हर कदम, हर डगर
किसानों का हमसफर
भाकृअनुप कृषि अनुसंधान परिषद
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KVKs 1974-2024
कृषि विज्ञान केन्द्र
Krishi Vigyan Kendra
Serving Farmers

वार्षिक प्रतिवेदन
Annual Report
2024

ICAR-Agricultural Technology Application Research Institute, Zone-II
भाकृअनुप–कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र–II

(ISO 9001-2015)

Jodhpur-342 005, Rajasthan, India

जोधपुर 342 005, राजस्थान, भारत

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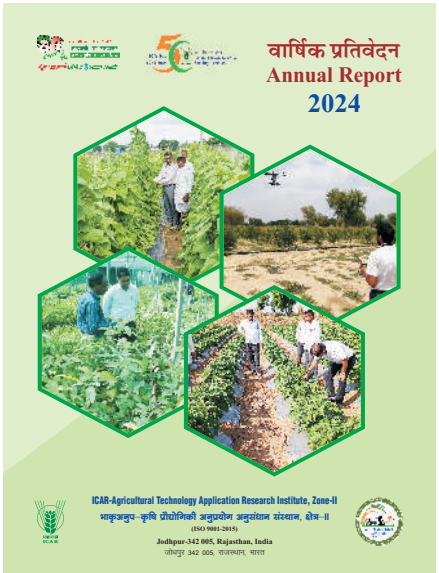

Cover photographs

- District Collector visiting Model Nursery at KVK, Dungarpur
- Mulching with plastic mulch at KVK, Tonk, Village Negardiya
- Drone demonstration at KVK, Gudamalini, Village Lunwa
- Scientist visit to farmer's field, KVK, Tonk, Village Sidhara

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PREFACE

National Agricultural Research Education Extension System (NAREES) has been pivotal in transforming the country from a food deficit to food surplus and net exporter during last 75 years post-independence. The year 2024 also witnessed celebration of Golden Jubilee Year of KVKs establishment. The first KVK was established in March 1974 at Puducherry. This was a structural change in NARS adding a district level 'farm science centre' under its ambit for frontline extensions. It happened to be significant policy decision for augmenting the process of dissemination of technologies and brought phenomenal change in research-extension continuum. The journey of KVKs since 1974 have been marked with several review and revisions throughout. They proved to be a proactive partner of research and development and contributed significantly in all agricultural revolutions of the country. This institutional mechanism of research-extension integration has been adopted in many developing countries. With 1 KVK in 1974, we have 731 KVKs in 2024. Today, one KVK exists in each rural district while larger districts have 2 KVKs.

The Indian Agriculture has moved steadily on the path of development. The foodgrain production has increased from 50.82 million tons in 1950-51 to 332.3 million tons in 2023-24. The foodgrain production has increased over 6 folds and other commodities have also witnessed the same level of increases. The projections for food demand in 2047 have put foodgrain demand of 415 million tons at a net national income growth of 7% and 437 million tons at net national income growth of 8%. Looking into the past growth trends in supply it is achievable. However, this has to be achieved with increasing pressure on land resources, escalating biotic and abiotic stress and depleting and deterioration natural resources. The demand for edible oils is projected to increase to 32 and 33 million tons and that of fruits to 233 million tons and of vegetables to 365 million tons. The demand of milk is projected at 527 million tons, meat 24, egg 21 million tons and fish 41 in 2047 at 7% growth in net national income. Thes projections emphasise much greater role of technologies and innovations to achieve the required growth in supply of the food items. Concurrently, Indian agricultural is also being reimagined with a new dimension of low chemical or no chemical use practices and protocols. The National Mission on Natural Farming launched with an outlay Rs. 2481 crore (Rs. 1584 crore Centre share and Rs.897 crore State's share). The National Mission on Natural Farming (NMNF) as a standalone Centrally Sponsored Scheme under the Ministry of Agriculture & Farmers' Welfare. The farmers will be encouraged to practise natural farming as a chemical free farming which involves local livestock integrated natural farming methods, diversified crop systems, etc. Natural farming follows local agro-ecological

principles rooted in local knowledge, location specific technologies and is evolved as per the local agro-ecology. The mission aims at promoting natural farming practices to enable providing safe and nutritious food to all. It is designed to support farmers to reduce input cost of cultivation and dependency to externally purchased inputs. Natural farming is supposed to maintain healthy soil ecosystems, promote biodiversity and encourage diverse cropping systems to enhance resilience as suitable to the local agroecology. It has been launched as a shift to scientifically revive and strengthen agriculture practices towards sustainability, climate resilience and healthy food for farmer families and consumers.

The NMNF is targeted to be implemented in 15,000 clusters in Gram Panchayats, which are willing, and reach to 1 crore farmers in next two years covering about 7.5 lakh ha area. Further, need-based 10,000 Bio-input Resource Centres (BRCs) will also be set-up to provide easy availability and accessibility to ready-to-use NF inputs for farmers.

NMNF envisages establishment of around 2000 NF Model Demonstration Farms at Krishi Vigyan Kendras (KVKs), Agricultural Universities (AUs) and farmers' fields. These models shall be supported by experienced and trained Farmer Master Trainers. The willing farmers will be trained at model demonstration farms about NF package of practices, preparation of NF inputs, etc. A massive awareness programme is also inbuilt under NMNF with the involvement of 30,000 Krishi Sakhis as community resource persons (CRPs). Natural Farming practices will also reduce health risks from exposure to fertilisers, pesticides, etc. and provide healthy & nutritious food for the farmers' family. Farmers will be provided with an easy simple certification system and dedicated common branding to provide access to market their natural farming produce. Real time geo-tagged & referenced monitoring of NMNF implementation shall be done through an online portal. The NMNF also envisaged convergence with existing schemes and support structures of the Governments, National and International Organisations.

The diverse and complex man-animal-plant-material-machine interface in agriculture calls for much integrated and coordinated actions at all levels of governance and executions. The KVKs by virtue of their presence at the districts have positioned themselves over last 50 years as the gateway of technology transfer much ahead of the normal extension system. Since their inception, the KVKs have contributed enormously in dissemination of green revolution technologies, mission-mode actions under Technology Mission on Oilseeds & Pulses (TMOP), export focus crops and varieties and good agricultural practices post economic liberalization, etc. The recent modifications in KVK's mandate to work as single window for knowledge resource for technologies and advisories is another dimension added to their work profile. This aligns well with nature of agriculture and its dynamism and the diversification in practices, protocols and policies moving away from input and production centric technologies to climate resilient, nature --based, market and demand driven income augmenting technologies and farming systems and deeper penetration of digital technologies. The KVKs need to position themselves to provide demand-driven services to the farmers for climate resilient and market smart farming. The structural changes and cyclical reforms in the KVKs shall help them to address the emerging challenges and harness the opportunities through a better delivery of the services and the technologies to the farmers, especially the disadvantaged and in the challenged geographies, who need it the most.

Place : Jodhpur
Date : June 5, 2025

(J.P. Mishra)

CONTENTS

भाकृअनुप
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हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

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कार्यकारी सारांश

भाकृअनुप–कृषि तकनीकी अनुप्रयोग अनुसंधान संस्थान, जोधपुर, अग्रणी प्रसार शिक्षण कार्यक्रमों के समन्वय और निगरानी के साथ–साथ कृषि विज्ञान केन्द्रों, भाकृअनुप के संस्थानों और कृषि विश्वविद्यालयों के माध्यम से कृषि प्रसार अनुसंधान, ज्ञान प्रबंधन को मजबूत करने और प्रौद्योगिकी अनुप्रयोग एवं अनुसंधान के लिए कार्यरत है। वर्ष 2024 के दौरान राजस्थान, हरियाणा और दिल्ली राज्यों में अटारी–केवीके–कृषि विश्वविद्यालय के माध्यम से कई नवीन पहल की गयी हैं।

प्रदर्शन एवं समस्या निवारण हेतु प्रौद्योगिकी परीक्षण

अग्रिम पंक्ति प्रसार और किसानों की समस्या के निवारण हेतु प्रौद्योगिकी का उनके खेतों पर परीक्षण, अग्रिम पंक्ति प्रसार प्रणाली की मुख्य गतिविधि है। वर्ष 2024 के दौरान, 10822 हेक्टेयर भूमि और 3506 पशुधन एवं मुर्गीपालन इकाइयों पर कुल 26131 अग्रिम पंक्ति प्रदर्शन आयोजित किए गए। इनमें दलहन पर 917 और तिलहन पर 6033 समूह अग्रिम पंक्ति प्रदर्शन शामिल थे। अग्रिम पंक्ति प्रदर्शनों के माध्यम से विभिन्न फसलों की 121 उच्च उपज देने वाली उन्नत किस्मों का प्रदर्शन किया गया। विविध परिस्थितियों में एकीकृत फसल प्रबंधन, एकीकृत कीट प्रबंधन, खरपतवार प्रबंधन, उन्नत और उच्च उपज देने वाली प्रजातियों, संकर किस्मों, पशुधन प्रबंधन, कृषि मशीनरी, कृषक परिवारों के पोषण और स्वास्थ्य पहलुओं आदि पर 219 प्रौद्योगिकियों के कुल 1518 प्रक्षेत्र परीक्षण आयोजित किए गए।

आदर्श तिलहन एवं दलहन ग्राम कार्यक्रम

वर्ष 2024 के दौरान, दो नई पहलों, ''आदर्श तिलहन ग्राम'' और ''आदर्श दलहन ग्राम'' परियोजनाओं की शुरुआत की गई ताकि चिन्हित गाँवों में पुरानी किस्मों को किसानों द्वारा पसंद की जाने वाली तिलहन एवं दलहन की उच्च उपज वाली किस्मों से बदला जा सके जिससे इन फसलों की उत्पादकता बढ़ाई जा सके। रबी 2024–25 के दौरान करौली जनपद में 2 गाँवों में 100 भागीदार किसानों के खेतों में 60 हेक्टेयर क्षेत्र में सरसों (RH–725) का प्रदर्शन किया गया। आदर्श दलहन ग्राम कार्यक्रम के अंतर्गत, राजस्थान के बारां जनपद के भोयल और कांकड़दा नामक गाँवों में दो समूहों में उड़द पर अग्रिम पंक्ति प्रदर्शन आयोजित किए गए।

कृषकों एवं महिला कृषकों का क्षमता विकास

भाकृअनुप–अटारी, जोन–2 के अन्तयात 3766 प्रशिक्षण पाठ्यक्रमों में 112278 पुरूष एवं महिला किसानों को प्रशिक्षण प्रदान किया। गैर–संस्थागत प्रशिक्षणों में किसानों की भागीदारी संस्थागत प्रशिक्षणों की तुलना में दुगुनी थी। अनुसूचित जनजाती के किसानों की भागीदारी संस्थागत प्रशिक्षणों में 45.3 प्रतिशत और गैर–संस्थागत प्रशिक्षणों में 41.5 प्रतिशत थी।

