	2.50
Oat	Bihar	2	3.25	40	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
	Total		3.25	40	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
Paddy	Bihar	83	646.87	1806	38.50	42.47	10.19	37959	86967	49657	1.87	38674	93812	56868	2.40
	Jharkhand		716.50	1130	30.79	38.34	27.22	36516	66106	29807	2.22	39433	79313	43712	2.20
	Total		1363.30	2936	34.64	40.40	18.70	37237	76536	39732	2.04	39053	86562	50290	2.30
Wheat	Bihar	67	556.48	1805	33.87	39.27	17.18	34049	73367	39799	2.09	35387	86207	50940	2.41
	Jharkhand		59.00	249	26.20	32.10	23.21	46075	66545	22017	1.52	37206	83424	34217	1.78
	Total		615.48	2054	30.03	35.68	20.19	40062	69956	30908	1.80	36296	84815	42578.5	2.09
Millet	Bihar	28	262.00	905	96.89	119.30	28.50	27387	61737	35410	2.38	28239	73460	47939	3.16
	Jharkhand		566.50	637	19.49	24.04	31.63	25065	64250	27422	2.40	29607	81163	53059	2.67
	Total		828.50	1542	58.19	71.67	30.06	26226	62993	31416	2.39	28923	77311	50499	2.92
Grand Total		205	3019.30	7055	36.48	43.96	19.70	29498	65785	35503	1.96	30610	76618	47258	2.23

Millet Crops

Millets are a group of nutritiously rich, drought tolerant and mostly grown in the arid and semi-arid regions of India. They are small-seeded grasses belonging to the botanical family poaceae. They constitute an important source of food and fodder for millions of resource-poor farmers and play a vital role in ecological and economic security of India. These millets are also known as "coarse cereals" or "cereals of the poor". Millets are nutritionally superior to wheat and rice as they are rich in protein, vitamins and minerals. They are also gluten-free and have a low glycaemic index, making them ideal for people with diabetes. Front Line demonstrations were laid out for various millet crops including barnyard millet, finger millet, foxtail millet, jowar, pearl millet, proso millet and pseudo millet to establish production potential of latest technologies at farmer field and minimize the yield gap. Total 28 FLDs were laid out in 828.50 ha area with the involvement of 1542 farmers. Among the millets, finger millet occupied the first rank in Bihar and Jharkhand in terms of farmer involvement (987 farmers) and area covered (652.30 ha) under front line demonstrations on different millet crops in the zone (Table 59).

Fig. 58: Front line demonstration on millet

Table 59: Details of front line demonstration on millet crops

Crop	State				Yield(q/ha)			Check (q/ha)				Demonstration (q/ha)			
		No of FLDs	Area (ha)	No. of Farmers	Check	Demo	% Increase	Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Barnyard millet	Bihar	1	4.00	10	9.68	12.29	26.96	33000	58080	25080	1.76	34500	73740	39240	2.13
	Total		4.00	10	9.68	12.29	26.96	33000	58080	25080	1.76	34500	73740	39240	2.13
Finger Millets	Bihar		88.80	360	12.63	14.01	33.04	21734	43720	20448	1.68	26884	57394	31105	2.08
	Jharkhand	18	563.50	627	11.78	15.68	44.16	22230	47715	25484	1.91	26413	66098	39689	2.42
	Total		652.30	987	12.20	14.84	38.60	21982	45717	22966	1.79	26648	61746	35397	2.25
Foxtail millet	Bihar	1	0.40	11	8.10	9.90	22.20	21580	29640	7960	1.37	20160	27620	17460	1.86
	Total		0.40	11	8.10	9.90	22.20	21580	29640	7960	1.37	20160	27620	17460	1.86
Jowar	Bihar	2	4.00	27	512.50	633.50	19.11	20460	76800	64340	2.75	14560	94950	80390	5.52
	Jharkhand		3.00	10	27.20	32.40	19.10	27900	80784	29360	2.89	32800	96228	66428	2.93
	Total		7.00	37	269.80	332.90	19.10	24180	78792	46850	2.82	23680	95589	73409	4.22
Pearl Millet	Bihar	3	145.80	409	17.18	21.39	29.53	22187	48530	26342	1.91	23281	55275	37708	2.37
	Total		145.80	409	17.18	21.39	29.53	22187	48530	26342	1.91	23281	55275	37708	2.37
Proso Millet	Bihar	1	10.00	68	6.45	8.36	29.61	15260	32250	16990	2.11	17850	41800	23950	2.23
	Total		10.00	68	6.45	8.36	29.61	15260	32250	16990	2.11	17850	41800	23950	2.23
Pscudo Millet	Bihar	2	9.00	20	14.80	16.36	10.54	30100	81400	51300	2.70	32200	89980	57780	2.79
	Total		9.00	20	14.80	16.36	10.54	30100	81400	51300	2.70	32200	89980	57780	2.79
Grand Total		28	828.50	1542	48.32	59.44	25.22	24041	53487	28212	2.06	25474	63678	40706	2.55

Horticultural Crops

Bihar and Jharkhand are basically an agrarian state where mainly cereals, pulses, oilseeds and sugarcane are cultivated. Adoption of paddy-wheat cropping system has created many problems such as environmental problems, degradation of natural resources, and economic instability. To diversified the cropping system towards horticulture crop; Frontline demonstrations in horticulture (vegetables, fruits, flower, etc,) is a focal point in terms of validations of technology by KVKs. In Bihar and Jharkhand FLDs on horticulture crops covered 595.58 ha involving 5147 farmers during the year 2024 (Table 60).

Table 60: Details of front line demonstration on horticultural crops

State	Vegetable			Fruit			Flower			Total		
	No of FLDs	Area(ha)	No. of farmers	No of FLDs	Area(ha)	No. of farmers	No of FLDs	Area(ha)	No. of farmers	No of FLDs	Area(ha)	No. of farmers
Bihar	128	353.76	3316	19	29.07	258	2	1.25	25	149	384.08	3599
Jharkhand	52	209.80	1537	3	1.20	6	1	0.50	5	56	211.50	1548
Total	180	563.56	4853	22	30.27	264	3	1.75	30	205	595.58	5147

Fig. 59: Front line demonstration on mango

Fig. 60: Front line demonstration on tomato

Vegetable Crops

Front Line demonstrations were laid out for various vegetable crops including beans, brinjal, broccoli, cabbage, capsicum, carrot, cauliflower, chilli, cowpea, cucumber, cucurbits, elephant foot yam, faba beans, fenugreek, french bean, garden beet, knol khol, makhana, okra, onion, palak, potato, radish, sprouting broccoli, sweet potato, tomato, turmeric, vegetable pea and muskmelon to establish production potential of latest technologies at farmer field and minimize the yield gap. Total 183 FLDs were laid out in 563.56 ha area with the involvement of 4853 farmers. Out of this, in Bihar, 353.76 ha were covered with the participation of 3316 farmers, while in Jharkhand, 209.80 ha were covered with the involvement of 1537 farmers. Among the vegetable crops, there was a major focus on cucurbitaceae family, with an area of 294.91 ha covered by the KVKs of Bihar and Jharkhand. The maximum number of farmers involved in tomato cultivation with an area of 54.34 ha (Table 61) under front line demonstrations on different vegetable crops in the zone.

Table 61: Details of front line demonstration on vegetables crops

Crop	State	No. of FLDs	Area (ha)	No. of Farmers	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Beans	Bihar	0	0.00	0	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
	Jharkhand	1	0.10	1	92.00	115.00	24.21	42600	184000	141400	4.30	44500	230000	185500	5.10
	Total	1	0.10	1	92.00	115.00	24.21	42600	184000	141400	4.30	44500	230000	185500	5.10
Brinjal	Bihar	19	41.98	657	222.15	278.70	25.96	90491	288146	197654	3.69	90473	362671	272198	4.44
	Jharkhand	5	25.90	245	264.96	330.00	26.37	72680	385756	313076	4.86	80630	517760	437130	5.71
	Total	24	67.88	902	243.55	304.35	26.16	81585	336951	255365	4.27	85551	440215	354664	5.07
Broccoli	Bihar	5	1.58	97	102.92	132.75	28.78	50750	158738	107988	3.38	54750	210937	156187	4.20
	Jharkhand	1	0.10	1	178.00	195.00	9.55	98500	712000	613500	7.20	100000	780000	680000	7.80
	Total	6	1.68	98	140.46	163.87	19.16	74625	435369	360744	5.29	77375	495468	418093	6.00
Cabbage	Bihar	4	1.00	122	160.15	195.60	18.20	66850	200000	133150	2.99	64857	244500	174642	3.76
	Jharkhand	1	0.25	1	180.00	210.00	16.66	98200	540000	441800	5.40	100000	630000	530000	6.30
	Total	5	1.25	123	170.07	202.80	17.43	82525	370000	287475	4.19	82428	437250	352321	5.03
Capsicum	Bihar	1	0.40	10	0.00	164.40	0.00	0	0	0	0.00	140900	493200	352300	3.50
	Jharkhand	1	0.25	2	245.00	310.00	26.53	109600	1225000	1115400	11.10	112500	1550000	1437500	13.70
	Total	2	0.65	12	245.00	237.20	26.53	109600	1225000	1115400	11.10	126700	1021600	894900	8.63
Carrot	Jharkhand	1	0.10	1	160.00	172.00	20.00	38500	800000	761500	20.70	40500	860000	819500	21.20
	Total	1	0.10	1	160.00	172.00	20.00	38500	800000	761500	20.70	40500	860000	819500	21.20
cauliflower	Bihar	16	16.10	268	172.91	203.52	17.46	74978	217143	154248	2.90	75655	445708	182550	3.45
	Jharkhand	4	7.25	73	225.00	295.33	27.54	77666	348333	270666	4.31	82800	448666	365866	5.29
	Total	20	23.35	341	198.95	249.42	22.50	76322	282738	212457	3.60	79227	447187	274208	4.37
Chilli	Bihar	8	7.24	202	110.95	131.80	23.48	84518	258806	174288	2.75	88170	321016	232846	3.32
	Jharkhand	2	4.00	38	336.00	435.00	29.46	83000	311000	228000	3.74	88342	425000	336658	4.81
	Total	10	11.24	240	223.47	283.40	26.47	83759	284903	201144	3.24	88256	373008	284752	4.06
Cowpea	Bihar	3	1.55	42	123.40	143.78	16.20	58323	163320	104996	2.89	63150	190074	126924	3.11
	Jharkhand	3	6.00	23	84.50	97.50	13.38	36900	220400	183500	6.38	39500	261000	221500	7.01
	Total	6	7.55	65	103.95	120.64	14.79	47611	191860	144248	4.63	51325	225537	174212	5.06
Cucurbit	Bihar	16	221.66	320	1061.10	1271.90	101.68	660910	1611904	951163	16.93	686302	1940397	1264419	19.26
	Jharkhand	8	73.25	271	689.20	869.20	121.26	211500	722400	511400	17.13	238700	1040900	802200	20.39
	Total	24	294.91	591	72.93	89.22	9.29	36350	97263	60940	1.42	38542	124221	86109	1.65
Elephant Foot Yam	Bihar	2	0.25	26	309.80	358.75	18.85	203415	541210	337794	2.71	190707	637000	446293	3.39
	Jharkhand	1	0.20	1	46.00	55.00	19.56	142600	276000	133400	1.90	148000	330000	182000	2.20
	Total	3	0.45	27	177.90	206.87	19.20	173007	408605	235597	2.30	169353	483500	314146	2.79
Faba Bean	Jharkhand	1	5.00	20	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
	Total	1	5.00	20	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
Fenugreek	Bihar	1	4.00	20	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
	Jharkhand	1	0.05	2	52.00	68.00	30.67	21600	104000	82400	4.80	22500	136000	113500	6.40
	Total	2	4.05	22	52.00	68.00	30.67	21600	104000	82400	4.80	22500	136000	113500	6.40

Crop	State	No. of FLDs	Area (ha)	No. of Farmers	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
French bean	Bihar	2	0.85	170	192.12	174.68	8.33	75500	288190	212690	3.81	68000	262016	194016	3.85
	Jharkhand	1	15.00	215	43.00	62.00	44.18	63000	129000	66000	2.05	68000	186000	118000	2.73
	Total	3	15.85	385	117.56	118.34	26.25	69250	208595	139345	2.93	68000	224008	156008	3.29
Garden beet	Bihar	2	0.80	20	0.00	224.20	0.00	0	0	0	0.00	106700	269040	162340	2.52
	Total	2	0.80	20	0.00	224.20	0.00	0	0	0	0.00	106700	269040	162340	2.52
Knolkhol	Bihar	1	0.06	32	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
	Total	1	0.06	32	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
Makhana	Bihar	4	7.00	9	15.90	18.50	16.35	113800	397500	283700	3.49	118500	462500	344000	3.90
	Total	4	7.00	9	15.90	18.50	16.35	113800	397500	283700	3.49	118500	462500	344000	3.90
Okra	Bihar	9	8.80	300	114.89	122.20	27.65	72594	223551	150956	2.75	72177	257050	183755	3.18
	Jharkhand	1	2.50	10	120.00	175.00	31.40	58200	180000	121800	3.09	65600	262500	196900	4.00
	Total	10	11.30	310	117.44	148.60	29.52	65397	201775	136378	2.92	68888	259775	190327	3.59
Onion	Bihar	5	4.20	72	317.80	350.69	10.50	132891	476309	343418	3.59	136303	54287	406570	4.04
	Jharkhand	3	12.75	169	148.00	225.00	50.20	78800	222000	143200	2.81	84600	337500	252900	3.99
	Total	8	16.95	241	232.90	287.84	30.35	105845	349154	243309	3.20	110451	195893	329735	4.01
Palak	Jharkhand	1	0.05	2	76.00	85.00	11.84	18600	76000	57400	4.08	20500	85000	64500	4.10
	Total	1	0.05	2	76.00	85.00	11.84	18600	76000	57400	4.08	20500	85000	64500	4.10
Potato	Bihar	2	1.90	74	255.40	310.60	21.61	103540	344790	241250	3.33	112080	419310	307230	3.74
	Jharkhand	3	170.00	65	218.66	268.33	23.16	105833	336666	230833	3.03	113333	400833	287500	3.38
	Total	5	18.90	139	237.03	289.46	22.38	104686	340728	236041	3.18	112706	410071	297365	3.56
Radish	Bihar	1	1.80	61	125.20	140.50	12.20	40200	187800	147600	4.67	53600	281000	227400	5.24
	Jharkhand	1	0.25	1	156.00	185.00	18.58	34500	156000	121500	4.50	36500	185000	148500	5.06
	Total	2	2.05	62	140.60	162.75	15.39	37350	171900	134550	4.58	45050	233000	187950	5.15
Spinach	Bihar	1	0.05	20	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
	Jharkhand	2	3.00	30	142.00	179.50	26.40	31650	117200	85550	3.53	36450	145900	109450	3.89
	Total	3	3.05	50	142.00	179.50	26.40	31650	117200	85550	3.53	36450	145900	109450	3.89
Sprouting Broccoli	Bihar	1	0.80	20	0.00	136.80	0.00	0	0	0	0.00	82900	218880	135980	2.64
	Total	1	0.80	20	0.00	136.80	0.00	0	0	0	0.00	82900	218880	135980	2.64
Sweet Potato	Jharkhand	1	2.00	10	183.33	265.32	44.72	29640	91500	61860	3.08	35845	185500	149655	5.17
	Total	1	2.00	10	183.33	265.32	44.72	29640	91500	61860	3.08	35845	185500	149655	5.17
Tomato	Bihar	18	27.54	650	245.77	291.12	27.71	77841	284725	206800	3.68	79210	340932	261722	4.33
	Jharkhand	6	26.80	302	262.46	332.70	28.12	61600	295200	233600	4.38	66900	374500	390040	5.28
	Total	24	54.34	952	254.11	311.91	27.91	69720	289962	220200	4.03	73055	357716	325881	4.80
Turmeric	Bihar	5	0.20	27	172.40	227.60	32.01	309750	724080	414330	2.33	317800	955920	638120	3.00
	Total	5	0.20	27	172.40	227.60	32.01	309750	724080	414330	2.33	317800	955920	638120	3.00
Vegetable pea	Bihar	2	3.00	41	60.23	65.45	8.66	40500	276240	235740	5.80	41320	292700	251380	7.08
	Jharkhand	5	8.00	54	78.40	106.80	34.10	43233	128666	85433	2.97	49533	178000	128466	3.6
	Total	7	11.00	95	69.31	86.12	21.38	41866	202453	160586	4.38	45426	235350	189923	5.34
Muskmelon	Bihar	1	1.00	56	172.86	224.50	29.90	56525	103715	46991	1.86	58450	134708	76258	2.30
	Total	1	1.00	56	172.86	224.50	29.90	56525	103715	46991	1.86	58450	134708	76258	2.30
Grand Total		183	563.56	4853	131.44	171.70	20.37	66281	275698	209618	3.91	76103	332664	263083	4.57

Fig. 61: Front line demonstration on potato

Fig. 62: Front line demonstration on cauliflower

Fruit Crops

Front Line demonstrations were laid out for various vegetable crops including banana, dragon fruit, mango, papaya and pineapple to establish production potential of latest technologies at farmer field and minimize the yield gap. Total 19 FLDs were laid out in 30.27 ha area with the involvement of 264 farmers. Out of these fruit crops, the major demonstrations were done in mango with an area of 17.60 ha involving 154 farmers by the KVKs of Bihar and Jharkhand followed by pineapple with an area of 8.00 ha under front line demonstrations on different fruit crops in the zone. (Table 62)

Table 62: Details of front line demonstration on fruits crops

Crop	State	No. of FLDs	Area (ha)	No. of Farmers	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Banana	Bihar	4	1.91	33	517.2	594.49	14.88	246666	598666	336666	2.21	270633	848533	577900	3.00
	Total	4	1.91	33	517.2	594.49	14.88	246666	598666	336666	2.21	270633	848533	577900	3.00
Dragon Fruit	Bihar	1	0.25	10	0	0	0	0	0	0	0	0	0	0	0.00
	Total	1	0.25	10	0	0	0	0	0	0	0	0	0	0	0.00
Mango	Bihar	6	16.6	150	122.79	166.43	29.46	85852	281285	1207058	3.11	81165	376091	294926	4.26
	Jharkhand	1	1	4	0	0	0	0	0	0	0	0	0	0	0.00
	Total	7	17.6	154	122.79	166.43	29.46	85852	281285	1207058	3.11	81165	376091	294926	4.26
Papaya	Bihar	4	2.31	45	610	765	29.73	319926	1112000	792074	3.9	303577	1372500	1068923	5.03
	Jharkhand	1	0.2	2	0	0	0	0	0	0	0	0	0	0	0.00
	Total	5	2.51	47	610	765	29.73	319926	1112000	792074	3.9	303577	1372500	1068923	5.03
Pine apple	Bihar	2	8	20	372.58	412.17	10.63	259500	819683	560183	2.16	256750	906766	650016	3.53
	Total	2	8	20	372.58	412.17	10.63	259500	819683	560183	2.16	256750	906766	650016	3.53
Grand Total		19	30.27	264	346.2	419.62	23.86	185389	551685	729959	2.81	187174	712403	525229	3.81

Fig. 63: Front line demonstration on mango

Livestock and Fisheries

The KVKs of ICAR-ATARI Zone-IV conducted front line demonstrations on livestock and fisheries, focusing on various aspects such as promotional livestock breed, feed and fodder management, animal vaccination, deworming, pond management, stocking density, fish production, and fingerling production. Total number of FLDs covered in Livestock and Fisheries are 62. A total of 2244 farmers participated in the livestock demonstrations, which involved 13124 units. Among these, 1862 farmers were from Bihar, and 382 farmers were from Jharkhand. In the fisheries sector, a total of 67 farmers participated in the fisheries demonstrations, which involved 36 ha land area. Among these, 67 farmers were from Bihar under front line demonstrations on livestock and fisheries in the zone. (Table 63)

Table 63: Details of front line demonstration on livestock and fisheries

S.N.	Enterprise	State	No of FLDs	No. of farmers	No. of Unit
1	Fisheries	Bihar	6	67	36
		Jharkhand		00	00
		Total		67	36
2	Livestock	Bihar	56	1795	12181
		Jharkhand		449	943
		Total		2244	13124

Livestock

Livestock are the domesticated animals raised in an agricultural setting in order to provide labour and produce diversified products for consumption such as meat, eggs, milk, fur, leather, and wool. The KVKs of ICAR-ATARI Zone-IV conducted front line demonstrations on livestock focusing on various enterprises like buffalo, cow, dairy, duckery, goatery, mineral mixture, piggery, poultry, sheep and goat. Total number of FLDs covered in Livestock are 56. A total 2244 farmers participated in livestock FLD having 13124 units. Maximum number of farmers participated in Poultry (812 farmers) under front line demonstrations on livestock in the zone. (Table 64)

Fig. 64: Front line demonstration on poultry

Table 64: Details of front line demonstration on livestock

Livestock	State	No of FLDs	No. of Farmers	No 0f Livestock	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Buffalo	Bihar	2	20	20	0.00	0.00	0.00	13500	24900	5700	0.92	16920	32610	15690	1.93
	Total		20	20	0.00	0.00	0.00	13500	24900	5700	0.92	16920	32610	15690	1.93
Cow	Bihar	5	182	397	1028.40	1129.00	12.37	25151	43366	13661	1.46	27063	51279	24216	2.15
	Total		182	397	1028.40	1129.00	12.37	25151	43366	13661	1.46	27063	51279	24216	2.15
Dairy	Bihar	7	153	2503	12.82	23.71	33.54	20711	39775	19064	2.33	21615	45425	23809	2.51
	Jharkhand		40	40	9.20	12.40	34.00	220	345	125	1.56	260	446	186	1.71
	Total		193	2543	11.01	18.05	33.77	10465	20060	9594	1.94	10937	22935	11997	2.11
Duckery	Bihar	6	100	250	60.45	105.60	37.65	10390	16770	6380	1.54	17396	33135	23839	1.88
	Jharkhand		65	30	200.00	250.00	87.44	1392	3952	1280	1.05	2217	9741	7519	2.39
	Total		165	280	130.22	177.80	62.54	5891	10361	3830	1.29	9806	21438	15679	2.13
Goatery	Bihar	2	86	646	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
	Total		86	646	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
Mineral mixture	Bihar	2	180	710	7.22	8.10	21.11	13731	22540	8809	1.53	13811	24805	10994	1.74
	Total		180	710	7.22	8.10	21.11	13731	22540	8809	1.53	13811	24805	10994	1.74
Piggery	Bihar	6	20	40	52.00	84.50	62.50	5850	10400	2275	0.88	6500	16900	10400	2.60
	Jharkhand		42	42	32.00	65.00	103.00	1400	2100	175	0.37	1550	5100	3550	3.29
	Total		62	82	42.00	74.75	82.75	3625	6250	875	0.54	4025	11000	6975	2.94
Poultry	Bihar	18	590	6020	30.66	41.26	27.65	16532	27995	8916	1.60	17235	51937	34703	2.99
	Jharkhand		222	725	88.49	273.36	76.70	2017	2450	288.5	0.98	2713	6445	4391	4.32
	Total		812	6745	59.57	157.31	52.17	9275	15223	4602	1.29	9974	29191	19547	3.70
Sheep and goat	Bihar	5	367	930	61.00	98.00	60.00	200000	305000	52500	0.76	201100	490000	288900	2.43
	Jharkhand		80	106	13.15	14.68	11.63	0	0	0	0.00	360	918	558	2.55
	Total		447	1036	37.07	56.34	35.81	200000	305000	26250	0.30	100730	245459	144729	2.49
Sorted semen	Bihar	1	30	30	6.00	8.00	0.00	0	0	0	0.00	43000	111000	68000	2.50
	Total		30	30	6.00	8.00	0.00	0	0	0	0.00	43000	111000	68000	2.50
Vaccination	Bihar	2	67	635	55.00	20.00	175.00	0	0	0	0.00	0	0	0	0.00
	Total		67	635	55.00	20.00	175.00	0	0	0	0.00	0	0	0	0.00
Grand Total		56	2244	13124	125.13	149.94	43.23	25603	40699	6665	0.84	21478	49974	28893	1.96

Fisheries

Fisheries is an economic activity that involves harvesting fish or any aquatic organism from the wild (capture fisheries) or raising them in confinement (culture fisheries/ aquaculture). In recent years, the government has prioritized the fishery farming. The KVKs of ICAR-ATARI Patna conducted front line demonstration on fisheries during reporting year 2024.Total number of FLDs covered in fisheries are 6. The total 67 farmers involve in the fisheries farming with an area of 36.00 ha. Among these, 67 farmers were from Bihar under front line demonstrations on fisheries in the zone (Table 65).

Table 65: Details of front line demonstration on fisheries

Crop	State	No of FLDs	Area (ha)	No. of Farmers	Yield(q/ha)		% Increase	Check (q/ha)				Demonstration (q/ha)			
					Check	Demo		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Carp fry rearing	Bihar	1	5.00	15	31.50	51.50	63.50	85600	152750	67150	1.80	198550	459600	261050	2.30
Fish		1	2.00	10	0.00	0.00	0.00	0	0	0	0.00	0	0	0	0.00
IMC + Common carps		1	2.00	10	25.80	31.50	22.09	196000	451500	255500	2.30	203500	567000	363500	2.79
Jayanti Rohu		3	27.00	32	363.41	508.21	28.67	127314	312670	185356	2.45	162478	450830	288351	2.73
	Total	6	36.00	67	105.17	147.80	28.56	102228	229230	127001	1.63	141132	369357	228225	1.95
Grand Total		6	36.00	67	105.17	147.80	28.56	102228	229230	127001	1.63	141132	369357	228225	1.95

Fig. 65: Front line demonstration on fisheries

Other Enterprises

In addition to conducting demonstrations on field crops, horticultural crops, livestock, and fisheries, the KVKs also organized demonstrations on various Agro-enterprises in farmers' fields. These demonstrations aimed to showcase the relative advantages of improved technologies compared to conventional practices and introduce new income-generating enterprises. Total number of FLDs covered in other enterprises are 44. A total of 1314 farmers were involved in these activities, covering 4028 units. The demonstrations included vermicompost production, beekeeping, value addition, mushroom cultivation, backyard poultry rearing, homestead vegetable cultivation, feed production, azolla cultivation, and many other enterprises undertaken by the KVKs. In Bihar, the KVKs conducted 2343 units involving 982 farmers, while in Jharkhand, 1685 were demonstrated, with the participation of 332 farmers during the reporting year 2024 under front line demonstrations on other enterprises in the zone. (Table 66)

Table 66: Details of front line demonstration on other enterprises

State	No of FLDs	Other Enterprises	
		No. of farmers	No. of Unit
Bihar	44	982	2343
Jharkhand		332	1685
Total		1314	4028

Fig. 66: Front line demonstration on azolla

Fig. 67: Front line demonstration on mushroom

Women Empowerment

In order to empower farm women and involve them in decision-making processes and income generating activities, advanced agro-techniques were demonstrated. These demonstrations focused on various activities such as tailoring, value addition, embroidery, and other related skills. Total number of FLDs covered in women empowerment are 67. A total of 2123 women participated in these initiatives, with 1548 women from Bihar and 575 women from Jharkhand state. The aim of these demonstrations was to enhance the economic independence and decision-making capabilities of farm women, enabling them to contribute actively to their households and communities under front line demonstrations on women empowerment in the zone. (Table 67).

Fig. 68: Front line demonstration on value addition and crop cutting

Table 67: Details of front line demonstration on women empowerment

State	No of FLDs	Women Empowerment	
		No. of farm women	No. of beneficiaries
Bihar	67	1548	2123
Jharkhand		575	1087
Total		2123	3210

Farm Implements

Farm machinery, tools, and implements play a crucial role in reducing labour requirements, minimizing seed usage, improving water use efficiency, and alleviating physical strain on farmers. In the ICAR-ATARI Zone-IV, various types of farm machinery, tools, and implements were demonstrated to benefit a total of 1577 farmers having 445.10 ha area. Total number of FLDs covered in Farm Implements are 43. Among these demonstrations, the KVKs of Bihar covered 1495 farmers with 416.70 ha area and KVKs of Jharkhand covered 82 farmers with 28.40 ha area. These efforts aimed to highlight the advantages and encourage the adoption of modern agricultural machinery for improved farming practices in the region under front line demonstrations on farm implements in the zone. (Table 68)

Fig. 69: Front line demonstration on farm implement

Table 68: Details of front line demonstration on farm implements

State	No of FLDs	Farm Implements Area(ha)	No. of farmer
Bihar	43	416.70	1495
Jharkhand		28.40	82
Total		445.10	1577

F1 Hybrid Seed

In Bihar and Jharkhand majority of farmers are small and marginal with small and fragmented plots. In order to bring more areas under the use of hybrid varieties for getting higher return, front line demonstrations were conducted on adopting F1 hybrid varieties of different crops by farmers KVKs of Bihar and Jharkhand demonstrating in 315.21 ha area involving 2980 farmers. Total number of FLDs covered are 52 under front line demonstrations on F1 hybrid seed in the zone. (Table 69).

Table 69: Details of front line demonstration on F1 hybrid seed

State		F1 hybrid seed	
	No of FLDs	Area(ha)	No. of farmer
Bihar	52	119.46	1260
Jharkhand		195.75	1720
Total		315.21	2980

CLUSTER FRONT LINE DEMONSTRATION (CFLD) ON OILSEEDS AND PULSES

For enhancement of oilseed production and productivity in India, Government of India was striving to increase oilseeds production, ICAR has taken key initiative to enhance oilseeds production and productivity by conducting nationwide cluster front line demonstrations through a wide network of Krishi Vigyan Kendras. ICAR has implemented a collaborative project "cluster front line demonstrations on oilseeds" since October 2015 under National Food Security Mission with the financial assistance of Department of Agriculture & Cooperation, Ministry of Agriculture & Farmers Welfare, GoI, New Delhi. Krishi Vigyan Kendras are facilitating farmers with quality seeds and proven technological packages. This initiative lays emphasis on major oilseed crops, namely groundnut, sesame, soybean, niger, sunflower, mustard, linseed and safflower. Under ICAR-ATARI, Zone-IV, Patna, 66 KVKs are actively involved to demonstrate proven technological packages of oilseeds for higher productivity and profitability. Total 66 KVKs including 43 KVKs from Bihar & 23 KVKs from Jharkhand were actively demonstrated production potentialities of oilseeds during kharif, rabi and summer season.

During 2024-25, total of 56387 CFLDs were laid out in the 20566.4 ha area under different micro-farming situations of selected districts under Oilseeds crops. Results of CFLDs has shown encouraging potentials, the average yield was increased by 41.92 % and average difference of yield between demonstration and local practice was 2.69 (q/ha). Total 29649 CFLDs were laid out in the 10837.4 ha area and yield was increased by 31.82% and average difference of yield between demonstration and local practice was 2.35 (q/ha) in Bihar state similarly total 26738 CFLDs were laid out in the 9729 ha area and yield was increased by 52.03% and average difference of yield between demonstration and local practice was 3.03 (q/ha) in Jharkhand state (Table 70)

Table 70: State wise details of cluster front line demonstration on oilseeds

S. No.	State	Targets of FLDs approved		Achievements of FLDs		Yield (q/h)		Yield increased (%)	Average yield difference (Demo and Local (q/ha)
		Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Bihar	11240	28100	10837.4	29649	7.14	9.49	31.82	2.35
	Jharkhand	10890	27225	9729	26738	6.27	9.3	52.03	3.03
	Total	22130	55325	20566.4	56387	6.7	9.39	41.92	2.69

Cluster Front Line Demonstration on oilseed during kharif season

Total 37 KVKs including 14 KVKs from Bihar & 23 KVKs from Jharkhand were actively demonstrated production potentialities of oilseeds during 2024-25. The CFLD program focused on various oilseed crops such as groundnut, sesame, soybean, niger and sunflower. Total of 15758 CFLDs were laid out in the 5369 ha area under different micro-farming situations of selected districts. Results of CFLDs has shown encouraging potentials, the average yield was increased by 45.31% and average difference of yield

between demonstration and local practice was 2.83 (q/ha). Among the different oilseed crops, the highest number of demonstrations 5171 were laid out for groundnut cultivation with an area of 1502 hectares and yield was increased by 50.91% and average difference of yield between demonstration and local practice was 4.85 (q/ha) in Bihar and Jharkhand states. Total 808 CFLDs were laid out in the 140 ha area and yield was increased by 44.63% and average difference of yield between demonstration and local practice was 4.16 (q/ha) in Bihar state similarly total 4363 CFLDs were laid out in the 1362 ha area and yield was increased by 57.19% and average difference of yield between demonstration and local practice was 5.55 (q/ha) in Jharkhand state. Total 5158 CFLDs were laid out in 1987 ha area in niger and yield was increased by 40.62% and average difference of yield between demonstration and local practice was 1.47 (q/ha) in Bihar and Jharkhand states. Total 254 CFLDs were laid out in the 100 ha area and yield was increased by 26.73% and average difference of yield between demonstration and local practice was 1.12 (q/ha) in Bihar state similarly total 4904 CFLDs were laid out in the 1887 ha area and yield was increased by 5.44% and average difference of yield between demonstration and local practice was 1.83 (q/ha) in Jharkhand state. Total 2964 CFLDs were laid out in 980 ha area in Soybean and yield was increased by 45.3% and average difference of yield between demonstration and local practice was 3.71 (q/ha) in Bihar and Jharkhand states. Total 825 CFLDs were laid out in the 300 ha area and yield was increased by 40.2% and average difference of yield between demonstration and local practice was 3.17 (q/ha) in Bihar state similarly total 2139 CFLDs were laid out in the 680 ha area and yield was increased by 50.39% and average difference of yield between demonstration and local practice was 4.25 (q/ha) in Jharkhand state. Total 2187 CFLDs were laid out in 810 ha area in Sesame and yield was increased by 50.89% and average difference of yield between demonstration and local practice was 1.9 (q/ha) in Bihar and Jharkhand states. Total 208 CFLDs were laid out in the 80 ha area and yield was increased by 43.42% and average difference of yield between demonstration and local practice was 1.50 (q/ha) in Bihar state similarly total 1979 CFLDs were laid out in the 730 ha area and yield was increased by 58.37% and average difference of yield between demonstration and local practice was 2.29 (q/ha) in Jharkhand state. Total 278 CFLDs were laid out in the 90-ha area in sunflower and yield was increased by 38.86% and average difference of yield between demonstration and local practice was 2.26 (q/ha) in Jharkhand state only.