प्रसार सेवाएँ और सूचना

भाकृअनुप–अटारी, जोन–2 के केवीके ने 12321 परामर्श सेवाएँ प्रदान कीं और 1438 निदानात्मक दौरे किए। कुल 406 प्रक्षेत्र दिवस, 628 समूह चर्चाएँ, 851 किसान गोष्ठियाँ, 977 फिल्म शो, 45 किसान मेले, 204 प्रदर्शनियाँ, 3778 वैज्ञानिकों द्वारा किसानों के खेतों का दौरा, 608 विधि प्रदर्शन आयोजित किए, जिनमें 2380069 किसानों और 18716 प्रसार कर्मियों, इनपुट डीलरों, स्थानीय व्यापारियों और जन नेतृत्व की भागीदारी रही। इसके अतिरिक्त, 34663 अन्य प्रसार गतिविधियाँ जैसे प्रिंट और इलेक्ट्रॉनिक मीडिया में कवरेज, पशु स्वास्थ्य शिविर आदि आयोजित किए। कुल 32968 नमूनों का विश्लेषण किया गया, जिनमें 20127 मिट्टी के, 10558 पानी के और 2278 पौधों के नमूने शामिल थे, जो 3449 गाँवों और 27060 किसानों के खेतों से लिये गये थे।

फॉर्मर फर्स्ट कार्यक्रम

फॉर्मर फर्स्ट कार्यक्रम 2016 से क्रियान्वित है। यह अनुसंधान प्राथमिकताओं की पहचान करने, खेत पर प्रयोग करने और स्थायी, जलवायु–अनुकूल प्रथाओं को बढ़ावा देने में किसानों की भागीदारी पर जोर देता है। फॉर्मर फर्स्ट का अर्थ है किसानों का खेत, नवाचार, संसाधन, विज्ञान और प्रौद्योगिकी। यह कार्यक्रम भारतीय कृषि अनुसंधान परिषद् के संस्थान–काजरी जोधपुर, राष्ट्रीय डेयरी अनुसंधान संस्थान,

करनाल, केंद्रीय मृदा लवणता अनुसंधान संस्थान, करनाल, केंद्रीय भेड़ एवं ऊन अनुसंधान संस्थान, अविकानगर, भारतीय कृषि अनुसंधान संस्थान, नई दिल्ली केन्द्रीय भैंस अनुसंधान संस्थान, हिसार, चौधरी चरण सिंह हरियाणा कृषि विश्वविद्यालय, हिसार और कृषि विश्वविद्यालय, जोधपुर में क्रियान्वित किया जा रहा है। राष्ट्रीय कृषि नवोन्मेष परियोजना, भारतीय कृषि सांख्यिकी अनुसंधान संस्थान एवं कृषि में ज्ञान प्रबंधन निदेशालय (नई दिल्ली) और राष्ट्रीय कृषि अनुसंधान प्रबंधन अकादमी (हैदराबाद) को भी भागीदारों के रूप में सहायता प्रदान की गई।

कृषि में युवाओं को आकर्षित करना और बनाए रखना

कृषि में युवाओं को आकर्षित करना और बनाए रखना (आर्या) कार्यक्रम 2015–16 में शुरू किया गया था। जोन–2 के अंतर्गत, आर्या कार्यक्रम राजस्थान के 7 जिलों (अलवर, बांसवाड़ा, बाड़मेर, बूंदी, जयपुर, झालावाड़ और उदयपुर) और हरियाणा के 3 जिलों (अंबाला, गुरुग्राम और महेंद्रगढ़) में लागू किया गया है। 2024 के दौरान, कृषि विज्ञान केंद्र, अलवर–1 और बूंदी द्वारा प्रशिक्षण आयोजित किए गए, जिसमें 30 ग्रामीण युवाओं को प्रशिक्षित किया गया। प्रशिक्षण के अलावा, पारस्परिक ज्ञान प्राप्ति के लिए सफल उद्यमों के प्रदर्शन दौरे भी आयोजित किए गए। कुल 18 युवाओं ने अपना उद्यम स्थापित किया। आर्या के युवा प्रशिक्षुओं ने भारतीय खाद्य सुरक्षा और मानक प्राधिकरण के साथ 4 उत्पादों का सफलतापूर्वक पंजीकरण कराया है। युवाओं ने सात उद्यमशील इकाइयों का विस्तार भी किया।

फसल अवशेष प्रबंधन

हरियाणा और दिल्ली में फसल अवशेष प्रबंधन के बारे में किसानों को जागरूक करने और फसल अवशेषों के यथास्थान प्रबंधन हेतु प्रेरित करने के लिये 15 कृषि विज्ञान केंद्रों ने सूचना, शिक्षा और संचार गतिविधियों के तहत अवशेष समाहित करने वाली मशीनों के प्रदर्शन सहित विभिन्न कृषि–आधारित और गैर कृषि गतिविधियाँ आयोजित की जिनमें कुल 39570 किसान शामिल हुए। पारंपरिक बुवाई विधियों की तुलना में सीआरएम तकनीकों और उपकरणों के प्रयोग से गेहूँ की उपज में 5.50 प्रतिशत की वृद्धि हुई। पारंपरिक विधियों की तुलना में सीआरएम पद्धतियों के तहत खेती की लागत लगभग 2200 रुपये प्रति हेक्टेयर कम हुई।

किण्वित जैविक खाद (FOM)/तरल किण्वित जैविक खाद (LFOM)

रासायनिक उर्वरकों के विकल्प के रूप में किण्वित जैविक खाद (FOM)/तरल किण्वित जैविक खाद (LFOM) को लोकप्रिय बनाने और बढ़ावा देने के लिए भारतीय कृषि अनुसंधान परिषद और रसायन एवं उर्वरक मंत्रालय, भारत सरकार ने एक पहल शुरू की है। यह परियोजना राजस्थान और हरियाणा के 25 कृषि विज्ञान केंद्रों में क्रियान्वित की जा रही है। 2025 के दौरान, राजस्थान और हरियाणा में कुल 45 प्रशिक्षण कार्यक्रम आयोजित किए गए और 349 बेंचमार्क सर्वेक्षण किए गए इनमें 1,238 प्रतिभागियों ने भाग लिया। संपीडित बायोगैस (सीबीजी) इकाइयों के प्रतिनिधियों ने प्रशिक्षण सत्रों में 31 व्याख्यान दिए।

वंचित समूहों और चुनौतीपूर्ण क्षेत्रों पर ध्यान

जोन–2 के अंतर्गत, राजस्थान के 24 कृषि विज्ञान केंद्रों ने जनजातीय उप–योजना (TSP) और राजस्थान एवं हरियाणा के 15 कृषि विज्ञान केंद्रों ने अनुसूचित जाति उप–योजना (SCSP) लागू की। TSP के अंतर्गत, 5322 जनजातीय किसानों के खेतों पर उन्नत तकनीकों पर 11 कृषि परीक्षण और 3725 अंगिम पंक्ति प्रदर्शन आयोजित किए गए। इसी प्रकार, SCSP के अंतर्गत, 3708 अनुसूचित जाति किसानों के खेतों पर उन्नत तकनीकों पर 9 कृषि परीक्षण और 3967 अंगिम पंक्ति प्रदर्शन आयोजित किए गए। इन कार्यक्रमों से कुल 10450 अनुसूचित जनजाति और 57215 अनुसूचित जाति के किसान लाभान्वित हुए, जिनमें महिला किसान भी शामिल हैं।

जलवायु अनुकूल कृषि में राष्ट्रीय नवाचार (निकरा)

'जलवायु अनुकूल कृषि में राष्ट्रीय नवाचार' (निकरा) के अंतर्गत अटारी, जोधपुर के 18 कृषि विज्ञान केंद्रों द्वारा प्रौद्योगिकी प्रदर्शन आयोजित किये गये। प्राकृतिक संसाधन प्रबंधन, फसल उत्पादन, पशुधन एवं चारा उत्पादन, संस्थागत हस्तक्षेप मॉड्यूल के अंतर्गत नवाचार क्रियान्वित किए गए। 2024–25 के दौरान कुल 15953 किसानों को शामिल करते हुए और 5621 प्रदर्शन (एनआरएम–977, फसल उत्पादन–2416, पशुधन एवं चारा उत्पादन–817, कस्टम हायरिंग सहित संस्थागत

हस्तक्षेप–1411, क्षमता निर्माण–5192 और विस्तार गतिविधियाँ–5115) आयोजित किए गए। कस्टम हायरिंग सेंटरों ने निकरा गाँवों से 118820 रुपये का राजस्व अर्जित किया।

कौशल विकास

वर्ष 2024 के दौरान कृषि विज्ञान केंद्रों द्वारा ASCI के अतंर्गत कौशल विकास प्रशिक्षण आयोजित किए गए। कुल 7 कृषि विज्ञान केंद्रों ने 25 से 30 दिनों की अवधि वाले विभिन्न विशयों पर ASCI प्रशिक्षण आयोजित किए, जिनमें प्रत्येक प्रशिक्षण में 20 से 25 पंजीकृत प्रतिभागी शामिल थे। ये कार्यक्रम निम्नप्रकार थेः उद्यानपाल (अजमेर, पाली–1, हनुमानगढ़–1, झालावाड़ में), सीकर–1 में जैविक कृषक और करौली में मधुमक्खी पालक। तदनुसार, वर्ष के दौरान विभिन्न प्रशिक्षणों जैसे उद्यानपाल, जैविक कृषक और मधुमक्खी पालक के लिए कृषि विज्ञान केंद्रों को बजट आवंटित किया गया।

गुणवत्तापूर्ण बीज और रोपण सामग्री का उत्पादन और आपूर्ति

केवीके द्वारा गुणवत्तापूर्ण बीज और रोपण सामग्री के उत्पादन और आपूर्ति ने जिलों में उनकी ब्रांड वैल्यू स्थापित की है। 2024 के दौरान विभिन्न फसल समूहों के कुल 14900.5 क्विंटल बीजों का उत्पादन किया गया, जिसकी कीमत 685.2 लाख रुपये थी। 2024 के दौरान उत्पादित कुल बीज मात्रा में अनाज (68.8 प्रतिशत), दलहन (15.8 प्रतिशत) और तिलहन (9.2 प्रतिशत) की हिस्सेदारी रही। ये बीज 18759 किसानों को पूर्व–निर्धारित मूल्य पर उपलब्ध कराए गए। राजस्थान और हरियाणा के 10 केवीके में दलहन बीज केंद्र कार्यरत हैं। 2024 के दौरान कृषक सहभागिता से कुल 3366.97 क्विंटल दलहन बीजों का उत्पादन किया गया।

प्राकृतिक खेती

राजस्थान, हरियाणा और दिल्ली के कृषि विज्ञान केंद्रों द्वारा प्राकृतिक खेती पर प्रदर्शन और क्षमता विकास का आयोजन किया गया। राष्ट्रीय प्राकृतिक खेती मिशन (NMNF) के शुभारंभ के बाद, 'केवीके के माध्यम से प्राकृतिक खेती का विस्तार' नामक चल रही परियोजना की सभी गतिविधियों को NMNF के अंतर्गत शामिल कर लिया गया। 2024 के दौरान, क्रमशः 3609 और 1481 किसानों की भागीदारी से कुल 86 जागरूकता कार्यक्रम और 38 प्रशिक्षण कार्यक्रम आयोजित किए गए। 66.8 हेक्टेयर क्षेत्र में कुल 167 प्रदर्शन आयोजित किए गए। प्राकृतिक कृषि पद्धतियों और नवाचार के साथ उगाई जाने वाली प्रमुख फसलें हैंः राजस्थान में गेहूं, मोठ, बाजरा, सरसों, चना, हरा चना, जौ, जीरा, हल्दी, अश्वगंधा, आंवला, नींबू, टमाटर, बैंगन, भिंडी, मिर्च शामिल हैं। हरियाणा में चना, अलसी, गेहूँ, मक्का, धान, जौ, गन्ना, सरसों, मूंग, कपास, चना, आम, केला, बेर, शकरकंद, टमाटर, खीरा, प्याज, गाजर, मूली आदि और दिल्ली में गेहूँ, चना, लौकी आदि की खेती की गई। प्राकृतिक खेती के तरीकों से राजस्थान में चने की जल धारण क्षमता और मृदा स्वास्थ्य में सुधार हुआ और पारंपरिक रासायनिक उर्वरकों की तुलना में दिल्ली में गेहूँ की खेती की लागत में 11.8 प्रतिशत की कमी आई, जबकि राजस्थान में चने की खेती की लागत में 55 प्रतिशत की कमी आई। किसानों ने यह भी बताया कि प्राकृतिक खेती से प्राप्त उपज की कीमत सामान्य उपज की तुलना में अधिक है।

कृषि–ड्रोन

राजस्थान और हरियाणा में 25 संस्थानों (10 कृषि विज्ञान केंद्र, 11 भारतीय कृषि अनुसंधान परिषद संस्थान और 4 राज्य कृषि विश्वविद्यालय) को कुल 32 ड्रोन आवंटित किए गए। सभी 32 ड्रोन खरीद लिए गए हैं और 50 ड्रोन पायलटों को प्रशिक्षण दिया जा चुका है। कीटनाशकों आदि के प्रयोग पर कुल 4460 क्षेत्रीय प्रदर्शन 4320.4 हेक्टेयर क्षेत्र में आयोजित किए गए हैं, जिनमें 108448 किसानों ने भाग लिया। प्रमुख फसलों में धान, बाजरा, गेहूँ, सरसों, मूंगफली, कपास, मक्का, गन्ना, आलू आदि भाामिल है।

सूचना एवं संचार प्रौद्योगिकी (आईसीटी) का अनुप्रयोग

किसान सारथी (कृषि–सूचना संसाधन प्रणाली, स्वचालित प्रसारण और प्रौद्योगिकी हब इंटरफेस), भाकृअनुप और डिजिटल इंडिया कॉर्पोरेशन, इलेक्ट्रॉनिक्स और सूचना प्रौद्योगिकी मंत्रालय (MeitY), भारत सरकार की एक संयुक्त पहल है। अब तक जोन–2 के 66 केवीके किसान सारथी पोर्टल पर पंजीकृत हैं। मार्च 2024 में इसकी शुरुआत के बाद से, जोन–2 के केवीके द्वारा किसान सारथी पोर्टल पर कुल 385416 किसानों को पंजीकृत किया गया है।

सहयोग और अभिसरण

भाकृअनुप–अटारी और कृषि और किसान कल्याण विभाग; मत्स्य पालन; पशुपालन और डेयरी मंत्रालय; ग्रामीण विकास मंत्रालय; जलशक्ति मंत्रालय; नीति आयोग; खाद्य प्रसंस्करण उद्योग मंत्रालय; सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय; पृथ्वी विज्ञान मंत्रालय, पेट्रोलियम मंत्रालय, महिला एवं बाल विकास मंत्रालय, राष्ट्रीय कृषि विस्तार प्रबंधन संस्थान, अर्ध–शुष्क उष्णकटिबंधीय के लिए अंतर्राष्ट्रीय फसल अनुसंधान संस्थान, भारतीय किसान उर्वरक सहकारी समितियां, केंद्रीय मीठे पानी जलीय कृषि संस्थान, आकाशवाणी, राष्ट्रीय सहकारी विकास निगम के बीच संबंध और समन्वय स्थापित किये गये। भाकृअनुप–उद्योग सहयोग के अंतर्गत, भाकृअनुप–अटारी, बायर, धानुका, अमेजन, बाड़मेर लिग्नाइट कंपनी लिमिटेड, अल्ट्राटेक सीमेंट (बिड़ला समूह), शिव किसान किसान उत्पादक कंपनी, बालोतरा के साथ मिलकर काम कर रहा है। भाकृअनुप–अटारी, जोधपुर ने अनुसंधान, शिक्षा और विस्तार गतिविधियों को बढ़ावा देने के लिए कृषि विश्वविद्यालय, जोधपुर के साथ एक समझौता ज्ञापन पर भी हस्ताक्षर किए हैं।

राष्ट्रीय और क्षेत्रीय अभियान

राजस्थान, हरियाणा और दिल्ली की सभी ग्राम पंचायतों में 25 जनवरी 2024 तक विकसित भारत संकल्प यात्रा आयोजित की गई। कृषि विज्ञान केंद्रों ने मृदा स्वास्थ्य, जैविक खेती, प्राकृतिक खेती, सतत कृषि और जलवायु परिवर्तन के प्रति सजग प्रौद्योगिकियों के बारे में जागरूकता पैदा की। सभी 66 कृषि विज्ञान केंद्रों ने इस यात्रा में सक्रिय रूप से भाग लिया और कुल 3380 ग्राम पंचायतों के 2295582 किसानों को भाामिल करते हुए कार्यक्रम आयोजित किये।

शासकीय प्रबंधन

भाकृअनुप–अटारी, जोन–2 जोधपुर ने 10–12 सितंबर, 2024 को चौधरी चरण सिंह हरियाणा कृषि विश्वविद्यालय, हिसार, हरियाणा में वार्षिक क्षेत्रीय कार्यशाला का आयोजन किया। राजस्थान के कृषि विज्ञान केंद्रों के लिए 29–31 जनवरी, 2024 और हरियाणा व दिल्ली के कृषि विज्ञान केंद्रों के लिए 5–6 फरवरी, 2024 को आयोजित बैठकों में वर्ष 2024–25 की वार्षिक कार्य योजना को अंतिम रूप दिया गया। संस्थान प्रबंधन समिति की 15वीं बैठक 5 नवंबर, 2024 को आयोजित हुई। 2024 के दौरान परिक्रामी निधि के अंतर्गत कृषि विज्ञान केंद्रों द्वारा अर्जित शुद्ध राजस्व रुपये 34.64 करोड़ था। 2024 के दौरान कृषि विज्ञान केन्द्र योजना के अंतर्गत रुपये 9834.95 लाख का आवंटन किया गया जिसमें से रुपये 9722.13 लाख (98.88 प्रतिशत) का उपयोग कर लिया गया।

EXECUTIVE SUMMARY

The mandate of ICAR-ATARI is to conduct technology application research as well as coordination and monitoring of front-line extension, and strengthening of agricultural extension research and knowledge management. During 2024 several initiatives were taken through ICAR-ATARI-KVK-SAUs network in Zone-II comprising of Rajasthan, Haryana and Delhi.

Demonstration and problem solving technology testing

Frontline extension and farmers problem solving technology testing at their fields is the core activity of frontline extension system. During 2024, total 26131 FLDs covering 10822.0 ha farmers' fields and 3506 units of livestock and poultry were conducted. These included 917 cluster frontline demonstrations (CFLDs) on pulses and 6033 on oilseeds. Through FLDs 121 improved and high yielding varieties of various crops were demonstrated. Total 219 technologies on different thematic areas such as varietal evaluation, ICM, IPM, integrated weed management, livestock management, farm machineries, nutrition etc. were tested under diverse farming micro-situations through 1518 on-farm testing (OFTs).

Model Oilseeds and Pulses Village Programme

During 2024 two new initiatives 'model oilseeds village' and model pulses villages projects were initiated to saturate the identified villages with oilseeds and pulses farmers preferred HYVs in order to enhance the productivity of these crops. During Rabi 2024-25, Demonstration's on Mustard (RH-725) in 2 villages at 100 partner farmers' fields in covering area of 60 ha. implemented by 01 KVKs Karauli. Under Model Pulse Village Programme Frontline Demonstrations (FLDs) on black gram were conducted across two clusters located in two model pulse villages of Bhoyal and Kankarda in Baran district by KVK Baran, Rajasthan.

Capacity development of farmers and farm women

Total 112278 farmers including farm women were trained in 3766 training courses by KVKs of Zone-II. About twice the number of farmers participated in off-campus trainings as compared to on-campus trainings. The participation of SC/ST farmers in on-campus trainings was 45.3 % and 41.5% in off-campus trainings.

Extension Services and information

KVKs of Zone-II provided 12321 advisory services and conducted 1438 diagnostic visits. Total 406 field days, 628 group discussions, 851 kisan ghosthi, 977 film shows, 45 kisan mela, 204 exhibitions, 3778 scientists' visit to farmers field, 608 method demonstrations with the participation of 2380069 farmers and 18716 extension personnel, input dealers, local traders, and public leadership was also organised. In addition, 34663 other extension activities viz. coverage in print and electronic media, animal health camps, etc were performed. Total 32968 samples including 20127 of soil, 10558 of water and 2278 of plants were analysed which represented 3449 villages and 27060 farmers' fields.