Fig. 70: Cluster front line demonstration on groundnut

Fig. 71: Cluster front line demonstration on niger

Table 71: Cluster Frontline Demonstration during kharif

S.No.	Crop	State	Targets of FLDs approved		Achievements of FLDs		Yield (q/h)		Yield increased (%)	Average yield difference (Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Groundnut	Bihar	190	475	140	808	12.16	16.32	44.63	4.16
		Jharkhand	1380	3450	1362	4363	10.12	15.67	57.19	5.55
	Total		1570	3925	1502	5171	11.14	15.99	50.91	4.85
2	Sesame	Bihar	80	200	80	208	3.475	4.98	43.42	1.505
		Jharkhand	630	1575	730	1979	4.11	6.4	58.37	2.29
	Total		710	1775	810	2187	3.79	5.69	50.89	1.9
3	Soybean	Bihar	420	1050	300	825	12.08	15.25	40.2	3.17
		Jharkhand	920	2300	680	2139	9.37	13.62	50.39	4.25
	Total		1340	3350	980	2964	10.73	14.44	45.3	3.71
4	Niger	Bihar	120	300	100	254	4.19	5.31	26.73	1.12
		Jharkhand	2300	5750	1887	4904	3.61	5.44	54.52	1.83
	Total		2420	6050	1987	5158	3.9	5.37	40.62	1.47
5	Sunflower	Jharkhand	90	225	90	278	6.81	9.07	38.86	2.26
	Total		90	225	90	278	6.81	9.07	38.86	2.26
	Grand Total		6130	15325	5369	15758	7.27	10.11	45.31	2.83

Cluster Front Line Demonstration on Oilseeds during rabi season

Total 66 KVKs including 43 KVKs from Bihar & 23 KVKs from Jharkhand were actively demonstrated production potentialities of oilseeds during 2024-25. Total 40629 CFLDs were laid out in the 15197.4 ha area under different micro-farming situations in selected districts in different oilseeds crops such as mustard, linseed, sesame, sunflower and safflower. Results of CFLDs has shown encouraging potentials, the average yield was increased by 50.60% and average difference of yield between demonstration and local practice was 2.83 (q/ha). 36028 CFLDs were laid out with an area of 13746.4 ha in mustard crop and yield was increased by 39.64% and average difference of yield between demonstration and local practice was 3.97 (q/ha) in Bihar and Jharkhand states. Total 25330 CFLDs were laid out in the 9596.4 ha area and yield was increased by 37.58% and average difference of yield between demonstration and local practice was 4.22 (q/ha) in Bihar state similarly total 10698 CFLDs were laid out in the 4150 ha area and yield was increased by 41.7% and average difference of yield between demonstration and local practice was 3.71 (q/ha) in Jharkhand state. Total 4138 CFLDs were laid out in 1281 ha area in linseed and yield was increased by

36.09% and average difference of yield between demonstration and local practice was 2.48 (q/ha) in Bihar and Jharkhand states. Total 2224 CFLDs were laid out in the 621 ha area and yield was increased by 30.18% and average difference of yield between demonstration and local practice was 2.27 (q/ha) in Bihar state similarly total 1914 CFLDs were laid out in the 660 ha area and yield was increased by 42.01% and average difference of yield between demonstration and local practice was 2.69 (q/ha) in Jharkhand state in linseed. Total 214 CFLDs were laid out in 80 ha area in sunflower and yield was increased by 37.88% and average difference of yield between demonstration and local practice was 3.24 (q/ha) in Jharkhand states. Total 165 CFLDs were laid out in 60 ha area in safflower and yield was increased by 61.42% and average difference of yield between demonstration and local practice was 2.35 (q/ha) in Jharkhand states. Total 84 CFLDs were laid out in 30 ha area in sesame and yield was increased by 77.99% and average difference of yield between demonstration and local practice was 2.13 (q/ha) in Bihar and Jharkhand states.

Table 72: Cluster Frontline Demonstration during rabi

S.No.	Crop	State	Targets of FLDs approved		Achievements of FLDs		Yield (q/h)		Yield increased (%)	Average yield difference (Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Mustard	Bihar	9600	24000	9596.4	25330	10.87	15.09	37.58	4.22
	Mustard	Jharkhand	4600	11500	4150	10698	8.15	11.86	41.7	3.71
	Total		14200	35500	13746.4	36028	9.51	13.48	39.64	3.97
2	Linseed	Bihar	800	2000	621	2224	7.26	9.53	30.18	2.27
	Linseed	Jharkhand	720	1800	660	1914	6.1	8.79	42.01	2.69
	Total		1520	3800	1281	4138	6.68	9.16	36.09	2.48
3	Sesame	Bihar	30	75	0	0				0
	Sesame	Jharkhand	80	200	30	84	2.8	4.93	77.99	2.13
	Tot al		110	275	30	84	2.8	4.93	77.99	2.13
4	Sunflower	Jharkhand	110	275	80	214	7.86	11.1	37.88	3.24
	Total		110	275	80	214	7.86	11.1	37.88	3.24
5	Safflower	Jharkhand	60	150	60	165	3.83	6.18	61.42	2.35
	Total		60	150	60	165	3.83	6.18	61.42	2.35
	Grand Total		16000	40000	15197.4	40629	6.14	8.97	50.60	2.83

Fig. 72: Cluster front line demonstration on linseed

Fig. 73: Cluster front line demonstration on mustard

Cluster Front line demonstration on oilseeds during summer season

Total 19 KVKs 10 from Bihar and 9 from Jharkhand actively proved their oilseed producing capacity. Total 881 CFLDs were laid out in 330 ha area under different micro-farming situations in selected districts in sesame and sunflower crops. Results of CFLDs has shown encouraging potentials, the average yield was increased by 26.64% and average difference of yield between demonstration and local practice was 1.67 (q/ha) Bihar and Jharkhand states. Total 472 CFLDs were laid out in 180 ha area in sunflower and yield was increased by 19.02% and average difference of yield between demonstration and local practice was 1.91 (q/ha) in Bihar and Jharkhand states. Total 175 CFLDs were laid out in the 70 ha area and yield was increased by 23.12% and average difference of yield between demonstration and local practice was 2.78 (q/ha) in Bihar state. Similarly total 297 CFLDs were laid out in the 110 ha area and yield was increased by 14.93% and average difference of yield between demonstration and local practice was 1.04 (q/ha) in Jharkhand state. Total 409 CFLDs were laid out in 150 ha area in sesame and yield was increased by 34.26% and average difference of yield between demonstration and local practice was 1.44 (q/ha) in Bihar and Jharkhand states. Total 250 CFLDs were laid out in the 90 ha area and yield was increased by 29.05% and average difference of yield between demonstration and local practice was 1.51 (q/ha) in Bihar state similarly total 159 CFLDs were laid out in the 60 ha area and yield was increased by 39.48% and average difference of yield between demonstration and local practice was 1.37 (q/ha) in Jharkhand state.

Fig. 74: Cluster front line demonstration on sunflower

Fig. 75: Cluster front line demonstration on linseed

Table 73: Cluster frontline demonstration during summer

S. No.	Crop	State	Targets of FLDs approved		Achievements of FLDs		Yield (q/h)		Yield increased (%)	Average yield difference (Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Ses ame	Bihar	90	225	90	250	5.215	6.73	29.05	1.51
		Jharkhand	60	150	60	159	3.47	4.84	39.48	1.37
	Total		150	375	150	409	4.34	5.78	34.26	1.44
2	Sunflower	Bihar	90	225	70	175	12.01	14.79	23.12	2.78
		Jharkhand	140	350	110	297	6.91	7.95	14.93	1.04
	Total		230	575	180	472	9.46	11.37	19.02	1.91
	Grand Total		380	950	330	881	6.9	8.57	26.64	1.67

Cluster Front line Demonstration (CFLD) on Pulses

Pulses are rich source of protein and occupy a unique place in the world by its high protein content, which is almost double than that of cereals. As Government of India was striving to increase pulse production, ICAR has taken key initiative to enhance pulse production and productivity by conducting nationwide cluster front line demonstrations through a wide network of Krishi Vigyan Kendras. ICAR has implemented a collaborative project "cluster front line demonstrations on pulses" since October 2015 under National Food Security Mission with the financial assistance of Department of Agriculture & Cooperation, Ministry of Agriculture & Farmers Welfare, GOI, New Delhi. Krishi Vigyan Kendras are facilitating farmers with quality seeds and proven technological packages. This initiative lays emphasis on major pulse crops, namely pigeon pea, green gram, black gram, moth bean, chickpea and lentil. Under ICAR-ATARI, Zone-IV, Patna, 02 KVKs are actively involved to demonstrate proven technological packages of pulses for higher productivity and profitability. Total 02 KVKs including 01 KVK from Bihar & 01 KVK from Jharkhand were actively demonstrated production potentialities of pulses during Kharif, Rabi and Summer season.

During 2024-25, a total of 507 CFLDs were laid out in the 200-ha area under different micro-farming situations of selected districts. Total 256 CFLDs were laid out in the 100 ha area and yield was increased by 28.73% and average difference of yield between demonstration and local practice was 2.50 (q/ha) in Bihar state, similarly total 251 CFLDs were laid out in the 100 ha area and yield was increased by 15.68% and average difference of yield between demonstration and local practice was 1.60 (q/ha) in Jharkhand state.

Fig. 76: Cluster front line demonstration on pigeonpea

Table 74: State wise Cluster Front Line Demonstration on pulses

S. No.	State	Target of CFLD Approved		Achievement of CFLD		Average Yield (q/ha)		Yield Increased (%)	Average difference of yield between Demo and Local (q/ha)
		Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Bihar	100	250	100	256	8.70	11.20	28.73	2.50
2	Jharkhand	100	250	100	251	10.20	11.80	15.68	1.60
Grand Total		200	500	200	507	9.45	11.50	21.69	2.05

Cluster Front Line Demonstration on pulses during kharif season

Only 01 KVK of Jharkhand state actively demonstrated production potentialities of pulses during 2024-25, a total of 251 CFLDs were laid out in the 100 ha area under different micro-farming situations of Garhwa district in pigeon pea crop. Results of CFLDs has shown encouraging potentials, the average yield was increased by 15.68 % and average difference of yield between demonstration and local practice was 1.60 (q/ha).

Fig. 77: Cluster front line demonstration on pigeonpea

Table 75: Cluster Frontline Demonstration during kharif

S. No	Crop	State	Target of CFLD Approved		Achievement of CFLD		Average Yield (q/ha)		Yield Increased (%)	Average difference of yield between Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Pigeon Pea	Jharkhand	100	250	100	251	10.20	11.80	15.68	1.60
Grand Total			100	250	100	251	10.20	11.80	15.68	1.60

Cluster Front Line Demonstration on pulses during rabi season

Only 01 KVK from Bihar actively demonstrated production potentialities of pulses during 2024-25 rabi season. A total of 256 CFLDs were laid out in 100-ha area under different micro-farming situations of Aurangabad district in lentil crop. Results of CFLDs have shown encouraging potentials, the average yield was increased by 28.73% and average difference of yield between demonstration and local practice was 2.50 (q/ha).

Fig. 78: Cluster front line demonstration on lentil

Table 76: Cluster Frontline Demonstration during rabi season

S. No	Crop	State	Target of CFLD Approved		Achievement of CFLD		Average Yield (q/ha)		Yield Increased (%)	Average difference of yield between Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Lentil	Bihar	100	250	100	256	8.70	11.20	28.73	2.50
Grand Total			100	250	100	256	8.70	11.20	28.73	2.50

Farmers and Farm Women

Adequate knowledge and technological proficiency are necessary to improve agriculture through the adoption and deployment of upgraded and sophisticated technology. KVK serves as a link to impart information and expertise about cutting-edge technology developed by academic institutions and research facilities specifically for practical application in agricultural communities. In order to accomplish this, KVK offers training programs to women, extension agents, and rural youths in addition to farmers, both on and off campus. Interested farmers and farm women must anxiously register to acquire the newest information and technology developments in the agricultural fields. Additionally, it has been demonstrated that young people in rural areas are very interested in courses that concentrate on gaining practical skills in a specific sector of local agriculture.

A total of farmers have benefited from 7195 training courses that KVKs have arranged this year on different topics related to agriculture and its allied sectors namely cereal crop cultivation, vegetable and fruit production, ornamental plant cultivation, plantation crop management, livestock production and management, home science and women empowerment, agricultural engineering, plant protection, fisheries development, on-site input production, capacity building, group dynamics, agroforestry, and other relevant fields. Among the participants, there were 151601 male farmers, including 27581 from SC and 17108 from ST communities, while farm women were 91628, including 31963 from SC and 18235 from ST (Table 77).

Table 77: State wise details of training programme for practicing farmer and farm women

State	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Bihar	5518	98232	34508	132740	23645	27840	51485	3399	4158	7557	125276	66506	191782
Jharkhand	1677	8680	6922	15602	3936	4123	8059	13709	14077	27786	26325	25122	51447
Total	7195	106912	41430	148342	27581	31963	59544	17108	18235	35343	151601	91628	243229

Fig. 79: Training for farmer and farm women

A. Thematic area wise training programmes

A comprehensive examination of the training programs provided under Zone IV showed that, out of the 7195 total with a participation of 243229. It includes 1726 were in crop production and 1159 were in horticulture. These training covered a variety of topics, including the production of vegetables (754), fruits (304), ornamental plants (30), aromatic and medicinal plants (26), plantation crops (23), tuber crops (12) and spices (10). Similarly, as indicated in the Table 78, KVK has offered skill training in the areas of plant protection (963), agricultural engineering (764), home science (758) soil health and fertility management (755) and livestock production and management (484).

Table 78: Thematic area wise details of thematic area wise training programs

Subjects		No. of Courses	No. of Participants									Grand Total		
			Other			SC			ST					
			M	F	T	M	F	T	M	F	T	M	F	T
Crop Production		1726	29397	8097	37494	6377	6006	12383	5157	5329	10486	40931	19432	60363
Horticulture	a) Vegetable Crops	754	8394	3863	12257	2972	3567	6539	1879	2483	4362	13245	9913	23158
	b) Fruits	304	4726	1514	6240	1341	1186	2527	450	538	988	6517	3238	9755
	c) Ornamental Plants	30	306	100	406	141	153	294	81	53	134	528	306	834
	d) Plantation crops	23	302	127	429	63	62	125	62	37	99	427	226	653
	e) Tuber crops	12	353	108	461	130	72	202	20	34	54	503	214	717
	f) Spices	10	65	27	92	19	0	19	57	86	143	141	113	254
	g) Medicinal and Aromatic Plants	26	427	173	600	113	135	248	59	56	115	599	364	963
Soil Health and Fertility Management		755	13343	3916	17259	3187	2620	5807	2739	1658	4397	19269	8194	27463
Livestock Production and Management		484	4959	2430	7389	1972	2330	4302	1410	1461	2871	8341	6221	14562
Home Science/Women empowerment		758	4125	8334	12459	1918	7767	9685	462	1785	2247	6505	17886	24391
Agril. Engineering		764	14784	4174	18958	3545	2182	5727	1172	1003	2175	19501	7359	26860
Plant Protection		963	18650	5445	24095	3640	2971	6611	1645	1551	3196	23935	9967	33902
Fisheries		155	2371	483	2854	515	278	793	294	143	437	3180	904	4084
Production of Inputs at site		115	1191	1037	2228	288	217	505	608	913	1521	2087	2167	4254
Capacity Building and Group Dynamics		309	3484	1578	5062	1343	2377	3720	981	1076	2057	5808	5031	10839
Agro-forestry		07	35	24	59	17	40	57	32	29	61	84	93	177
Grand Total		7195	106912	41430	148342	27581	31963	59544	17108	18235	35343	151601	91628	243229

I. Crop Production

A comprehensive classification of the KVKs' thematically organized training programs, it was observed that 66 KVKs provided 1726 training sessions on agricultural production. These classes helped 60363 farmers, 19432 of whom were farm women. Out of all the sub-thematic areas, integrated crop management had the highest courses (470), with 15623 farmers including 4762 farm women participation. 5670 no. of farmers, 1522 of them were farm women, enrolled in the 156 seed production courses that were offered. Furthermore, KVKs conducted training in various sub-thematic areas such as cropping systems (149 courses), resource conservation technologies (147 courses), weed management (147 courses) crop

diversification (83 courses), production of organic inputs (71), water management (58 courses) integrated farming and nursery management both having 53 courses. The data also showed that there was substantial participation in all these sub thematic areas from farmers in crop production training. (Table 79).

Table 79: Details of sub-thematic area wise training programme for crop production

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
I. Crop Production		M	F	T	M	F	T	M	F	T	M	F	T
Crop Diversification	83	1365	512	1877	432	261	693	171	156	327	1968	929	2897
Cropping Systems	149	1882	559	2441	659	546	1205	513	477	990	3054	1582	4636
Integrated Crop Management	470	7516	1535	9051	1351	1350	2701	1994	1877	3871	10861	4762	15623
Integrated Farming	53	775	302	1077	472	151	623	159	178	337	1406	631	2037
Nursery management	53	716	245	961	232	400	632	172	96	268	1120	741	1861
Production of organic inputs	71	885	251	1136	283	245	528	504	435	939	1672	931	2603
Resource Conservation Technologies	147	2980	991	3971	653	874	1527	184	161	345	3817	2026	5843
Seed production	156	3501	791	4292	374	282	656	273	449	722	4148	1522	5670
Water Management	58	907	172	1079	168	138	306	96	84	180	1171	394	1565
Weed Management	147	3079	796	3875	537	402	939	212	176	388	3828	1374	5202
Fodder production	25	431	69	500	86	78	164	88	48	136	605	195	800
Others, if any	314	5360	1874	7234	1130	1279	2409	791	1192	1983	7281	4345	11626
Total	1726	29397	8097	37494	6377	6006	12383	5157	5329	10486	40931	19432	60363

Fig. 80: Training on crop production

II. Horticulture Crop

The second most popular subject area was horticulture, with 36334 farmers receiving training in 1159 courses, including 14374 for farm women and 21960 for farmers. Among the seven sub-thematic categories, the production of vegetable crops received the highest attention, with 754 courses covering a total of 23158 farmers. Fruit crop cultivation followed closely behind, with 304 courses with 9755 participants. 30 training programs were conducted for 834 participants in ornamental plants, 26 for medicinal & aromatic plants, 23 for plantation crops, 12 for tuber crops and 10 for spices (Table 80).

Table 80: Details of training programme for horticultural crop

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
II. Horticulture		M	F	T	M	F	T	M	F	T	M	F	T
a) Vegetable Crops													
Enterprise development	18	101	37	138	42	30	72	128	77	205	271	144	415
Export potential vegetables	12	92	71	163	26	63	89	3	34	37	121	168	289
Grading and standardization	8	118	30	148	9	29	38	23	13	36	150	72	222
Integrated nutrient management	95	1092	333	1425	459	347	806	314	318	632	1865	998	2863
Nursery raising	88	955	466	1421	372	442	814	170	166	336	1497	1074	2571
Off-season vegetables	50	558	252	810	170	212	382	115	135	250	843	599	1442
Production of low volume and high value crops	62	742	343	1085	189	163	352	399	376	775	1330	882	2212
Protective cultivation (Green Houses, Shade Net etc.)	45	532	273	805	237	173	410	90	94	184	859	540	1399
Water management	16	273	101	374	62	52	114	45	35	80	380	188	568
Yield increment	67	1063	376	1439	198	259	457	69	73	142	1330	708	2038
Training and Pruning	9	128	49	177	16	32	48	10	3	13	154	84	238
Skill development	20	203	91	294	37	50	87	80	69	149	320	210	530
Others, if any	264	2537	1441	3978	1155	1715	2870	433	1090	1523	4125	4246	8371
Total	754	8394	3863	12257	2972	3567	6539	1879	2483	4362	13245	9913	23158
b) Fruits													
Cultivation of Fruit	71	940	405	1345	215	366	581	115	203	318	1270	974	2244
Grading and standardization	1	13	9	22	4	5	9	0	0	0	17	14	31
Integrated nutrient management	1	29	4	33	6	5	11	0	0	0	35	9	44
Layout and Management of Orchards	53	848	276	1124	195	118	313	63	60	123	1106	454	1560
Management of young plants/orchards	38	752	187	939	220	98	318	28	81	109	1000	366	1366
Micro irrigation systems of orchards	24	355	133	488	141	87	228	32	26	58	528	246	774
Nursery raising	3	55	16	71	11	5	16	0	0	0	66	21	87
Plant propagation techniques	33	522	149	671	135	153	288	113	75	188	770	377	1147
Rejuvenation of old orchards	21	295	91	386	65	78	143	66	19	85	426	188	614
Training and Pruning	1	13	9	22	5	3	8	4	4	8	22	16	38
Export potential fruits	4	40	7	47	5	19	24	3	24	27	48	50	98
Others, if any	54	864	228	1092	339	249	588	26	46	72	1229	523	1752
Total	304	4726	1514	6240	1341	1186	2527	450	538	988	6517	3238	9755
c) Ornamental Plants													
Nursery Management	17	220	56	276	106	131	237	18	8	26	344	195	539
Export potential of ornamental plants	3	26	20	46	30	20	50	0	0	0	56	40	96
Management of potted plants	2	14	2	16	4	0	4	24	1	25	42	3	45
Propagation techniques of Ornamental Plants	1	11	0	11	0	2	2	0	0	0	11	2	13
Others, if any	7	35	22	57	1	0	1	39	44	83	75	66	141
Total	30	306	100	406	141	153	294	81	53	134	528	306	834
d) Plantation Crops													
Production and Management technology	15	183	82	265	47	34	81	58	11	69	288	127	415
Processing and value addition	6	93	45	138	16	28	44	2	2	4	111	75	186
Others, if any	2	26	0	26	0	0	0	2	24	26	28	24	52
Total	23	302	127	429	63	62	125	62	37	99	427	226	653

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
II. Horticulture		M	F	T	M	F	T	M	F	T	M	F	T
e) Tuber crops													
Production and Management technology	11	350	105	455	130	63	193	20	9	29	500	177	677
Processing and value addition	1	3	3	6	0	9	9	0	25	25	3	37	40
Total	12	353	108	461	130	72	202	20	34	54	503	214	717
f) Spices													
Production and Management technology	8	47	8	55	17	0	17	55	71	126	119	79	198
Processing and value addition	2	18	19	37	2	0	2	2	15	17	22	34	56
Total	10	65	27	92	19	0	19	57	86	143	141	113	254
g) Medicinal and Aromatic Plants													
Nursery Management	4	66	9	75	7	20	27	20	10	30	93	39	132
Production and Management technology	9	210	37	247	56	22	78	38	45	83	304	104	408
Post harvest technology and value addition	9	113	123	236	45	56	101	1	1	2	159	180	339
Others, if any	4	38	4	42	5	37	42	0	0	0	43	41	84
Total	26	427	173	600	113	135	248	59	56	115	599	364	963


Fig. 81: Training on horticulture crop production

III. Soil Health and Fertility Management

An equally important theme was soil health and fertility management, where 27463 farmers were enrolled in 755 training sessions. Among these courses, integrated nutrient management took the lead with 200 offerings, followed by soil fertility management (151 courses), production and use of organic inputs (102 courses) and soil and water testing (61). These courses attracted 6637, 7059, 4135 and 1976 farmer participants, respectively. Other crucial aspects such as micronutrient deficiency in crops, nutrient use efficiency and soil and water conservation were also covered in the training programs. (Table 81).


Fig. 82: Training on soil health and fertility management

Table 81: Details of training programme for soil health and fertility management

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
III. Soil Health and Fertility Management													
Integrated nutrient management	200	3794	776	4570	700	510	1210	523	334	857	5017	1620	6637
Management of problematic soils	21	177	54	231	68	28	96	170	38	208	415	120	535
Micro nutrient deficiency in crops	28	328	138	466	129	67	196	70	29	99	527	234	761
Nutrient use Efficiency	22	380	140	520	26	52	78	78	43	121	484	235	719
Production and use of organic inputs	102	2231	681	2912	509	413	922	239	62	301	2979	1156	4135
Soil and water conservation	44	516	152	668	124	113	237	205	175	380	845	440	1285
Soil and water testing	61	830	290	1120	211	91	302	382	172	554	1423	553	1976
Soil fertility management	151	3550	1158	4708	1038	736	1774	369	208	577	4957	2102	7059
Others, if any	126	1537	527	2064	382	610	992	703	597	1300	2622	1734	4356
Total	755	13343	3916	17259	3187	2620	5807	2739	1658	4397	19269	8194	27463

IV. Livestock Production and Management

Training in livestock production and management has become a crucial and important topic, both in terms of course offerings and farmer involvement. The KVK of the zone offered a total of 484 courses in this subject area, benefiting 14562 farmers, 6221 of them were farm women, accounting for roughly 42.72 %. The subject area of disease management offered the highest (110), followed by dairy management (94), poultry management (84), feed management (80), piggery management (18) and (12) training programmes for the development of quality animal products. The number of participants in these courses are as follows: 3382 for disease management, 2686 for dairy management, 2337 for poultry management, 2702 for feed management, 564 for piggery management and 321 for the development of high-quality animal

Table 82: Details of training programme for livestock production and management

	No. of Courses	No. of Participants									Grand Total		
		Others			SC			ST					
Livestock Production and Management		M	F	T	M	F	T	M	F	T	M	F	T
Dairy management	94	1018	516	1534	288	286	574	324	254	578	1630	1056	2686
Disease management	110	1402	366	1768	575	614	1189	231	194	425	2208	1174	3382
Feed management	80	991	688	1679	277	327	604	197	222	419	1465	1237	2702
Poultry management	84	387	254	641	340	693	1033	288	375	663	1015	1322	2337
Production of quality animal products	12	52	129	181	40	54	94	26	20	46	118	203	321
Piggery management	18	75	37	112	156	52	208	138	106	244	369	195	564
Others, if any	86	1034	440	1474	296	304	600	206	290	496	1536	1034	2570
Total	484	4959	2430	7389	1972	2330	4302	1410	1461	2871	8341	6221	14562

V. Fisheries

In 2024, the KVKs planned 155 fishery science courses for 4084 farmers and farm women, covering topics like carp and ornamental fish breeding, hatchery management, fish feed preparation, rearing carp fingerlings and fry, fish processing, freshwater prawn culture, integrated fish farming, pearl culture, pen culture, composite fish culture and fish disease. Among the 155 trainings, 29 courses addressed fish disease and composite fish culture with 776 participants; 25 courses addressed integrated fish farming with 646 participants; 22 courses addressed rearing carp fingerlings and fry with 544 participants; 20 courses addressed the preparation of fish feed and its use in fish ponds with 589 participants and 13 courses addressed carp breeding and hatchery management with 315 participants. (Table 83).

Table 83: Details of training programme for fisheries

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
Fisheries		M	F	T	M	F	T	M	F	T	M	F	T
Composite fish culture & fish disease	29	405	96	501	79	23	102	103	70	173	587	189	776
Fish feed preparation & its application to fish pond, like nursery, rearing & stocking pond	20	356	73	429	50	24	74	68	18	86	474	115	589
Fish processing and value addition	11	149	30	179	34	27	61	22	11	33	205	68	273
Integrated fish farming	25	365	86	451	73	69	142	31	22	53	469	177	646
Carp fry and fingerling rearing	22	317	68	385	91	57	148	11	0	11	419	125	544
Carp breeding and hatchery management	13	230	24	254	39	12	51	8	2	10	277	38	315
Hatchery management and culture of freshwater prawn	9	163	32	195	38	17	55	37	19	56	238	68	306
Breeding and culture of ornamental fishes	7	110	17	127	28	20	48	1	0	1	139	37	176
Portable plastic carp hatchery	3	56	0	56	11	0	11	1	0	1	68	0	68
Pen culture of fish and prawn	1	20	0	20	0	0	0	0	0	0	20	0	20
Pearl culture	2	36	0	36	10	0	10	0	0	0	46	0	46
Others, if any	13	164	57	221	62	29	91	12	1	13	238	87	325
Total	155	2371	483	2854	515	278	793	294	143	437	3180	904	4084

Fig. 83: Training on fish production

VI. Home Science/Women Empowerment

In the current situation, women's empowerment is a vital priority, and KVK provides the perfect venue for this. The sixth significant domain for training provision and participation in the KVK system was thought to be women empowerment and home science. 758 courses were offered to 24391 farmers in the reporting year out of which almost (73.33%) were women (17886) participants.

Attendees 6801 of the course (212) focused on household food security by kitchen gardening and nutrition gardening as a means of achieving family food security. With 130 courses and the active engagement of 4014 farm women in value addition were gaining importance as a new source of income generation. (Table 84).

Table 84: Details of training programme for home science/women empowerment

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Others			SC			ST					
Home Science/Women empowerment		M	F	T	M	F	T	M	F	T	M	F	T
Capacity building	14	121	44	165	62	147	209	16	43	59	199	234	433
Enterprise development	31	362	261	623	98	338	436	20	75	95	480	674	1154
Gender mainstreaming through SHGs	26	130	346	476	95	351	446	0	50	50	225	747	972
Household food security by kitchen gardening and nutrition gardening	212	1096	2451	3547	540	2206	2746	78	430	508	1714	5087	6801
Income generation activities for empowerment of rural Women	56	410	661	1071	153	684	837	36	106	142	599	1451	2050
Location specific drudgery reduction technologies	14	61	128	189	20	127	147	39	81	120	120	336	456
Rural Crafts	10	34	152	186	1	78	79	0	0	0	35	230	265
Storage loss minimization techniques	16	129	99	228	52	113	165	44	28	72	225	240	465
Value addition	130	661	1348	2009	305	1318	1623	95	287	382	1061	2953	4014
Women and Child care	62	104	649	753	51	714	765	22	116	138	177	1479	1656
Minimization of nutrient loss in processing	29	101	349	450	49	227	276	15	105	120	165	681	846
Design and development of low/minimum cost diet	27	47	279	326	37	145	182	16	90	106	100	514	614
Designing and development for high nutrient efficiency diet	44	82	402	484	202	375	577	0	172	172	284	949	1233
Others, if any	87	787	1165	1952	253	944	1197	81	202	283	1121	2311	3432
Total	758	4125	8334	12459	1918	7767	9685	462	1785	2247	6505	17886	24391

Fig. 84: Training on women empowerment

VII. Agriculture Engineering

Agricultural engineering has seen a significant upsurge in recent years as a result of farm mechanization. 26860 farmers participated in 764 training courses that were held in total. The fact that 43.64% of these participants were farm women shows how much more involved they are in this sector. A total of 8181 farmers attended 232 courses on the repair and maintenance of agricultural machinery and implements, making it one of the most prominent themtic area. The setup and upkeep of micro-irrigation systems, in which 3327 farmers took part in 104 courses, was another critical area. Furthermore, with 58 courses offered and 1638 farmers in attendance, post-harvest technology was recognized as a significant sub-thematic field (Table 85).

Table 85: Details of training programme for agricultural engineering

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Others			SC			ST					
Agril. Engineering		M	F	T	M	F	T	M	F	T	M	F	T
Installation and maintenance of micro irrigation systems	104	1630	419	2049	590	292	882	258	138	396	2478	849	3327
Post Harvest Technology	58	805	242	1047	119	202	321	171	99	270	1095	543	1638
Production of small tools and implements	53	897	263	1160	315	177	492	54	69	123	1266	509	1775
Repair and maintenance of farm machinery and implements	232	4312	1395	5707	1404	775	2179	193	102	295	5909	2272	8181
Use of Plastics in farming practices	26	345	115	460	77	59	136	61	82	143	483	256	739
Small scale processing and value addition	30	320	91	411	176	119	295	0	0	0	496	210	706
Others, if any	261	6475	1649	8124	864	558	1422	435	513	948	7774	2720	10494
Total	764	14784	4174	18958	3545	2182	5727	1172	1003	2175	19501	7359	26860

Fig. 85: Training on farm implements use in agriculture

VIII. Plant Protection

A vital area that has drawn a lot of attention in relation to training initiatives and farmer involvement is plant protection. In collaboration, the KVKs of Bihar and Jharkhand organized a total of 963 courses, which proved beneficial for 33902 farmers, including 9967 farm women. The primary focus of these courses was integrated pest management, which accounted for 472 courses and attracted 15009 participants. Integrated disease management followed closely, with 228 courses and 6444 participants. Additionally, bio-control of pests and diseases was another important area, with 73 courses involving 3530 participants. These areas received significant emphasis, as evidenced by the substantial number of courses conducted and the active involvement of farmers. (Table 86).

Table 86: Details of training programme for plant protection

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
Plant Protection		M	F	T	M	F	T	M	F	T	M	F	T
Integrated Pest Management	472	8663	2166	10829	1498	1402	2900	637	643	1280	10798	4211	15009
Integrated Disease Management	228	3460	935	4395	697	541	1238	403	408	811	4560	1884	6444
Bio-control of pests and diseases	73	1431	1013	2444	399	373	772	158	156	314	1988	1542	3530
Production of bio control agents and bio pesticides	33	293	109	402	176	90	266	93	78	171	562	277	839
Others, if any	157	4803	1222	6025	870	565	1435	354	266	620	6027	2053	8080
Total	963	18650	5445	24095	3640	2971	6611	1645	1551	3196	23935	9967	33902

Fig. 86: Training on plant protection measures

IX. Production of Input at sites

Under the heading of "production of inputs at site," the KVKs of zone IV distributed 115 courses to 4254 students. These courses included seed production (36 courses) with 942 participants, vermicompost production (15 courses) with 629 participants, organic manures production (12 courses) with 419 participants, production of bee-colonies and wax sheets (07 courses) with 206 participants, planting material production (06 courses) with 191 participants, bio-agents production (03 courses) with 86 participants, production of livestock feed and fodder (02 courses) with 48 participants, bio-pesticides production (02 courses) with 88 participants and small tools and implements single course with 53 participants (Table 87).

Fig. 87: Training on bee keeping

Table 87: Details of training programme for production of input at sites

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
Production of Input at Sites		M	F	T	M	F	T	M	F	T	M	F	T
Seed production	36	449	63	512	112	51	163	107	160	267	668	274	942
Vermi-compost production	15	73	272	345	94	61	155	62	67	129	229	400	629
Planting material production	6	80	23	103	7	17	24	46	18	64	133	58	191
Bio-agents production	3	23	31	54	1	31	32	0	0	0	24	62	86
Organic manures production	12	197	68	265	28	22	50	65	39	104	290	129	419
Production of livestock feed and fodder	2	4	13	17	4	10	14	8	9	17	16	32	48
Bio-fertilizer production	1	28	12	40	0	0	0	0	0	0	28	12	40
Small tools and implements	1	2	0	2	0	0	0	28	23	51	30	23	53
Production of Bee-colonies and wax sheets	7	10	6	16	1	0	1	45	144	189	56	150	206
Bio-pesticides production	2	3	3	6	3	3	6	54	22	76	60	28	88
Others, if any	30	322	546	868	38	22	60	193	431	624	553	999	1552
Total	115	1191	1037	2228	288	217	505	608	913	1521	2087	2167	4254

X. Capacity Building Programme and Group Dynamics

A total of 10839 farmers and farm women participated in 309 training sessions that were mostly focused on group dynamics and capacity building, organized by the KVKs of Jharkhand and Bihar. These training covered a wide range of important topics, such as Entrepreneurial development of farmers/youths (70), creating and running self-help groups (SHGs) (65), group dynamics (31 sessions), developing leadership development (25) and social capital mobilization (19). The following participation figures were recorded: 2330 people entrepreneurial development of farmers/youths, 2026 farmers took part in SHG classes, 1131 group dynamics, 740 people leadership development and 1470 farmers actively worked on social capital mobilization. (Table 88).

Table 88: Details of training programme for capacity building programme and group dynamics

Thematic Area	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
Capacity Building Programme and Group Dynamics		M	F	T	M	F	T	M	F	T	M	F	T
Formation and Management of SHGs	65	730	284	1014	272	428	700	81	231	312	1083	943	2026
Leadership development	25	208	160	368	64	130	194	101	77	178	373	367	740
Mobilization of social capital	19	146	88	234	72	1087	1159	45	32	77	263	1207	1470
Entrepreneurial development of farmers/youths	70	736	449	1185	195	189	384	311	450	761	1242	1088	2330
WTO and IPR issues	11	206	90	296	21	19	40	64	47	111	291	156	447
Group dynamics	31	452	86	538	272	157	429	80	84	164	804	327	1131
Others, if any	88	1006	421	1427	447	367	814	299	155	454	1752	943	2695
Total	309	3484	1578	5062	1343	2377	3720	981	1076	2057	5808	5031	10839

Fig. 88: Training on group dynamics

XI. Agro-Forestry

The KVKs also organized a total of 7 courses on agro-forestry covering Integrated Farming Systems with 83 participants by involving 38 male and 45 farm women. Nursery management covering 2 courses with the involvement of 27 male and 9 farm women and production technologies with 19 men and 39 farm women respectively (Table 89).

Table 89: Details of training programme for agro-forestry

Thematic Area / Agro-Forestry System	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Nursery Management	2	10	0	10	6	5	11	11	4	15	27	9	36
Production technologies	2	10	10	20	9	29	38	0	0	0	19	39	58
Integrated Farming Systems	3	15	14	29	2	6	8	21	25	46	38	45	83
Total	07	35	24	59	17	40	57	32	29	61	84	93	177

B. Training Programme for Rural Youth

The KVKs of zone-IV started a methodical program in 2024 to give skill-oriented training to young people in rural areas with the goal of creating prospects for self-employment. These enterprise-oriented training programs were meticulously organized, benefitting a large number of rural youths. A total of 1223 training programs were conducted, catering the needs of 36864 rural youth, comprising 22139 male and 14725 female. The schedule tribe communities comprised 17.62% of the participants, while 23.85% of them were schedule caste members. Among the courses offered, mushroom production (151) was the most sought-after, attracting 4656 trainees, repair and maintenance of farm machinery and implements (87) with 2529 trainees ranked second, followed by Bee-keeping (67) with 1983 participants and value addition (66) for 1989 participants and integrated farming (66) for 1903 participants. These courses were designed to equip rural youth with the necessary skills and expertise for self-employment, empowering them to contribute to the economic growth and development for their communities. (Table 90).

Table 90: State-wise details of training programme for rural youth

State	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Bihar	850	12816	5676	18492	3194	3957	7151	357	587	944	16367	10220	26587
Jharkhand	373	1859	1223	3082	907	736	1643	3006	2546	5552	5772	4505	10277
Total	1223	14675	6899	21574	4101	4693	8794	3363	3133	6496	22139	14725	36864

Fig. 89: Training for rural youth

Table 91: Thematic area wise training programme for rural youth

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
Bee-keeping	67	938	311	1249	246	118	364	235	135	370	1419	564	1983
Commercial fruit production	26	380	131	511	78	137	215	31	29	60	489	297	786
Mushroom production	151	1393	1166	2559	434	907	1341	224	532	756	2051	2605	4656
Planting material production	26	245	155	400	86	64	150	126	95	221	457	314	771
Post-harvest technology	15	117	38	155	47	70	117	53	54	107	217	162	379
Poultry production	47	584	179	763	228	221	449	180	175	355	992	575	1567
Protected cultivation of vegetable crops	28	392	133	525	140	136	276	49	90	139	581	359	940
Seed production	62	996	207	1203	302	245	547	240	129	369	1538	581	2119
Training and pruning of orchards	14	138	54	192	65	76	141	43	25	68	246	155	401
Value addition	66	217	815	1032	100	449	549	130	278	408	447	1542	1989
Vermi-culture	58	657	281	938	151	168	319	275	68	343	1083	517	1600
Sheep and goat rearing	63	912	293	1205	323	255	578	133	326	459	1368	874	2242
Integrated farming	66	949	258	1207	166	116	282	287	127	414	1402	501	1903
Nursery Management of Horticulture crops	55	642	242	884	207	106	313	257	167	424	1106	515	1621
Production of organic inputs	51	548	211	759	175	175	350	250	186	436	973	572	1545
Dairying	59	940	207	1147	352	151	503	92	57	149	1384	415	1799
Para vets	8	132	40	172	19	8	27	10	3	13	161	51	212
Repair and maintenance of farm machinery and implements	87	1220	375	1595	285	297	582	265	87	352	1770	759	2529
Enterprise development	51	683	306	989	175	99	274	150	117	267	1008	522	1530
Composite fish culture	14	207	78	285	41	21	62	19	14	33	267	113	380
Freshwater prawn culture	5	86	16	102	13	4	17	1	0	1	100	20	120
Fish harvest and processing technology	4	65	29	94	6	2	8	0	0	0	71	31	102
Rural Crafts	29	247	388	635	61	160	221	1	0	1	309	548	857
Tailoring and Stitching	16	20	88	108	12	188	200	4	118	122	36	394	430
Small scale processing	21	59	73	132	15	80	95	11	46	57	85	199	284
Piggery	16	88	46	134	29	27	56	167	71	238	284	144	428
Ornamental fisheries	2	24	11	35	7	9	16	0	0	0	31	20	51
Fry and fingerling rearing	3	42	10	52	18	11	29	0	0	0	60	21	81
Production of quality animal products	7	156	8	164	14	1	15	4	0	4	174	9	183
Para extension workers	3	36	70	106	4	14	18	4	6	10	44	90	134
Cold water fisheries	3	7	24	31	9	36	45	5	16	21	21	76	97
Quail farming	3	32	12	44	16	40	56	0	0	0	48	52	100
Other if any	97	1523	644	2167	277	302	579	117	182	299	1917	1128	3045
Grand Total	1223	14675	6899	21574	4101	4693	8794	3363	3133	6496	22139	14725	36864

C. Training Programme for Extension Functionaries

The State Government Departments Extension staff are essential in introducing new technology to more expansive agricultural production regions. These extension agents must be trained in the latest advancements in agricultural sciences, especially the cattle industry. KVK's training program involved a wide range of extension workers from Bihar and Jharkhand, including line department officials, teachers, NGO staff and other workers with an agricultural background. The KVKs trained extension functionaries through a total of 667 training courses covering a wide range of subject areas. Women and men made 40486 the total participant count. Integrated nutrient management ranks highest with 142 courses,

followed by productivity enhancement (89 courses), integrated pest management (66 courses), protected cultivation technology (47 courses), maintenance of farm machinery and implements (43 courses), group dynamics and farmers organization (34) (Table 93).

Table 92: State wise details of training programme for extension functionaries

State	No. of Courses	No. of Participants									Grand Total		
		Other			SC			ST					
		M	F	T	M	F	T	M	F	T	M	F	T
Bihar	412	8907	3617	12524	1373	1062	2435	101	81	182	10381	4760	15141
Jharkhand	255	1443	811	2254	496	433	929	1311	851	2162	3250	2095	5345
Total	667	10350	4428	14778	1869	1495	3364	1412	932	2344	13631	6855	20486

Fig. 90: Training for extension personal

Table 93 : 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
Integrated Nutrient management	142	1475	349	1824	183	133	316	307	104	411	1965	586	2551
Integrated pest management	66	1535	351	1886	217	95	312	140	103	243	1892	549	2441
Production and use of organic inputs	26	767	74	841	108	47	155	48	16	64	923	137	1060
Protected cultivation technology	47	760	458	1218	95	117	212	99	62	161	954	637	1591
Women and child care	9	60	201	261	15	79	94	0	15	15	75	295	370
Management in farm animals	16	284	56	340	47	53	100	44	28	72	375	137	512
Value addition	17	77	220	297	13	130	143	25	35	60	115	385	500
Productivity enhancement in field crops	89	1700	629	2329	266	185	451	208	99	307	2174	913	3087
Rejuvenation of old orchards	13	76	183	259	22	91	113	8	10	18	106	284	390
Household food security	28	177	437	614	37	74	111	42	56	98	256	567	823
Care and maintenance of farm machinery and implements	43	1354	270	1624	334	85	419	39	26	65	1727	381	2108
Livestock feed and fodder production	13	163	77	240	18	11	29	27	16	43	208	104	312
Group Dynamics and farmers organization	34	482	184	666	104	89	193	142	44	186	728	317	1045
Capacity building for ICT application	19	324	86	410	91	39	130	53	45	98	468	170	638
Formation and Management of SHGs	17	212	116	328	35	49	84	58	85	143	305	250	555
Low cost and nutrient efficient diet designing	12	83	186	269	16	44	60	5	10	15	104	240	344
Information networking among farmers	8	141	33	174	23	6	29	17	25	42	181	64	245
Gender mainstreaming through SHGs	9	53	85	138	33	44	77	19	27	46	105	156	261
Other if any	59	627	433	1060	212	124	336	131	126	257	970	683	1653
Total	667	10350	4428	14778	1869	1495	3364	1412	932	2344	13631	6855	20486

D. Sponsored Training Programme

The KVKs of ATARI zone-IV facilitate cooperation with agricultural development groups, educate farmers and offer vital support. To help farmers and agricultural growth, they implement HRD initiatives. In order to provide instruction on a range of subjects, including livestock production, home science, agricultural extension, post-harvest technology and value addition and crop production and management, the government and organizations have often reached out to KVKs. In contrast, the KVKs made an effort to fulfill the requirements of these organizations while still completing their assigned tasks. KVKs with crop production technology (773), which involved 37469 participants, post-harvest technology and value addition (144) which involve 1968 participants, agricultural extension (134) courses with 6540 participants, home science (131) courses with 4795 participants and livestock production (110) which involved 4251 participants. Attendance trends revealed that sponsors preferred to train their clients in areas where participants might start their own enterprises and become independent.

Table 94: State wise details of sponsored training programme

State	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total
Bihar	998	28621	8069	36690	7670	6138	13808	626	2051	2677	36917	16258	53175
Jharkhand	403	1769	1136	2905	795	648	1443	2822	3571	6393	5386	5355	10741
Total	1401	30390	9205	39595	8465	6786	15251	3448	5622	9070	42303	21613	63916

Table 95 : Thematic area wise details of sponsored training programme

Area of training	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total
Crop production and management													
Commercial production of vegetables	136	2696	1021	3717	721	641	1362	526	811	1337	3943	2473	6416
Fruit Plants	63	1172	384	1556	284	343	627	92	139	231	1548	866	2414
Increasing production and productivity of crops	289	6657	1724	8381	1569	1331	2900	829	909	1738	9055	3964	13019
Methods of protective cultivation	20	699	134	833	389	87	476	7	312	319	1095	533	1628
Ornamental plants	6	69	54	123	24	9	33	22	36	58	115	99	214
Production and value addition	6	318	23	341	18	13	31	0	0	0	336	36	372
Production of Inputs at site	5	124	19	143	4	0	4	16	3	19	144	22	166
Soil health and fertility management	92	3428	936	4364	894	614	1508	279	179	458	4601	1729	6330
Spices crops	8	136	10	146	19	2	21	6	45	51	161	57	218
Other	148	3268	745	4013	849	720	1569	369	741	1110	4486	2206	6692
Total	773	18567	5050	23617	4771	3760	8531	2146	3175	5321	25484	11985	37469
Post-harvest technology and value addition													
Processing and value addition	46	393	375	768	201	498	699	28	20	48	622	893	1515
Other	98	84	18	102	76	17	93	202	56	258	362	91	453
Total	144	477	393	870	277	515	792	230	76	306	984	984	1968
Farm machinery													
Farm machinery, tools and implements	74	3688	1068	4756	1151	517	1668	106	366	472	4945	1951	6896
Other (Repair and maintenance of farm implement)	35	475	296	771	370	157	527	255	444	699	1100	897	1997
Total	109	4163	1364	5527	1521	674	2195	361	810	1171	6045	2848	8893

Area of training	No. of Courses	No. of Participants											
		General			SC			ST			Grand Total		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total
Livestock Production													
Animal Disease Management	19	690	116	806	140	80	220	6	46	52	836	242	1078
Animal Nutrition Management	17	265	109	374	72	41	113	77	131	208	414	281	695
Fisheries Management	13	168	54	222	40	47	87	4	0	4	212	101	313
Fisheries Nutrition	3	34	7	41	19	16	35	4	0	4	57	23	80
Livestock production and management	54	927	280	1207	207	181	388	123	177	300	1257	638	1895
Other	4	106	24	130	23	5	28	28	4	32	157	33	190
Total	110	2190	590	2780	501	370	871	242	358	600	2933	1318	4251
Home Science													
Drudgery reduction of women	7	93	66	159	91	93	184	1	25	26	185	184	369
Economic empowerment of women	17	135	333	468	97	97	194	13	191	204	245	621	866
Household nutritional security	80	534	504	1038	317	769	1086	217	305	522	1068	1578	2646
Other	27	312	155	467	72	76	148	27	272	299	411	503	914
Total	131	1074	1058	2132	577	1035	1612	258	793	1051	1909	2886	4795
Agricultural Extension													
Capacity Building and Group Dynamics	52	1888	238	2126	313	148	461	104	164	268	2305	550	2855
Other	82	2031	512	2543	505	284	789	107	246	353	2643	1042	3685
Total	134	3919	750	4669	818	432	1250	211	410	621	4948	1592	6540
Grand Total	1401	30390	9205	39595	8465	6786	15251	3448	5622	9070	42303	21613	63916

Fig. 91: Sponsored training programme for farmer

E. Vocational Training Programme

Zone-IV implemented 597 vocational training programs in 2024 to combat rural unemployment. The objective was to equip participants with the skills they would need to enhance their employment opportunities. These initiatives, which sought to lower unemployment and encourage economic growth, involved 18587 participants. The KVKs determined that mushroom cultivation, goat husbandry, vegetable cultivation, dairy management, entrepreneurial development, value addition and commercialization for sustainable lives were all potential options for skill development. In order to alleviate the trainees' anxieties regarding business development, the KVKs worked with banks and credit unions to offer seed money. In addition to addressing unemployment, this approach encouraged participants' independence and entrepreneurship.

Fig. 92: Training on common service center

Fig. 93: Training on mushroom production

Table 96: State wise vocational training programme

State	No. of Training	Grand Total		
		Male	Female	Total
Bihar	399	7016	5515	12531
Jharkhand	198	3192	2864	6056
Total	597	10208	8379	18587

Table 97 : Thematic area wise details of vocational training programme

Area of training	No. of Training	Grand Total		
		Male	Female	Total
Beekeeping	27	548	266	814
Commercial Fruit Production	39	754	525	1279
Dairy Management	41	857	436	1293
Entrepreneurship Development	58	1044	842	1886
Seed Production	29	592	399	991
Income generation	40	723	568	1291
Goat farming	36	653	538	1191
Value addition	20	157	415	572
Vermicompost production	24	445	305	750
Mushroom Production	67	1007	1211	2218
Production of Organic Input	19	255	211	466
Poultry farming	25	433	362	795
Vegetable cultivation	20	276	327	603
Fish Production	6	86	89	175
Tailoring and Stitching	12	41	276	317
Farm Mechanization	28	577	298	875
Soil & water testing	5	54	110	164
Protected cultivation	17	232	265	497
Integrated farming system	12	230	127	357

EXTENSION ACTIVITIES AND OTHERS
EXTENSION ACTIVITIES

A. Extension Activities

The extension activities conducted with the aim of rising awareness among the farmers about the advantage of modern and recent agriculture and allies technologies. During the year 2024, KVKs of Bihar state has organized 95762 extension activities with the involvement of 1008220 farmers and extension officials and KVKs of Jharkhand state has organized 22934 extension activities with the involvement of 609939 farmers and extension officials. The KVKs are engaged in various activities via. advisory services (27853), diagnostic visits (3973), animal health camps (96), and scientific-based scientific visits to farmers' fields (7523) and KVK (67464) were among the many aspects covered under these activities.

In total all 68 KVKs under ICAR-ATARI Zone IV, Patna has organised 118696 extension activities with the involvement of 1618159 farmers and extension officials to create awareness about different latest agriculture and allied sector technologies in the farming community as well as state extension officials and district level extension officials to disseminate the different technologies for the benefit of farming community to enhance production, profitability and productivity.

Table 98 : State wise details of extension programme

Name of State	No. of activities	Farmers					Extension Officials					Total				
		M	F	Total	SC (no.)	ST (no.)	M	F	Total	SC (no.)	ST (no.)	M	F	Total	SC (no.)	ST (no.)
Bihar	95762	751003	235212	986215	139107	27597	15914	6091	22005	2121	200	766917	241303	1008220	141228	27797
Jharkhand	22934	370196	215656	585852	87181	249014	15482	8605	24087	3033	5400	385678	224261	609939	90214	254414
Total	118696	1121199	450868	1572067	226288	276611	31396	14696	46092	5154	5600	1152595	465564	1618159	231442	282211

Fig. 94: Extension activities under different programmes

Table 99 : Details of various extension programmes

Nature of Extension Activity	No. of activities	Farmers					Extension Officials					Total				
		M	F	Total	SC (no.)	ST (no.)	M	F	Total	SC (no.)	ST (no.)	M	F	Total	SC (no.)	ST (no.)
Advisory Services	27853	339344	141840	481184	86327	152193	6245	3282	9527	980	1259	345589	145122	490711	87307	153452
Agri mobile clinic	187	207	59	266	26	192	2	2	4	0	0	209	61	270	26	192
Animal Health Camp	96	3903	1158	5061	1645	967	137	40	177	21	22	4040	1198	5238	1666	989
Celebration of important date	409	12867	7414	20281	3178	1211	841	422	1263	129	104	13708	7836	21544	3307	1315
Diagnostic visits	3973	15879	4990	20869	2510	3669	733	369	1102	112	120	16612	5359	21971	2622	3789
Exhibition organized	81	8668	6117	14785	2279	610	454	157	611	78	29	9122	6274	15396	2357	639
Exposure visits	396	19214	8286	27500	4142	1413	466	117	583	103	38	19680	8403	28083	4245	1451
Ex-trainees Sammelan	48	1805	735	2540	357	472	162	165	327	11	13	1967	900	2867	368	485
Farm Science Club Conveners meet	20	924	367	1291	172	334	33	11	44	2	3	957	378	1335	174	337
Farmers Seminar	43	3189	1005	4194	477	351	177	55	232	49	62	3366	1060	4426	526	413
Farmers visit to KVK	67464	89673	38793	128466	16879	14264	3880	1838	5718	707	1167	93553	40631	134184	17586	15431
Field Day	649	20092	8019	28111	3557	4577	660	335	995	79	78	20752	8354	29106	3636	4655
Film Show	749	20296	12568	32864	3568	9522	662	332	994	114	147	20958	12900	33858	3682	9669
Group discussion	674	15922	2994	18916	3215	2357	557	352	909	117	26	16479	3346	19825	3332	2383
Kisan Ghosthi	620	35101	16415	51516	8398	5016	926	191	1117	80	69	36027	16606	52633	8478	5085
Kisan Mela organized	46	34381	29776	64157	8549	15064	1407	472	1879	158	67	35788	30248	66036	8707	15131
Kisan Mela participated	199	119891	57189	177080	28186	23090	3054	1466	4520	602	384	122945	58655	181600	28788	23474
Lectures delivered as resource persons	2566	67041	16456	83497	11429	2386	1980	626	2606	149	59	69021	17082	86103	11578	2445
Mahila Mandals Conveners meetings	47	947	1350	2297	524	281	81	22	103	13	10	1028	1372	2400	537	291
Method Demonstrations	376	7612	3374	10986	1373	1795	161	66	227	57	159	7773	3440	11213	1430	1954
Participation in exhibition	126	32119	16076	48195	7321	7866	647	221	868	101	110	32766	16297	49063	7422	7976
Sankalp Se Siddhi	9	780	381	1161	283	198	30	18	48	8	2	810	399	1209	291	200
Scientific visit to farmers field	7523	48241	17235	65476	11010	7775	3242	2135	5377	608	938	51483	19370	70853	11618	8713
Self Help Group Conveners meetings	83	1397	2159	3556	529	540	103	57	160	22	36	1500	2216	3716	551	576
Soil health Camp	49	2232	1006	3238	337	588	156	104	260	22	51	2388	1110	3498	359	639
Soil test campaigns	2210	4191	1925	6116	1205	1586	564	55	619	61	130	4755	1980	6735	1266	1716
Special day celebration	374	14006	8073	22079	3753	3510	578	166	744	94	52	14584	8239	22823	3847	3562
Swatchta Hi Sewa	895	32566	15098	47664	5293	8702	1043	425	1468	187	313	33609	15523	49132	5480	9015
Workshop	226	12746	4194	16940	2116	1279	794	199	993	87	39	13540	4393	17933	2203	1318
Others	705	155965	25816	181781	7650	4803	1621	996	2617	403	113	157586	26812	184398	8053	4916
Total	118696	1121199	450868	1572067	226288	276611	31396	14696	46092	5154	5600	1152595	465564	1618159	231442	282211

B. Others Extension Activities

The KVKs also participate in various extension activities, including writing technical articles, performing on television and radio, creating extension materials, mass media communication, also actively participating in publishing popular article. acting as resource partners for the state agriculture department or ATMA, organizing awareness campaigns, and more. The KVKs in zone IV conducted these types of 22160 extension activities throughout the year. KVKs in Bihar organized 15409 and Jharkhand organized 6751 extension efforts, through variety of methods, including extension literature, newspaper coverage and electronic media (such as TV and radio calls). (Table 99)

Table 100: Other's extension activities organized by KVKs

Nature of Extension Activity	No. of Activities		Total
	Bihar	Jharkhand	
Any other	64	93	157
Electronic media	1020	125	1145
Extension literature	10233	5277	15510
Newspaper coverage	3599	1016	4615
Radio talks	144	44	188
TV talks	89	108	197
Popular articles published	260	88	348
Grand Total	15409	6751	22160

PRODUCTION OF SEED, PLANTING MATERIALS, LIVESTOCK AND BIO PRODUCTS

A. Seed produced by KVKs (Farm and Village Seed Production)

Seed production plays a pivotal role in agricultural development, ensuring farmers access to high-quality seeds that enhance yields, improve crop performance and promote sustainability. With a focus on quality control, capacity building and strategic partnerships, zone IV has launched the farm and village seed production programme to maximize seed production, meet the growing demand for quality seeds and support the livelihoods of farming communities. In 2024, the KVKs of zone IV successfully produced 13571.03 quintals of seeds for major field crops, including cereals, pulses, oilseeds, horticultural crops (vegetables, fruits, spices, medicinal and aromatic plants), commercial crops, green manure and fodder crops. This achievement has been instrumental in ensuring a steady supply of high-quality seeds to support agricultural activities and meet the needs of farmers.

Table 101: State-wise details of seed production

Sl. No.	State	Seed Production (q)
1	Bihar	11266.45
2	Jharkhand	2304.58
	Total	13571.03

Fig. 95: Seed production at KVKs farm and farmers field

Crop-wise seed production

In 2024, the KVKs of ATARI zone IV made substantial contributions to seed production across a range of crops. They produced a total of 10040.34 quintals of cereals, 404.69 quintals of pulses, 327.55 quintals of oilseeds, 1846.53 quintals of vegetables, 0.4 quintals of fruits, 606 quintals of commercial crops, 315.72 quintals of spices, 13.36 quintals of fodder crops and 16.45 quintals of green manures (Table 101). The primary objective of this initiative was to ensure the availability of high-quality seeds to farmers in nearby regions. This effort has been instrumental in strengthening agricultural activities and ensuring that farmers have reliable access to superior seeds for their cultivation needs.

Table 102: Details of crop wise seed production

Crop Type	Name of Crop	Quantity of Seed (q)		
		Bihar	Jharkhand	Grand Total
Cereals	Paddy	5066.78	1455.82	6522.60
	Wheat	3231.38	137.75	3369.13
	Finger Millet	62.62	20.2	82.82
	Maize	37.03	-	37.03
	Barnyard Millet	14.81	-	14.81
	Barley	7.67	-	7.67
	Foxtail Millet	3.88	-	3.88
	Sorghum	0.4	1.24	1.64
	Pearl Millet	0.76	-	0.76
Sub Total		8425.33	1615.01	10040.34
Pulses	Pigeon pea	116.63	22.14	138.77
	Chickpea	101.29	5.61	106.9
	Lentil	88.99	1	89.99
	Green gram	63.13	2	65.13
	Black gram	-	1.36	1.36
	Lathyrus	1.34	-	1.34
	Field Pea	0.68	-	0.68
	Kidney beans	0.5	-	0.5
	Broadbean	0.02	-	0.02
Sub Total		372.58	32.11	404.69
Oilseeds	Mustard	188.11	64.99	253.1
	Sesame	18.7	1.97	20.67
	Linseed	17.01	3	20.01
	Groundnut	-	13.36	13.36
	Soybean	12.66	-	12.66
	Niger	2.51	5.14	7.65
	Safflower	0.1	-	0.1
Sub Total		239.09	88.46	327.55
Vegetables	Potato	1540.05	194.5	1734.55
	Kitchen Garden Product	80	-	80
	Pea	21.87	8.49	30.36
	Brinjal	-	0.79	0.79
	Amaranthus	0.7	-	0.7
	Cowpea	-	0.125	0.125
Sub Total		1642.62	203.91	1846.53

Crop Type	Name of Crop	Quantity of Seed (q)		
		Bihar	Jharkhand	Grand Total
Fruits	Dragon Fruit	0.4	-	0.4
		0.4	-	0.4
Commercial Crops	Sugarcane	431.65	-	431.65
	Elephant Foot Yam	10	100.2	110.2
	Makhana	64.15	-	64.15
Sub Total		505.8	100.2	606
Spices	Turmeric	61.56	250	311.56
	Coriander	3.5	-	3.5
	Fenugreek	0.43	-	0.43
	Fennel	0.17	-	0.17
	Kalonji	0.06	-	0.06
Sub Total		65.72	250	315.72
Fodder Crops	Maize	12.66	-	12.66
	Finger Millet	0.5	-	0.5
	Azolla	0.2	-	0.2
Sub Total		13.36	0	13.36
Green Manure	Sesbania	-	7.1	7.1
	Sunhemp	-	4	4
	Tephrosia	-	3.8	3.8
	Dhaincha	0.9	-	0.9
	Greengram	0.65	-	0.65
Sub Total		1.55	14.9	16.45
Grand Total		11266.45	2304.58	13571.03

Fig. 96: Seed production of different crops

B. Horticultural planting materials

High-quality planting materials are essential for both successful crop production and the overall expansion of the horticulture sector. Horticultural planting materials encompass a variety of propagation sources used to grow fruits, vegetables, flowers and ornamental plants. Seeds, seedlings, cuttings, tubers, bulbs, rhizomes, grafts and tissue culture plants are some examples of these materials. In 2024, KVKs produced a total 31.50 lakh planting materials with Bihar producing 20.85 lakh and Jharkhand contributing 10.65 lakh. This led to a revenue of Rs. 16.18 million from selling high-quality materials to 133826 beneficiaries in zone IV (Table103). This initiative has significantly contributed to horticulture advancement and provided farmers with valuable resources, enabling them to improve their agricultural activities.

Table 103: State-wise production of horticultural planting materials by KVKs

Commercial	Bihar			Jharkhand			Total		
	No. of plants	Value (Rs.)	No. of Farmers	No. of plants	Value (Rs.)	No. of Farmers	No. of plants	Value (Rs.)	No. of Farmers
Fruit Crops	203951	11741655	8564	208383	1762744	16316	412334	13504399	24880
Vegetable seedlings	1771838	1679787	50203	508315	548011.3	12038	2280153	2227798	62241
Spices	18800	73900	58	0	0	0	18800	73900	58
Medicinal and Aromatic	3408	88070	658	7460	54200	492	10868	142270	1150
Ornamental plants	84055	165800	1046	340435	27641.5	44336	424490	193441.5	45382
Others	3000	40000	95	20	200	20	3020	40200	115
Grand Total	2085052	13789212	60624	1064613	2392797	73202	3149665	16182009	133826

Fruit crops

For producing high-quality planting materials for fruit crops including lemon, guava, mango, litchi and many more, it is essential to do successful orchard farming. By employing appropriate propagation methods, maintaining stringent quality control and effectively managing nurseries, producers may ensure that farmers have access to high-quality planting materials. To address the demand for high quality planting material, KVKs in zone IV propagated 4.12 lakh excellent planting materials for essential fruit crops, with mango saplings ranking highest (150611) followed by papaya (37923). Sapling of guava plants were propagated 28536 and sapling of litchi plants propagated 36210. Total no of beneficiaries under fruit crop planting material is 24880. These efforts have significantly contributed to meeting the demand for quality planting materials and supporting fruit crop cultivation.

Fig. 97: Production of planting material of papaya

Table 104: Details of production of planting materials in fruits crop

Fruit Crops	Bihar			Jharkhand			Total		
	No. of plants	Value (Rs.)	No. of farmers	No. of plants	Value (Rs.)	No. of farmers	No. of plants	Value (Rs.)	No. of farmers
Mango	118481	7895170	3229	32130	1426045	1231	150611	9321215	4460
Papaya	22333	378225	2169	15590	46771	654	37923	424996	2823
Guava	17382	996830	1133	11154	216056	907	28536	1212886	2040
Pomegranate	13009	723020	242	0	0	0	13009	723020	242
Lime	11983	706860	793	640	37800	246	12623	744660	1039
Litchi	10070	858500	504	26140	32	352	36210	858532	856
Banana	6339	35710	174	0	0	0	6339	35710	174
Dragon Fruit	3814	124700	130	0	0	0	3814	124700	130
Jamun	194	1500	72	0	0	0	194	1500	72
Aonla	0	0	0	640	12800	64	640	12800	64
Pear	0	0	0	1500	22500	17	1500	22500	17
Others	346	21140	118	120589	740	12845	120935	21880	12963
Grand Total	203951	11741655	8564	208383	1762744	16316	412334	13504399	24880

Vegetable crops

The production of high-quality planting materials for vegetable crops is essential for ensuring successful crop establishment, higher yields and healthy disease-free plants. This process involves selecting appropriate propagation methods, managing nurseries efficiently and maintaining strict quality control standards. In this context, zone IV has placed a strong emphasis throughout the year on producing superior planting materials for key vegetable crops, tailored to their specific growing seasons.

According to the data, tomato was the most extensively propagated vegetable, with 536,668 seedlings produced, followed by brinjal (443882), onion (385104) and cauliflower (348562) Total no of beneficiaries under vegetable crop planting material 62241. (Table 105). Notably, the majority of tomato seedlings were contributed by Bihar KVK which recorded the highest production. With a particular focus on tomatoes, these dedicated efforts have played a pivotal role in ensuring a steady supply of premium planting materials for vegetable cultivation. This initiative has empowered local farmers to cultivate vegetables more effectively, significantly advancing agricultural practices in the region.

Fig. 98: Production of planting material of vegetable crops

Table 105: Details of production of planting materials in vegetable crops

Vegetable Crops	Bihar			Jharkhand			Total		
	No. of plants	Value (Rs.)	No. of farmers	No. of plants	Value (Rs.)	No. of farmers	No. of plants	Value (Rs.)	No. of farmers
Tomato	428870	440017	8222	107798	70183.5	3459	536668	510200.5	11681
Onion	334257	53780	186	50847	74344	536	385104	128124	722
Cauliflower	305711	313180	12525	42851	55483.25	1724	348562	368663.3	14249
Brinjal	301143	236655	6055	142739	142590.5	1239	443882	379245.5	7294
Chilli	148856	159513	3977	58901	23239.5	567	207757	182752.5	4544
Cabbage	105743	70305	3032	42041	64694.5	751	147784	134999.5	3783
Broccoli	33641	61670	8744	8898	15996	276	42539	77666	9020
Bitter Gourd	22916	34692	417	0	0	0	22916	34692	417
Capsicum	12633	52227	210	6700	6400	162	19333	58627	372
Cucurbits	11917	14948	5396	0	0	0	11917	14948	5396
French Beans	10000	0	85	0	0	0	10000	0	85
Lobia	10000	0	103	0	0	0	10000	0	103
Sponge Gourd	7939	22644	279	0	0	0	7939	22644	279
Bottle gourd	3905	13625	217	0	0	0	3905	13625	217
Cucumber	3500	15000	174	0	0	0	3500	15000	174
Pointed Gourd	642	19260	42	0	0	0	642	19260	42
Pumpkin	452	2260	85	0	0	0	452	2260	85
Ridge Gourd	161	805	53	0	0	0	161	805	53
Knol Khol	0	0	0	7214	14428	187	7214	14428	187
Others	29552	169206	401	40326	80652	3137	69878	249858	3538
Grand Total	1771838	1679787	50203	508315	548011.3	12038	2280153	2227798	62241

Spices, medicinal and aromaticplants, ornamental plants, forest species and fodder crops saplings

The production of high-quality planting materials for spices, medicinal and aromatic crops is critical to the successful cultivation of these high-value crops. In 2024, the KVKs of Bihar and Jharkhand actively propagated a diverse range of planting materials, including 10,868 units of medicinal and aromatic plants and 424,490 ornamental plants. Total no of beneficiaries under this is 46647 (Table 106). This reflects the growing interest among farmers in cultivating these high-value crops, which not only meet local demand but also offer significant bio-aesthetic value. Within the domain of medicinal and aromatic plants, there was high demand for mentha, lemongrass,

ajwain, aloe vera, moringa and several others. The proactive initiatives of the KVKs have been instrumental in promoting the cultivation of these crops, thereby strengthening and diversifying the agricultural landscape in Bihar and Jharkhand.