Farmer FIRST Programme

Farmer FIRST Programme (FFP) has been implemented since 2016. It emphasizes farmer involvement in identifying research priorities, conducting on-field experiments, and promoting sustainable, climate-resilient practices. 'Farmer FIRST' stands for Farmers' Farm, Innovations, Resources, Science, and Technology. The FFP has been implemented at ICAR institutes - CAZRI Jodhpur, CSWRI Avikanagar, CSSRI Karnal, NDRI Karnal, IARI New

Delhi, CIRB Hisar and SAUs - CCSHAU Hisar and AU Jodhpur. The support was also provided by NAIP, IASRI, DKMA (New Delhi) and NAARM (Hyderabad) as consortium partners.

Attracting and Retaining Youth in Agriculture

Attracting and Retaining Youth in Agriculture (ARYA) was launched in 2015-16. Under Zone-II, ARYA has been implemented in 7 districts of Rajasthan (Alwar, Banswara, Barmer, Bundi, Jaipur, Jhalawar, and Udaipur) and 3 districts of Haryana (Ambala, Gurugram, and Mahendergarh). During 2024, training was organised by KVK, Alwar-I and Bundi in which 30 rural youth have been trained. In addition to training, exposure visits to the successful enterprises were organised for mutual learning. Total 18 youth have established their own enterprise. ARYA youth trainees have successfully registered 4 products with the FSSAI. Youth have extended the size of seven entrepreneurial units.

In-situ Management of Crop Residues

In Haryana and Delhi, the information, education and communication (IEC) activities for creating awareness about crop residue management and motivation of the farmers for in-situ management of crop residues, 15 KVKs carried out various on-farm and off-farm activities including demonstrations on residue incorporating machines. Total 39570 farmers were involved directly. The grain yield of wheat increased by 5.50% due to application of CRM techniques and tools as compared to conventional sowing methods. The cost of cultivation reduced by approximately Rs.2200/ha under CRM practices compared to conventional methods.

Fermented Organic Manure (FOM)/Liquid Fermented Organic Manure (LFOM)

In order to popularise Fermented Organic Manure (FOM)/Liquid Fermented Organic Manure (LFOM) as an alternative to chemical fertilizers, Indian Council of Agricultural Research (ICAR) and Ministry of Chemicals & Fertilizers, Government of India, have launched an initiative to popularise and promote use of FOM and Liquid FOM (LFOM). The project was implemented at 25 KVKs of Rajasthan and Haryana. During 2025, total 45 trainings were conducted and benchmark surveys of 349 respondents was conducted in Rajasthan and Haryana. These initiatives engaged 1,238 participants. Representatives from Compressed Biogas (CBG) units delivered 31 lectures in the training sessions.

Focus on disadvantaged groups and challenged area

Under Zone-II, 24 KVKs of Rajasthan implemented Tribal Sub-Plan (TSP) and 15 KVKs of Rajasthan and Haryana implemented Scheduled Caste Sub Plan (SCSP). Under TSP, 11 on-farm testing on improved technologies and 3725 FLDs at 5322 tribal farmers' fields were conducted. Similarly, under SCSP, 9 on-farm testing on improved technologies and 3967 FLDs at 3708 SC farmers' fields were conducted These programmes benefitted total 10450 ST and 57215 SC farmers including women farmers.

National Innovations in Climate Resilient Agriculture (NICRA)

The Technology Demonstration under, “National Innovations in Climate Resilient Agriculture” (NICRA) was carried out by 18 KVKs under ATARI, Jodhpur. The interventions under Natural Resource Management, Crop Production, Livestock & Fodder Production, Institutional Interventions modules were implemented. During 2024-25 total 15953 farmers were covered and 5621 demonstrations (NRM-977, crop production-2416, livestock and fodder production-817, institutional interventions including custom hiring -1411 capacity building-5192 and extension activities-5115 were conducted. The CHC earned a revenue of Rs 118820 from NICRA villages.

Skill Development

ASCI empowered skill development trainings have been conducted by KVKs during 2024. Total 7 KVKs organized ASCI trainings on different job roles with duration ranging from 25 to 30 days with registered participants varying from 20 to 25 per training. The job

roles were garden keeper (at Ajmer, Pali-I, Hanumangarh-I, Jhalawar), organic cultivator at Sikar-I and honey bee keeper at Karauli. Budget was allotted to KVKs accordingly for different job role trainings viz.; garden keeper, organic cultivator and honey bee keeper during the year under report.

Production and supply of quality seed and planting materials

The production and supply of quality seed and planting materials by the KVKs has established their brand value in the districts. Total 14900.5 qtls of seeds of various crop groups worth Rs. 685.2 lakh were produced during 2024. The cereals dominated the seed production with over 68.8% share of the total quantity of seed produced during 2024. Pulses (15.8%) and oilseeds (9.2%) were other important commodities. These seeds were provided to 18759 farmers on a pre-decided price. Seed hub of pulses is operational in 10 KVKs in Rajasthan and Haryana. Total 3366.97 qtls of seeds of pulses have been produced during 2024 in participatory mode.

Natural Farming

The demonstrations and capacity development on natural farming has been conducted by KVKs of Rajasthan, Haryana and Delhi. Subsequent to launch of National Mission on Natural Farming (NMNF), all the activities of ongoing project 'out scaling of natural farming through KVKs' were subsumed under NMNF. During 2024, total of 86 awareness programmes and 38 training programmes were conducted with the participation of 3609 and 1481 farmers, respectively. Total 167 demonstrations were conducted on 66.8 ha area. The crops on which natural farming practices and protocols were demonstrated included wheat, moth bean, pearl millet, mustard, chickpea, green gram, barley, cumin, turmeric, ashwagandha, aonla, citrus, tomato, brinjal, okra, chili, in Rajasthan; chickpea, linseed, wheat, maize, paddy, barley, sugarcane, mustard, moong, cotton, mango, banana, ber, sweet potato, tomato, cucurbits, onion, carrot, radish etc. in Haryana; and wheat, gram, bottle gourd, etc. in Delhi. The natural farming practices improved water holding capacity, soil health and reduced cost of cultivation by 11.8% in Chickpea in under Rajasthan conditions to 55% in wheat under Delhi conditions as compared to conventional chemical fertilizer application. The farmers also reported higher price of the produce obtained through natural farming as compared to normal produce.

Agri-Drone

In Rajasthan and Haryana, total 32 drones were assigned to 25 institutions (10 KVKs, 11 ICAR institutes, and 4 SAUs). All 32 drones have been purchased and 50 drone pilots have undergone trainings. Total 4460 field demonstrations on application of pesticides etc have been conducted covering 4320.4 ha area with the participation of 108448 farmers.

Application of ICT

Kisan SARATHI (System of Agri-information Resources Auto-transmission and Technology Hub Interface), a joint initiative of ICAR & Digital India Corporation, Ministry of Electronics and Information Technology (MeitY), Govt. of India. So far 66 KVKs of Zone-II are registered on Kisan Sarathi portal. Since its inception in March 2024 total 3689454 farmers have been registered by KVKs of Zone-II on Kisan SARATHI Portal.

Collaboration and Convergence

Close linkage and coordination have been maintained between ICAR-ATARI and Department of Agriculture & Farmers Welfare, Ministry of Fisheries, Animal Husbandry & Dairying, Ministry of Jalshakti, NITI Aayog, MoFPI MSME, IMD, WCD, MANAGE, ICRISAT, IFFCO, All India Radio, National Cooperative Development Corporation. Under ICAR-Industry interface, ICAR-ATARI is working with Bayer, Dhanuka, Amazon, Barmer Lignite Company Ltd, Ultra tech Cement (Birla Group), Shiv Kisan Farmers Producers Company, Balotara. ICAR-ATARI, Jodhpur

also entered into a MoU with Agricultural University, Jodhpur for the promotion of research, education and extension activities.

National and Regional Campaigns

Vikshit Bharat Sankalp Yatra was undertaken in all the Gram Panchayats of Rajasthan, Haryana and Delhi up to 25 January 2024. The KVKs created awareness about soil health, organic farming, natural farming, sustainable agriculture and climate resilient technologies. All the 66 KVKs took active part in VBSY and carried out campaigns covering total 3380 GPs and 2295582 farmers.

Governance

Annual Zonal Workshop was organized on 10-12, September, 2024 at CCSHAU, Hisar, Haryana. Annual work plan of KVKs for 2024-25 was finalised in the meetings held on 29-31 January, 2024 for KVKs of Rajasthan and 5-6 February, 2024 for KVKs of Haryana and Delhi. The 15th Institute Management Committee meetings was held on 5th November, 2024. The net revenue generated by the KVKs during 2024 under Revolving Fund was 34.64 crore. Against an allocation of Rs.9834.95 lakhs under KVK sheme during 2024 (RE stage), the utilization was 9722.13 lakhs (98.88%).

CHAPTER 1

ICAR-ATARI - AN INTRODUCTION

ICAR-Agricultural Technology Application Research Institute (ATARI)-Zone-II has been instituted in 2015 and is located at Jodhpur. The institute is covering 66 KVKs of Rajasthan, Haryana and Delhi for their fund and finance management, research and extension coordination and monitoring of various activities. The institute is functioning under the governance of Division of Agricultural Extension, Indian Council of Agricultural Research (ICAR), New Delhi.

1.1 Genesis of ICAR-ATARI

To monitor and coordinate Lab to Land Programme (LLP) launched in 1979, eight Zonal Coordinating were established in September, 1979. The Zonal Coordinating Units, Zone-VI consisting of KVKs of Rajasthan, Gujarat and UTs Daman & Diu and Dadra & Nagar Haveli was established at Ahmedabad in 1979. The ZCU was shifted to Jodhpur in September 1991. The zonal coordinating units were converted into a plan scheme with additional staff in 1986 and additional objective of monitoring other Transfer of Technology (ToT) project of ICAR i.e., Krishi Vigyan Kendra, Trainers Training Centre (TTC), National Demonstration Scheme (NDS), Operational Research Project (ORP), Scheduled Caste and Schedule Tribe Project and Special Project on Oilseeds. The Zonal Coordinating Units were elevated to Zonal Project Directorates and Zonal Coordinators redesignated as Zonal Project Directors with financial and administrative powers akin to other ICAR institutes in 2009. These Zonal Project Directorates were further elevated into ICAR-Agricultural Technology Application Research Institute (ATARI) in 2015. The Zone VI was also re-delineated as Zone-II with the addition of Haryana and Delhi replacing Gujarat, Daman & Diu and Dadra & Nagar Haveli.

Mandate of ATARI

- Coordination and monitoring of technology application and front-line extension programs.
- Strengthening of agricultural extension research and knowledge management

1.2 Organizational Structure of ICAR-ATARI

The organizational structure of ICAR-ATARI, Zone-II, Jodhpur and KVK functioning in Zone is depicted in Fig 1.1.