Fig. 99: Production of planting material of medicinal and aromatic crops

Table 106: Details of production of planting materials in other horticultural crops

Commercial	Planting materials	Bihar			Jharkhand			Total		
		No. of Plants	Value (Rs.)	No. of farmers	No. of Plants	Value (Rs.)	No. of farmers	No. of Plants	Value (Rs.)	No. of farmers
Medicinal and Aromatic Plants	Moringa	2058	82320	658	2460	49200	492	4518	131520	1150
	Lemon grass	500	1000	0	5000	5000	0	5500	6000	0
	Leafy ajwain	125	625	0	0	0	0	125	625	0
	Mulethi	125	625	0	0	0	0	125	625	0
	Patharchur	125	625	0	0	0	0	125	625	0
	Pudina	125	625	0	0	0	0	125	625	0
	Satawar	125	625	0	0	0	0	125	625	0
	Tulsi	125	625	0	0	0	0	125	625	0
	Aloevera	100	1000	0	0	0	0	100	1000	0
Total		3408	88070	658	7460	54200	492	10868	142270	1150
Ornamental Plants	Marigold	77445	48800	995	47490	641.5	4504	124935	49441.5	5499
	Croton	2000	60000	0	0	0	0	2000	60000	0
	Annual chrysanthemum	1000	1000	26	9753	503	3251	10753	1503	3277
	Tuberose	2400	5000	7				2400	5000	7
	Hibiscus	0	0	0	1200	24000	0	1200	24000	0
	Others	1210	51000	18	281992	2497	36581	283202	53497	36599
Total		84055	165800	1046	340435	27641.5	44336	424490	193441.5	45382
Spices	Turmeric	18800	73900	58	18800	73900	58	0	0	0
Forest Species	Forest species	1000	0	0	0	0	0	1000	0	0
	Curry Leaf	0	0	0	20	200	20	20	200	20
Fodder crop saplings	Hybrid Napier	2000	40000	95	0	0	0	2000	40000	95
Grand Total		109263	367770	1857	366715	155942	44906	438378	375911.5	46647

C. Bio-Product

The production of bio-products covers a wide spectrum of commercial and agricultural applications, greatly enhancing economic development, environmental preservation and public health. Continued investment in research, development and efficient production techniques is crucial for sustaining the growth and success of the bio-products sector. To support and promote the utilization and production of these products, the KVKs in zone IV have been actively promoting and ensuring a steady supply of bio-pesticides, bio-fertilizers and bio-agents with bio-pesticides gaining the highest demand.

They have produced 26121.6 kilograms of bio-pesticides, 81901 kilograms of biofertilizers and 1142 kilograms of bioagents effectively catering to the diverse needs of the farming community (Table 107). This initiative has not only fulfilled local demand but has also encouraged farmers to adopt environmentally friendly alternatives for sustainable agricultural practices.

Table 107: State-wise details of bio-product productions

Name of Bio-Products	Bihar			Jharkhand			Total		
	Quantity (Kg. or Litre)	Value (Rs.)	No. of farmers	Quantity (Kg. or Litre)	Value (Rs.)	No. of farmers	Quantity (Kg. or Litre)	Value (Rs.)	No. of farmers
Bio-agents	942	10050	77	200	3000	0	1142	13050	77
Bio-fertilizers	61751	328144	777	20150	222750	248	81901	550894	1025
Bio-fungicide	50	0	24	0	0	0	50	0	24
Bio-pesticide	17243	784806	83	8878.6	236412	1224	26121.6	1021218	1307
Worms	415.5	169500	145	75	18750	10	490.5	188250	155
Others	69452.85	592435	782	66624	476640	2040	136076.9	1069075	2822
Grand Total	149854.4	1884935	1888	95927.6	957552	3522	245782	2842487	5410

Fig. 100: Preparation of bio-products

D.Livestock Production

Livestock production plays a key role in supporting the livelihoods and income generation of small and marginal farmers in the region. It involves key aspects such as genetic improvement, balanced nutrition, health management, housing and sustainable practices. Continuous education, technological adoption and best management practices are essential for ensuring sustainable growth in this sector. The KVKs have been actively working to provide improved breeds

and strains of livestock, including poultry birds, ducks, piglets and fish fingerling to support farmers. In 2024, the KVKs facilitated the distribution of 61 dairy animals, 37954 poultry birds, 10104 piggery animals and 993184 fish fingerlings reaching a total of 970 farmers. This initiative has ensured access to a diverse range of high-quality livestock resources, enhancing and strengthening their animal-based activities and economic prospects (Table 108).

Table 108: State-wise details of livestock production

Particulars of Livestock	Bihar			Jharkhand			Total		
	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers	Number	Value (Rs.)	No. of farmers
Dairy animals	61	2029400	77	0	0	0	61	2029400	77
Piggery	23	119005	13	10081	263600	23	10104	382605	36
Poultry	12488	861110.7	411	25466	1563026	258	37954	2424136.7	669
Small ruminants	97	308830	14	41	121000	15	138	429830	29
Fisheries	880834	1595508	104	112350	21200	55	993184	1616708	159
Grand Total	893503	4913854	619	147938	1968826	351	1041441	6882679.7	970

Fig. 101: Production and distribution of livestock

E. Soil and Water Sample Analysis

Soil and water sample testing are critical interventions for enhancing agricultural productivity and improving farm incomes through precise nutrient management. In zone IV, KVK scientists have systematically promoted pre-sowing soil and water testing to optimize fertilizer application and reduce unnecessary input use. In 2024, the KVKs analyzed a total of 43919 samples, which included 16112 soil samples, 80 water samples, 310 plant samples and various other samples such as food, manure and related materials (Table 109). The soil and water testing services were accessed by 56946 farmers across 2005 villages.

Notably, the number of samples tested by the KVKs has been steadily increasing over the years indicating the growing awareness and acceptance of soil health management practices among the farming community. This trend reflects the success of KVKs in promoting evidence-based nutrient management strategies and supporting informed decision-making for sustainable agricultural intensification.

Fig. 102: Soil and water analysis

Table 109: Soil, water and plant analysis at KVKs

State	Analysis	No. of Samples analysed	No. of Villages covered	No. of Farmers benefitted	Amount realized (Rs.)
Bihar	Soil	16112	769	15753	1432780
	Plant	310	70	310	0
	Manures	90	18	90	3000
	Water	80	16	80	0
	Fertilizers	50	10	50	0
	Others	100	15	100	0
Total (Bihar)		16742	898	16383	1435780
Total (Jharkhand)	Soil	27177	1107	40563	2623445
Grand Total		43919	2005	56946	4059225

Attracting and Retaining Youth in Agriculture (ARYA)

The Indian Council of Agricultural Research (ICAR) has launched a program called "Attracting and Retaining Youth in Agriculture" with the aim of attracting rural youth to agriculture and allied sectors as viable income-generating enterprises. This initiative is implemented in 10 KVKs under ATARI zone - IV 6 KVKs in Bihar (Aurangabad, Bhagalpur, Bhojpur, Vaishali, East Champaran, and West Champaran) and 4 KVKs in Jharkhand (Chatra, East Singhbhum, Gumla, and Ranchi). The primary focus of the program is to engage youth in capital-intensive activities such as beekeeping & honey production, goatery, horticulture nursery, lac cultivation, mushroom production and food processing & value addition, and its marketing. Participants receive training in running enterprises such as beekeeping, goatery, horticulture nurseries, lac cultivation, mushroom production, pig farming, quail farming, seed production, poultry farming, food processing, banana fibre extraction/banana processing, and fish farming.

Since its implementation, the program has generated 6215 employment opportunities 4829 in Bihar and 1386 in Jharkhand through various enterprises such as mushroom cultivation, poultry farming, beekeeping and honey production units, fish farming horticultural nursery and food processing & value addition. The highest number of employment opportunities emerged from horticultural nursery enterprises (2035), followed by banana fibre extraction units/ banana processing (720), mushroom production (670) and poultry farming (618). This initiative has proven instrumental in addressing the issue of labour migration prevalent in Zone IV. By offering alternative livelihood opportunities and equipping rural youth with essential skills and knowledge, the ARYA project has brought about a significant improvement in the living conditions of families across the region (Table 110).

Fig. 103: Activities under ARYA project

Table 110: Details of activities under ARYA programme

State	Subject	No. of Entrepreneurial units Established	No. of Skill Training conducted	No. of Youths trained	No. of group formed for establishment of Unit	Avg. members in each group	No. of group active	No. of persons left the group	Total viable unit	Economic Gains/ unit (Rs.)	Total Employment generated/ year (man day @ 8 hr/day)
Bihar	Mushroom Production	69	17	538	37	31	37	72	100	977000	670
	Poultry Farming	50	11	300	14	10	16	21	41	433500	618
	Beekeeping and Honey Production Units	34	5	155	8	7	16	7	59	198460	364
	Fish Farming	26	6	180	6	12	9	8	19	125000	136
	Horticultural Nursery	16	6	177	10	11	10	0	16	970580	2035
	Food Processing	6	1	32	3	10	3	5	5	140200	265
	Banana Fiber Extraction Units/ Banana Processing	3	6	180	2	50	2	-	1	235000	720
	Quail Unit	1	1	30	0	0	0	-	3	144000	21
	Goat Farming	-	2	66	1	10	1	-	1	-	-
Total of Bihar		205	55	1658	81	16	94	113	245	3223660	4829
Jharkhand	Mushroom Production	36	2	62	6	12	6	0	6	27960	162
	Lac Cultivation	25	1	26	2	8	2	0	37	131002	180
	Pig Farming	21	3	62	5	6	5	2	10	34005	372
	Seed Production	18	3	40	3	10	3	0	3	44000	128
	Goat Farming	13	2	69	3	15	3	6	18	128001	362
	Beekeeping and Honey Production Units	3	3	84	3	22	3	5	16	93001	182
Total of Jharkhand		116	14	343	22	12	22	13	90	457970	1386
Grand Total		321	69	2001	103	14	116	126	335	3681630	6215

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

The national innovations on climate resilient rgriculture (NICRA) program was launched in 2011 to generate data on agricultural adoption and mitigation and to address the challenges of sustaining domestic food supply in the face of climate change. The Technologies Demonstration Component (TDC) of NICRA offers an excellent opportunity to work with farmers and deploy such technologies in the field, especially in light of the current climate crisis. The primary goal has been to learn more about how technologies function in different agro-ecologies and agricultural systems. Additionally, this makes it easier to quantify distinct aspects of climate resilience in varied biophysical and socioeconomic contexts. The NICRA Technology Demonstration Component (TDC) offers a great chance to work with farmers to address the issues caused by the current climatic variability. The program's main goal is to make sure that small and marginal farmers may use current technology while also creating context-specific solutions to meet the changing needs of a changing environment. One of the most crucial factors in achieving sustainability in agriculture is enhancing resilience, particularly in light of climate change and vulnerability. The following are the KVK districts' vulnerabilities as reported by ICAR-CRIDA Hyderabad.

Table 111: List of districts and KVKs with climate vulnerability under TDC-NICRA

S. No.	State	Agro -climatic Zone	Districts	Climate vulnerability
1.	Bihar	North-east alluvial plain (Zone-2)	Kishanganj	Flood/ Moisture stress
2.	Bihar	North-east alluvial plain (Zone-2)	Saharsa	Flood/ Moisture stress
3.	Bihar	North-east alluvial plain (Zone-2)	Supaul	Flood/ Moisture stress
4.	Bihar	South-east alluvial plain (Zone-3b)	Bhagalpur	Flood/ Moisture stress
5.	Bihar	South-east alluvial plain (Zone-3b)	Lakhisarai	Flood/ Moisture stress
6.	Bihar	North-west alluvial plain (Zone-1)	Darbhanga	Flood/ Moisture stress
7.	Bihar	North-west alluvial plain (Zone-1)	Siwan	Flood/ Moisture stress
8.	Bihar	North-west alluvial plain (Zone-1)	West Champaran I	Flood/ Moisture stress
9.	Bihar	North-west alluvial plain (Zone-1)	Sitamarhi	Flood/ Moisture stress
10.	Bihar	South-west alluvial plain (Zone-3a)	Nalanda	Flood/ Moisture stress
11.	Bihar	South-west alluvial plain (Zone-3a)	Buxar	Flood/ Moisture stress
12.	Jharkhand	Western plateau-Region-II	Garhwa	Rainfed / Moisture stress
13.	Jharkhand	Central north eastern plateau-Region I	Godda	Rainfed / Moisture stress
14.	Jharkhand	Western plateau-Region-II	Gumla	Rainfed /Moisture stress

Fig. 104: Different activities under NICRA project

The interventions being implemented are categorized under four modules, i.e., Natural resource management (NRM), crop production, livestock & fisheries, capacity building and extension activities. Under NRM modules different interventions under taken like Green Manuring, Mulching, Summer ploughing, Zero tillage, DSR, Rain water Harvesting structure were followed. Under there interventions 388 number of demonstrations with 371.76 ha area.

Under crop modules different crop were grown in the farmers field with different interventions like short duration variety, direct seeded rice, pest and disease management, Flood tolerant etc. This intervention conducted for 1214 demo with 947.26 ha area.

In case of livestock & fisheries different interventions were taken like animal health camp, worm Control in cattle, immunization, Fodder production etc. Was followed in NICRA village of Zone IV. Under these activities, 578 demo for 13.6 ha area with 73694 (60000 fingerlings) animals/ fishery.

The NICRA Programme capacity building activities, conducted in 2024, 155 courses with benefited 5338 farmers, with thematic areas such as Scientific cultivation of different crop, contingency crop Plan, integrated weed management, entrepreneurship development, green manure and management. 116 extension activities 4462 farmers in NICRA-TDC, covering various thematic areas, including exposure visits, field days, Kisan Gosthi, RAWE student visits, Vaccination programme, soil Health camp, millet-based recipe contest, Agri-Drone Technology plant health clinics, and pesticide application etc. (Table 112)

Table 112: State wise details of NICRA modules

States	NRM		Crop production		Livestock & Fisheries			Capacity Building		Extension Activities	
	Demo	Area (ha)	Demo	Area (ha)	Demo	Area (ha)	No. of animals/ fisheries	No of Courses	Farmers	No. of programme	Farmers
Bihar	145	180.76	526	526.26	161	12.6	71770 (60000 Fingerlings)	120	4197	100	4053
Jharkhand	243	191	688	421	417	1	1924	35	1141	16	409
Total	388	371.76	1214	947.26	578	13.6	73694 (60000 Fingerlings)	155	5338	116	4462

Farmers FIRST Program (FFP)

Farmer FIRST represents Farm, Innovations, Resources, Science, and Technology (FIRST) and is an adaptive research project. The fundamental idea is that a village farmer will play a central role in identifying research problems, setting priorities, conducting trials, and managing them under farmers' field settings. In order to focus on moving from production to profit, it highlights resource management, climate resilient agriculture, and production management, including marketing, supply chains, value chains, storage, and information system mobilization. In order to prioritize smallholder agriculture and the complicated, varied, and risky realities faced by the majority of farmers, ICAR took the initiative to go beyond production and productivity. In Farmer FIRST previously there was four projects, two for ICAR Institutes and two for State Agricultural Universities, this year one more centre Bihar Animal Sciences University (BASU) Patna was added under ICAR-ATARI, Patna (Table 113).

Fig. 105: Activities under FFP project


Fig. 106: Different activities under FFP project

Table 113: Details of Institute, Project Title and Budget under FFP

Name of the Institutes	Title of project	Fund sanctioned during 2024-25 (Rs. in lakh)
Bihar Agricultural University (BAU) Sabour, Bhagalpur,	Bihar Cross Sectional Livelihood Improvement & Income Enhancement throughAgro-Enterprise Diversication	8.00
Birsa Agricultural University (BAU) Ranchi	Technology integration for doubling farm income through participatory research and extension approaches in Ranchi district of Jharkhand	4.20
Mahatma Gandhi Integrated Farming Research Institute (MGIFRI)Motihari	Improved livelihood of farmers through good practices in agriculture, fisheries and animal husbandry in the East Champaran region	9.00
ICAR-RCER, FSRCSPR, Ranchi	Enhancing food, nutritional and livelihood security of marginal & small farmers in Jharkhand through need based agricultural technologies	11.44
Bihar Animal Sciences University (BASU) Patna	Enhancing Rural Livelihood Security through Integrated Crop-Livestock Development Approach	3.99
ICAR-ATARI, Patna	Planning, implementation and monitoring	4.36
Total		41.00

Under crop modules different crop were demonstrated in the farmer's field through 392 demonstrations benefiting 392 households. In case of NRM module about 65 demonstration and 740 demonstrations in horticulture module were conducted by covering 65 and 740 households respectively. In case of livestock and poultry module different interventions were through 264 demonstrations including 717 animals benefiting 123 households. Similarly in IFS module 18 demonstration was done with 18 farm families. About 34 extension activities covering 1562 farm families were also conducted during the reporting period.

Table 114: Institute wise details of FFP

Name of the Institute	NRM Module		Crop Module		Horticulture Module		Livestock & Poultry			IFS Module		Extension Activities		Forestry Modules	
	Demonstrations (No.)	No of Farm Families	Demonstrations (No.)	No of Farm Families	Demonstrations (No.)	No of Farm Families	Demonstrations (No.)	No of Farm Families	No of Animals	Demonstrations (No.)	No of Farm Families	No. of prog.	Farmers	Demonstrations (No.)	No of Farm Families
BAU Sabour	0	0	73	73	97	97	158	42	211	0	0	21	443	0	0
MGFRI Motahari	20	20	185	185	383	383	10	10	15	4	4	3	450	0	0
ICAR-RCER Palandu	45	45	134	134	260	260	86	61	471	4	4	8	516	0	0
BAU Ranchi	0	0	0	0	0	0	10	10	20	10	10	2	153	10	10
Total	65	65	392	392	740	740	264	123	717	18	18	34	1562	10	10

Out-scaling of Natural Farming through KVKs

Natural farming project was initiated by Government of India in the year 2022. The main purpose of natural farming is that improvement of soil health and improve microbial activity and also reduce cost of cultivation with environmental balance. It is a traditional farming strategy that minimizes artificial methods and external inputs in an effort to work with nature by creating nutrient-rich, chemical-free food and lowering exposure to dangerous pesticides, it enhances soil health and human health thus promoting a sustainable and holistic approach to agriculture. It is considered as agroecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity. This method is gaining recognition for its potential to transform environmentally friendly and economically sustainable system. ZBNF is self-nourishing and symbiotic in nature involves has following nine essential components/pillars: *Jeevamritha, Beejamritha, Whapsa, Neemastra, Achadhana, Brahmastra, Agni Astra, Dashaparni ark and Mulching*. The KVKs has assigned the activities under these three components through Training, Awareness and Demonstration. Under this project a total 39 KVKs (28 KVKs in Bihar and 11 KVKs in Jharkhand) were selected in ICAR- ATARI, Zone-IV, Patna. During the reporting year, total 306 training programs organized with 13892 farmers trained, 305 awareness programs with 124634 number of participants and 391 demonstrations (each having area of 01 acre) were conducted by KVK in farmer's field and KVK farm as mentioned below (Table 115).

Fig. 107: Natural farming practice at farmer field

Table:115: State wise details of out-scaling of natural farming through KVKs

State	No. of KVKs involved	No. of training Programmes organized	No. of Farmers trained	No. of Awareness Programs organized	No. of Farmers participated in Awareness Programs	No. of Demonstration Conducted	No. of Farmers participated in Demonstration
Bihar	28	238	10160	182	65695	283	283
Jharkhand	11	68	3732	123	58939	108	108
Total	39	306	13892	305	124634	391	391

Oilseeds Model Village

The ICAR has approved Oilseeds Model Village (OMV) project regarding self-sufficiency in edible oilseeds through institutional and technological interventions by developing Oilseeds Model Village in the county through Krishi Vigyan Kendras for three years with the financial assistance of Department of Agriculture & Cooperation, Ministry of Agriculture & Farmers Welfare, GoI, New Delhi. This project has been implemented by 12 Krishi Vigyan Kendras under ICAR-ATARI, Zone-IV, Patna with the involvement of 3 Oilseeds Model Villages by each KVK. Total 36 Oilseeds Model Villages were selected for demonstration of oilseeds latest production technologies on the basis of technology gap analysis for self-sufficiency in edible oilseeds. During 2024, total 4879 demonstrations were laid out in 2000 ha area under different micro farming situations of selected Oilseeds Model Villages in groundnut, sesame and mustard crops to establish production potential of latest oilseeds technology in farmer field. Results of demonstrations of Oilseeds Model Villages has shown encouraging potentials, the average yield was increased by 44.85% and average difference of yield between demonstration and local practice was 4.77(q/ha). Total 2879 demonstrations were laid out in the 1200 ha area and yield was increased by 45.86% and average difference of yield between demonstration and local practice was 5.47 (q/ha) in Bihar state similarly total 2000 demonstration were laid out in the 800 ha area and yield was increased by 43.85% and average difference of yield between demonstration and local practice was 4.08 (q/ha) in Jharkhand state (Table 116).

Fig. 108: Demonstration on niger crop

Table 116 State wise details of demonstrations under oilseeds model village

S.No.	State	Targets of FLDs approved		Achievements of FLDs		Yield (q/h)		Yield increase (%)	Average yield difference Local (q/ha)
		Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Bihar	1200	3000	1200	2879	12.35	17.83	45.86	5.47
	Jharkhand	1200	3000	800	2000	9.27	13.35	43.85	4.08
Total		2400	6000	2000	4879	10.81	15.59	44.85	4.77

Oilseeds Model Village during Kharif season

The Oilseeds Model Villages project has focused on Groundnut and Sesame crops during Kharif 2024. Total of 200 demonstrations were laid out in the 80 ha area under different micro-farming situations of selected districts. Results of demonstration of Oilseeds Model Villages has shown encouraging potentials, the average yield was increased by 45.29% and average difference of yield between demonstration and local practice was 4.2 (q/ha). The highest number of demonstrations 150 were laid out in groundnut cultivation with an area of 60 hectares and yield was increased by 46.15% and average difference of yield between demonstration and local practice was 6.0 (q/ha) and it is followed by sesame having 50 demonstrations with an area of 20 hectares, yield was increased by 44.44% and average difference of yield between demonstration and local practice was 2.4 (q/ha) in Jharkhand state only.

Table 117: Demonstrations under oilseeds model village during kharif

S.No.	Crop	State	Targets of FLDs approved		Achievements of FLDs		Yield (q/h)		Yield increase (%)	Average yield difference (Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Groundnut	Jharkhand	120	300	60	150	13	19	46.15	6
2	Sesame	Jharkhand	80	200	20	50	5.4	7.8	44.44	2.4
Grand Total			200	500	80	200	9.2	13.4	45.29	4.2

Oilseeds Model Village during rabi season

Total of 4679 demonstrations were laid out in the 1920 ha area in mustard crop under different micro-farming situations of selected Oilseeds Model Villages by 12 KVKs in Bihar and Jharkhand states to establish production potential of technology in farmer field. Results of demonstration under Oilseeds Model Villages has shown encouraging potentials, the average yield was increased by 43.41% and average difference of yield between demonstration and local practice was 4.66 (q/ha). The number of demonstrations 2879 were laid out for mustard cultivation with an area of 1200 hectares and yield was increased by 45.86% and average difference of yield between demonstration and local practice was 5.47 (q/ha) in Bihar state and 1800 demonstrations with an area of 720 hectares, yield was increased by 40.96% and average difference of yield between demonstration and local practice was 3.85 (q/ha) in Jharkhand state respectively.

Fig. 109: Demonstration on mustard crop

Table 118: Demonstrations under oilseeds model village during rabi

S.No.	Crop	State	Targets of FLDs approved		Achievements of FLDs		Yield (q/h)		Yield increase (%)	Average yield difference (Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	No. of FLDs		
1	Mustard	Bihar	1200	3000	1200	2879	12.35	17.83	45.86	5.47
		Jharkhand	1000	2500	720	1800	9.41	13.26	40.96	3.85
Grand Total			2200	5500	1920	4679	10.88	15.55	43.41	4.66

Pulses Model Village

The ICAR has approved Pulses Model Village (PMV) project regarding self-sufficiency in pulses through institutional and technological interventions by developing Pulses Model Village in the county through Krishi Vigyan Kendras with the financial assistance of Department of Agriculture & Cooperation, Ministry of Agriculture & Farmers Welfare, GoI, New Delhi. This project has been implemented by 10 Krishi Vigyan Kendras under ICAR-ATARI, Zone-IV, Patna with the involvement of 2 Pulses Model Villages by each KVK. Total 20 Pulses Model Villages were selected for demonstration of latest production technologies on the basis of technology gap analysis for self-sufficiency in pulses. During 2024-25, Total of 2675 demonstrations under Pulses Model Village were laid out in 1203.5 ha area under different micro farming situations of selected Pulses Model Village in Pigeon pea, Black gram and Lentil crops. Results of demonstrations under Pulses Model Village has shown encouraging potentials, the average yield was increased by 38.82% and average difference of yield between demonstration and local practice was 3.77 (q/ha). Total 1388 demonstrations under Pulses Model Village were laid out in the 713.5 ha area and yield was increased by 22.49% and average difference of yield between demonstration and local practice was 2.52 (q/ha) in Bihar state similarly total 1287 demonstrations under Pulses Model Village were laid out in the 490 ha area and yield was increased by 61.01% and average difference of yield between demonstration and local practice was 5.04 (q/ha) in Jharkhand state (Table 119).

Table 119: State wise demonstrations under pulses model village

Sl. No.	State	Target of FLDs Approved		Achievement of FLDs		Average Yield (q/ha)		Yield Increase (%)	Average difference of yield between Demo and Local (q/ha)
		Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Bihar	1500	3750	713.50	1388.00	11.16	13.67	22.49	2.52
2	Jharkhand	1500	3750	490.00	1287.00	8.26	13.30	61.01	5.04
Grand Total		3000	7500	1203.5	2675	9.71	13.48	38.82	3.77

Pulses Model Village during kharif season

The Pulses Model Villages project has focused on Pigeon pea and Black gram crops during Kharif 2024. Total of 1166 demonstrations were laid out in the 445 ha area under different micro-farming situations of selected Pulses Model Villages. Results of demonstrations under Pulses Model Village has shown encouraging potentials, the average yield was increased by 72.75% and average difference of yield between demonstration and local practice was 6.16 (q/ha). Among the different oilseed crops, the highest number of demonstrations 607 were laid out for Pigeon pea cultivation with an area of 235 hectares and yield was increased by 71.85% and average difference of yield between demonstration and local practice was 7.15 (q/ha) and it is followed by black gram having 559 demonstrations with an area of 210 hectares, yield was increased by 73.66% and average difference of yield between demonstration and local practice was 5.18 (q/ha) in Jharkhand state only.

Table 120: Demonstrations under pulses model village during kharif

Sl. No.	Crop	State	Target of FLDs Approved		Achievement of FLDs		Average Yield (q/ha)		Yield Increase (%)	Average difference of yield between Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Black Gram	Bihar	40	100	0	0	0	0	0	0
		Jharkhand	510	1275	210	559	7.03	12.2	73.66	5.18
2	Pigeon Pea	Bihar	185	462.5	0	0	0	0	0	0
		Jharkhand	845	2112.5	235	607	9.95	17.1	71.85	7.15
Grand Total			1580	3950	445	1166	8.49	14.65	72.75	6.16

Pulses Model Village during rabi season

Total of 1509 demonstrations were laid out in the 758.5 ha area under different micro-farming situations of selected Pulses Model Villages. Results of demonstrations has shown encouraging potentials, the average yield was increased by 25.96% and average difference of yield between demonstration and local practice was 3.91 (q/ha). Total 1388 demonstrations were laid out in lentil crop with an area of 713.5 hectares and yield was increased by 22.49% and average difference of yield between demonstration and local practice was 2.52 (q/ha) in Bihar state and 121 demonstrations with an area of 45 hectares, yield was increased by 35.89% and average difference of yield between demonstration and local practice was 2.80 (q/ha) in Jharkhand state respectively.

Fig. 110: Demonstration on chickpea crop

Table 121: Demonstrations under pulses model village during rabi

Sl. No.	Crop	State	Target of FLDs Approved		Achievement of FLDs		Average Yield (q/ha)		Yield Increased (%)	Average difference of yield between Demo and Local (q/ha)
			Area (ha)	No. of FLDs	Area (ha)	No. of FLDs	Local	Demo		
1	Lentil	Bihar	1275	3187.5	713.5	1388	11.16	13.67	22.49	2.52
2		Jharkhand	145	362.5	45	121	7.80	10.60	35.89	2.80
Grand Total			1420	3550	758.5	1509	9.48	12.13	25.96	3.91

Tribal Sub Plan (TSP)

The Tribal Sub-Plan (TSP) initiative aims to address the backwardness of tribal areas and populations by promoting integrated and holistic development. Its core objective is to reduce the livelihood gap between tribal communities and other segments of society. Implemented through 24 Krishi Vigyan Kendras (KVKs) in Zone IV with a total outlay of ₹430 lakh, the programme focuses on enhancing tribal livelihoods and skills. Throughout the year, KVKs conducted diverse activities in agriculture, horticulture, animal husbandry, fishery, and vocational training. These efforts primarily benefited Scheduled Tribe individuals and families, aiming to improve their socioeconomic conditions and ensure sustainable development.

Under the Tribal Sub-Plan (TSP) initiative in Bihar and Jharkhand, extensive activities were carried out to improve the livelihoods of tribal communities through agricultural and allied sector interventions. A total of 1062 farmers and Farm women's training sessions were organized, benefiting 28829 farmers and Farm women's.

A total of 8,316 were involved in frontline demonstrations. Mobile agro-advisory services reached 5.33 lakh farmers. Extension activities drew 2.39 lakh participants, reflecting strong community engagement. Significant outputs included the production of 1,248.29 quintals of seeds, 13.91 lakh planting materials, and 24.15 lakh livestock strains in Jharkhand. Additionally, 8,990 soil, water, and manure samples were tested. Asset creation included the distribution of 2,946 tools such as sprayers and pump sets.

Furthermore, 1,573 other programmes ranging from seed, planting material distribution and vaccination camp were conducted. The majority of these efforts were concentrated in Jharkhand, highlighting its pivotal role in the TSP implementation. Overall, the initiative significantly contributed to skill development, resource access, and sustainable livelihood improvement among tribal populations.

Table 122: Details of activities conducted under TSP

Sl. No.	Name of Activities		Bihar	Jharkhand	Total
1	Training for Farmer and Farm women	No. of Trainings	88	974	1062
		No. of Farmer (a)	1735	22600	24335
		No. of Farm women (b)	557	3937	4494
	Subtotal (a+b)		2292	26537	28829
2	Frontline demonstrations (No.)		1080	7236	8316
3	Mobile Agro- advisory to farmers (No.)		748	532479	533227
4	Participants in extension activities (No.)		516	239281	239797
5	Production of seed (q)		0.00	1248.29	1248.29
6	Production of Planting material (Number in lakh)		0.00	13905.51	13905.51
7	Production of Livestock strains (Number in lakh)		0.00	24154.01	24154.01
8	Production of fingerlings (Number in lakh)		0.00	0.00	0.00
9	Testing of Soil, water, plant, manures samples (Number)		82	8908	8990
10	Asset creation (Number; Sprayer, ridge maker, pump set, weeder etc.)		0	2946	2946
11	No. of other programmes (Planting material distribution, Vaccination camp etc.)		21	1552	1573

Fig. 111: FLD under tribal sub plan

Scheduled Caste Sub Plan (SCSP)

The Scheduled Caste Sub Plan (SCSP) is a government initiative in India aimed at the socioeconomic development of farmers from Scheduled Caste (SC) communities. It focuses on uplifting SC farmers through targeted interventions in sectors like agriculture. The programme seeks to provide science-based solutions and location-specific technologies while ensuring that SC communities receive equitable benefits from central and state government schemes. Its main objectives include promoting research and technology adoption to improve living standards, encouraging scientists to address challenges faced by SC families, and replicating successful technology models relevant to SC populations in rural and urban areas.

Under the Scheduled Caste Sub Plan (SCSP), a wide range of developmental activities were conducted across Bihar and Jharkhand. A total of 742 training sessions

across various Krishi Vigyan Kendras (KVKs) highlights the significant advantages of using improved mustard varieties (such as BBM-1, RH-761, and Bharat Mustard 1) over traditional farmer practices. Implemented under both irrigated and rainfed conditions, these improved practices consistently resulted in higher yields ranging from 22.87% to 49.81% increases. Although input costs were generally higher for the improved practices, the gross and net returns were substantially greater, with benefit-cost (B:C) ratios improving in all cases. For instance, B:C ratios under improved practices ranged from 2.11 to 3.01, compared to 1.76 to 2.87 under farmers' practices (Table 124).

Table 124: KVKs wise detailed activities

Name of KVK	Varieties used in IP	Situation (irrigated / rainfed)	Varieties used in FP	Yield (Kg/ha)		Yield increased (%)	Cost of Cultivation (Rs. /ha)		Gross Return (Rs. /ha)		Net Return	B:C ratio	
				IP	FP		IP	FP	IP	FP		IP	FP
Chatra	BBM-1	Irrigated	Pila Sarso	1600	1068	49.81	22000	17800	64000	42720	17080.00	2.91	2.40
East Singhbhum	RH-761	Rainfed	Local Seed	950	700	35.71	21000	19500	53675	39550	12625.00	2.56	2.03
Garwah	Bharat Mustard 1	Irrigated	Non-descript	12500	980	27.55	26000	23000	63125	49490	10635.00	2.43	2.15
Gumla	BBM-1	Irrigated	PM-28	1654	1195	38.41	36755	32250	93451	67518	21433.00	2.54	2.09
Latehar	BBM-1	Irrigated	Local	1400	1100	27.27	28300	23400	85200.0	67200	13100.00	3.01	2.87
Ranchi	BBM-1	Irrigated	Shivani	1357	972	39.61	32507	29325	73956.5	52974	17800.50	2.28	1.81
West Singhbhum	BBM 1	Rainfed	Shivani	1155	940	22.87	32500	31850	68722.5	55930	12142.50	2.11	1.76

Fig. 113: Demonstration and distribution of agriculture equipment on DRMR

The project implemented a range of agricultural development activities aimed at enhancing the skills, productivity, and awareness of farmers and stakeholders. A total of 27 short-term training programs (1-3 days each) were conducted, benefiting 970 participants through capacity building and skill development sessions. Frontline Demonstrations (FLDs) covered 289.6 hectares and directly involved 743 farmers to showcase new agricultural techniques and technologies. In addition, 21 awareness camps and exposure visits were organized, reaching 1095 beneficiaries. Under input distribution, 1200 kg of quality seeds were provided to 519 farmers, while 105 small equipment units and 305 large equipment units were distributed to an equal number of beneficiaries. Fertilizers (8068 kg) and plant protection chemicals (1130 litres) were supplied to 827 and 509 farmers respectively, improving crop health and yield. To aid in knowledge dissemination, 557 copies of printed literature

benefited 20332 farmers and farm women's. Additionally, frontline demonstrations involved 14,353 farmers, while mobile agro-advisories reached 1.43 lakh farmers. The programme also facilitated seed production of 1,902.76 quintals, over 62 lakh planting materials, 2.49 lakh livestock strains, and testing of 6,185 soil and manure samples.