1.3 KVKs functioning under ICAR-ATARI, Jodhpur

Total of 66 KVKs are functioning under ICAR-ATARI, Jodhpur, 47 KVKs in Rajasthan, 18 KVKs in Haryana and one KVK in Delhi (Table 1.1). There have been 14 large districts in Rajasthan which have 2 KVKs. However, after reorganization of districts in Rajasthan, 17 new districts have been notified in 2023 and many of new districts are now unrepresented by KVKs. In Haryana, three new KVKs have been proposed in Nuh, Panchkula and Palwal which are under advance stage of approvals.

1.4 Farmers Registration on Kisan Sarathi

Kisan SARATHI (System of Agri-information Resources Auto-transmission and Technology Hub Interface) is joint initiative of Indian Council of Agricultural Research (ICAR) & Digital India Corporation, Ministry of Electronics and Information

Fig 1.1 Organizational structure of ICAR-ATARI, Zone-VI, Jodhpur

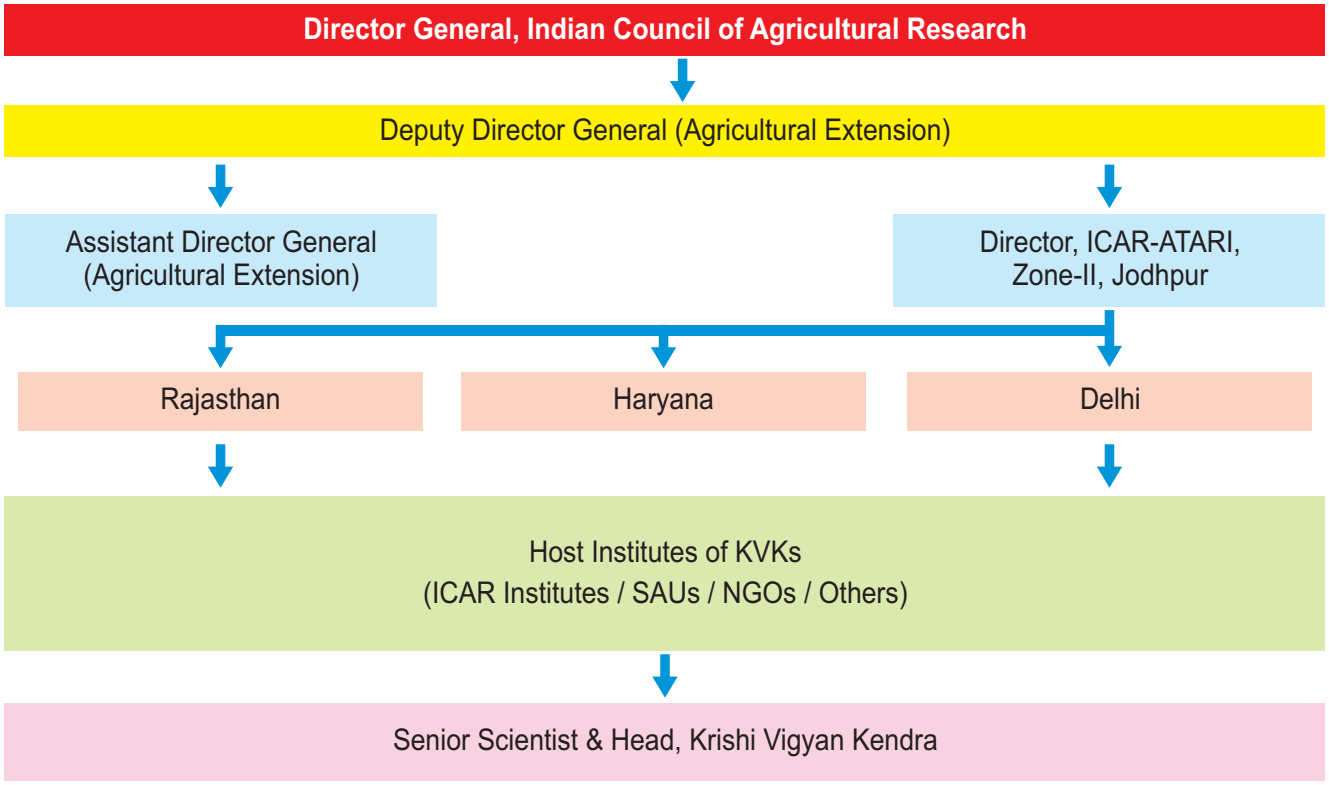


Table 1.1 KVKs functioning under ICAR-ATARI, Jodhpur

State	Number of KVKs	Host Organization-wise KVKs				Total
		SAUs	NGOs	ICAR	Educational Institutions/ Others	
Rajasthan	47	38	4	3	2	47
Haryana	18	14	2	2	0	18
Delhi	1	0	0	0	1	1
Total	**66**	**52**	**6**	**5**	**3**	**66**

Technology (MeitY), Govt. of India and is powered by Interactive Information Dissemination System (IIDS). It is an ICT based intelligent online platform for supporting agriculture at local niche with national perspective. It 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. All the 66 KVKs of Zone-II are registered on Kisan SARATHI portal. Each KVKs was initially given task of registering 5000 farmers of the district on Kisan SARATHI portal. Since its inception in March 2022 total 3689454 farmers under Zone-II have been registered by KVKs on Kisan SARATHI Portal. Through Kisan SARATHI KVKs can cater location specific problems of their farmers by using the IIDS system.

1.5 Workshops/Seminar/Symposium, etc Organized

Table 1.2 Workshops/Seminar/Symposium

S.No.	Name of the Event	Venue	Duration	Participants
A	**Themes of Meetings in Hybrid and Virtual Mode**			
1.	Meeting on 10.01.2024 at 10.00 AM in connection with Annual Action Plan-2024	ICAR-ATARI, Jodhpur	10.01.2024	66 KVKs of Zone-II
2.	Meeting for Financial related	ICAR-ATARI, Jodhpur	25.01.2024	66 KVKs of Zone-II
3.	Meeting for Data Analysis	ICAR-ATARI, Jodhpur	08.02.2024	66 KVKs of Zone-II
4.	Virtual Review Meeting on Natural Farming	ICAR-ATARI, Jodhpur	15.02.2024	Natural Farming implementing KVKs
5.	Review meeting of TSP-SP project	ICAR-ATARI, Jodhpur	16.02.2024	TSP-SP implementing KVKs
6.	DFI Data Analysis Review Meeting	ICAR-ATARI, Jodhpur	23.02.2024	All the 66 KVKs
7.	Meeting on Budget Utilization and Annual Progress Report-2023	ICAR-ATARI, Jodhpur	12.03.2024	66 KVKs of Zone-II
8.	Virtual Meeting on Natural Farming	ICAR-ATARI, Jodhpur	27.03.2024	Natural Farming implementing KVKs
9.	Meeting on NARI project	ICAR-ATARI, Jodhpur	08.04.2024	All the 66 KVKs
10.	Meeting on Financial Matters	ICAR-ATARI, Jodhpur	09.04.2024	All the 66 KVKs
11.	Meeting on NARI project	ICAR-ATARI, Jodhpur	15.04.2024	All the 66 KVKs
12.	Meeting on Agronomical issues in zone	ICAR-ATARI, Jodhpur	15.04.2024	All the 66 KVKs
13.	Meeting on Annual Action Plan 2024	ICAR-ATARI, Jodhpur	19.04.2024	All the 66 KVKs
14.	Meeting on discussion about status of celebration of 50 years of KVKs	ICAR-ATARI, Jodhpur	19.04.2024	All the 66 KVKs
15.	Meeting on discussion about status of celebration of 50 years of KVKs	ICAR-ATARI, Jodhpur	22.04.2024	All the 66 KVKs
16.	Meeting for Review of FPO Project on 25.04.2024 at 10.00 AM	ICAR-ATARI, Jodhpur	25.04.2024	FPO implementing KVKs
17.	Meeting on Skill development training under ASCI	ICAR-ATARI, Jodhpur	03.05.2024	ASCI implementing KVKs
18.	Online meeting Regarding conduction of DSR demonstrations.	ICAR-ATARI, Jodhpur	13.05.2024	KVKs of Haryana
19.	Meeting on Krishi Mapper app	ICAR-ATARI, Jodhpur	15.05.2024	All the 66 KVKs
20.	Annual Action Plan-2024	ICAR-ATARI, Jodhpur	15.05.2024	All the 66 KVKs
21.	Online meeting on Review of revisiting DFI farmers	ICAR-ATARI, Jodhpur	22.05.2024	All the 66 KVKs

S.No.	Name of the Event	Venue	Duration	Participants
22.	Online meeting regarding Staff information, seed production and FPO	ICAR-ATARI, Jodhpur	17.06.2024	All the 66 KVKs
23.	Discussion of SCSP Action plan 2024-25	ICAR-ATARI, Jodhpur	24.06.2024	SCSP implementing KVKs
24.	Discussion of TSP Action plan 2024 25	ICAR-ATARI, Jodhpur	24.06.2024	TSP implementing KVKs
25.	HRD Programme for SMSs (Animal Science) from KVKs	ICAR-ATARI, Jodhpur	27-28.06.2024	All the 66 KVKs
26.	Online meeting on 100 Days target	ICAR-ATARI, Jodhpur	08.07.2024	All the 66 KVKs
27.	Virtual Zonal Review Meeting under Farmer FIRST Programme	ICAR-ATARI, Jodhpur	29.07.2024	Farmer FIRST implementing KVKs and ICAR Insitutes
28.	Discussion for visit of ICAR Scientist	ICAR-ATARI, Jodhpur	05.08.2024	All the 66 KVKs
29.	Zoom meeting for registration and mapping of KVKs in PFMS	ICAR-ATARI, Jodhpur	07.08.2024	All the 66 KVKs
30.	Online meeting regarding ATARI, Jodhpur website	ICAR-ATARI, Jodhpur	12.08.2024	All the 66 KVKs
31.	100 Days target review meeting	ICAR-ATARI, Jodhpur	14.08.2024	All the 66 KVKs
32.	Meeting to discuss on FOM & LFOM and sulphur coated Urea on 16.08.2024 at 3.00 PM	ICAR-ATARI, Jodhpur	16.08.2024	FOM & LFOM implementing KVKs
33.	Online meeting for ATARI, Jodhpur Website Template	ICAR-ATARI, Jodhpur	27.08.2024	All the 66 KVKs
34.	100 Days target review meeting	ICAR-ATARI, Jodhpur	27.08.2024	All the 66 KVKs
35.	Online meeting with NGO KVKs of ATARI, Jodhpur	ICAR-ATARI, Jodhpur	29.08.2024	NGO KVKs
36.	100 Days target review meeting	ICAR-ATARI, Jodhpur	20.09.2024	All the 66 KVKs
37.	Meeting on 04.10.2024 at 3.00 PM to discuss on PM Kisan Nidhi programme	ICAR-ATARI, Jodhpur	04.10.2024	All the 66 KVKs
38.	Online meeting for office website	ICAR-ATARI, Jodhpur	07.10.2024	All the 66 KVKs
39.	ATARI-II Jodhpur Meeting on 56 (j)	ICAR-ATARI, Jodhpur	07.10.2024	Administrative staff of Division of Agricultural Extension and ATARI, Jodhpu
40.	Meeting with following KVKs having FPOs-CBBO at 11:00 AM on 08.10.2024	ICAR-ATARI, Jodhpur	08.10.2024	FPOs-CBBO implementing KVKs
41.	Meeting with Pomegranate and Cumin growing KVKs on 08.10.2024 at 12.00 PM	ICAR-ATARI, Jodhpur	08.10.2024	KVKs promoting pomegranate and cumin.
42.	Meeting of CRM	ICAR-ATARI, Jodhpur	10.10.2024	CRM implementing KVKs of Haryana
43.	CRM Zoom Meeting at 10:00 AM on 18.10.2024	ICAR-ATARI, Jodhpur	18.10.2024	CRM implementing KVKs of Haryana