Table 123: Details of activities conducted under Schedule Caste Sub Plan

Sl. No.	Name of Activities		Bihar	Jharkhand	Total
1	Training for Farmer and Farm women	No. of Trainings	597	145	742
		No. of Farmers(a)	10167	3760	13927
		No. of Farm Women's (b)	4693	1712	6405
		Subtotal (a+b)	14860	5472	20332
2	Frontline demonstrations(No.)		12179	2174	14353
3	Mobile Agro-advisory to farmers (No.)		20103	123030	143133
4	Participants in extension activities (No.)		10190	4938	15128
5	Production of seed (q)		169.76	1733	1902.76
6	Production of Planting material (Number in lakh)		60596.44	1932.13	62528.56
7	Production of Livestock strains (Number in lakh)		2.42	0.06	2.49
8	Production of fingerlings (Number in lakh)		0	0	0.00
9	Testing of Soil, water, plant, manures samples (Number)		1952	4233	6185

Fig. 112: FLD under scheduled sub plan

Augmenting Rapeseed-Mustard Production for Sustainable Livelihood Security of Tribal Farmers in Jharkhand under the Scheduled Tribe Component

The Directorate of Rapeseed-Mustard Research (DRMR) is contributing significantly to the sustainable production of rapeseed-mustard in Zone IV through its research and extension initiatives. In response to shifting dietary preferences and population growth, this program helps to increase edible oil consumption self-sufficiency. By creating economically and environmentally sound agro-production and protection methods that are appropriate for a range of climatic circumstances, it seeks to realize the potential yield of cultivars. This program was carried out by seven KVKs during the year. The analysis

were distributed among 2254 beneficiaries. One Kisan Mela was organized, engaging 819 participants through exhibitions and interactive sessions. Additionally, 20620 units of other support activities such as nursery plants, soil testing, and further exposure visits were delivered to 173 beneficiaries. Overall, the project activities benefited a total of 8319 individuals with a total budget utilization of Rs. 730000, reflecting comprehensive support across various domains of agricultural development (Table 125).

Table 125: Details of various activities conducted under the project

Sl.No.	Item /Activity	Units	Quantity	No of beneficiaries
1	Training (Capacity building /skill development etc)			
1.1	1 - 3 days	No.	27	970
2	Frontline demonstration (FLDs) and other demonstrations			
2.1	Area under FLDs	Hectare	289.6	743
3	Awareness camps, exposure visit etc	No.	21	1095
4	Input Distribution			
4.1	Seeds (Field Crops)	Kg	1200	519
4.2	Small equipment's (Upto Rs.2000)	No.	105	105
4.3	Large equipment's (more than Rs.2000)	Nos.	305	305
4.4	Fertilizers (NPK)/ Secondary/ Micro Fertilizers	Kg	8068	827
4.5	Plant Protection chemicals	Lit.	1130	509
5	Distribution of Literature	No.	557	2254
6	Kisan Mela	No.	1	819
7	Any other (Nursery Plants/Soil test/Exposure visits)	No.	20620	173
8	Total Budget Utilized	Rs.	730000	8319

Nutri-Sensitive Agricultural Resources and Innovations (NARI)

The Nutri-Sensitive Agricultural Resources and Innovations (NARI) program, initiated by the ICAR, is a strategic endeavor aimed at integrating nutritional objectives into agricultural practices. Launched to address the persistent issue of malnutrition in India, NARI emphasizes the production and consumption of nutrient-rich crops, thereby aligning agricultural development with nutritional security goals. The key objectives of this program are to enhance nutritional security by promoting biofortified and nutrient-rich crops, empower women and youth through active involvement in nutrition-sensitive agriculture, and integrate nutrition education into agricultural extension services via KVKs.

Under this project, a total of 34 KVKs actively implemented a wide range of initiatives across 101 Nutri-Smart Villages with the primary goal of enhancing nutritional literacy and ensuring nutritional security, particularly among women and adolescent girls. During the year, these KVKs carried out nine On-Farm Trials and 295 Frontline Demonstrations focused on a variety of nutrition-based agricultural technologies and interventions aimed at improving dietary diversity and health outcomes. In addition, a significant effort was made in capacity building through the organization of 271 training programs, which benefitted a total of 7472 participants. Along with 142 extension programs, covering 5244 beneficiaries, which facilitated the dissemination of knowledge and best practices related to nutrition-sensitive agriculture at the grassroots level. These comprehensive efforts underscore the program's commitment to integrating nutrition into agricultural practices and empowering rural communities for better health and livelihoods.

Table 126: State wise details of nutri sensitive agricultural resources and innovation

SL No.	State	No. of KVK Involved	No. of Nutri smart village developed	Area (Sqm)	No of OFT organized	No. of FLD organized	No. of training/capacity development programme	No. of farmers/ beneficiaries	No. of Extension programmes	No. of farmers/ beneficiaries
1	Bihar	26	75	24.15	04	209	226	6548	118	4389
2	Jharkhand	8	26	7.25	05	86	45	924	24	855
Grand Total		34	101	31.40	09	295	271	7472	142	5244

Fig. 114: Training and distribution of planting material under NARI project

Microbial based Agricultural Waste Management using Vermicomposting

Under this programme Evaluation of Vermicomposting Technology for Dairy Waste Management at Household Level project was under taken in six districts of Bihar and Jharkhand-Jehanabad, Begusarai, Nawada, Ranchi, Godda, and Deoghar-aimed to assess farm waste management practices among dairy farmers and their utilization of vermicomposting. Data were collected from 240 dairy farmers (40 per district) using a well-structured interview schedule. The findings revealed that most farmers were young, with an average age of 39 years, and had 5 to 10 years of experience in dairy farming. The majority (69.45%) identified agriculture as their primary occupation, while 26.25% considered dairy farming their main livelihood. Herd sizes generally ranged from 3 to 5 animals. Traditional farmyard manure preparation was practiced by 40% of farmers, while 25% engaged in vermicomposting, typically with one or two household units. Approximately 60% of farmers had basic knowledge of vermicomposting, mostly acquired through government agencies, and 70% used the produced vermicompost in their agricultural fields. The predominant earthworm species used was Eisenia foetida, though farmers showed interest in adopting more economically beneficial species.

Fig. 115: Demonstration on vermicomposting

Formation and promotion of Farmer Producer Organization (FPO) by KVKs and ICAR institute

Government of India has launched a new Central Sector Scheme (CSS) titled "Formation and Promotion of 10000 Farmer Producer Organizations (FPOs)" in February 2020 in the next five years with a clear strategy and committed resources to form and promote 10000 new FPOs in the country with a budgetary provision of Rs. 68660 million and operational guidelines were issued in July 2020 to give a further push to the programme of promoting of FPOs with the objectives of increased access to technology, capital and markets. As per pib.gov.in dated 2nd August 2024, 580 FPOs in Bihar and 355 FPOs in Jharkhand state were registered under Central Sector Scheme (CSS). However, under the funding from NCDC only 05 Krishi Vigyan Kendras under ICAR-ATARI, Zone-IV, Patna has giving technology backstopping to the 10 FPOs in Bihar and Jharkhand state and preparation of business plan and also giving support to the Directors and CEOs of FPO for proper output of FPOs for benefit of small and marginal farming community as given in the table. (Table 127)

Table 127: Detail of Farmer Producer Organisation (FPO) activities conducted by KVKs

State	Name of KVKs	Name of block	No. of FPOs	No of farmers	Status registration of FPOs	Name of FPOs
Bihar	Darbhanga	A. Jale B. Singhwara	2	A. 325 B. 65	Registered District Co-operative Darbhanga	1. JaleMakhana Kisan Utpadak Sangathan Swalambi Sahkari Samiti Limited 2. Singhwara Makka Kisan Utpadak Sangathan Swalambi Sahkari Samiti Limited
	Vaishali	A. Bidupur B. Vaishali	2	A. 400 B. 405	Registered by NCDC, RO Patna	1. Samridhi Farmer Producer Organization Self Supporting Co-operative Society Ltd. 2. Diwan Farmer Producer Organization Self Supporting Co-operative Society Ltd.
Jharkhand	Samastipur-I	A. Morwa B. Pusa	2	A. 310 B. 160	Registered by NCDC, RO Patna	1. Morwa Jankalyan Kisan Utpadak Sangathan Swawlambi Sahkari Samiti Limited 2. Pusa Jankalyan Kisan Utpadak Sangathan Swawlambi Sahkari Samiti Limited
	Gumla	A. Gumla B. Raidih	2	A. 386 B. 304	Registered by Jharkhand Co-operative Society	1. Gumla Sabji Utpadak Sahyog Samiti Ltd. 2. Raidih Phal Utpadak Sahyog Samiti Ltd.
	Dumka	A. Kathikund B. Shikaripara	2	A. 444 B. 450	Registered by Jharkhand Co-operative Society	1. Daninath Krishak Utpadak Swawlambi Sahyog Samiti Limited 2. Maluti Krishak Utpadak Swawlambi SahyogSamiti Limited

Agri-Drone Project

Agri Drone Project under Sub Mission on Agricultural Mechanization for the year 2024. The main objectives of using Agri drones in agriculture are to enhance efficiency, reduce costs, improve crop health, and optimize resource utilization. This is achieved by enabling precise application of inputs like fertilizers and pesticides, monitoring crop health, and providing data-driven insights for better farming decisions. Agri Drone is useful in various sectors of agriculture for increasing the efficiency in production and reduce the labour burden on farmers field and also helpful in crop analysis, monitoring and surveillance, spraying of pesticides, nutrient application, etc. It is also helpful for time saving, labour saving and input saving. During this year, 12 number of kisan drone were purchased and area covered under demonstration was 2775.3. Total no. of 20 person trained as drone pilot (Table 128).

Fig. 116: Agri-drone application in agriculture

Table 128: State wise details of Agri Drone project

State	Name of PIC	No. of Agri Drones Sanctioned	No. of Agri Drones Purchased	No. of Person trained as Drone Pilot	Area covered under demo (area in ha)	No. of farmers participated during demo
Bihar	KVK East Champaran-I	1	1	2	193.20	249
	KVK East Champaran-II	1	1	2	183.10	123
	KVK Jehanabad	1	1	2	250.00	337
	KVK Kishanganj	1	1	2	250.00	389
	KVK Nawada	1	1	2	250.00	406
	KVK Patna	1	1	1	250.00	695
	KVK Saharsa	1	1	1	250.00	406
	KVK Samastipur-I	1	1	2	237.00	305
	KVK Saran	1	1	2	20.00	20
Total of Bihar		9	9	16	1883.30	2930
Jharkhand	KVK Chatra	1	1	1	242 .00	601
	KVK Gumla	1	1	2	400.0 0	1001
	KVK Jamtara	1	1	1	250 .00	600
Total of Jharkhand		3	3	4	892 .00	2202
Grand Total		12	12	20	2775. 3 0	5132

Seed Hub

The government has launched many initiatives to increase the nation's output of pulses, providing timely access to sufficient supplies of high-quality seeds and lowering reliance on imports. In response to this issue, on June 15, 2016, the Ministry of Agriculture and Farmers Welfare launched the "Creation of Seed Hub for increasing indigenous production of pulses in India," a Centrally Sponsored Scheme under the National Food Security Mission (NFSM). The primary objective of a seed hub project is to enhance the availability of quality seeds, promote efficient fertilizer use, and ultimately increase agricultural productivity.

Zone IV in 10 KVKs, 7 KVKs in Bihar, and 3 KVKs in Jharkhand are producing high-quality pulse seed in order to satisfy farmers' growing demand for premium seed. In all, 4358.02 q of certified and foundation pulse seed were produced in the zone under the seed hub plan in 2024–2025. Notified Pulse varieties not older than 10 years Green gram (IPM-02-3, Shikha, Varsha, Virat), Chick pea (GNG-2207, GNG-2299, JG-12, RVG-202, RVG-204, Sabour Chana-1), Lentil (HUL-57, IPL-220, IPL-221, IPL-316, IPL-321, IPL-526, L-4717) and Pigeon pea (IPA-15-2, IPA-203, Rajendra Arhar-1) seeds were produced in Bihar in an amount of 2977.62 q, while Jharkhand produced the remainder 1380.00 q of Black gram (Birsa Urd-2, IPU-2-11, IPU-2-43, WBU-109), green gram (GM-06, Shikha), chick pea (JG-12), Lentil (IPL-221, IPL-316, IPL-321) and Pigeon pea (IPA-15-2, IPA-203). During the late kharif and rabi seasons, the class of seed comprises foundation seed and certified seed.

Under ICAR-ATARI, Patna, 10 KVKs Bhojpur, Buxar, East Champaran-I, Lakhisarai, Munger, Saran, Vaishali, Bokaro, Dumka, and East Singhbhum established Seed Hubs that were operational from 2016-2017. A thorough examination of the seed hub project revealed that, among all KVK's, Dumka KVK had the highest production (1380 q), followed

by Bhojpur KVK (743.86 q) while Buxar KVK had the least production (123.40 q). Data also showed that, 4358.02 q pulse seed were produced by Seed Hub KVKs of which highest quantity produced was Lentil (2020.34 q) followed by chickpea (873.48), Green gram (688.68 q), Pigeon pea (535.52 q) and Black gram (240.00 q).

Fig. 117: FLD under seed hub plan

Table 129: Crop wise details performance of seed hub

Crops	Varieties	Area shown (ha)	Seed Production (q)	Seed sale out (q)	No. of farmers purchased seed from KVK	Seed sale out to farmers (q)	No. of village covered through sale of seed	Seed sale out to other organizations (q)	Amount generatede (in Lakh)	Presently Total Amount in Seed Hub Project (in Lakh)
Lentil	IPL-220, L-4717, Pusa Ageti, IPL-316	255.60	2020.34	1295.41	62	33.67	29	1146.61	138.83	158.17
Chickpea	GNG-2299, GNG-2207, Sabour Chana-1, RVG-204	134.60	873.48	727.29	63	26.78	30	649.70	66.78	17.24
Green gram	Shikha, Virat	88.00	688.68	12.4	3	2.00	3	10.40	-	-
Pigeon Pea	IPA-203, Rajendra Arhar-1 & 2	79.50	535.52	29.6	17	7.60	13	2.00	11.94	292.27
Black gram	IPU-2-43, IPU-2-11	65.00	240.00	-	-	-	-	-	-	-
Total		622.70	4358.02	2064.70	145	70.05	75	1808.71	217.55	467.68

Table 130: Seed produced and revolving fund status

State	KVK Name	Seed Production (q)	Amount generated (in Lakh)
Bihar	Bhojpur	743.86	80.54
	Buxar	123.40	6.71
	East Champaran-I	556.84	9.73
	Lakhisarai	728.91	66.98
	Munger	402.61	49.15
	Saran	282.00	1.72
	Vaishali	140.40	2.72
Jharkhand	Bokaro	-	-
	Dumka	1380.00	-
	East Singhbhum	-	-
TOTAL		4358.02	217.55

Cereal System Initiative in South Asia (CSISA)

ICAR in collaboration with CSISA of CIMMYT has implemented this project phase-III to increase the crop yield and incomes of farms families through wide spread adoption of efficient and productive agronomic practices. This includes cultivation of high

yielding and stress tolerant varieties of cereal crops across ecologies. Under ICAR-ATARI, Zone IV, Patna total 03 KVKs (Bhojpur, East Champaran and Rohtas) in Bihar for paddy and 08 KVKs (Begusarai, Bhojpur, Buxar, East Champaran, Lakhisarai, Madhepura, Muzaffarpur-I and Rohtas) were demonstrated technologies related to DSR, zero tillage, puddled transplanted rice, transplantation and line sowing during the year. The average yield of paddy was recorded 59.22 Qt/ha and in wheat 42.75 Qt/ha under this project. The detail of the same is given below in the Table 131.

Table 131: Season wise details of CSISA

Season	Name Crops	Name of KVKs	Total Area covered (ha)	Average Grain Yield (q/ha)	Average Cost of cultivation (Rs/ha)	Average Gross return (Rs/ha)	Average Net Return (Rs/ha)	Average BCR
Kharif	Paddy	3	20.00	59.23	41891.67	126827.41	81589.08	3.07
Rabi	Wheat	8	143.40	42.75	34854.29	96041.06	61670.02	2.78

Table 132: Crop wise details of CSISA

Name of Crops	Name of KVKs	Total Area covered (ha)	Average grain yield (q/ha)	Average ost of cultivation (Rs/ha)	Average gross return (Rs/ha)	Average Net return (Rs/ha)	Average BCR
Paddy	Bhojpur	5	61.48	43609	110666	67017	2.54
	East Champaran	10	47.85	33566	122180.24	88614.24	3.64
	Rohtas	5	68.35	48500	147636	99136	3.04
Wheat	Begusarai	30	42.19	33136.67	87772.67	54503	2.65
	Bhojpur	5	41.48	36400	82971	46571	2.28
	Buxar	38.40	39.61	30775	90123.50	59348.50	2.93
	East Champaran	10	52.12	34520	126391	97271	3.66
	Lakhisarai	10	25	36500	59500	23000	1.63
	Madhepura	25	45	31225	109125	77900	3.49
	Muzaffarpur	20	44.24	33957.67	94134.33	58775.67	2.77
	Rohtas	5	52.35	42320	118311	75991	2.80

Fig. 118: CSISA trail at farmer feild

Kisan Sarathi Programme

Kisan Sarathi-System of Agri-information Resources Auto-transmission and Technology Hub Interface, ICAR. Powered by: Interactive Information Dissemination System (IIDS), Digital India Corporation (DIC), Ministry of

Electronics and Information Technology (MeitY), Govt. of India"Kisan Sarathi" an Information Communication and Technology (ICT) based interface solution with an ultimate goal of: An intelligent online platform for supporting agriculture at local niche with national perspective. Which is intended to provide a seamless, multimedia, multi-ways connectivity to the farmers with the latest agricultural technologies, knowledge base and the pool of large number the subject matter experts. Real-time expert advice the platform provides access to expert advice on various aspects of agriculture, including crop management, horticulture, animal husbandry, and fisheries, directly from scientists at Krishi Vigyan Kendra's (KVKs). 44 KVKs of Bihar has registered 3426447 no. of farmers and 24 KVKs of Jharkhand has registered 601388 no. of farmers to disseminate real time expert advice in the both states.

Fig. 119:Kisan sarathi portal

Table 133: State wise details of kisan sarathi programme

State	No. of KVKs registered	No. of Farmers registration
Bihar	44	3426447
Jharkhand	24	601388
Grand Total	68	4027835

Design and Development of ATARI Access Management System and its Impact on the Organizational Performance

In the era of ICT, real-time reporting and monitoring systems plays an important role in achieving organizational growth and targets efficiently. Most of the organization now a days depends upon Information Technology tools for collection and processing data into accurate, well presented, up-to-date and cost-effective information. Presently the current online cum offline system is extensive and have many flaws. As ATARI's main priority is implementation, reporting and monitoring of KVK activities with the provision in Institute EFC. Therefore, in order to handle voluminous reports along with data handling and to overcome and simplified the process of data management for application of technology, this project is undertaken to develop web-based access management system for enhancing the working efficiency of the organization and to streamline and improve the KVK reporting and monitoring system. During the current year, primary data is collected through structured questionnaire/format designed as per the type of reports like APR, MPR etc. The design/ layout was finalised and key modules of dashboard, role & user management, field management, form management, reports generation were developed during this period as given below.

Integrated Farming System

An integrated agricultural system can lessen the chance of crop failure and offer steady cash flow all year long by diversifying its sources of income, which also lessens the income's seasonality. This approach entails supplementing primary agriculture with alternative businesses related to rural off-farm pursuits. Crop based, horticulture based or animal-based IFS models are a few examples of practices that can be included into agricultural systems. The following lists the number of IFS

system components that the KVKs of Jharkhand (18) and Bihar (121) have established. Various activities were organized under IFS which includes 397 demonstrations for 6785 farmers and 134 training programmes for 2664 number of farmers in Bihar. In Jharkhand 506 demonstration for 825 farmers and 79 training programmes for 2064 farmers were conducted during the reporting period (Table 134).

Table 134: State wise IFS activities by KVKs

State	No. of KVKs under the Component	No. of Components established	Area (ha)	No. of Activities		No. of farmers benefited	
				Demo	Training	Demo	Training
Bihar	30	121	49.3111	397	134	6785	2664
Jharkhand	10	18	29.3426	506	79	825	2064
Total	40	139	78.6537	903	213	7610	4728

Table 135: Component wise IFS activities by KVKs

State	Component Name	No. of KVKs under the Component	No. of Components established	Area (ha)	No. of Activities		No. of farmers benefited	
					Demo	Training	Demo	Training
Bihar	Dairy unit	6	16	3.3	69	19	1182	410
	Fish production unit	2	9	20.4	50	35	920	955
	Horticulture crop	5	54	11.3	137	28	2060	169
	Poultry/Duckery unit	5	7	0.5	61	8	1180	148
	Cereal crops	4	15	2.8	3	28	138	634
	Small Ruminants	6	18	10.9	75	13	1305	288
	Vermi-compost	2	2	0.0	2	3	0	60
	Total	30	121	49.3111	397	134	6785	2664
Jharkhand	Dairy unit	2	3	0.2	52	10	105	125
	Fish production unit	1	4	2.0	6	4	6	122
	Horticulture crop	2	3	0.8	64	14	180	343
	Poultry/Duckery unit	1	1	0.0	100	9	100	224
	Cereal crops	2	3	26.0	224	22	330	612
	Other Enterprises	2	4	0.4	60	20	104	638
	Total	10	18	29.3426	506	79	825	2064

Fig. 120: Integrated farming system model

Attachment Training Programme

Rural Agricultural Work Experience, is a program in India that provides B.Sc. (Agriculture) students with practical, hands-on experience in rural agricultural settings. It aims to bridge the gap between theoretical knowledge and real-world farming practices, empowering students to understand rural systems, identify farmer problems, and effectively transfer agricultural technologies. The Rural Agricultural Work Experience (RAWE) program in India is a hands-on program that provides agricultural students with practical experience in farming and village life. As part of the program, students work with farm families to identify problems and use extension

tools to transfer the latest agricultural technologies. They also have the opportunity to study ongoing schemes related to agriculture and rural development and participate in their implementation. The program includes an orientation period to help students prepare for the challenges and problems they may encounter in farmers' fields and to develop their competence and confidence in solving agricultural problems. During these programs, the trainees including both students and probationary officers, actively engaged with the scientists and administrative staff of KVKs under the guidance of ATARI Zone-IV Patna. It provides valuable opportunity for the students and trainees to gain practical experience and deeper understanding of agricultural practices in rural areas and they were able to develop insights into the overall agricultural scenario and contribute to their knowledge and skill development. Total 1073 students participated in RAWE in KVKs for 4181 days and 83 students from Fisheries and Horticulture colleges participated in RFWE /RHWE (Rural Fisheries Work Experience/ Rural Horticulture Work Experience) for a training duration of more than 100 days in KVK East Chamapran-I & II. (Table 136).

Fig. 121: RAWE training at KVK

Table 136: State wise details of attachment training programme

State	No. of KVKs	No of RAWE trainees	Training duration for RAWE (days)	No. of RFWE /RHWE trainees	Training duration for RFWE / RHWE (days)
Bihar	34	770	3750	83	106
Jharkhand	14	303	431	0	0
Grand Total	48	1073	4181	83	106

Kisan Mobile Advisories

The Kisan Mobile Advisory (KMA) is an essential Information and Communication Technology (ICT) tool designed to provide farmers with timely, relevant, and need-based agricultural information. Through the kisan portal, farmers can access advisories, services, and information in multiple languages, including english, hindi, and regional languages, via SMS. These advisories cover a wide array of topics, such as weather patterns, agricultural best practices, pest and disease management, storage techniques, fertilizers, seed management, crop-specific guidance, insurance schemes, farm equipment usage, and cost optimization for fertilizers and storage. During the reporting period, the program reached 1255133 farmers, delivering a total of 236214 advisories through 62 Krishi Vigyan Kendras (KVKs). The Kisan Portal (*www.mkisan.gov.in*) serves as a key platform for empowering farmers with the knowledge and tools needed to enhance productivity and make informed decisions in their agricultural practices.

Table 137: State wise advisories sent through kisan portal by KVKs

State	No. of KVKs	No. of advisories	No. of beneficiaries
Bihar	40	230602	733913
Jharkhand	22	5612	521220
Total	62	236214	1255133

Poshan Maah

The 7th Rastriya Poshan Maah 2024 is a nationwide initiative dedicated to combating malnutrition and promoting holistic health and nutrition. This year's campaign, taking place throughout the month of September, focuses on several critical themes: Anaemia prevention, Growth Monitoring, Complementary Feeding, "*Poshan Bhi Padhai Bhi*," Technology for Better Governance, and the environmental campaign "Ek Ped Maa Ke Naam". Over the years, more than 100 crore nutrition-centric sensitisation activities have been reported during these awareness campaigns under various themes. Additionally, the campaign leverages technology for better governance, utilizing digital platforms like the POSHAN ((Prime Minister's Overarching Scheme for Holistic Nutrition) Tracker to monitor and improve real-time nutrition delivery for beneficiaries. Community engagement remains a cornerstone of Poshan Maah, with activities such as awareness campaigns on exclusive breastfeeding and complementary feeding, health competitions like Swasth Balak Spardha (Healthy Child Competition), and community outreach programs to encourage positive nutrition-seeking behaviours The campaign continues to align with the goals of Mission Saksham Anganwadi and Poshan 2.0, driving the country closer to the eradication of malnutrition and promoting the well-being of every individual. This programme is operational under 41 KVK of Zone IV with total 17073 participant where 3934 girls, 7296 farm women, 4372 farmers, 404 aganwadi workers, 627 Govt Officials and 203 public representatives. During this programme total 1106 number of vegetable kits were distributed and 159759 No of sapling were planted.

Table 138: State wise details of Poshan Maah

State	Number of KVK	No of activities conducted	Name of Event/ Programme	No of sapling planted	No of Vegetable kit distributed	No of participants						Total Participants
						Girls	Farm Woman	Farmers	Aganwadi Workers	Govt Officials	Public Representatives	
Bihar	28	213	Awareness programme on "Nutritional security through nutri -garden and biofortified variety" and National Poshan Maah	53480	394	1531	2829	1637	161	250	70	6579
Jharkhand	13	326	Awareness Programme on Nutri Thali Benefits, Awareness Programme on Balanced Diet and Awareness Programme on Food Security through different food groups Nutrition security through value addition	106279	712	2403	4467	2735	243	377	133	10494
Total	41	539		159759	1106	3934	7296	4372	404	627	203	17073

Fig. 122:Awareness programme on Rastriya Poshan Maah

Fig. 123:Demonstration on nutri-garden

Swachh Bharat Abhiyan

Swachhta Hi Sewa

Swachhta Hi Sewa (15th Sept-01st Oct 2024) is a nationwide campaign, this year dedicated to Swabhav Swachata-Sankar Swachhta" along with celebration of 'Swachh Bharat Diwas' celebration on 2nd October 2024'promoting cleanliness and hygiene across all sections of society with the cleanliness of the thoughts. The campaign includes a wide range of activities such as cleaning public spaces, promoting proper waste segregation and disposal, raising awareness about hygiene practices, and advocating the reduction of plastic waste. In 2024, a total of 58 KVKs under Zone IV of ICAR-ATARI, Patna actively participated in the campaign, with 909 number of activities organized during the report. Through various outreach programs, these KVKs engaged with 21726 participants including staffs, farmers and others. spreading the message of cleanliness and responsible environmental practices. Their efforts helped cultivate a sense of ownership and accountability within rural communities, particularly in the area of sustainable waste management and reduced plastic usage. On the occasion of Swachh Bharat Diwas on 2nd Oct 2024, ICAR-ATARI felicitated the '*Safai Mitra*' of the Institute for their work and dedication towards cleanliness.

Table 139: Detail of activities under swachhta hi sewa

State	No. of KVKs	No of Activities	No. of Participants			
			Staffs	Farmers	Others	Total
Bihar	40	631	2360	10592	2523	15466
Jharkhand	18	278	346	5575	339	6260
Total	58	909	2706	16167	2862	21726

Fig. 124: Celebration of swachhta hi sewa at KVKs and facilitation of safai mitra at ATARI

Outreach programme under Swachata at BMP High School

To promote environmental awareness and cleanliness among school children. An outreach activity of tree plantation and interactive awareness activities as part of the Swachata Hi Sewa Abhiyan was organised at BMP High School, Patna on 20.10.2024. Saplings of indigenous trees (e.g., neem, peepal, mango, tulsi and ornamental plants)

were planted in the school premises along with the active participation of school principal, teachers and students in digging, planting, and watering. Later on, a brief introduction to the Swachata Abhiyan and explanation of the environmental benefits of trees and importance of community participation were discussed in detail. Few completions including poem recitation and poster making was also organised for class 9th and 10th students. The winners were awarded with prizes and distribution of posters and pamphlets on Swachata. The outreach programme successfully organised by Dr. Pragya Bhadauria, Scientist In-charge and her team under the guidance of Director of the Institute which instilled a sense of responsibility and environmental consciousness among the young minds.

Fig. 125: Different activities organised under swachhta hi seva at BMP high school

Swachhata Pakhwada

As part of the nationwide cleanliness initiative Swachhata Pakhwada (16th - 31st Dec 2024) was organised by all the personnel of ICAR-ATARI, Patna, along with the Krishi Vigyan Kendras (KVKs) of the Zone-IV. The KVKs played a crucial role in expanding the reach of the campaign by raising awareness among farmers and villagers, promoting the slogan "Swabhav Swachhata - Sanskar Swachhata" (Cleanliness as a Natural Habit and a Core Societal Value). In addition to the cleaning activities, the KVKs organized a series of awareness programs, workshops, and campaigns to reinforce the message of cleanliness. During this campaign, across the 48 KVKs under the ICAR-ATARI, Patna zone, a total of 496 activities were conducted, involving 1869 staff members, 10439 farmers, and a cumulative 14395 participants (Table 140). This collective effort aimed to foster a sense of shared responsibility among all stakeholders, encouraging the development of a cleaner and healthier environment.

Table 140: Detail of activities under swachhata pakhwada

State	No. of KVKs	No of Activities	No. of Participants			
			Staffs	Farmers	Others	Total
Bihar	33	338	1625	6236	1450	9311
Jharkhand	15	158	244	4203	637	5084
Total	48	496	1869	10439	2087	14395

Fig. 126: Celebration of swachhta pakhwada

Mahila Kisan Diwas

Mahila Kisan Diwas 2024, observed on October 15 in alignment with the International Day of Rural Women, is a significant national event that honours the vital contributions of women farmers to Indian agriculture by promoting gender equality and empowering them through access to technology, training, and institutional support. On this occasion, various activities were organized by KVKs and ICAR institutes, including the felicitation of progressive women farmers, demonstrations of gender-friendly farm tools, awareness sessions on government schemes, training programs, exhibitions highlighting women's innovations, and dialogues aimed at strengthening their roles in agricultural decision-making. This observance plays a crucial role in enhancing the visibility of women in agriculture and underlining the importance of inclusive policies to ensure their active participation across the agricultural value chain. The 43 KVK of Zone IV, which had 2139 participants, held debates, exhibitions, discussions, and competitions to address issues pertaining to women's empowerment and the role of women in the agricultural sector (Table 141). During the different programs, exceptional women from the area were also honoured.

Fig. 127: Celebration of mahila kisan diwas

Table 141: State wise details of mahila kisan diwas

State	No. of KVK	No. of Activities	No. of participants
Bihar	24	25	1065
Jharkhand	19	19	1074
Total	43	44	2139

Training programs on Microbial Based Agricultural Waste Management through Vermicomposting

ICAR-Agricultural Application Research Institute (ATARI) Zone-IV Patna organized two days training programs on Microbial Based Agricultural Waste Management through Vermicomposting. This program was conducted during 01-02 February 2024. The training program covered six districts of Bihar and Jharkhand states–Ranchi, Godda, Deoghar, Begusarai, Nawada and Jahanabad.


Fig. 128: Training programme on vermicomposting

A total of 120 farmers participated actively in the training programme. Dr. Ranveer Singh technical expert of the Indian Veterinary Research Institute (IVRI), Izatnagar provided the valuable information on importance on Jai-Gopal vermiculture technique. While discussing on solid waste management in today's scenario during the technical session, he emphasised on the importance of waste disposal and its value addition in the form of vermicompost. The program also served as a valuable platform to share farmers' indigenous knowledge and practical insights into sustainable agricultural waste management practices. Knowledge evaluation and farmer-scientist interaction during programs were conducted successfully. During the programme, Jaigopal vermi-culture was also demonstrated and distributed among the farmers who were beneficiaries of the training programme. The objective of the training program was to increase awareness and skills related to Jai Gopal vermicomposting technology developed by IVRI Izatnagar, contributing to effective agricultural waste management. A positive response witnessed from farmers, including an enthusiastic change in their understanding of the new vermiculture technology. Dr. Pragya Bhadauria, Senior Scientist, ATARI, under the guidance of Dr. Anjani Kumar Director ATARI and chairmanship of Director-in-Charge Mohd. Monobrullah, Principal Scientist, ICAR-ATARI coordinated the program under Swachata Action Plan.

National Workshop on ARYA Project

A two days National Workshop of ARYA project was organized by ICAR-ATARI, Patna during February, 22-23, 2024 at Bodhgaya, Bihar. DDG (AE), ADG (AE), former DDG (AE), ICAR, New Delhi, former Vice Chancellor, Directors, ICAR-ATARIs, Principal Scientists from ICAR, HQ and ICAR-ATARIs and Senior Scientist & Heads of 100 Krishi Vigyan Kendra across the country were participated. Dr. U. S. Gautam, DDG, (AE), ICAR, New Delhi emphasized upon generation of employment and regular flow of income stream for the rural youth. The reasons for the youth's lack of interest in agriculture are low profitability of agriculture, drudgery of farm operations, poor quality of life in the rural area and rapidly shrinking size of land holdings are the most significant among them. Dr. Gautam also applauded those ecological balances are of paramount importance and need to be addressed. He expressed that reduction of migration of youth from rural area to urban area can be done, if sufficient employment opportunities are available in the villages during his inaugural speech. Dr. K.D. Kokate former DDG (AE), ICAR, New Delhi emphasized on linking the participants of ARYA project with government schemes and also stressed the need to formulate strategies on how to promote them at national and international level and to focus on creating agri-tech start-ups associated with agriculture. Dr. M. M. Adhikari, former Vice Chancellor, BCKV Nadia, while sharing his

views, said that the progressive farmers have been doing better work even in the past years, but through this project, the number and income of such farmer entrepreneurs has seen all-round development. Dr. R.R Barman, ADG, (AE), ICAR, New Delhi, while giving detailed information about the project, said that the council laid the foundation of the project in the year 2015-16 seeing the migration of rural youth in the field of agriculture. Through Krishi Vigyan Kendra, the interest of youth was seen in 10 major agriculture related enterprises, and it was also found that there is a lot of interest and income of youth in small business-like goat rearing, poultry farming, nursery production, bee keeping, mushroom production etc. Dr. Anjani Kumar, Director, ICAR-ATARI, Patna, while inaugurating the program, cordially welcomed all the distinguished guests and highlighted the outline of ARYA project and the importance and objectives of the national workshop. During the program, 12 progressive entrepreneurs from Bihar and Jharkhand were also awarded with Krishak Protsahan Puraskar. The annual report of ARYA project and the newsletter of Krishi Vigyan Kendra's were also released.

Fig. 129: National Workshop on ARYA project


Fig. 130: Review workshop of TDC- NICRA project

TDC-NICRA Review Workshop

The Zonal Review Workshop and hands on training of NICRA-TDC was held during 19-20 March, 2024 at ICAR-ATARI, Zone IV, Patna. Dr Anup Das, Director, ICAR-RCER, Patna was the Chief guest of the programme, Dr. G. Pratibha was special Guest of the programme along with Dr. P.K. Pankaj, Nodal officer, NICRA–CRIDA, Hyderabad. In this program, 14 KVKs (11 KVKs from Bihar and 03 KVKs from Jharkhand) were participated. The workshop was started with the welcome

address by Dr. Amrendra Kumar, Pr. Scientist and Nodal officer TDC-NICRA project informed the purpose of the review meeting and salient achievements made under the project. During inaugural session Chief guest, Dr. Anup Das, Director, ICAR-RCER, Patna emphasized that the achievement made by previous NICRA driven KVKs must be given to state government for large scale dissemination. He clearly explained about the climate resilient agriculture interventions should be taken by new NICRA-KVKs. Other components related to climate resilient which were not covered in previous phase must be taken in account in coming annual action plan. Contingency plan must be revised on regular basis considering climatic factor like temperature, humidity, rainfall, etc. as when need arise. Rice fish farming system should be demonstrated in water logging condition, for disseminating of all climate resilient practices through convergence should be linked with government and other agriculture and allied sector, which helps for making the respective district as a climate resilient district.

Annual Zonal Workshop

The 7th Annual Zonal Workshop of KVKs was successfully organized by the ICAR- ATARI, Patna, from 29th to 31st August 2024, at BAU, Sabour, Bhagalpur. The workshop witnessed the esteemed presence of several distinguished dignitaries, including Dr. U.S. Gautam, Deputy Director General (Agricultural Extension), ICAR; Dr. D.R. Singh, Hon'ble Vice-Chancellor, BAU Sabour; Dr. Keshava, Principal Scientist, ICAR Headquarters; along with Directors and Directors of Extension Education (DEE) from various ICAR institutes and agricultural universities. About 260 participants, comprising dignitaries, delegates, administrative personnel, and project staff, actively engaged in the three-day event. The workshop provided a significant platform for meaningful dialogue, experience sharing, and strategic planning to strengthen the functioning of KVKs. The central theme of the workshop was to identify and address the key challenges being faced by KVKs in the present agricultural landscape. Discussions were held to prioritize pressing agricultural issues reported by farmers across different districts, with an aim to develop location-specific, farmer-centric strategies for sustainable development. The deliberations focused on improving the effectiveness of KVKs in technology dissemination, capacity building, and promoting innovations at the grassroots level. This collaborative initiative reaffirmed the commitment of ICAR and participating institutions to empower farmers, enhance agricultural productivity, and ensure food and livelihood security through science-led interventions.

Fig. 131: Celebration of Annual Zonal Workshop

Institute Research Committee (IRC) Meeting

The second annual Institute Research Committee (IRC) meeting of the ICAR-ATARI, Zone-IV Patna was held on 17th May 2024 under the chairmanship of Dr. Anjani Kumar, Director, ICAR-ATARI Patna. Dr. Pragya Bhadauria, I/C PME & Secretary IRC conducted the meeting with a warm welcome to all the members of the committee. The meeting was attended by special invitees Dr. Anup Das, Director, ICAR-RCER Patna and Dr. M.M

Adhikary, former VC, BCKV, Nadia ICAR-RCER Patna as External expertise. Dr. Md. Monobullah, Dr. Amrendra Kumar, Dr. D.V Singh, Principal Scientist, and Dr. Pragya Bhadauria, Senior Scientist, ICAR-ATARI, Patna has participated as Institute member. This was followed by detailed presentation of the various research projects are to be presented in the forthcoming RAC meeting. The detailed project presentation was done by the concerned scientists on different thematic areas. There was total four projects (two old and two new) were presented. During the meeting it was suggested that all the scientists have to prepare the RFP–I of their respective project proposals after incorporation of the suggested modification and recommendation of the IRC. During the plenary session, chairman applauded the overall presentation of the scientists. Thereafter, the chairman offered his comments, suggestions & recommendations on the IRC deliberations. The IRC meet was concluded with the remark of the chairman and formal vote of thanks by Dr. Pragya, I/C PME & Secretary IRC.

Fig. 132: IRC meeting held at ATARI,Patna

Foundation day of ICAR-ATARI

The ICAR- ATARI, Patna, celebrated its 9th Foundation Day on 19th August 2024 at its headquarters in Patna with great enthusiasm and participation. The event was graced by several eminent personalities from the ICAR and esteemed academic institutions. Among the distinguished guests were Dr. R.K. Samanta, Former Vice-Chancellor, BCKV, West Bengal; Dr. U.S. Gautam, Deputy Director General (Agricultural Extension), ICAR, New Delhi; Dr. P.S. Pandey, Vice-Chancellor, Dr. Rajendra Prasad Central Agricultural University (DRPCAU), Pusa; Dr. S.C. Dubey, Vice-Chancellor, Birsa Agricultural University (BAU), Ranchi; and Dr. R.K. Singh, ADG (Agricultural Extension), ICAR, New Delhi. Also present were Dr. S.R.K. Singh, Director, ICAR-ATARI, Jabalpur; Dr. K.G. Mandal, Director, ICAR-MGIFRI, Motihari; Dr. Bikas Das, Director, ICAR-NRCL, Muzaffarpur; Dr. Abhijit Kar, Director, ICAR-NISA, Ranchi; and Dr. Anup Das, Director, ICAR-RCER, Patna. DEE and Directors from various agricultural universities, along with Heads of KVKs from Bihar and Jharkhand, also attended the event. The Foundation Day witnessed the active participation of around 200 dignitaries, delegates, administrative staff, and project personnel. The celebration served as a platform to honour the contributions of progressive entrepreneurs from Bihar and Jharkhand through a special felicitation ceremony. In addition, several new publications were released during the occasion, showcasing recent advancements and achievements. A significant highlight of the event was the technical session, which featured an interactive dialogue between scientists and farmers. This session proved to be a valuable exchange of knowledge, aimed at addressing field-level challenges and promoting innovative agricultural practices. Adding to the vibrancy of the event was an exhibition showcasing various products, technologies, and success stories from different KVKs.


Fig. 133: Celebration of foundation day at ATARI, Patna

Brainstorming Session on Wetland Ecosystem and Livelihood Security Promotion in Eastern India

Brainstorming session on Wetland Ecosystem and Livelihood Security Promotion in Eastern India was organized at ICAR ATARI, Patna on dated 19-20 July 2024. ADG (AE) Dr. Ranjay Singh chaired the meeting along with Director ATARI Patna. Total 31 participants involving Head Scientist of KVKs of Bihar and ATARI scientist has actively participated. The agenda of the event was to find out the status of livelihood based on wet land ecosystem and what are scope, challenges and future possibilities for providing livelihood security to the farmer residing in the wet land area constituting ahar, chaur, ponds, river particularly in North Bihar.


Fig. 134:Brainstorming session on wetland ecosystem and livelihood security

Action Plan and Review Meeting of Zero Hunger and Zero Technology gap project

Action Plan and Review of collaborative project entitled "Zero Hunger and Zero Technology gap" organized by ICAR ATARI, Patna on dated 11 May 2024. The project is being implemented in Chotaka Dhakaich village of Buxar district in collaboration with ICAR-RCER Patna and KVK, Buxar with an objective to create a model village with zero hunger and no gap in agriculture technologies in respect of selected technologies. During the meeting the process model for achieving zero technology gap and nutritional security was discussed in detail for its execution at village level along with timelines with the project team of ATARI and RECER Patna.

Research Advisory Committee (RAC) Meeting

The Research Advisory Committee (RAC)

2024 serves as a strategic think tank for ICAR research institutes, guiding them to align their scientific endeavours with emerging challenges and national priorities in agriculture. During the first RAC of this year on 30th Aug 2024, the ATARI Patna was suggested to proposed new network research project on "Impact of FPO on agribusiness management and livelihood of the member". In another RAC meeting held on 19-20 Nov. 2024 at ICAR-NAARM Hyderabad detailed presentation of the project was made on this network project in which the principal scientists of the Institute actively taken part.

Parthenium Awareness Week

Parthenium Awareness Week is an annual event observed to raise awareness about the harmful effects of Parthenium, a highly invasive weed, and to promote its control and eradication. In 2024, awareness programs were conducted across India, with specific activities organized by agricultural universities, research institutes, and other organizations. The 59 KVKs of Bihar and Jharkhand conduct this awareness programme with 5802 number of participants (Table 142).

Table 142: State wise details of parthenium awareness week

State	No. of KVK	No. of Activitics	No. of participants
Bihar	41	138	3759
Jharkhand	18	49	2043
Total	59	187	5802

Fig. 135: Activity under parthenium awareness week

International Food Day

ICAR-ATARI, Zone IV, Patna, along with 28 KVKs under its jurisdiction, observed World Food Day on October 16, 2024, with the active participation of 1299 individuals. Celebrated annually, World Food Day aims to raise global awareness about hunger and to inspire action toward ensuring food security for all, while also safeguarding the health of our planet. The theme for this year, "*right to foods for a better life and a better future*" emphasized the essential role that water plays in sustaining life and serving as the foundation of our food systems. The observance aimed to draw attention to the urgent need for sustainable water management to support agriculture, ensure equitable access, and secure a food-secure future for all (Table 143).

Table 143: State wise details of the activities conducted during international food day

State	No. of KVKs organized the event	No. of participated
Bihar	16	670
Jharkhand	12	629
Total	28	1299

Hindi Pakhwada

Hindi Pakhwada is an annual observance aimed at promoting the use and importance of Hindi as the official language across government offices and institutions in India. Hindi Pakwada was organized from 14-28 September 2024 at ICAR-Agricultural Technology Application Research Institute, Patna along with all the KVKs of the zone. Under this hindi and its importance were discussed in detail on the occasion of Hindi Diwas. Along with this, strategies to promote hindi in departmental works were also discussed. Since the institute is committed to the promotion of the official language hindi, various competitions such as hindi typing, essay, poetry recitation, hindi vocabulary and debate competitions were also organized

during the fortnight. All the officers and employees of the institute participated enthusiastically in all these competitions and awarded cash prizes. The entire program was coordinated by Dr. Pragya Bhadauria, Scientist and Officer-in-Charge, Official Language and her team under the patronage of Director, ATARI. The 31 KVKs of Bihar and Jharkhand organized 45 number of activities such as essay writing, poetry recitation, debates, quizzes, and workshops with 2231 number of participants that encourage employees and students to use hindi in their official and daily communication. (Table 144)

Table 144: KVK wise details of hindi pakhwada

State	No. of KVK	No. of Activitics	No. of participants
Bihar	18	27	981
Jharkhand	13	18	1250
Total	31	45	2231

Fig. 136: Activity under hindi pakhwada

Viksit Bharat Sankalp Yatra

The goal of the nationwide outreach initiative known as the Viksit Bharat Sankalp Yatra was to successfully implement the various central schemes must reach all intended beneficiaries in a timely and efficient manner throughout India. The campaign promotes awareness and monitors the implementation of key government initiatives, including Ayushman Bharat, Ujjwala Yojana, PM Suraksha Bima Yojana, and PM SAMAN Nidhi. It follows a holistic approach, involving multiple ministries, departments, organizations and institutions. Additionally, the campaign supports small and marginal farmers by enrolling them in the PM-Kisan scheme, enabling them to access agricultural inputs necessary for maintaining crop health and improving yields. As a part of this massive initiative, 2859 events were conducted across 2845-gram panchayats, with 1366974 farmers actively participating. These events also featured lectures focused on soil health and the promotion of natural farming practices (Table 145).

Fig. 137: Different activity under viksit bharat sankalp yatra

Table 145: State wise details of Viksit Bharat Sankalp Yatra

State	No of events conducted	No. of Gram Panchayat	Farmer participated	No of Lecture delivered on Soil Health/ Natural Farming
Bihar	2357	2051	1231841	3926
Jharkhand	502	794	135133	773
Total	2859	2845	1366974	4699

Vigilance Awareness Week

Vigilance Awareness Week (27 Oct. to 2 Nov. 2024) is one of the participative vigilance initiatives of the Central Vigilance Commission in the fight against corruption. It is an awareness building and outreach measure which aims to bring together all the stakeholders. It is observed to create greater sensitivity about the need for ethics and transparency in governance and public administration. The commission endeavours to promote integrity and eradicate corruption with the active support and participation of all citizens. For the past three years, there has been a campaign in the run up to the week with preventive vigilance initiatives as focus areas. Every year Vigilance Awareness Week is observed in the week in which the birthday of Bharat Ratna Sardar Vallabhbhai Patel falls in. Zone IV also celebrated this programme with a total 31 number of KVKs covering 1481 number of participants. (Table 146)

Fig. 138: Celebration of vigilance awareness week

Table 146: State wise KVK details of vigilance awareness week

State	No. of KVK	No. of Activities	No. of participants
Bihar	24	30	908
Jharkhand	7	15	573
Total	31	45	1481

World Soil Day

World Soil Day (WSD) is held annually on 05th December as a means to focus attention on the importance of healthy soil and advocating for the sustainable management of soil resources. This theme for this year is "*Caring for Soils: Measure, Monitor, Manage*," which underscores the importance of accurate soil data and information in understanding soil characteristics and supporting informed decision making on sustainable soil management for food security. This day was also the 10th anniversary of World Soil Day. The 43 KVKs of Bihar and Jharkhand organized 43 number of activities with 2538 number of participants along with distribution of 1158 soil health cards (Table 147).

Table 147: Detail of the activities conducted during world soil day

State	No. of KVK	No. of Activities	No of soil health card distributed	No. of participants
Bihar	23	23	680	1264
Jharkhand	20	20	478	1274
Total	43	43	1158	2538


Fig. 139: Celebration of world soil day

International Yoga Day

The International Day of Yoga has been celebrated globally every year on June 21 since 2015. In 2024, marking its 10th anniversary, the day was observed under the theme "*Yoga for Self and Society*," highlighting the benefits of yoga for individual well-being and community harmony. The 62 KVKs of Bihar and Jharkhand organized various activities, including yoga classes, meditation session, discussion and meeting with a variety of cultural performance were with 4339 participants (table 148).

Table 148: State wise details of international yoga day

State	No. of KVK	No. of Activities	No. of participants
Bihar	42	42	1004
Jharkhand	20	20	3335
Total	62	62	4339


Fig. 140: Celebration of International Yoga Day

Inauguration of Kailashpati Mishra Memorial Park

Union Home Minister Amit Shah inaugurated the memorial park of veteran leader Kailashpati Mishra at the premises of ICAR-Agricultural technology Application Research Institute (ATARI) Patna on 09th March 2024. The chief guest of the occasion was welcomed by Dr. Anjani Kumar, Director, ICAR-ATARI. The programme was also marked the presence of Honorable Governor Rajendra V Arlekar, Deputy CMs Samrat Chaudhary and Vijay Kumar Sinha, Government of Bihar, former Union minister Ravi Shankar Prasad, senior leaders, relatives of Kailashpati Mishra and ATARI scientists. The park has been developed on two acres of land of ICAR-ATARI Patna with a beautiful landscape.

Fig. 141:Inauguration of Kailashpati Mishra memorial park

Educational Field trip

Educational Field trip for 46 students of 3rd year BA(Economics) of Patna Women's college at ICAR-ATARI, Patna was organised on dated 8-9 September 2024 in presence of Dr. Anjani Kumar, Director, and other scientific staff of ICAR-ATARI Patna. Various technical lecture and brain storming was also organised in presence of recourse person including Dr. Narsh Chandra, Ex Pr. Sci. ICAR-RCER, Mr Banda Sainath, Sr. Sci. ICAR-RCER, and Dr. Rohan Kumar Raman, Sr. Scientist. ICAR-RCER, Patna who gave their valuable insight for the student during this programme.

Fig. 142: Educational field trip of college students

Digital Initiatives

Implementation of E-Office/ E-hrms

The National Informatics Centre (NIC) created the e-Office program, which was introduced in 2009 with the goal of improving the efficacy, efficiency and transparency of

intergovernmental transactions and procedures. In order to provide a more straightforward, responsive, efficient, and transparent working environment in the office, ATARI Patna has also begun working on e-Office.

Agricultural Research Management System (ARMS)

The Agricultural Research Management System (ARMS) is an integrated digital platform developed to streamline and enhance the planning, monitoring, and evaluation of agricultural research activities within the Indian Council of Agricultural Research (ICAR). ATARI Patna has also begun working on ARMS for project monitoring, scientist profiling, publication records, technology management, and performance assessment, all integrated into a centralized system to support ICAR's mission of fostering innovation and excellence in agricultural research and development.

Krishi Vigyan Kendra (KVK) Knowledge Network/KVK Portal

The KVK Knowledge Network/Portal (*www.kvk.icar.gov.in),* developed by ICAR, aims to bridge the communication gap between farmers and KVKs. This platform enables KVK scientists to upload vital information, promoting the swift dissemination of new technologies at both national and district levels. A total of 68 KVKs under ICAR-ATARI, Patna-comprising 24 in Jharkhand and 44 in Bihar-have contributed diverse data to the portal. This includes KVK profiles, available facilities, records of past and ongoing events, and practical agricultural packages. The portal emphasizes the use of location-specific technological solutions across agriculture, livestock, fisheries, and allied sectors.

KRISHI Portal

The KRISHI (Knowledge-based Resources Information Systems Hub for Innovations in Agriculture) Portal, developed between 2016 and 2017, serves as ICAR's centralized Research Data Repository for effective knowledge management. Its Data Inventory Repository aims to build a Meta Data Inventory by offering insights into data availability at the institute level. The portal comprises six key repositories: technology, publications, observational data, survey data, experimental data, and a geo-portal. The portal is regularly updated by ICAR-ATARI in publishing and uploading institutional data. (Table148) State wise details of Celebration of Important Days

Table 149: State wise details of celebration of important days

Celebration of important Day	Bihar			Jharkhand			Grand Total		
	No. of KVK	No. of Activities	No. of participants	No. of KVK	No. of Activities	No. of participants	No. of KVK	No. of Activities	No. of participants
World Pulse Day (10th Feb.)	2	2	102	0	0	0	2	2	102
National Science Day (28th Feb.)	3	3	104	2	2	120	5	5	224
International Women's Day (8th Mar.)	25	26	1232	18	22	1486	43	48	2718
World Water Day (22nd Mar.)	3	3	170	0	0	0	3	3	170
Ambedkar Jayanti (14th Apr.)	7	7	189	9	9	372	16	16	561
World's Veterinary Day (27th Apr)	6	6	170	4	4	164	10	10	334
World Bee Day (20th May.)	3	3	84	2	2	56	5	5	140
World Milk Day (1st Jun.)	13	13	576	7	7	258	20	20	834
World Environment Day (05th Jun)	12	15	623	3	3	122	15	18	745
International Yoga Day (21st Jun.)	42	42	1004	20	20	3335	62	62	4339
National fish farmer day (10th July)	2	2	75	0	0	0	2	2	75

Celebration of important Day	Bihar			Jharkhand			Grand Total		
	No. of KVK	No. of Activities	No. of participants	No. of KVK	No. of Activities	No. of participants	No. of KVK	No. of Activities	No. of participants
ICAR foundation Day (16th July.)	35	59	350	24	41	200	59	83	550
Parthenium Awareness Week (16th to 22nd Aug.)	41	138	3759	18	49	2043	59	187	5802
Poshan Maah (01-30th Sep)	28	213	6579	13	326	10494	41	539	17073
Hindi Diwas (14th Sep.)	18	27	981	13	18	1250	31	45	2231
Mahila Kisan Diwas (15th Oct.)	24	25	1065	19	19	1074	43	44	2139
World Food Day (16th Oct.)	16	16	670	12	12	629	28	28	1299
Vigilance Awareness Week (27th Oct. to 2nd Nov.)	24	30	908	7	15	573	31	45	1481
World Science Day (10th Nov.)	9	9	256	6	6	222	15	15	478
National Education Day (11th Nov.)	11	11	526	6	9	348	17	20	874
Fisheries Day (21st Nov.)	11	11	424	2	2	24	13	13	446
National Constitution Day (26th Nov.)	24	28	615	11	11	365	35	39	980
World Soil Day (5th Dec.)	23	23	1264	20	20	1274	43	43	2538
Kisan Diwas (23rd Dec.)	34	34	2078	19	19	1206	53	53	3284
Any other day	9	16	721	3	7	758	12	23	1479

Interaction/Live Telecasted programme of Hon'ble Prime Minster/Agriculture Minister/Gov. of India

The Prime Minister of India, in collaboration with the Minister of Agriculture and Farmers Welfare, has actively participated in numerous nationwide interactions with farmers. These engagements were designed to directly address the concerns of the farming community and to share important government initiatives aimed at their welfare. To maximize outreach and ensure that vital information reached every corner of the agricultural sector, these sessions were broadcast live across the country. In total, 37 such programmes were telecasted live and directly relayed to farmers through all 68 KVKs within the zone. These efforts successfully engaged a cumulative audience of 29,190 farmers, showcasing a strong commitment to inclusive dialogue and support for the agricultural community (Table 150).

Fig. 143: Live telecast programme of hon'ble PM and Ag. Minister

Table 150: Interaction/live telecasted programmes of hon'ble prime minster/agriculture minister/ gov. of India

Date of Event	Name of Event	Total Participant
08-01-2024	Live telecast VBSY	1830
18-01-2024	Live webcast for VBSY and Launch of New Schemes by Hon'ble Prime Minister	511
28-02-2024	Live telecast Programme of Hon'ble PM for release of 16thInstalment of PM Kisan Samman Nidhi	1950
14-06-2024	PM KISAN Programme	183
18-06-2024	Live telecast Programme of Hon'ble PM for release of 17thInstalment of PM Kisan Samman Nidhi	7198
17-07-2024	ICAR foundation day	78
11-08-2024	Live telecast of Inaugural programme by ICAR New Delhi on release of 109 biofortified & climate resilient variety	2153
15-08-2024	Nationwide Launch of National Pest Surveillance System (NPSS) by Honorable Agriculture Minister	817
19-08-2024	ATARI Foundation day	48
20-09-2024	Video Conferencing from ICAR- NISA, Namkum, Ranchi, regarding Centenary Celebration of ICAR-NISA, Ranchi Inaugurated by Hon'ble President of India	132

Date of Event	Name of Event	Total Participant
23-09-2024	Climate Resilient Agriculture awareness cum interaction programme	1006
04-10-2024	PM KISAN Programme	78
05-10-2024	Live telecast of Release of 18th instalments of PM KISAN Sammelan & Launch of various initiatives related to the Agricultural and Animal Husbandry Sector by Hon'ble Prime Minister	1870
15-11-2024	PM Kisan Samman Nidhi	323
07-12-2024	Live telecast for viewing of First episode of Krishi Choupal at KVKs	230
08-12-2024	Kisan Chaupal	71
27-12-2024	Live tele cast for VBSY and launch of new scheme	153
31-12-2024	Viksit Bharat Sankalp Yatra	187
11-01-2025	Viksit Bharat Sankalp Yatra	491
01.05.2024	Vikshit Bharat	265
05.10.2024	Launch ofVarious initiatives related to the Agricultural and Animal Husbandry Sectorby Hon'ble Prime Minister	1742
06.06.2024	Kisan Samnn Nidhi	132
07.12.2024	Live viewing of first episode of Krishi Chaupal	495
08.01.2024	Live webcast for VBSY and Launch of New Schemes	665
10.06.2024	PMProgramme Live Telecast	80
15.01.2024	Ceremony of Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan	619
16.07.2024	96th ICAR Foundation and Technology Day programme	295
17.05.2024	Live telecast programme on Nano Urea and Nano DAP utilization	321
17.12.2024	Kisan Chaupal	63
18.01.2024	PM Programme on Viksit Bharat Sankalp Yatra	505
18.12.2024	PM Live Telecast Programme on Govt. Scheme for farming community	589
20.09.2024	Celebration of Century year of NISA, Ranchi	329

Agriculture Technology Information Centre (ATIC)

The Agricultural Technology Information Centre (ATIC), established under the National Agricultural Technology Project (NATP), functions as a vital "single window" system that connects agricultural research institutions with farmers, entrepreneurs, and extension workers. Operating through Indian Council of Agricultural Research (ICAR) institutes and State Agricultural Universities (SAUs), ATICs aim to disseminate agricultural technologies, provide expert farm advisory services, and facilitate feedback from the farming community to improve research and extension. Their core functions include distributing quality seeds, planting materials, and biofertilizers; sharing educational resources; organizing training and exposure visits; and offering diagnostic services for crop diseases. A notable example is the ATIC at Bihar Agricultural University (BAU), Sabour-launched in March 2024-which offers advisory services and hosts Kisan Pathshalas.

ICAR-ATARI, Zone IV oversees a total of three Agricultural Technology Information Centres (ATICs) located at Bihar Agricultural University (BAU), Sabour; Dr. Rajendra Prasad Central Agricultural University (DRPCAU), Pusa in Bihar; and Birsa Agricultural University (BAU), Ranchi in Jharkhand. These centres provide a range of technological products and expert technical guidance to farmers.

During the reporting period, the three ATICs recorded a total of 1,470 farmer visits, provided 2,872 instances of technology-related information, and delivered 3,092 technological products to farmers. The highest outreach was in soil and water testing, with 32,065 samples analyzed. This was followed by 16,482 animal diagnostic visits and treatments, and 9,670 individual treatment cases. In addition, 4,631 soil health cards were issued, and farmers were trained through KVKs and NGOs. Other services included 3,392 advisories through the Kisan Mobile Advisory system, 2,698 agro-veterinary advisory services, training programs for 1,043 farmers, 643 plant diagnostic cases, 590 additional farmer visits to ATICs, and 216 special extension programs.

Table 151: Details of ATIC

Particulars	Bihar Agricultural University, Sabour	DRPCAU, Samastipur	Birsa Agricultural University, Ranchi	Total
No. of ATIC	01	01	01	03
Number of Farmers visited to ATICs	565	25	880	1470
Technology information provided (No. of farmers)	565	927	1380	2872
Technology Products provided to No. of farmers	1400	Different products of Mushroom, Jaggery and Honey	1692	3092

Table 152: Details of others services by ATIC

Particulars	Bihar Agricultural University, Sabour	DRPCAU, Samastipur	Birsa Agricultural University, Ranchi	Total
Soil and water testing	380	25	31660	32065
Plant diagnostics	302	251	90	643
Details about the services to line departments	06	-	-	06
Others -No. of case treated	-	-	9670	9670
Animal diagnostic visits/treatment	-	62	16420	16482
Agro/Veterinary Advisory Services	-	26	2672	2698
Special Extension programme	-	210	06	216
Farmers visited ATIC	565	25	-	590
Mechanization planning advisory	-	-	18	18
Soil Health Cards issued & Farmers' training conducted in KVKs & NGOs	4593	-	38	4631
Technologies on freshwater aquaculture (hatchery management, grow out culture and post-harvesttechnology)				0
Kisan Call Centre Services	-	02	0	2
Kisan Mobile Advisory	2465	927	0	3392
ATIC Help Line Service		01	0	01
E-mail services (Nos.)	25	0	0	25
Training (No.)	29	0	03	32
Training (No. of Farmers)	933	0	110	1043
Literature (No. of documents)	15	0	07	22
Literature (No of beneficiaries)	7500	0	7200	14700

Technology Backstopping by Directors of Extension Education

The Directorate of Extension Education (DEE) plays a crucial role in supporting all 68 Krishi Vigyan Kendras (KVKs) under ICAR-ATARI, Zone IV by providing technological backstopping and facilitating inputs from various agricultural universities. In 2024, a total of 16 workshops and meetings were organized by the four DEEs of the State

Agricultural Universities (SAUs) within the zone. (Table153.)

The DEEs actively participated in a wide range of extension and technological activities, including 14,351 frontline demonstrations and 2,671 scientists' visits to farmers' fields. Additionally, 1,737 farmers visited DEE offices for technical support. Other notable initiatives included Kisan Gyan Vahan outreach programs (537 farmers), 420 on-farm trials, 299 radio talks, 190 field days, and 87 lectures delivered as resource persons. Further engagement included 67 television talks, 62 training programs, 53 farmer–scientist interactions, and 48 soil testing campaigns. Activities such as group discussions, interface meetings, field visits, and review meetings (39), World Soil Day events (39), soil health camps (35), and diagnostic visits (29) were also conducted. Other efforts comprised SAC meetings (26), animal health camps (24), exhibitions (18), Kisan Melas (4), and awareness campaigns. These collective actions significantly enhanced the reach and effectiveness of agricultural extension services in the region (Table 154).

Table 153: Details of no Workshop/ meeting organised by DEEs

SAUs/CAUs	Total No. of workshop/meeting organized by DEEs
Bihar Agricultural University, Sabour	9
DRPCAU, Samastipur	0
Birsa Agricultural University, Ranchi	6
BASU, Patna	1
Total	16

Table 154: Details of activities conducted by DEEs

Particulars	Bihar Agricultural University, Sabour	DRPCAU, Samastipur	Birsa Agricultural University, Ranchi	BASU, Patna	Total
SAC meetings	22	0 1	0 2	0 1	26
Field days		185	0 4	0 1	190
Workshops / seminars	0 7	0 3	0 2	0	12
Technology week	0	0	0 2	0 2	0 4
Training programmes	0 4	DEE office-43and KVKs-2355	0 3	12	62
Others pl. specify Group discussions, interface meetings, field visits, review meetings etc.	25	14	0	0	39
Kisan Mela	0 1	DEE office-1and KVKs-19	0 1	0 1	0 4
Inauguration of Administrative Building	0	0 1	0	0	0 1
Monitoring of interventions	12	0 8	0 9	0 1	30
Farm Development Programmes	0 4	0 2	0 2	0 1	0 9
Rabi and kharif campaign	0 3	0 2	0 3	0	0 8
World soil day programme	22	16	0 1	0	39
Animal health camp, awareness programme, campaigns, diagnostic visits etc.	0 8	0	0	0	0 8
Farmer Scientist Interaction	29	22	0 2	0	53
On Farm Trials	182	140	98	0	420
Front Line Demonstrations	10488	177	3686	0	14351

Particulars	Bihar Agricultural University, Sabour	DRPCAU, Samastipur	Birsa Agricultural University, Ranchi	BASU, Patna	Total
Kisan Goshties	10	208	0 6	0	224
Exhibition	0 4	0 7	0 1	0 6	18
Research -Exhibition Interface meeting	0 2	0	0 3	0	0 5
Special day celebration	0 8	0 6	0 6	0 1	21
Soil health camp	0 5	28	00 2	0	35
Animal Health Camp	0 5	0 9	0 4	6	24
Soil test Campaign	10	36	0 2	0 0	48
Scientists visit to farmer's field	17	2460	182	12	2671
No. of farmers visit to DEE	565	DEE office-825, KVKs-75849	190	157	1737
Diagnostics visit	15	DEE office-11, KVKs-1013	14	0	29
Group Meeting	0 4	0 6	0 1	0	11
Radio talk	262	21	0 9	0 7	299
Television talk	10	32	0 7	18	67
Newspaper Coverage	250	178	16	54	498
Lectured delivered as resource person	44	DEE office and KVKs-636	0 9	34	87
Farm Development Programmes	0 1	0 2	0	0	0 3
Others (Kisan Gyan Vahan) Place/No. of Farmers	211/14633	220/16298	0	106/12875	537

SUCCESS STORIES

JOURNEY FROM RURAL TO SUCCESSFUL HONEY ENTREPRENEUR

Personal information

Name of the farmer: Suman Devi
Date of birth: 18 March 1992
Education: 10th Pass
Farming experience/experience in enterprise: Over 5 years in beekeeping and honey value addition
Cell No./E-mail: 8002045108
Full address: W/o Satyendra Singh, Village: Kadmahiya, Post: Laxmipur Bhedihari, Block: Valmikinagar, District: West Champaran, Bihar – 845107
Professional membership: Associated with KVK Madhopur under the ARYA Project; recognized by district-level institutions.

Awards received

- Appreciated by Hon'ble Chief Minister of Bihar at a state-level exhibition
- Awarded by District Magistrate, KVK Madhopur and DAO, West Champaran
- Awarded by district administration/ Govt/Private society for successful entrepreneurship

Situation analysis / problem statement

Belonging to a rural background in Valmikinagar, Suman Devi had limited income-generating options. She wanted to contribute to her family's income and become self-reliant but lacked the technical knowledge and resources to start a viable business

Plan, implement and support / KVK intervention(s)

Under the ARYA project of KVK Madhopur, she was selected for specialized training in beekeeping and honey production. With additional support from the Department of Agriculture, she received comprehensive training in scientific beekeeping and technical guidance on effective hive management. She was also provided assistance in establishing her own beekeeping enterprise and was connected to both local and institutional markets, enabling her to grow her business and enhance her income.