S.No.	Name of the Event	Venue	Duration	Participants
44.	Zoom Meeting invitation - XVth IMC meeting of ICAR-ATARI-II, Jodhpur	ICAR-ATARI, Jodhpur	05.11.2024	IMC Member of ATARI, Jodhpur
45.	Approaches and methodologies on social-ecological sciences in achieving SDGs and aim of Vikshit Bharat	ICAR-ATARI, Jodhpur	05.11.2024	All the KVKs
46.	URGENT meeting with All KVKs of ICAR-ATARI, Jodhpur	ICAR-ATARI, Jodhpur	06.11.2024	66 KVKs of Zone-II
47.	Feedback of KVKs on status of fertilizers in Rajasthan, Haryana and Delhi	ICAR-ATARI, Jodhpur	07.11.2024	66 KVKs of Zone-II
48.	Discussion on Rabi Season Progress and Monthly Plans	ICAR-ATARI, Jodhpur	11.11.2024	66 KVKs of Zone-II
49.	Discussion on Model Pulses Village	ICAR-ATARI, Jodhpur	12.11.2024	KVKs implementing Model Pulses Village
50.	Discussion on F2F Project	ICAR-ATARI, Jodhpur	12.11.2024	KVKs implementing F2F project
51.	Online meeting for Oilseeds Project (CFLD & Model Village)	ICAR-ATARI, Jodhpur	25.11.2024	KVKs implementing CFLD oilseeds and Model Village programme
52.	Online Meeting for TSP Project	ICAR-ATARI, Jodhpur	26.11.2024	TSP implementing KVKs
53.	Implementation and promotion of millet technologies under TSP and SCSP program of the Global Centre of Excellence on millets (Shree Anna)	ICAR-ATARI, Jodhpur	03.12.2024	KVKs having TSP & SCSP programme
54.	Online meeting for PPV&FRA workshop	ICAR-ATARI, Jodhpur	17.12.2024	66 KVKs of Zone-II
55.	Online meeting regarding release of salary and allowances to the KVK employee	ICAR-ATARI, Jodhpur	23.12.2024	66 KVKs of Zone-II
56.	Annual Review Meeting of 'DAPSC'	ICAR-ATARI, Jodhpur	23.12.2024	DAPSC' implementing KVKs
B.	**Meetings in Physical Mode**			
1.	Annual Action Plan 2024 of KVKs of Rajasthan	ICAR-ATARI, Jodhpur	29-31 January, 2024	ICAR-ATARI Scientists, SMSs/Heads of 47 KVKs, DEEs of SAUs of Rajasthan
2.	Annual Action Plan 2024 of KVKs of Haryana and Delhi	CCSHAU, Hisar	5-6 February, 2024	ICAR-ATARI Scientists, SMSs/Heads of 19 KVKs, DEE of CCSHAU, Hisar, Haryana
3.	Annual Zonal Review Workshop of KVKs of Rajasthan, Haryana & Delhi	CCSHAU, Jodhpur	10-12, September, 2024	DDG(AE) and ADG(AE), ICAR, VC, CCSHAU, Hisar, DEEs of SAUs of Rajasthan and Haryana, ICAR-ATARI Scientists, SMSs/Heads of 66 KVKs
4.	Annual Review Meeting of DAPST inaugurated today	ICAR-ATARI, Zone-II, Jodhpur	6th December, 2024	24 KVKs, DEEs and staff of ICAR-ATARI, Jodhpur
5.	15th IMC Meeting in hybrid mode.	KVK, Udaipur-I	5th November, 2024	All IMC Members

Annual Action Plan Workshop-2024 for KVKs of Harana & Delhi at CCSHAU, Hisar

Annual Action Plan Workshop of KVKs of Rajasthan at ICAR-ATARI, Jodhpur

Annual Zonal Review Workshop of KVKs of Rajasthan, Haryana and Delhi at CCSHAU, Hisar

1.6 Budgetary Support

The funds received from different sources and utilized by ICAR-ATARI and KVKs of the Zone-II is summarized in the Table 1.3. The total funds received was Rs. 10377.62 lakh of which Rs. 10225.19-lakh was utilized.

Table 1.3 Fund allocation & utilization at ATARI, DEEs and KVKs for the year 2024-25 (Rs. lakhs)

S.No.	Scheme/projects	Allocation	Expenditure
1.	ATARI Jodhpur	424.45	424.45
2.	KVK	9372.15	9259.32
3.	NICRA (SBI Account+CSNA Account and TSA Account)	253.70	248.23
4.	ARYA	60.00	60.00
5.	Farmers First Programme	81.00	81.00
6.	Swachta Action Plan	19.00	19.00
7.	NEMA	2.70	2.70

S.No.	Scheme/projects	Allocation	Expenditure
8.	ICAR Bayer Crop Science Collaboration	0.98	0.98
9.	PM Kisan 17 th and 19 th instalment 2024-25	39.31	39.31
10.	Global CoE TSP 2024-25	30.00	30
11.	Global CoE SCSP 2024-25	27.52	27.52
12.	Kisan Sarathi 2.0 2024-25	2.50	1.43
13.	CFLD-Pulses 2024-25 CSNA	8.29	7.88
14.	CFLD-Pulse Model Village 2024-25 CSNA	2.76	0.59
15.	CFLD-Oilseed 2024-25 CSNA	8.02	7.77
16.	CFLD-Oilseed Model Village 2024-25 CSNA	1.51	1.27
17.	FOM/LFOM 2024-25 CSNA	5.52	2.82
18.	Crop Residue Component 2024-25 CSNA	38.21	10.92
	Total	**10377.62**	**10225.19**

1.7 Staff strength at ICAR-ATARI, Jodhpur

The sanctioned staff strength of ATARI, Zone-II, Jodhpur is 18, out of which 11 are filled up (Table 1.4) and the scientific, technical, administrative, finance and other staff in place are presented in Table 1.5.

Table 1.4 Staff strength at ICAR-ATARI, Jodhpur as on 31.12.2024

S.No.	Post/Designation	Sanctioned	Filled	Vacant
1.	Director	1	1	0
2.	Principal Scientist	1	1	0
3.	Senior Scientist (Livestock Production & Management)	1	1	0
4.	Senior Scientist (Agricultural Economics)	1	0	1
5.	Senior Scientist (Vegetable Science)	1	0	1
6.	Scientist (Agricultural Extension)	1	1	0
7.	Scientist (Agronomy)	1	1	0
8.	Senior Technical Officer (Computer)	1	1	0
9.	Assistant Finance & Accounts Officer	1	1	0
10.	Assistant Administrative Officer	1	0	1
12.	Assistant	2	1	1
13.	Private Secretary	1	0	1
14.	Senior Clerk	1	1	0
15.	Junior Clerk	2	1	1
16.	Driver	1	1	0
17.	Skill Support Staff	1	0	1
	Total	18	11	7

Table 1.5 Staff Position existing on 31.12.2024

Category	Name of staff	Designation
Director	Dr. Jai Prakash Mishra	Director
Scientific	Dr. P. P. Rohilla	Principal Scientist (LPM)
	Dr. B. L. Jangid	Principal Scientist (Agril. Extn.)
	Dr. M. S. Meena	Principal Scientist (Agril. Extn.)
	Dr. H. N. Meena	Principal Scientist (Agronomy)
Technical	Sh. P. K. Satapathy	Chief Technical Officer
	Sr. Ram Niwas	Driver
Administrative	Sh. Prakash Vimal	Assistant Finance & Accounts Officer
	Sh. Rajendra Benda	Assistant
	Sh. Mukesh Tripathi	UDC
	Smt. Nishtha	LDC

1.9 Staff strength at KVKs

Total sanctioned position in 66 KVKs is 1056 against which 530 are in position as on 31.12.2024 which included 38 Sr Scientist & Head and 221 subject matter specialists. About 48.1% positions are still vacant for which attempts have been initiated by SAUs to fill the posts. The details are presented in Table 1.6.

Table 1.6 Summary of KVK staff position

Category	Rajasthan			Haryana			Delhi			Total		
	S	F	V	S	F	V	S	F	V	S	F	V
Senior Scientist & Head	47	24	23	18	13	5	1	1	0	66	38	28
Subject Matter Specialist	282	122	160	108	84	24	6	5	1	396	211	185
Programme Assistant	141	73	68	54	27	27	3	3	0	198	103	95
Administrative	94	40	54	36	14	22	2	2	0	132	56	76
Auxiliary	94	49	45	36	19	17	2	2	0	132	70	62
Supporting	94	43	51	36	9	27	2	0	2	132	52	80
Total	**752**	**351**	**401**	**288**	**166**	**122**	**16**	**13**	**3**	**1056**	**530**	**526**

1.10 Transfers/Promotions/Joining, etc.

- Dr. Raj Narayan, Principal Scientist (Veg. Sc.) was promoted to the post of Head (H&F) Division, ICAR-CIARI, Port Blair, A&N Islands and was relieved from ICAR-ATARI, Jodhpur w.e.f.,

1.11 Nodal Officers of various ongoing Projects/Programmes

S.No.	Nodal Officer	Projects
1.	Dr. P.P. Rohilla	National Innovations in Climate Resilient Agriculture, Farmer Producer Organization, Farmers FIRST, Skill Development
2.	Dr. B.L. Jangid	Cluster Frontline Demonstration-Pulses, Model Pulses Village, Tribal Sub-Plan/Scheduled Caste Sub-Plan
3.	Dr. H.N. Meena	Crop Residue Management, Natural Farming, District Agro-Met Unit, Agri-Drone, Fermented Organic Manure (FOM)/Liquid FOM
4.	Dr. M.S. Meena	Attracting and Retaining Youth in Agriculture, Cluster Frontline Demonstration-Oilseeds/Oilseed Model Village, Kisan SARATHI
6.	Sh. P.K. Satapathy	Swachchta Action Plan

CHAPTER 2

RAINFALL PATTERN AND DROUGHT MITIGATION

Under ICAR-ATARI, Zone II climatologically diverse 3 States viz., Rajasthan, Haryana and Delhi are included. A large geographies in Rajasthan are rainfed and water stressed whereas the lion's share of Haryana and Delhi are irrigated, albeit the groundwater depletion in all the three states is alarming. The quality of water is also not very good. During monsoon, crops and livestock often experience water stress due to long dry spells. The frequent dry spells and droughts are not uncommon in Rajasthan and the same is now being experienced in Haryana in recent years. Figure 2.1 depicts the normal and actual rainfall in Rajasthan, Haryana and Delhi during 2024. The figure indicates normal rainfall in Rajasthan, Haryana and Delhi with positive deviation towards surplus by 71.00 % in West Rajasthan, 47.00% in East Rajasthan and -3.00 % in Haryana and Delhi.