Details of practices followed by the farmer

She established her own enterprise named "Rudra Natural Honey and Shop," where she maintains 110 bee boxes within a 550 square meter area. She follows scientific apiary management practices, including seasonal rotation, strict hygiene, and quality harvesting methods to ensure high standards. To enhance market appeal, she uses modern packaging and labeling techniques. Her products are sold through local markets, SSB canteens, and various online platforms, allowing her to reach a wide range of customers and expand her business effectively.

Results / output

Description	Value
Name of Enterprise	Rudra Natural Honey and Shop
Size of Enterprise	110 bee boxes (550 m² area)
Production per Season	2500 kg
Cost of Production	₹60,000
Gross Income	₹5,80,000
Net Income	₹5,20,000
Marketing Channels	Local markets, SSB canteen, online platforms

Impact / outcome

She has emerged as a symbol of rural women's empowerment in West Champaran, significantly improving the financial stability

of her household through her beekeeping enterprise. Her success has created widespread local awareness about the income-generating potential of beekeeping and has inspired many other women in the region to explore agri-based enterprises. Her achievements were further recognized when she was honoured by the Chief Minister of Bihar at a public exhibition, highlighting her as a role model for rural entrepreneurship.

Economic information

Paramcter	Details
Gross Income (Annual)	₹5,80,000
Net Income (Annual)	₹5,20,000
Cost-Benefit Ratio	1:9.6
Economic Impact	Significant livelihood generation from a low-investment model with high return potential

Lesson learned and future plans

Her journey demonstrates that with proper training and institutional support, rural women can be transformed into successful entrepreneurs. Building on her achievements, she now plans to expand her enterprise and diversify into value-added products such as honey-based soaps and herbal extracts. She also aims to train more women in her locality through Self-Help Groups (SHGs) and actively motivate others to pursue rural entrepreneurship, fostering economic independence and community development.

MUMBAI'S STITCHING INDUSTRY TO A THRIVING PIG-BASED INTEGRATED FARM

Personal information

Name of the farmer: Basant Kumar Ravi
Date of birth: 01/01/1991
Education : 5th Standard
Farming experience : 2 Years
Cell no./ e-mail : 9326121264
Full address: Village: Udalu, P.O. Patanga, Block: Mandu, District: Ramgarh, Jharkhand
Professional membership: Member of Self-Help Group
Awards received: Innovative Farmers Award by Birsa Agricultural University

Situation analysis / problem statement

Basant Kumar Ravi, a hardworking youth from Udalu village, Jharkhand, migrated to Mumbai in search of better opportunities. For nearly five years, he worked in a small garment factory, earning ₹20,000 per month through stitching and tailoring. However, when the COVID-19 pandemic struck, factories shut down, and like millions of migrant workers, Ravi faced unemployment. With no source of income, he was forced to return to his village in 2020. Determined to rebuild his life in his hometown, Ravi looked for alternative sources of livelihood. His turning point came when Krishi Vigyan Kendra, Ramgarh selected Udalu village under Scheduled Caste Sub Plan (SCSP) project. Through this initiative, he received two female and one male Jharsukh breed pigs, along with technical training in pig farming and integrated agriculture. With their support, he ventured into pig-based integrated farming, a decision that changed his life. Being from a Scheduled Caste background in a remote village of Ramgarh, Basant Kumar Ravi faced financial instability and limited livelihood opportunities. Traditional farming yielded low returns. With a strong will to improve his economic status, he looked towards animal husbandry, especially piggery, which is well-suited to the region and culturally accepted.

Plan, implement and support / KVK intervention(s)

Under the Scheduled Caste Sub Plan (SCSP), KVK Ramgarh provided comprehensive support to Basant to enhance his livelihood through pig farming. As part of the initiative, he received three Jharsukh breed pigs, including two females and one male. In addition, Basant was trained in scientific pig farming practices to ensure effective and sustainable management. The support also included vaccination and disease management services to maintain the health of the animals. Furthermore, assistance was extended in constructing pig sheds and feeding structures, creating a conducive environment for pig rearing.

Details of practices followed by the farmer

Scientific housing with proper ventilation is essential for maintaining the health and productivity of pigs. A balanced diet that includes locally available concentrate and green fodder ensures optimal growth and nutrition. Regular vaccination and deworming schedules help prevent disease outbreaks and maintain herd immunity. Cleanliness and effective waste management practices are crucial for hygiene and reducing the risk of infections. Additionally, timely breeding and proper piglet management contribute

significantly to improving reproductive efficiency and overall farm productivity.

Results / output

Three adult pigs, each weighing over one quintal, were sold at a favorable market price, generating good returns. Additionally, 13 piglets, each weighing around 25 kilograms, were sold, contributing further to the income. Moreover, 18 two-month-old piglets are now ready for sale or can be retained for further rearing, offering flexibility for continued farm growth or immediate revenue.

Economic impact of technology/ intervention

Mortality rates have significantly reduced due to regular vaccination, ensuring healthier livestock. Improved feed and better management practices have led to faster growth of the animals. Additionally, market linkage support provided by the Krishi Vigyan Kendra (KVK) has enabled the farmer to secure better prices, enhancing overall profitability.

Enterprise-wise economic details

Particulars	Quantity	Rate (□)	Total (□)
(A)Vegetable cultivation	0.5 acre	-	25,000.00
(B) Pig farming			
Sale of 3 adult pigs (>1 quintal)	3	12,000 each	36,000.00
Sale of 13 piglets (25 kg each)	13	3,500 each	45,500.00
18 piglets (2 months, rearing value)	18	Estimated Value: 2,000 each	36,000.00
Gross Income			□ 1,17,500
Cost of Inputs (feed, medicine, labour, etc.)			□ 45,000.00
Net Income			□ 72,500.00
Total Income (A+B)			□ 97,500.00
Cost -Benefit Ratio			1:2.8

Lessons learned and future plans

Basant Kumar Ravi now firmly believes that pig farming is not only a profitable venture but also a sustainable livelihood option for small and marginal farmers. Encouraged by his success, he plans to expand his operation by increasing the number of breeding sows to ten. He also aims to build a bio-secure unit equipped with a waste recycling system to enhance hygiene and environmental sustainability. Furthermore, he is committed to empowering others by training fellow Scheduled Caste (SC) youth in his village, promoting inclusive growth and self-reliance.

ENHANCING LIVELIHOOD THROUGH MUSHROOM CULTIVATION AND APICULTURE

Personal information

Name of the farmer: Smt. Nirmala Devi
Date of Birth: 01 January 1981
Education: 8th Class
Farming Experience/ Experience in enterprise: Mushroom production (3 years), Apiculture (1.5years)
Cell no. : 9693242782
Full address: Village:Matiharwa Done, Block: Ramnagar, West Champaran, Bihar
Professional membership: Nari Shakti group

Awards received

Multiple Master Trainer certificate conferred from Wild life trust of India, NABARD, Wild Life Institute of India, Seema Shashatra Bal, Brajina Foundation, Appreciation certificate by KVK Narkatiyaganj for Mushroom and Apiculture Entrepreneurship 2025.

Situation analysis / problem statement

In West Champaran district mushroom cultivation and apiculture emerge as viable solutions due to their low land requirement, potential for high returns, and adaptability to small-scale setup. However, entrepreneurship in the region is hampered by several constraints, including inadequate infrastructure, lack of funding, technical skill gaps, socio-cultural barriers, and limited access to organized markets. Specific to these ventures, mushroom cultivation faces issues like temperature fluctuations and pest attacks, while apiculture is challenged by honeybee colony health and environmental concerns.

Despite these obstacles, Nirmala Devi have shown commendable initiative to opt for both the ventures. Initially lacking scientific knowledge and practical skills, she connected with the Krishi Vigyan Kendra (KVK) at Narkatiyaganj and participated in vocational training on mushroom cultivation and apiculture. With continued technical supports and input assistance from KVK experts, she successfully established her own enterprise, which has since provided her with both economic stability and improved nutritional security.

Plan, implement and support/KVK intervention(s)

The team at Krishi Vigyan Kendra (KVK), Narkatiyaganj conducted an assessment to identify knowledge gaps in the implementation of integrated farming approaches within agriculture and allied sectors in the region. During this process, they came into contact with Smt. Nirmala Devi, who was primarily engaged in small-scale farming. Eager to enhance her livelihood and contribute to her family's income, Nirmala expressed a keen interest in learning about apiculture and mushroom cultivation—two promising components of integrated farming systems. The KVK team encouraged her participation in a Rural Youth Training Programme on "Bee Keeping and Mushroom Production" for practical skills and scientific knowledge. To further strengthen her capabilities, she has completed a specialized training programme on Scientific Beekeeping, organized by the National Botanical Research Institute (NBRI), Lucknow. Her dedication and proactive approach led to her selection under the Tribal Sub-Plan programme, through which she received honeybee boxes and other necessary inputs from the KVK team to initiate her apiculture venture.

Details of practices followed by the farmer

The farmer uses to following practices in case of different enterprises.

For mushroom production

Selection of mushroom type according to season, preparation of substrate for mushroom spawning, bag incubation, maintenance of bags, Harvesting and post-harvest handling.

For apiculture

Bee hive management, Site selection according to floral availability, Feeding management, Honey extraction, Seasonal management of boxes

Results/output

Through the adoption of improved agricultural practices and diversification of farm activities. She is successfully doing Oyster mushroom cultivation and runs 4 cycle of oyster mushroom comprising 50 bags per cycle which fetches an impressive gross income of around ₹144,400 annually. In mushroom sector, the economic gain per unit area in terms of gross returns, net returns and BCR are recorded Rs 1,44,000, Rs 1,10,000 and 4.23 respectively. By maintaining 10 honeybee boxes, she is able to produce approximately 250 kg of honey annually, contributing to both pollination and additional income. By selling honey @500 per kg she gains a gross amount of 100000 annually. The economic gain per unit area in terms of gross returns, net returns and BCR are recorded Rs 1,25,000, Rs 80,000 and 2.78 respectively. This integrated approach not only ensures better economic stability for the family but also showcases the potential of combining traditional farming with allied activities for sustainable rural livelihoods.

Impact/ Outcome

Nirmala's initiative in mushroom cultivation and apiculture that their family has experienced significant economic and social upliftment. By integrating mushroom farming and beekeeping, Nirmala has become a vital financial pillar of her household. Her work demonstrates how such low-input ventures can be sustainable and impactful in rural settings.

The spent mushroom waste is being used as manure and applied to crop fields. One of the notable outcomes of her success is the improvement in her family's standard of living. With the profits earned from selling mushrooms, Nirmala purchased a motorcycle, this investment not only increased their market reach but also enhanced household mobility and access to services.

In near future she wants to expand her enterprise. Currently she prepares around 60 mushroom bags at a time which she wants to expand up to 200 bags per cycle as per demand she also aims to scale up beekeeping with up to 50 honeybee boxes. She is exploring improved infrastructure and marketing strategies to support this growth. Her journey from a traditional farmer to an agri-entrepreneur has made her a source of inspiration in her locality. Several women, motivated by her success, have started mushroom cultivation themselves, fostering rural women empowerment and community development.

Economic information

Enterprise	Gross Income(annual)	Net Income	Cost -Benefit ratio	Economic Impact of technology/intervention (cost saving/ higher yield/etc.)
Mushroom	144000	110000	4.23	Higher yield and improving their income, livelihood and nutritional security and set-forth example for other women farmers of the district.
Apiculture	125000	80000	2.78	

SUSTAINABLE EARNING THROUGH IFS MODEL

Personal information

Name of the farmer: Rajesh Kumar Singh
Date of Birth: 23 June 1978
Education: Graduation
Farming experience/ experience in enterprise: 07 years
Full address: Vill: Gokhulpur, PO: Harnaut District :Nalanda, Bihar- 813210
Mobile No.: 9279355770
Professional membership: Member of FPO (Magaddh Farmer's producers Company)

Awards received

Innovative Farmer Award from Bihar Agricultural University (2024) Sabour, Bhagalpur

Situation analysis/problem statement

Rajesh Kumar Singh, a progressive farmer from Gokhulpur village in Nalanda district, faced persistent challenges due to the region's low-lying clay soil that often resulted in waterlogging and subsequent crop failures. With recurring losses and uncertainty in farming, he struggled to maintain a sustainable income for his family.

Plan, implement and support/KVK intervention

In search of a solution, Rajesh approached the Krishi Vigyan Kendra (KVK), which suggested transforming the waterlogged land into a productive unit through Integrated Farming System (IFS). A pond was excavated in the low-lying area, making it ideal for fish culture. The bunds around the pond were utilized by establishing an orchard and poultry unit, with additional space on the slopes dedicated to vegetable cultivation. This marked the beginning of a diversified and sustainable farming model on his 5-acre farm.

Details of Practices followed by the farmer

Enterprise	Area (acres)
Paddy	2.5
Mustard	0.5
Wheat	1.1
Chick pea	0.2
Lentil	0.2
Potato	0.5
Livestock (no.)	02
Poultry	Sonalika Poultry Breed
Farm machinery available:	Zero Tillage, Drip irrigation, Tractor

Adoption of climate-resilient and innovative technologies

Zero tillage (ZT)

Rajesh adopted zero tillage for sowing crops like paddy, wheat, and lentil, which significantly reduced cultivation costs and improved yields by 10-15%.

ZT + mulching in potato

By integrating zero tillage with straw mulching in potato cultivation, Rajesh reduced input costs and increased productivity-achieving 124 q/acre yield compared to 115 q/acre in the conventional ridge and furrow method.

Drip irrigation

Use of micro-irrigation techniques enhanced water use efficiency and boosted fruit and vegetable productivity.

Sonalika poultry breed

This dual-purpose poultry breed helped him cut feed costs and disease incidence while improving egg production and meat yield.

Practical utility of the innovation / adoption of technology

Water conservation

Drip irrigation and mulching led to significant water savings.

Cost reduction

Zero tillage eliminated expenses related to puddling, tillage, and ridge-making operations.

Resource efficiency

Integrated recycling of farm by-products led to better resource use and reduced waste.

Impact/ outcome

Rajesh's success story inspired widespread adoption in his village: Over 250 farmers in the region have now adopted zero tillage for paddy cultivation due to lower input costs and better efficiency. ZT + Mulching in potato has gained popularity, especially among farmers facing labor shortages. His integrated poultry-fish-vegetable model has become a blueprint for diversification and resource optimization in lowland areas. He has also generated regular employment for 4-5 local workers, contributing to rural livelihood improvement. Through innovation, adaptation, and guidance from the KVK, Rajesh Kumar Singh transformed adversity into opportunity. His Integrated Farming System model now provides a sustainable income, better resource utilization, and a resilient livelihood. Looking ahead, Rajesh plans to expand his enterprise further and aims to become a local employment generator and mentor for aspiring farmers in his district.

MAXIMIZING PULSE YIELD THROUGH RAISED BED PLANTING TECHNOLOGY

Personal information

Name of the farmer: Kunal Rai
Date of birth: 17 April 1984
Education: Intermediate
Farming experience/ experience in enterprise: 20 years
Cell no. : 8825177490
Full address: S/o- Mithilesh Kumar Rai, Vill: Barraipati, Block: Gopalganj, District: Gopalganj, Bihar
Awards received: Millionaire Farmer of India

Situation analysis/problem statement

Kunal Rai, a seasoned farmer from Barraipati village in Gopalganj district, has been engaged in pulse cultivation for two decades. Despite his rich experience, pulse yields remained sub-optimal due to traditional farming practices, poor soil health, and disease incidence, particularly Fusarium wilt. Recognizing the need for improvement, he approached the Krishi Vigyan Kendra (KVK) for a scientific solution to boost pulse productivity and profitability.

Plan, implement and support/KVK intervention(s):

To overcome the yield stagnation and improve profitability KVK team introduced, Trainings, technology demonstration, raised bed planting with Tractor operated raised bed planter, Secondary and micro nutrients application, high yielding variety, Wilt resistant variety, achieving maximum the raised bed planting technology combined with a suite of improved practices:

Details of practices followed by the farmer

Seed and Variety	Pigeon Pea and Rajendra Arhar-1
Seed rate and method	20 kg/ha and Raised bed planting
Seed treatment	Phosphate Solubilizing Bacteria (PSB), Rhizobium and Carbendazim @ 2gram/kg
Micro nutrients	Zinc 33% @18.0kg/ha and Sulphur 90 % @ 20 kg/ha
Herbicide	Pendimethalin 30% EC @2500 ml/ha
Insecticide	Chlorpyriphos50% + Cypermethrin 5% @ 625 ml/ha

Results/ output

The adoption of raised bed technology resulted in a substantial improvement in yield and income: The demonstration clearly indicated that raised bed planting combined with integrated nutrient and pest management can enhance productivity and profitability by more than 60%..

Specific Technology	Yield (q/ha)	Gross cost (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C ratio
Farmer practices	11.25	22350	74250	51900	3.3
Demonstration	16.5	24750	108900	84150	4.4
% Increase	46.66	10.7	46.67	62.14	33.3

Impact/ outcome

The success of Kunal Rai's model in pulse cultivation created a ripple effect in the surrounding farming community. Inspired by the results:

- Farmers from Barraipati and neighboring villages adopted the raised bed technology on over 30 hectares of farmland.
- This marks a horizontal expansion of 20 hectares, driven by peer learning and farmer-to-farmer dissemination.
- Many farmers have also started saving seeds from their own harvest to ensure varietal purity and cost reduction for future sowings.

- The raised beds have improved drainage, root health, and plant vigor, resulting in a sustainable solution to soil-borne diseases and moisture stress.

The journey of Kunal Rai is a testament to how scientific interventions and modern technology can revolutionize traditional farming. His success in maximizing pulse yield through raised bed planting has not only improved his economic condition but also set a benchmark for sustainable and climate-resilient pulse production in the region. Kunal now actively mentors fellow farmers and collaborates with KVK and local institutions to scale up the adoption of improved practices. His future goal is to establish a farmer-led seed bank and training center in the village to empower more farmers in pulse and cereal production.

HUMAN RESOURCE DEVELOPMENT

The institute of human resource development program aims to improve the technical knowledge, abilities and subject matter expertise of KVK staff members as well as the Institute itself. This will increase their efficiency in completing their duties and assist their professional growth. In accordance with their areas of expertise, the institute actively supports scientists and other staff members in pursuing advanced training and participating in subject-specific capacity building programs. Furthermore, scientists are urged to act as teachers or resource people, educating extension staff from ICAR Institutes, SAUs and state development agencies. A list of numerous conferences, workshops, meetings, and training sessions that were held to support skill development and human resource development initiatives is provided below.

Table 155: Details of HRD activities/ meeting organised by ICAR-ATARI, Zone-IV

S.No	Name of Coordinator	Name of Events	Date	Venue	No of participants
1	Dr. Anjani Kumar Dr. P. Bhadauria	Training programme on microbial waste management using vermicompost	01-02 Feb 2024	ICAR-ATARI Patna	110
2	Dr. Anjani Kumar Dr. Amrendra Kumar	Review Meeting on financial Expenditure 2023-24	09-10 Feb 2024	ICAR-ATARI Patna	68
3	Dr. Anjani Kumar Dr. Amrendra Kumar	National Review workshop of ARYA	22-23 Feb 2024	Bodhgaya Bihar	150
4	Dr. Anjani Kumar Dr. Amrendra Kumar	TDC-NICRA Review workshop and Hands on training	19-20 Mar 2024	ICAR-ATARI Patna	40
5	Dr. Anjani Kumar Dr. P. Bhadauria	Institute Research Committee Meeting (IRC)	17 May 2024	ICAR-ATARI Patna	07
6	Dr. Anjani Kumar Dr. D.V. Singh	Training on Oilseed & Pulses Production Technology	19 May 2024	KVK Ranchi	51
7	Dr. Anjani Kumar Dr. Md. Monobrullah Dr. Amrendra Kumar	Coordination Meeting with BAU Sabour	28 May 2024	ICAR-ATARI Patna	06
8	Dr. Anjani Kumar Dr. D.V. Singh Dr. Md. Monobrullah	Review meeting for CSS formation and promotion of FPOs	29 May 2024	ICAR-ATARI Patna	14
9	Dr. Anjani Kumar Dr. D.V. Singh	Convergence Platform meeting	30 May 2024	ICAR-ATARI Patna	33
10	Dr. Anjani Kumar Dr. D.V. Singh	OFT workshop cum training on Soil Science and Agronomy	28-29 May 2024	BAU Sabour Bhagalpur	78
11	Dr. Anjani Kumar Dr. Amrendra Kumar	OFT finalization workshop cum refresher training on Horticulture	06-07 Jun 2024	ICAR-ATARI Patna	56
12	Dr. Anjani Kumar Dr. Md. Monobrullah	OFT finalization workshop cum training on plant protection	14-15 Jun 2024	ICAR-ATARI Patna	45
13	Dr. Anjani Kumar Dr. P. Bhadauria	OFT finalization workshop cum training on Animal Science and Fisheries	27-28 Jun 2024	ICAR-ATARI Patna	37
14	Dr. Anjani Kumar Dr. Md. Monobrullah Dr. Amrendra Kumar Dr. D.V. Singh Dr. P. Bhadauria	Action plan and Review of collaborative project entitled "Zero hunger and Zero technology gap"	11 Jul 2024	ICAR-ATARI Patna	15
15	Dr. Anjani Kumar	Brain storming session on wetland ecosystem and livelihood security promotion in eastern India	19-20 Jul 2024	ICAR-ATARI Patna	24
16	Dr. Anjani Kumar Dr. D.V. Singh	Action plan workshop of SMS Home Science and Agriculture Extension	23-24 Jul 2024	ICAR-ATARI Patna	58
17	Dr. Anjani Kumar Dr. D.V. Singh Dr. T.S. Kapil	OFT cum training of Agriculture Engineering and others	25-26 Jul 2024	ICAR-ATARI Patna	52

S.No	Name of Coordinator	Name of Events	Date	Venue	No of participants
18	Dr. Anjani Kumar Dr. Md. Monobrullah Dr. Amrendra Kumar Dr. D.V. Singh Dr. P. Bhadauria	MDP Training programme for heads of KVKs	26 Jul 2024	ICAR-ATARI Patna	05
19	Dr. Anjani Kumar Dr. Md. Monobrullah	Educational field trip for 3rd year student of Patna Women's college	8-9 Aug 2024	ICAR-ATARI Patna	73
20	Dr. Anjani Kumar Dr. Md. Monobrullah Dr. Amrendra Kumar Dr. D.V. Singh Dr. P. Bhadauria Dr. T.S. Kapil	9th Foundation Day of ICAR-ATARI, Patna	19 Aug 2024	ICAR-ATARI Patna	127
21	Dr. Anjani Kumar Dr. Md. Monobrullah Dr. Amrendra Kumar Dr. D.V. Singh	Annual Zonal Review Workshop of KVK of Bihar and Jharkhand	29-31 Aug 2024	BAU Sabour	97
22	Dr. Anjani Kumar Dr. Md. Monobrullah	Participant during stakeholders' construction on Transforming Agriculture research. Entaining role of private sector	3 Sep 2024	ICAR-ATARI Patna	12
23	Dr. Anjani Kumar Dr Amrendra Kumar	Vigilance awareness workshop	25-26 Oct 2024	ICAR-ATARI Patna	38
24	Dr. Anjani Kumar Dr. D.V. Singh	Convergence platform meeting	11 Nov 2024	ICAR-ATARI Patna	32
25	Dr. Anjani Kumar	8th IMC Meeting	26 Nov 2024	ICAR-ATARI Patna	10
26	Dr. Anjani Kumar Dr. Md. Monobrullah Dr. Amrendra Kumar Dr. D.V. Singh Dr. P. Bhadauria	MDP Training programme for heads of KVKs	24-31 Dec 2024	ICAR-ATARI Patna	08

Table 156: List of ongoing project and schemes

S.No	Title of project/Programme	Nodal officers /PI
	Externally funded Projects	
1.	Attracting and Retaining Youth in Agriculture (ARYA)	Dr. Amrendra Kumar
2.	Climate Resilient Agriculture Technology Demonstration (NICRA-TDC)	Dr. Amrendra Kumar
3.	Cluster Frontline Demonstration (CFLD) on Oilseed	Dr. D.V. Singh
4.	Cluster Frontline Demonstration (CFLD) on Pulses	Dr. D.V. Singh
5.	Oilseed Model Village (OMV)	Dr. D.V. Singh
6.	Pulse Model Vil lage (PMV)	Dr. D.V. Singh
7.	CSISA -ICAR Collaborative Project Phase -III (CSISA)	Dr. D.V. Singh
8.	Seed Hub	Dr. D.V. Singh
9.	Agri -Drone Project	Dr. D.V. Singh
10.	Formation and Promotion of Farmer Producer Organization (FPO) by KVKs and ICAR institute	Dr. D.V. Singh
11.	The Out-scaling of Natural Farming through Krishi Vigyan Kendra	Dr. D.V. Singh
12.	Tribal Sub Plan (TSP)	Dr. Md. Monobrullah
13.	Scheduled Caste Sub Plan (SCSP)	Dr. Md. Monobrullah
14.	Farmer FIRST Programme (FFP)	Dr. Pragya Bhadauria
15.	New Extension M ethodology and Approaches (NEMA)	Dr. Pragya Bhadauria
16.	Microbial based Agricultural Waste Management using Vermicomposting under (SAP)	Dr. Pragya Bhadauria
17.	Nutri -Sensitive Agricultural Resources and Innovation (NARI)	Dr. Pragya Bhadauria

S.No	Title of project/Programme	Nodal officers /PI
	Institute Projects	
1.	Characterization of farming System Typologies of Zone IV Agroclimatic Conditions implemented Through KVKs	Dr. Amrendra Kumar
2.	Impact of ARYA on promotion of agri- preurship and alternative livelihoods in rural areas	Dr. D.V . Singh
3.	Evaluation of Vermicomposting Technology for Dairy Waste Management at Household Level	Dr. Pragya Bhadauria
5.	Design & Development of ATARI Access Management System and its Impact on the Organizational Performance	Dr. Pragya Bhadauria

Publication

In order to promote the dissemination of research and technology transfer through scientific and local languages through print media, scientists at ATARI and KVKs are actively encouraged to engage in publishing a wide range of materials which includes research papers, books, book chapters, technical bulletins, newsletters, popular articles, leaflets/pamphlets and DVD/CD resources. The purpose of this is to make valuable information accessible to researchers, extension workers, KVKs, SAUs, ICAR institutes, line departments, ATMA, NABARD, other agencies, farmers and other stakeholders. KVK personnels have contributed significantly to this area, with a total of 1207 publications. 46 books, 125 book chapters and 09 research papers are among them.

Details of Publications by ATARI Scientists during 2024

Research Paper

1. Chandre, G. M. J., Rana, K. R., Dubey, S. K., Meena, M. S., Raut, A. A., Pal, P. P., Bhaskaran, A., **Kumar, A.**, Bordoloi, R. and Rajesh, T. (2024). Drivers of Functioning or Discontinuation of Small-Scale Agri Entrepreneurship in Rural India, *International Journal of Small Business and Entrepreneurship Research*. 12 (2): 25-58.
2. Gupta Rohit, Lathwal Surendra S, Kerketta Shilpi, **Bhadauria Pragya** and Fahim Ahmad. (2024). Spectrum analysis of buffaloes acoustic signature for their individuality identification. *International Journal of Veterinary Sciences and Animal Husbandry*. 9(2): 231-237
3. **Monobrullah, Md.,** Raizada, A., Singh, D. K., Tamta, M., Kumar, U., Kumar, R., Das, B. and **Kumar, A.** (2024). Estimation of Economic Losses in Farming due to Climatic Aberrations in East Champaran, Bihar. *Economic Affairs*. 69(4): 1567-1572.
4. **Kumar, A., Kumar, A., Singh, D. V., Monobrullah, Md**., Kumari, P., **Kapil, T.**, Singh, R., Shekhar, D., Pankaj, P. K., Keshava and U.S. Gautam (2024). Assessment of Biofortified Wheat Varieties for Nutritional Security in Eastern India. *The Indian Journal of Dryland Agricultural Research and Development*. 39(1):39-45.
5. Patel, R. K., Srivastava, K., **Kumar, A.,** Purbey, S. K. and Lal, N. (2024). Productivity Improvement of Pond-Based Production System through Integration of Horti-Livestock-cum-pisciculture. *Indian Journal of Ecology*. 51(2): 333-338.
6. Ray, P. K., Bharti, P., Singh, R. N. and **Kumar, A.** (2024). Effects of frontline demonstrations on pea (var. Prakash) yield and economics in the Koshi zone of Bihar. *International Journal of Advanced Biotechnology and Research*. **8**(7): 474-476.
7. Singh, D. K., Kumar, A., Mukherjee, Kumar, A., Kumar, U., Kumar, R., **Monobrullah, Md**., Raman, R. K.,

Ramkewal, R. and Sarkar, S. (2024). Evaluation of potato based cropping sequence through on-farm demonstrations in Buxar, Bihar. *Potato Journal*. 50 (2): 189-195.

8. Yashveer Vinita, Nirala Ravikant, Sinha Kumar Ravi Ranjan, Kumari Sudha, Kumar Dhirendra and **Bhadauria Pragya.** (2024). Evaluation of Growth, Production and Reproduction Performance Traits of Dahlem Red and their Crosses with Native Breeds in the Agro Climatic Conditions of Bihar. *Progressive Research*. 19 (1): 31-36

Technical/Popular Articles

1. Malica, M. A., Patel, M., **Singh, D. V.**, Thamarai, k. and Rathour, T.P. 2024. The Power of Microgreens: A Nutritional Revolution. *New Era Agriculture Magazine.* **3**(6): 127-130. E-ISSN: 2583-5173.
2. Patel, M. and **Singh, D.V.** 2024. Role of Agricultural Technologies in Improving Nutritional Security. *New Era Agriculture Magazine*. **3**(7): 135-138. E-ISSN: 2583-5173.
3. Patel, M. and **Singh, D.V.** 2024. Balance Diet for Healthy Life. *Agri Article*. **4**(5): 216-223. E-ISSN: 2582-9882.
4. Chand, P. and **Singh, D.V.** 2024. Millet in India: Ancient Food for Healthy Life. *New Era Agriculture Magazine*. **3**(4): 9-11. E-ISSN: 2583-5173.
5. Chand, P. and **Singh, D.V.** 2024. Azolla: A wonder fern for feeding livestock. *New Era Agriculture Magazine*. **4**(9): 133-135. E-ISSN: 2583-5173.
6. **Singh, D.V.** and Patel, M. 2024. Role of ICT in Adaptation to Climate Change. *New Era Agriculture Magazine*. 3(5): 68-74. E-ISSN: 2583 5173.
7. **Singh, D.V**. and Patel, M. 2024. Revolutionizing Farming: The Role of Drones in Modern Agriculture. New Era Agriculture Magazine. 3(7): 79-84. E-ISSN: 2583-5173.
8. Kumar Dharmendra, **Bhadauria Pragya, Kumar Anjani**, Kumar Rajesh, Sohane R.K. 2024. Village based Round the Year Fodder Production Model for Small and Marginal Farmer of Bihar. Indian Farming.
9. Singh Vishakha, **Bhadauria Pragya**, Singh Ajeet, **Kumar Anjani** and Singh R.K. 2023. Millet Recipe Contest: A Community Engagement Model for Exploring the Millet Diversity in Jharkhand. Indian Farming.
10. Kumari Priyanka, **Kumar Amrendra, Kumar Anjani, Bhadauria Pragya** and Kumari Pushpa. 2024. Improved Agro-technique for Makhana cultivation. Indian Farming. 74(03):40-43.
11. सिंह अजीत कुमार, सिंह रवीन्द्र कुमार, dekj vruh] dekj vejUæ ,o Hknkfj;k çKk 2024 स्थानीय संसाधन आधारित जैविक खेती किसानो की आय दुगनी करने की एक सफल पहल खेती
12. कुमारी प्रियंका एवं ritfLouh dfiy 'kh"kr 2024 बागवानी फसलों के लिए पौध उत्पादन तकनीक के रूप में ऊतक संवर्धन उन्नत तकनीकी : आत्म निर्भर किसान ISBN 981-81-927632-3-0; पृष्ठ 174–75
13. dfiy ritfLouh] सिंह अरविन्द कुमार, कुमार आनंद, गंगवार अंशु, çKk Hknkfj;k ,o vruh dekj 2024,नएडीईपी कम्पोस्ट के माध्यम से कृषि ठोस अपशिष्ट का प्रबंधन खेती 76 (11): 61-64.
14. dfiy ritfLouh] सिंह अरविंद कुमार एवं vruh dekj- 2024 डिजिटल कृषि – भारतीय खेती का भविष्य पूर्वी किरण अंक 02, पृष्ठ 13–17
15. कुमार सूरज, सिंह कुमार अरविन्द, dfiy 'kh"kr ritfLouh एवं गंगवार अंशु 2024 बदलते मौसम के परिवेश में शून्य जुताई तकनीक से गेहूँ की खेती प्रसंस्करण प्रगति, अंक (1), पृष्ठ 81–85
16. सीमा यादव, शांतनु कुमार दुबे, राघवेंद्र सिंह एवं iKk Hknkfj;k 2024। गाभिन डेरी पशु एवं नवजात बछड़े का प्रबंधन "भारतीय कृषि प्रौद्योगिकी दर्पण" भारतीय कृषि अनुसंधान परिषद कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान अंचल–6

काहि कुची गुवाहाटी। 1 (1):26-30.

17. योगेंद्र सिंह जादौन, i:Kk Hknkfj ;k एवं अरविन्द कुमार ठाकुर 2024 । पशुपालकों के लिए बिहार सरकार की योजनाएं प्रशिक्षण मैनुअल वैज्ञानिक डेयरी प्रार्मिंग। 1Pp:52-58
18. i:Kk Hknkfj ;k] vrtuh dqekj एवं सीमा यादव 2024। वर्मीकम्पोस्टिंग के माध्यम से पशुधन अपशिष्ट प्रबंधन आईसीएआर–शीत जल मत्स्य अनुसंधान निदेशालय। हिम ज्योति। 1Pp:75-78
19. i:Kk Hknkfj ;k] अर्पणा, सतवीर सिंह एवं मुनीश कुमार ठाकुर–2024। बकरी पालनः प्रमुख प्रबंधन तकनीकें प्रसंकरण प्रगति अर्ध वार्षिक पत्रिका। अंक 8(1):86-92.
20. i:Kk Hknkfj ;k] योगेन्द्र सिंह जादौन एवं अरविन्द कुमार ठाकुर–2024 । बरसात के मौसम में पशुओं की देखभाल एवं प्रबंधन। प्रशिक्षण मैनुअल वैज्ञानिक डेयरी फार्मिंग। Pp:106-108.