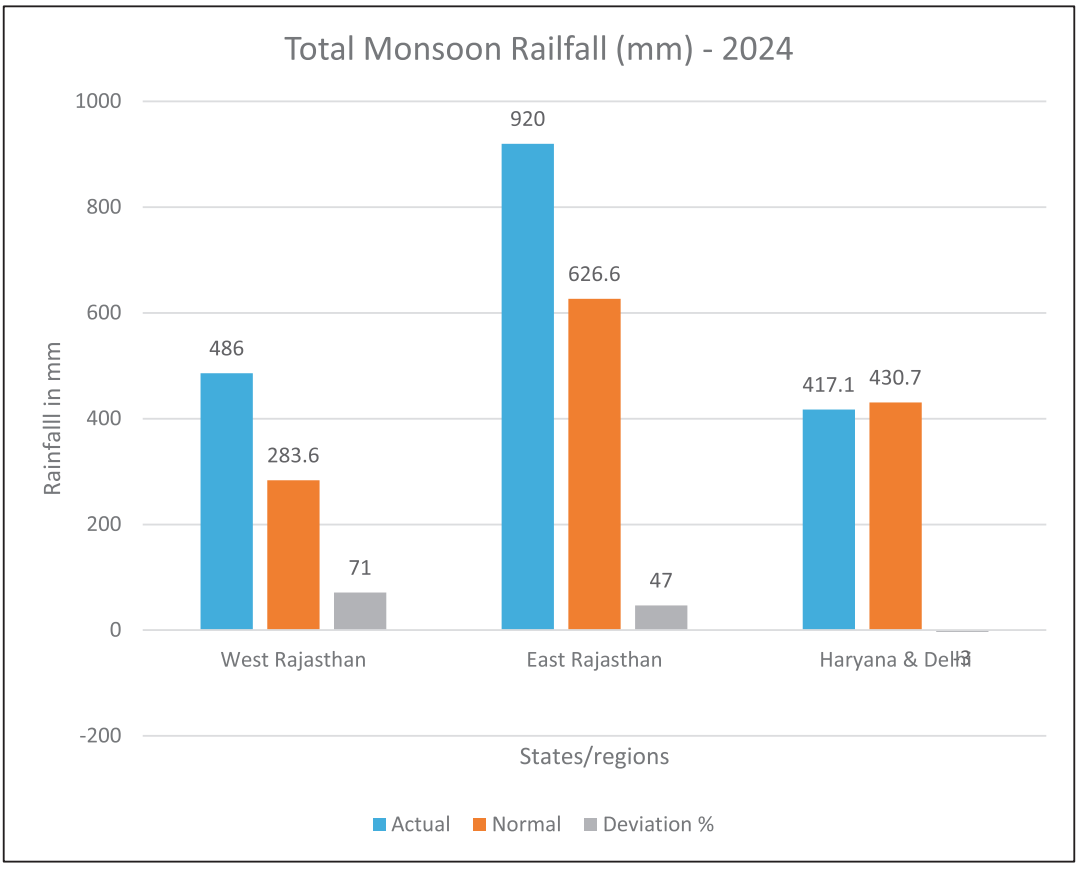


Fig. 2.1 Actual rainfall during 2024 and normal rainfall in West Rajasthan, East Rajasthan and Haryana & Delhi

2.1 Rainfall Pattern in Rajasthan and Haryana during 2024

The monsoon rainfall in Rajasthan and Haryana during 2024 is given in Table 2.1. On the whole Rajasthan received excess rainfall.

Table 2.1 Annual Rainfall in mm during 2024 (June to August) in West Rajasthan, East Rajasthan and Haryana & Delhi

State	Actual	Normal	Departure from Normal%
West Rajasthan	486.60	283.60	+71.00%
East Rajasthan	920.00	626.60	+47.00
Haryana & Delhi	417.10	430.70	-3.00%

2.2 Intervention

2.2.1 Promotion of Climate Resilient Varieties: The climate resilient varieties of bajra, green gram, blackgram, mothbean, clusterbean, groundnut, wheat, mustard and other field crops and horticultural crops were popularized and promoted by KVKs.

2.3.2 Rainwater harvesting, Efficient Water Application Tools: *In-situ* rain water conservation and ex-situ water harvesting along with use of efficient water application techniques and tools are the key interventions for drought proofing in these States. KVKs under Zone-II imparted trainings and skills with the farmers to enhance their awareness and knowledge on water conservation, harvesting and efficient recycling for maximum use efficiency under stressed conditions. Altogether, 15 KVKs conducted 35 trainings with the participation of 1154 farmers including 213 female farmers. Of the total participants, 621 were SC/ST farmers which included 102 female SC/ST farmers. The state-wise details are given in Table 2.2.

Table 2.2 Trainings on rainwater harvesting and efficient water application system

State	No. of KVK	No. of Courses	No. of Participants including SC/ST			No. of SC/ST Participants		
			Male	Female	Total	Male	Female	Total
Rajasthan	9	12	299	152	451	130	76	206
Haryana	5	20	547	36	583	389	26	415
Delhi	1	3	95	25	120	0	0	0
Total	**15**	**35**	**941**	**213**	**1154**	**519**	**102**	**621**

2.2.3. Soil Water and Plant Analysis: Soil and water testing laboratories have been established in total 66 KVKs and all the 66 KVKs had analyzed soil and water samples for enhancing the soil conditions and proper utilization of water. The soil and water analysis is also used for recommendations to the farmers about nutrient application based on soil test for conducting OFTs and FLDs, suitability of water for irrigation and advisories to the farmers. During the year, 28820 samples, comprising of 20127 soil, 10558 water, 2278 plants and 5 manure were received from 28271 farmers of 3445 villages, were analyzed. A revenue of Rs. 9.65 lakh was also generated by KVKs through this activity.

Table 2.3 Analysis of soil, water and plant samples by KVKs of Zone-II during 2024

State	Samples	No. of samples	No. of Farmers	No. of villages	Amount realized (Rs.)
Rajasthan Total	Soil	13653	11936	995	751075
	Water	8377	6833	875	111505
	Plant	1055	862	66	21925
	Manure	5	2	1	0
	Total	**23090**	**19633**	**1937**	**884505**
Haryana & Delhi	Soil	6316	4413	577	59200
	Water	2101	1731	613	21560
	Plant	1073	883	239	0
	Manure	0	0	0	0
	Total	**9490**	**7027**	**1429**	**80760**
Zone Total	Soil	20127	16499	1612	810275
	Water	10558	8639	1518	133065
	Plant	2278	1920	318	21925
	Manure	5	2	1	0
	Total	**32968**	**27060**	**3449**	**965265**

Soil sample collection method – Awareness programme by KVK, Kurukshetra.

CHAPTER 3

RESEARCH ACHIEVEMENTS, COLLABORATIVE AND SPONSORED PROJECTS

Research activities in ICAR-ATARI-Zone-II are spread across network, sponsored and institute projects. The major projects implemented during 2024 included Natural Farming, ARYA, FFP, NICRA-TDP, TSP, SCSP, CRM, Agri-Drone, FOM/LFOM, DAMU and institute projects on salinity, LPM, seed system and millets. The significant achievements under various categories of the projects are summarized in this chapter.

3.1 Farmer FIRST Programme

The Farmer FIRST Programme (FFP), it is operation since 2016. It emphasizes farmer involvement in identifying research priorities, conducting on-field experiments, and promoting sustainable, climate-resilient practices. 'Farmer FIRST' stands for Farmers' Farm, Innovations, Resources, Science, and Technology. The FFP has been implemented at ICAR institutes - CAZRI Jodhpur, CSWRI Avikanagar, CSSRI Karnal, NDRI Karnal, IARI New Delhi, CIRB Hisar and SAUs - CCSHAU Hisar and AU Jodhpur. The support was also provided by NAIP, IASRI, DKMA (New Delhi) and NAARM (Hyderabad) as consortium partners. The key achievements under various modules are presented as under:

Natural Resource Management (NRM): A total of 368 demonstrations covering an area of 402.49 ha were carried out, engaging 588 farmers under various components of natural resource management. The application of vermi-compost containing 1.8% nitrogen in the Tinda variety 'Mahyco Mahy' led to a 14.3% increase in yield compared to traditional farmer practices. Additionally, the use of sub-surface drainage technology in salt-tolerant rice varieties- CSR-30, CSR-56, CSR-60, and CSR-76- resulted in yield increases of 33.6%, 61.8%, 66.7%, and 65.1%, respectively, over the local variety.

Crop-Based Module: Total of 1,443 demonstrations were conducted over an area of 601.06 ha, involving 1,497 farm families under various crop-based modules. Among the wheat varieties demonstrated, DBW-87 emerged as the highest yielding at Avikanagar conditions, recording a productivity of 67.58 q/ha with 37.7% increase over farmers 'practices. Demonstrations of cumin variety GC-4 showed superior performance both in yield and resistance to wilt disease, achieving a 28.3% higher yield compared to the local variety and gaining strong acceptance among farmers. At the FFP centers in Karnal, improved rice varieties PB-1509 and PB-1692 recorded yields of 57.23 q/ha and 57.12 q/ha, respectively, making increases of 35.20% and 34.94% over farmers' yields. Demonstrations of improved pearl millet variety HHB-67 at farmers' fields resulted in yields of 14.5 q/ha, which was 21.54% higher than the local check. The improved moth bean variety CZMO-5 yielded 5.78 q/ha, showing a 32.27% improvement over the local check under jodhpur conditions.