Technical bulletins/Reports/Books

1. Singh, V.K., Pratibha, G., Prasad, J.V.N.S., Pankaj, P.K., **Amrendra Kumar, Anjani Kumar**, Prabhakar, M., Srinivas, I., Prasad, T.V., Rajbir Singh, Gautam U.S. and Chaudhari, S.K. (Editors) (2024). *Promising Climate Resilient Technologies for Bihar*. ICAR-Central Research Institute for Dryland Agriculture, Hyderabad. p113.
2. Singh, V.K., Pratibha, G., Prasad, J.V.N.S., Pankaj, P.K., Prabhakar, M., Rejani R., Prasad, T. V., **Anjani Kumar., Amrendra Kumar**., Rajbir Singh, Gautam U.S. and Chaudhari, S.K. (Editors) 2024. *Promising Climate Resilient Technologies for Jharkhand*. ICAR-Central Research Institute for Dryland Agriculture, Hyderabad. p100.
3. Kumar, A.; Kumar, R.; **Shirsat, T.K.;** Prasad, R.E. and **Kumar,A.** (2023). Annual Report of National Innovations on Climate Resilient Agriculture- TDC, ICAR-ATARI, Zone IV, Patna, India, pp 44.
4. Kumar, A.; Kumar, R.; **Shirsat, T.K.; Kumar, A., Monobrullah, M; Singh, D.V.,** Pankaj, P.K. and Prasad, R.E. (2024). Annual Report of National Innovations on Climate Resilient Agriculture- TDC, ICAR-ATARI, Zone IV, Patna, India, pp 68.
5. Gautam, U.S; Burman, R.R; Singh, R.K; Kumar, A.; **Kumar, A.; Monobrullah, Md.**; Keshav; **Singh, D.V. and Shirsat, T.K.** (2024). Annual Progress Report of Attracting and Retaining Youth in Agriculture 2023-24. ICAR-ATARI Patna, Division of Agriculture Extension, Indian Council of Agricultural Research, New Delhi. pp-126.
6. Sheoran Parvender, Rana Rajesh K, Murai Ashish Santosh, Mamgai Preeti, **Bhadauria Pragya** and Kumar Arvind. (2024). ICAR-ATARI At a Glace ICAR-Agricultural Technology. Zone-I, Ludhiana, Punjab. PP: 34.
7. vrtuh dqekj] i:Kk Hknkfj ;k] ek-ekukaykg ,o Mh- oh- flg&(2024) । संपादकीय मंडल, पूर्वी किरण। भा.कृ.अनु.प.–कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र–4, पटना।
8. i:Kk Hknkfj ;k संपादकीय सदस्य,कृषि प्रौद्योगिकी दर्पण (जुलाई–सितम्बर–2024) : भारतीय कृषि अनुसंधान परिषद कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान अंचल–6 काहि कुची गुवाहाटी।
9. अरविन्द कुमार सिंह, 'kh"kr rtfLouh dfiy इत्यादि, उन्नत तकनीकी आत्म निर्भर किसान (तृतीय संस्करण 2024.25), परमार पब्लिशर्स एंड डिस्ट्रीब्यूटर्स, धनबाद **(ISBN: 981-81-927632-3-0).**

Book Chapter

1. Chand P and **Singh D.V**. 2024. Biotic and abiotic stress management in agriculture. Advances in Agriculture Sciences. pp: 85-93. ISBN: 978-93-95847-59-9.

2. **Bhadauria Pragya.,** Nirala, R.K Jadoun, Y.S. and **Kumar Anjani**. 2024. Changing Prospective of Livestock Development through Krishi Vigyan Kendras. Recent Advances in Veterinary Sciences and Animal Husbandry. ICAR-Indian Veterinary Research Institute Regional Station, Palampur, H.P & National Agriculture Development Cooperative Ltd. Baramulla. pp: 218-227. ISBN: 978-93-91995-40-9.
3. **Bhadauria Pragya.,** Nirala R.K., Jadoun, Y.S. and **Kumar Anjani.** 2024. Role of Krishi Vigyan Kendra in fostering Dairy Entrepeurship at Grass root Level. Dairy Dynamics. Navigating New Frontiers. Bihar Animal Sciences University (BASU) Patna Sanjay Gandhi Institute of Dairy Technology (SGIDT) & National Agriculture Development Cooperative Ltd. Baramulla. pp:218-227. ISBN: 978-93-91995-40-9.
4. Jadoun Y.S., **Bhadauria Pragya**., Singh A and Kumar R. 2024. Entrepreneurial opportunities for rural youth through dairy-based enterprises. Dairy Dynamics. Navigating New Frontiers. Bihar Animal Sciences University (BASU) Patna Sanjay Gandhi Institute of Dairy Technology (SGIDT) & National Agriculture Development Cooperative Ltd. Baramulla. pp: 312-323. ISBN: 978-93-91995-40-9.
5. Jadoun Y.S. and **Bhadauria Pragya**. 2024. ICT Application in livestock farming. Recent Advances in Veterinary Sciences and Animal Husbandry. ICAR-Indian Veterinary Research Institute Regional Station, Palampur, H.P & National Agriculture Development Cooperative Ltd. Baramulla. pp: 218-227. ISBN: 978-93-91995-40-9.
6. Singh B., Singh A., Jadoun Y.S., **Bhadauria Pragya** and Kour G. 2024. Strategies for Sustainable Climate Smart Livestock Farming. Springer Adapting to Climate Change in Agriculture-Theories and Practices. Springer Nature. pp:341-359. ISBN 978-3-031-28141-9.

Presentation in workshops/ seminars/ symposia/ conferences

1. **Kumar, A., Monobrullah, Md.,** Somya; Kumari, P., **Tejawini K. S.** and **Kumar, A.** 2024. Assessment of Microbial consortia against wilting in Brinjal (*Solanaum melongena* L.). International Conference on Plant Protection in Horticulture Advance and Challenges. ICAR-IIHR, Bengaluru. Pp: 65.
2. **Monobrullah, Md.,** Tiwari, A. B., **Kumar, A.** and Jha, S.K. 2024. Location specific validation for management of red banded caterpillar (*Deanolis sublimblis*). International conference on plant protection in Horticulture Advance and Challenges. ICAR-IIHR, Bengaluru.
3. Kumar Dharmendra, **Bhadauria Pragya, Kumar Anjani,** Sohane R.K. and Kumar Pankaj. 2024. Enhancing Milk Production in Dairy Cattle through Effective Management of Combined Harvested Paddy Straw in 02 days National Conference on "Enhancing Farmer's Income by Livestock, Poultry and Aqua Farming through Sustainable and Eco-friendly Smart Technologies and Practices" organized by Bihar Veterinary College, BASU Patna.
4. **Bhadauria Pragya,** Aparna, Singh Rajbir, Sheoran Parvender and **Kumar Anjani.** 2024 Assessment of impact making livestock technologies and their adoption trends in north-western India in 02 days National Conference on "Enhancing Farmer's Income by Livestock, Poultry and Aqua Farming through Sustainable and Eco-friendly Smart Technologies and

Practices" organized by Bihar Veterinary College, BASU Patna.

5. **Bhadauria Pragya,** Azad Mandeep Singh, Lal Banarasi and **Kumar Anjani**. 2024. Socio-Economic Empowerment of Rural Women through Kadaknath Farming under Backyard System in National Conference on New Vistas in Harnessing Genetic Resources for Sustainable Animal Production at Bihar Veterinary College, Bihar Animal Sciences University, Patna-800014 during 21–22 November, 2024.

Table 157: Details of publications by KVKs scientists during 2024

Sr. No.	Item	Number
1	Research Paper	
	A. Research Paper	124
	B. Above NAAS rating 6 Journals	37
2	Review Paper	
	A. Research Paper	09
	B. In NAAS rated Journals	09
3	Seminar/ Conference Symposia Papers	80
4	Books	46
5	Bulletin	61
6	News Letter	49
7	Popular Articles	260
8	Book Chapter	125
9	Extension Pamphlets/ Literature	243
10	Technical Reports	157
11	Electronic Publication (CD/ DVD etc.)	07

AWARD AND RECOGNITION RECEIVED BY THE INSTITUTE

Table 158: Details of award and recognition of ATARI-ICAR, Zone-IV, Patna Scientists during 2024

Name of Scientists	Name of Award	Conferring Authority
Dr. D.V. Singh	Eminent Scientist Award-2024 for outstanding contribution and recognition in the field of Agricultural Extension	Agricultural & Environmental Technology Development Society (AETDS), U.S. Nagar, Uttarakhand, India
Dr. Md. Monobrullah	Honorary Fellow by Entomological Science Academy (ESA), Faculty of Agriculture	Sher-e-Kashmir University of Agricultural Sciences and Technology
Dr. Md. Monobrullah	Eminent Scientist Award-2024 for outstanding contribution and recognition in the field of Agricultural Entomology	Agricultural & Environmental Technology Development Society (AETDS), U.S. Nagar, Uttarakhand, India
Dr. Md. Monobrullah	Certificate of Appreciation as Coordinator in the organization of the National Seminar "Progressive Agriculture -Viksit Bharat: Preparedness for Eastern Region (PAVER-2025)"	ICAR Research Complex for Eastern Region, Patna in collaboration with Indian Society of Agronomy, BAU Chapter, Sabour held at ICAR-RCER, Patna
Dr. Pragya Bhadauria and Dr. Anjani Kumar	Best oral presentation Award for the paper entitled "*Enhancing Milk Production in Dairy Cattle through Effective Management of Combined Harvested Paddy Straw*" in National Conference on "Enhancing Farmer's Income by Livestock, Poultry and Aqua Farming through Sustainable and Eco-friendly Smart Technologies and Practices	Society for Promotion of Farm and Companion Animals, Bihar Veterinary College, BASU Patna.
Dr. Anjani Kumar, Dr. Amrendra Kumar and Dr. Pragya Bhadauria *et al.* as associate developer	Rural Agricntrcurship Incubation Centre (AIC) Model for Youth	Division of Agricultural Extension, Indian Council of Agricultural Research, New Delhi
Dr. Anjani Kumar, Pragya Bhadauria and Dr. Amrendra Kumar *et al.* as associate developer	Methodology for Revitalization technique and integrated seed availability approach for indigenous scented rice Bhutku and Tulsi Mukul to low land areas of Ranchi district for livelihood and nutrition security of tribal farmers	Division of Agricultural Extension, Indian Council of Agricultural Research, New Delhi
Dr. Anjani Kumar and Dr. Pragya Bhadauria *et al.* as associate developer	Waste to Wealth based Agriprcurship Model for Banana fiber	Division of Agricultural Extension, Indian Council of Agricultural Research, New Delhi
Dr. Anjani Kumar and Dr. Pragya Bhadauria *et al.* as associate developer	Impactful model for farmer FIRST Programme Implementation	Division of Agricultural Extension, Indian Council of Agricultural Research, New Delhi

AWARD AND RECOGNITION BY KVK SCIENTISTS

Table 159: Details of award and recognition of KVK Scientists

Name of KVK	Name of Award	Conferring Authority	Purpose / Achievement
Arwal	Appreciation	BAU, Sabour	Uploading Max. number of events on ICAR Portal during year 2023-24
	Stall Exhibition	BAU, Sabour	3rd Prize in Stall Exhibition at BAU Kisan Mela 2024
	Participation	DRPCAU, PUSA, Samastipur	Participation in Kisan Mela 2024 at KVK Piprakothi, East Champaran
Darbhanga	Best Exhibition Stall	KVK, Basaith Madhubani	1st Prize in Exhibition Stall
East Champaran	Best KVK Award	ICAR-ATARI, Zone -IV, Patna	Registration of maximum numbers of farmers in Kissan Sarthi Portal
Khagaria	1st Prize in Dr. RPCAU, Pusa	DRPCAU, PUSA, Samastipur	-
Lakhisarai	Best Stall	DAO Lakhisarai	For Stall in Yantrikaran Mela
Muzaffarpur II	Best Exhibition Award 2024	ATMA, Muzaffarpur	IFS model exhibition
	Best KVK Stall Exhibition Award 2024	ICAR-NRCL, Muzaffarpur	Organic vegetables (Okra, bottle gourd, mushroom, potato)
	Best KVK, Exhibition Award 2024	BASU, Patna	Natural farming model
Nalanda	2nd Prize on Best stall exhibition at BAU Sabour	BAU, Sabour	2nd prize in kisan mela stall exhibition at BAU Sabour
	Kisan Sarthi	BAU, Sabour	Outstanding contribution in kisan sarthi portal
Patna	1st Prize for Best Stall Exhibition in Kisan Mela organized by KVK Jamui	KVK, Jamui	-
	2nd Prize for Best Stall Exhibition in Kisan Mela organized by BAU, Sabour, Bhagalpur	BAU, Sabour	-
Rohtas	Revolving Fund Development and promoting frontline extension	ICAR-ATARI, Zone -IV, Patna	-
Saran	2nd best stall award	Govt. of Bihar	Recognized in State level Sonepur Mela, 2024
Bokaro	Best KVK Stall	ICAR – IARI, New Delhi	-
Dhanbad	First prize in Agro-tech Kisan Mela-2024	BAU, Ranchi	Best stall
Godda	2nd Award for stall depicting various technologies in Pusa Krishi Vigyan Mela 2024 at Simdega	ICAR – IARI, New Delhi	Depicting various technologies related to Agriculture & Allied Activities
	Award for Revolving Fund	ICAR-ATARI, Zone -IV, Patna	Award for Revolving Fund
	Award for NICRA Project	ICAR-ATARI, Zone -IV, Patna	Climate Resilient Agriculture
Gumla	Appreciation	ICAR-ATARI, Zone -IV, Patna	Entrepreneurship development in Rural youths through ARYA

AWARD AND RECOGNITIONS RECEIVED BY THE FARMERS

Table 160: Details of award and recognition by the farmers

Name of the Farmer	Name of the Award	District	Purpose / Achievement	Conferring Authority
Sri Manoranjan Kumar Singh	Appreciation Award	Arwal	Agriculture & Allied Sector	ICAR-RCER, Patna
Smt. Nagmani Devi	Innovative Farmer Award	Arwal	Innovative work in Agriculture & Allied Sector	BAU, Sabour, Bhagalpur
Mr. Vinay Patel	Progressive Farmer award (District)	Aurangabad	Good work in the field of IFS Model	BAU, Sabour, Bhagalpur
Smt. Bandana Kumari	Innovative Farmer Award	Banka	Dairy Farming	ICAR, New Delhi
Smt. Kumari Rakhi Mohan Sinha	Progressive farmer award	Banka	Poultry Farming	BAU, Sabour, Bhagalpur
Sri Abhimanyu Kumar Singh	Innovative Farmers Award	Bhojpur	-	
Sh. Jai Prakash Singh	Innovative farmer Award	Buxar	Innovation in agriculture	BAU, Sabour, Bhagalpur
Sh. Kamlesh Pandey	MFOI 2024 Appreciation Award	Buxar	Millionaire Farmer	Krishi Jagran, Delhi
Sri Dhirendra Kumar	Best Mango variety	Darbhanga	Best Mango variety farmer	DRPCAU, Pusa, Samastipur
Mr. Dheeraj Mishra	Progressive Farmer Award	East Champaran	Natural Farming	DRPCAU, Pusa, Samastipur
Mr. Rajesh Kr. Yadav	Progressive Farmer Award	East Champaran	Medicinal Plants	DRPCAU, Pusa, Samastipur
Mr. Ravindra Singh	Progressive Farmer Award	East Champaran	Papaya Grower	DRPCAU, Pusa, Samastipur
Zainab Begum	Progressive Farmer Award	East Champaran	Progressive farmer	DRPCAU, Pusa, Samastipur
Smt. Sanjeeta Sinha	Best farmer award	Gaya	-	BAU, Sabour, Bhagalpur
Sri Vijay Kumar	District Progressive Farmer	Gaya II	-	BAU, Sabour, Bhagalpur
Sh. Manish Tiwari	MFOI 2024 Appreciation Award	Gopalganj	Diversified farming	Mahindra & Mahindra
Smt. Rekha Kumari	Progressive Mushroom Grower Award	Gopalganj	Mushroom Cultivation	DMR Solan
Sri Dhanesh Kumar	Certificate of participation	Jehanabad	Outstanding performance in agriculture	ICAR-RCER, Patna
Sri Mohan Prasad Verma	Certificate of participation	Jehanabad	Outstanding performance in agriculture	ICAR-RCER, Patna
Sri Surendra Dubey	Innovation Award	Kaimur	Climate smart farming	BAU, Sabour, Bhagalpur
Sri Ramayan Singh	Innovation Award	Kaimur	Climate smart farming	BAU, Sabour, Bhagalpur
Sri Sanjay Prajapati	Innovation Award	Kaimur	Climate smart farming	BAU, Sabour, Bhagalpur
Mrs. Kumari Priti	Kisan Mela- 2024	Katihar	Value added products	BAU, Sabour, Bhagalpur
Mr. Anil Kumar	Innovative Farmers Award	Khagaria	-	-
Mr. Sikandar Singh	Innovative Farmers Award	Khagaria	-	-
Mr. Rajiv Kumar	Innovative Farmers Award	Khagaria	-	-
Smt. Jamni Krishna	Farmers Millionere Award	Kishanganj	Dragon Fruit cultivation	
Smt. Usha Devi	Best Farmer award	Lakhisarai	Innovative Farmer	BAU, Sabour, Bhagalpur
Mr. Rajesh Ranjan Kumar	MFOI 2024 Appreciation Award	Muzaffarpur	"District" Millionaire Farmer of India Award - 2024	Krishi Jagaran, New Delhi
Mr. Abhishek Ranjan	MFOI 2024 Appreciation Award	Muzaffarpur	"District" Millioniaire Farmer of India Award - 2024	Krishi Jagaran, New Delhi
Mr. Rakesh Kumar	Innovative Farmer	Muzaffarpur	Innovative Farmer in 24 Foundation day of ICAR Patna	ICAR-ATARI, Patna
Mr. Nand Kishore	Innovative Farmer	Muzaffarpur	Innovative Farmer in 24 Foundation Day of ICAR Patna	ICAR-ATARI, Patna
Mr. Sonu Nigam	IARI Innovative farmers award 2024	Muzaffarpur II	Organic farming	IARI, New Delhi
Mr. Kushal Kumar	Abhinav Kisan Puraskar 2024	Muzaffarpur II	IFS, natural farming, millets products	DRPCAU, Pusa, Samastipur
Mr. Ram Nanad Prasad	MFOI 2024 Appreciation Award	Muzaffarpur II	IFS, natural farming	Krishi Jagaran, New Delhi
Mr. Roshan Kumar	Billenium Award 2024	Muzaffarpur II	Oraganic farming & mushroom production	Krishi Jagaran, New Delhi
Mr. Gopal Sahi	Award 2024	Muzaffarpur II	Organic mango cultivation	Raj Bhawan, Patna
Mr. Suresh Kumar	Best Horticulture farmers-2024	Muzaffarpur II	Organic vegetables, flower cultivation, fruit cultivation	Raj Bhawan, Patna
Mr. Neelam Devi	Best innovative farmwomen award 2024	Muzaffarpur II	Mushroom cultivation	ATMA, Muzaffarpur
Sahanwaj Anjum	Best Goat farming award-2024	Muzaffarpur II	Scientific goat farming	DRPCAU, Pusa, Samastipur
Smt. Nitu Kumari	Best Progresive farmers award-2024	Muzaffarpur II	Organive vegetables cultivation	ATMA, Muzaffarpur
Mr. Ayush Kumar	Best Litchi Grower Award-2024	Muzaffarpur II	Best litchi farmers award	NRCL, Litchi
Mr. Raj Kishor Kushwaha	Innovative farmers Award 2024	Muzaffarpur II	Best Progresive farmers Award	ATMA, Muzaffarpur
Smt Suvidha Devi	Aam Utsav	Nalanda	Maximum diversity of mango in Nalanda Distt	Raj Bhawan, Patna
Sri Rajesh Kumar	Best innovative Farmer	Nalanda	High profitability through IFS model	BAU, Sabour, Bhagalpur
Mr. Satyam Kumar	Baghani mahotsav	Nalanda	Drumstick Honey	Gov. of Bihar
Mr. Satyam Kumar	Horticulture show	Nalanda	Bottle gourd	BAU, Sabour, Bhagalpur
Mr. Satyam Kumar	Horticulture show	Nalanda	Red Potato	BAU, Sabour, Bhagalpur
Mrs. Madhu Patel	Bihar Gaurav	Nalanda	Mushroom Spawn & Mushroom Value added product	Ministry of food processing industries

Name of the Farmer	Name of the Award	District	Purpose / Achievement	Conferring Authority
Mr. Alok Anand	Innovative Farmer Award	Nalanda	Protected cultivation	BAU, Sabour, Bhagalpur
Mr. Vineeta Kumar	Innovative Farmer Award	Nalanda	Mushroom Production	BAU, Sabour, Bhagalpur
Smt. Anita Kumari	Innovative Farmer Award	Nalanda	Mushroom Value added product	BAU, Sabour, Bhagalpur
Smt. Usha Devi	Innovative Farmer Award	Nalanda	Vegetable Cultivation	BAU, Sabour, Bhagalpur
Mr. Rahul Kumar	Innovative Farmers Award	Nawada	-	BAU, Sabour, Bhagalpur
Mr. Anand Murari	Best Farmers	Patna	Certificate	BAU, Sabour, Bhagalpur
Mr. Sujeet Kumar	Best Farmers	Patna	Certificate	ICAR-RCER, Patna
Mr. Pramanand Singh	Best Farmers of Mango Production	Patna	Certificate	Raj Bhawan, Patna
Mr. Vikramditya Upadhyay	Best Farmers of Mango Production	Patna	Certificate	Raj Bhawan, Patna
Mr. Deepak Kumar	Best Farmers of Mango Production	Patna	Certificate	Raj Bhawan, Patna
Mr. Harendra Kumar Singh	Best Farmers of Mango Production	Patna	Certificate	Raj Bhawan, Patna
Mr. Amarjeet Kumar Sinha	Best Farmers of Mango Production	Patna	Certificate	Raj Bhawan, Patna
Smt. Sangeeta Kumari	Best Women Farmers	Patna	Certificate	BAU, Sabour, Bhagalpur
Sri Amarjeet Kumar Sinha	Best Innovative Farmers	Patna	Certificate	BAU, Sabour, Bhagalpur
Sri Anand Murari	Best Farmers of Millets Production	Patna	Certificate	BAU, Sabour, Bhagalpur
Sri Arjun Singh	MFOI 2024 Appreciation Award	Rohtas	Certificate	ICAR, New Delhi
Sri Vijay Kumar Singh	MFOI 2024 Appreciation Award	Rohtas	Certificate	ICAR, New Delhi
Sri Prem chandra Patel	Best Farmer Award	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Dilip Kumar Singh	Innovative Farmer	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Arjun Singh	Innovative Farmer	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Sunil Kumar	Innovative Farmer	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Bhikhari Rai	Innovative Farmer	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Vijay Kumar Singh	Innovative Farmer	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Vijay Bahadur Singh	Innovative Farmer	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Premchandra Patel	Innovative Farmer	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Dhananjay Kumar Singh	Skill development	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Santosh Kumar Mali	Skill development	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Ashok Kumar	Navachari Krishak	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Deen Dayal Singh	PPV & FRA	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Nakul Singh	PPV & FRA	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Akash Kumar	PPV & FRA	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Adresh Kumar	PPV & FRA	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Kamladeo Rai	PPV & FRA	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Sri Pradeep kumar	PPV & FRA	Rohtas	Certificate	BAU, Sabour, Bhagalpur
Hazara Khatun	Progressive Farmers Award	Saharsa	Backyard Poultry	BAU, Sabour, Bhagalpur
Mr. Mahesh Prasad	MFOI 2024 Appreciation Award	Samastipur II	-	-
Smt. Sunita Ittrasa	Rajya Gaurav Puruskar	Saran	Adoption & Promotion of vertical farming	Gov. of Bihar
Mr. Pappu Thakur	Best Vegetable grower	Sitamarhi	-	KVK Piprakothi
Mr. Pappu Thakur	Protected cultivation	Sitamarhi	-	KVK Sitamarhi
Mr. Rajiv Lal Karn	Best FPO in District	Sitamarhi	-	KVK Sitamarhi
Smt. Priyanka Kumari	Mushroom production	Sitamarhi	-	KVK Sitamarhi
Mr. Randhair Kumar	MFOI 2024 Appreciation Award	Sitamarhi	-	Krishi jagran & Agriculture wanted
Mr. Randhir Kumar	Integrated System Farming	Sitamarhi	-	KVK Sitamarhi
Mr. Chandan Kumar	Integrated System Farming	Sitamarhi	-	KVK Sitamarhi
Sri Shiv Shankar Rai	Mushroom Production	Sitamarhi	-	KVK Sitamarhi
Smt. Rina Kumari	Vegetable Production	Sitamarhi	-	KVK Sitamarhi
Mr. Pankaj Pandey	Natural Farming	Sitamarhi	-	KVK Sitamarhi
Mr. Jamindar Singh	Millets Production	Sitamarhi	-	KVK Sitamarhi
Sri Shiv Prasad Sahani	Best Inland Fish Farmer	Siwan	-	-
Sri Shiv Prasad Sahani	Innovative Farmers	Siwan	-	-
Sri Munna Singh	Innovative Farmers	Siwan	-	-
Sri Dharampal Singh	Innovative Farmers	Siwan	-	-
Sri. Chandra Narayan Singh	District Kisan Award	Supaul	Crop diversification	BAU, Sabour, Bhagalpur
Sri Bhikari Mehta	MFOI 2024 Appreciation Award	Supaul	Vermicompost	Krishi Jagran Awards
Sri Amit Kumar	MFOI 2024 Appreciation Award	Supaul	Vermicompost	Krishi Jagran Awards
Sri Subodh Kumar	MFOI 2024 Appreciation Award	Vaishali	Vermicompost	Krishi Jagran Awards, MFOI, Green TV
Sri Bir Chandra Singh	MFOI 2024 Appreciation Award	Vaishali	Natural Farming	Krishi Jagran Awards, MFOI, Green TV
Sri Shankar Kishore Chaudhary	MFOI 2024 Appreciation Award	Vaishali	Oal	Krishi Jagran Awards, MFOI, Green TV
Mr. Ram Swarth Ray	MFOI 2024 Appreciation Award	Vaishali	Banana Production	Krishi Jagran Awards, MFOI, Green TV
Mr. Vijay Kumar Sah	MFOI 2024 Appreciation Award	Vaishali	Honey Production	Krishi Jagran Awards, MFOI, Green TV
Smt. Neelam Devi	MFOI 2024 Appreciation Award	Vaishali	Mushroom Production	Krishi Jagran Awards, MFOI, Green TV
Smt. Meena Kushwaha	MFOI 2024 Appreciation Award	Vaishali	Mushroom Value Addition	Krishi Jagran Awards, MFOI, Green TV

Name of the Farmer	Name of the Award	District	Purpose / Achievement	Conferring Authority
Sri. Prabhu Dayal Singh	MFOI 2024 Appreciation Award	Vaishali	Organic Farming	Krishi Jagran Awards, MFOI, Green TV
Mr. Sunil Kumar Suman	MFOI 2024 Appreciation Award	Vaishali	Banana Production and Value Addition	Krishi Jagran Awards, MFOI, Green TV
Mr. Rajeev Ranjan	MFOI 2024 Appreciation Award	Vaishali	Mushroom	Krishi Jagran Awards, MFOI, Green TV
Smt. Manorma Singh	MFOI 2024 Appreciation Award	Vaishali	Mushroom	Krishi Jagran Awards, MFOI, Green TV
Smt. Sangeeta Kumari	MFOI 2024 Appreciation Award	Vaishali	Mushroom Value Addition	Krishi Jagran Awards, MFOI, Green TV
Mr. Sanjeev Kumar	MFOI 2024 Appreciation Award	Vaishali	Cauliflower Seed Production	Krishi Jagran Awards, MFOI, Green TV
Sri. Raghav Saran Prasad	Best Farmer Award for cultivation of diversified variety of Mango	West Champaran	for cultivation of diversified variety of Mango	Raj Bhawan, Patna
Mr. Gokul Prasad Yadav	Certifiate of Excellence	Deoghar	Contribution in field of Natural Farming	BAU, Ranchi
Mr. Anshika Prasad Kushwaha	Certificate of Excellence	Deoghar	Contribution in field of Horticulture Production	BAU, Ranchi
Mr. Naresh Kumar Mahto	Best Innovative Farmer	Dhanbad	Spreading Low-Cost Vertical farming at District level as entrepreneur	BAU, Ranchi
Smt. Bmita Kumari	MFOI 2024 Appreciation Award	Dumka	-	Jagran News Paper
Sri Shivnath Kushwaha	Innovative Farmer award	Garwah	-	BAU, Ranchi
Sri Dinesh Singh	Progressive Farmer Award	Godda	Progressive Farmer Award for Climate Resilient Agriculture	BAU, Ranchi
Mr. Ram Munda	Agrotech Kisan Mela	Gumla	Pig farming	BAU, Ranchi
Mr. Ajay Mahali	Agrotech Kisan Mela	Gumla	Pig farming	BAU, Ranchi
Mrs. Sumitra Munda	Lakhpati Didi	Gumla	Commercial vegetable production	Vikas Bharti
Mrs. Basanti Devi	Lakhpati Didi	Gumla	Value addition	Vikas Bharti
Mrs. Mani Devi	Lakhpati Didi	Gumla	Integrated farming System	Vikas Bharti
Mrs. Phoolkumari Devi	Lakhpati Didi	Gumla	Commercial Poultry farming	Vikas Bharti
Mrs. Anupa Oraon	Lakhpati Didi	Gumla	Lac Cultivation	Vikas Bharti
Mrs. Parvati Devi	Lakhpati Didi	Gumla	Lac Cultivation	Vikas Bharti
Mrs. Shila Devi	Lakhpati Didi	Gumla	Vermicompost production	Vikas Bharti
Mrs. Rajmani Kujur	Lakhpati Didi	Gumla	Stiching	Vikas Bharti
Mr. Dileep Sharma	Excellent Farmer Award	Khunti	For micro irrigation system	BAU, Ranchi
Mrs. Sneh Lata Gudiya	Excellent Farmer Award	Khunti	For Lac Cultivation	BAU, Ranchi
Mr. Kapildeo Oraon	Agrotech Kisan Mela, BAU, Ranchi	Latehar	Integrated Farming System	BAU, Ranchi
Mrs. E Baje	Best Produce Exhibit	Lohardaga	Best Produce Exhibit	BAU, Ranchi
Mr. Basant Kumar Ravi	Progressive Farmers	Ramgarh	Commercial Pig farming	BAU, Ranchi
Smt. Sangita Devi	Progressive Farmers	Ramgarh	Protected Vegetable cultivation	BAU, Ranchi
Mr. Rachiya Mahto	Progressive Farmers	Ramgarh	Strawberry cultivation and IFS model	ICAR-RCER, Patna
Mr. Arun Mahto	Progressive Farmers	Ramgarh	Processing and Marketing Honey and Ghee	ICAR-RCER, Patna
Smt. Geeta Devi	Progressive Farmers	Ramgarh	Banana cultivation	ICAR-RCER, Patna
Mr. Kimnu Kumar	Progressive Farmers	Ramgarh	IFS	ICAR-RCER, Patna
Mr. Raj Ranjan Bedia	Progressive Farmers	Ramgarh	Orchard	ICAR-RCER, Patna
Mr. Ravi Kumar Mahto	Best Progressive Farmer	Ranchi	IFS	BAU, Ranchi
Mr. Somrai Mardi	Progressive farmers	Saraikela	Pig farming	BAU, Ranchi

OFFICE PERSONNEL

Sl. No.	Name	Designation
1.	Dr. Anjani Kumar	Director
2.	Dr. Md. Monobrullah	Principal Scientist (Entomology)
3.	Dr. Amrendra Kumar	Principal Scientist (Horticulture)
4.	Dr. D.V. Singh	Principal Scientist (Agril. Extension)
5.	Dr. Pragya Bhadauria	Senior Scientist (LPM)
6.	Dr. Tejaswini Kapil	SMS (Agril. Engineering)
Administration and Finance		
1.	Mr. R.V. Dwivedi	AAO
2.	Mr. Alok Kumar	AF & AO
3.	Mr. Om Prakash Singh	Assistant
4.	Mr. Sumit Kumar	Assistant
5.	Mr. Srikant Kumar	L.D.C
6	Mr. Vijay Kumar	L.D.C
Project Staff		
1.	Rabindra Kumar	SRF (NICRA)
2.	Sujeet Kumar	SRF (CFLD Pulses)
3.	Abhay Kumar	SRF (CFLD Oilseed)
4.	Somya	Young Professional II (ARYA)
5.	Shalu Kumari	Young Professional II (FFP)
6.	Priyanka Kumari	Young Professional II (NEMA)
7.	Vineet Singh	Young Professional II (CSISA)
8.	Manoj Kumar	Young Professional II (Institute)
9.	Atish Kumar	Young Professional I (Institute)
10.	Sanjeev Kumar	Young Professional I (ARYA)
11.	Suman	DEO (CFLD Oilseed)

DATA COMPILATION & ASSISTANCE

Mr. Prashant Kumar Sinha, KVK Arval
Mr. Akhilesh Kumar, KVK Patna
Mr. A.K. Vikas, KVK Katihar
Mr. Harendra Prasad Sharma, KVK Rohtas
Mr. Atish Kumar, ICAR-ATARI, Zone- IV, Patna
Dr. Pallavi Bharti, ICAR-ATARI, Zone- IV, Patna
Dr. Deepika, ICAR-ATARI, Zone- IV, Patna
Mr. Rabindra Kumar, ICAR-ATARI, Zone- IV, Patna
Mr. Sujeet Kumar, ICAR-ATARI, Zone- IV, Patna
Mrs. Somya, ICAR-ATARI, Zone- IV, Patna
Mrs. Priyanka Kumari, ICAR-ATARI, Zone- IV, Patna
Mr. Abhay Kumar, ICAR-ATARI, Zone- IV, Patna
Mrs. Shalu Kumari, ICAR-ATARI, Zone- IV, Patna
Mrs. Sanjeev Kumar, ICAR-ATARI, Zone- IV, Patna
Mrs. Suman, ICAR-ATARI, Zone- IV, Patna

Notes

हर कदम, हर डगर
किसानों का हमसफर
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