Horticulture-Based Module: This module was implemented through 985 demonstrations covering an area of 66.345 ha, engaging 1,158 practicing farmers. The okra variety Arka Anamika, demonstrated at farmers' fields, recorded a 10% higher yield compared to the local variety. Similarly, the marigold variety Pusa Narangi Gainda showed promising results, delivering an 11.33% increase in yield over the local variety during field demonstrations.

Livestock and Fodder-Based Module: Demonstrations on the use of mineral mixtures for cows and buffaloes to enhance milk production were carried out with 40 farmers covering 40 animals in selected villages. The results showed an 11.19% increase in milk yield in cows and a 9.88% increase in buffaloes. Regular supplementation of mineral mixtures can help fulfil the

nutritional needs of livestock, promoting better health, improved reproductive performance, and increased dairy productivity. Additionally, multi-nutrient feed blocks (MNFB) were demonstrated among 35 farmers with 35 animals, leading to a 12% increase in milk yield in buffaloes and 13.4% in cows. Demonstrations of Napier grass varieties CO-4 and CO-5 as green fodder were conducted among 100 farm families, covering 8 hectares in the adopted village. These varieties, containing 8–11% crude protein, are perennial grasses known to enhance milk yield in lactating cattle.

IFS and Enterprise Module: A total of 196 demonstrations were conducted under the IFS and Enterprise module, covering an area of 34.62 hectares and involving 179 practicing farmers. As part of the intervention, button mushroom cultivation was introduced at farmers' fields. One demonstration unit of a button mushroom variety was provided to a farmer, resulting in a production of 1,035 kg. The total expenditure was Rs. 45,140, with a selling price of Rs. 115/kg, leading to a gross income of Rs. 1,19,025 and a net income of Rs. 73,885, achieving a Benefit-Cost (B:C) ratio of 2.64. In addition, two demonstrations on seed production units for rice and wheat were conducted. The results showed a 20.00% increase in net income from rice seed production and a 13.00% increase from wheat seed production, highlighting the profitability of seed production as a farm enterprise.

Extension Activities: During 2024, total of 213 programmes were carried out engaging 3432 partner farmers. These extension activities included exposure visits, institute visits, farmer-scientist interactions, diagnostic field visits by scientists, one-day awareness programmes, kisan goshtis, soil sampling training, kisan melas, kisan chaupals, demonstrations, livestock health camps, field days and group meetings etc.

3.2 Attracting and Retaining Youth in Agriculture

Attracting and Retaining Youth in Agriculture (ARYA) was launched in 2015-16 for entrepreneurial development in rural areas with a specific focus on youth engaged in agriculture. Initially one Krishi Vigyan Kendra (KVK) was targeted in each state with the primary objective of helping 200 rural youth in each district by developing their entrepreneurial skills and facilitating the establishment of micro-enterprises. The project was extended to 100 KVKs during 2018-19. Under Zone-II, ARYA has been implemented in 7 districts of Rajasthan by KVKs of Alwar-I, Banswara, Barmer-II, Bundi, Jaipur-I, Jhalawar, and Udaipur-I and 3 districts of Haryana of Ambala, Gurugram, and Mahendergarh. During 2024-25, 2 training have been organised by KVK, Alwar-I (Goatery), and Bundi (Nursery Management), in which 30 rural youth have been trained. In addition to training, exposure visits to the successful enterprises were organised for mutual learning. 18 youth have established their own enterprise. ARYA Youth trainees have successfully registered four products with the FSSAI. Youth have extended the size of seven entrepreneurial units.

3.3 National Mission on Natural Farming

National Mission on Natural Farming has been launched in 2024 with subsuming the erstwhile out scaling of natural farming (OSNF). The ongoing activities of OSNF (i) capacity-building (ii) awareness, and (iii) demonstrations were conducted during 2024-25 in 38 KVKs.

Table 3.1 Activities carried out during 2024 under OSNF (National mission on Natural farming)

State	KVKs (No.)	Awareness programmes		Trainings programmes		Demonstrations	
		No.	Participants	No.	Participants	No.	Area (ha.)
Rajasthan	19	56	2623	33	1281	74	29.6
Haryana	18	25	819	05	200	81	32.4
Delhi	01	05	167	0	0	12	4.8
Total	**38**	**86**	**3609**	**38**	**1481**	**167**	**66.8**

Table 3.2 Cost of cultivation, yield and income under natural farming (NF) and chemical farming (CF) during 2024

States	Crops	Cost of cultivation (Rs/ha)		Yield (kg/ha)		Net income (Rs/ha)		B: C Ratio	
		CF	NF	CF	NF	CF	NF	CF	NF
Rajasthan	Chickpea	32280	28870	1368	1164	40550	38390	2.30	2.36
	Cumin	47830	42410	558	396	89850	64280	2.88	2.50
	Mustard	28680	22850	1730	1315	69070	58140	3.41	3.54
	Wheat	40580	35390	4303	3549	60320	71670	2.48	3.03
Haryana	Moong	21560	18350	812	720	39370	38810	2.86	3.16
	Summer moong	22750	18310	968	839	54910	53130	3.41	3.90
	wheat	44950	36560	4429	3172	60630	71200	2.45	3.15
Delhi	Wheat	48000	36960	5129	3172	68690	109330	2.43	3.97

Natural farming practices resulted in a reduction in the cost of cultivation ranging from 11.8% for chickpea in Rajasthan to 29.9% for wheat in Delhi, compared to farmer conventional practices of application of fertilizers and other chemicals in their crops.

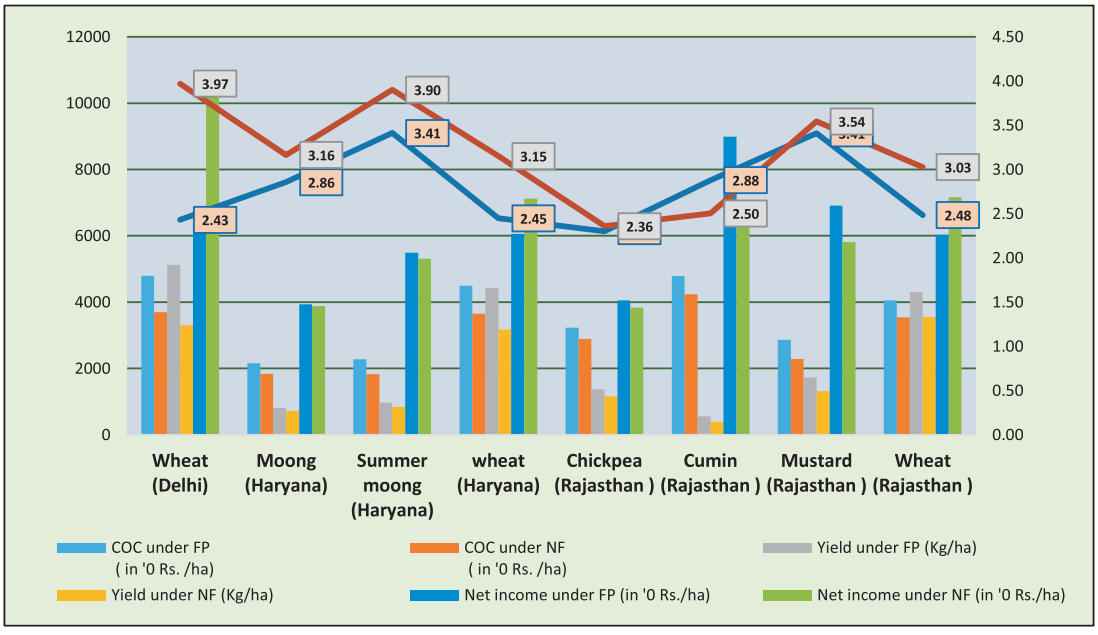


Fig. 1

The yield of crops declined, in the range of 12.8% in moong in Haryana to 55.0% in wheat in Delhi. Despite the reduction in yields, returns from natural farming were encouraging, as reflected by the benefit-cost (B:C) ratio. In wheat, each rupee invested under natural farming yielded returns of Rs. 3.03, Rs. 3.15, and Rs. 3.97 in Rajasthan, Haryana, and Delhi, respectively, compared to Rs. 2.46, Rs. 2.45, and Rs. 2.43 under conventional practices. Overall, natural farming provided an additional return of Rs. 0.55, Rs. 0.70, and Rs. 1.54 as

every rupee invested in Rajasthan, Haryana, and Delhi, respectively. Farm produce under natural farming generally fetched a premium price, except for cumin in Rajasthan, where lower yields resulted in reduced returns.

3.4 Management of Crop Residue in Haryana and NCT of Delhi

Rice-wheat cropping is the main agricultural practice in Haryana occupying 58% of the cultivated land. The burning of paddy straw was a noted environmental problem. To tackle this, a Centrally Sponsored Scheme "Promotion of Agricultural Mechanization for In-situ Management of Crop Residue" in Punjab, Haryana, Uttar Pradesh, and Delhi was implemented since 2018. Under this scheme, Information, Education, and Communication (IEC), component has been implemented by 60 KVKs of Rajasthan, Haryana, Delhi and UP since 2018. The important IEC activities carried out during 2024 are presented below:

Awareness Camps & Publicity: KVKs across Haryana and Delhi conducted 139 awareness camps at district, block, and village levels, reaching around 18788 farmers. These efforts were supported by print media advertisements, distribution of 111 newspaper/magazine articles, 209 hoardings, 374 wall writings, 736 posters, and 40696 pieces of publicity material.

Kisan Melas: Thirteen Kisan Melas were organized, attracting 11799 farmers who observed live demonstrations of crop residue management machinery post-rice harvesting.

Youth Mobilization: To engage youth (aged 15–29, as per national policy), 67 schools and colleges participated in essay, painting, and debate competitions, with about 7166 students sensitized on in-situ crop residue management.

Demonstrations: KVKs carried out 3603 machinery and decomposer demonstrations, involving around 4400 farmers from various villages, providing them with technical guidance.

Training Programmes: In collaboration with the State Agriculture Department, 50 five-day training sessions were conducted, training 1314 paddy farmers. Information on machinery subsidies and custom hiring centers was also shared.

Exposure Visits: A total of 41 exposure visits were organized, benefiting approximately 1849 farmers.

Field & Harvest Days: Forty-two field and harvest day events were held in selected villages, attended by around 1387 farmers.

Webinars & Lectures: One webinar was conducted, with 70 farmers participating virtually from Haryana and Delhi.

Table 3.3 Detail of IEC activities conducted by KVKs during 2024

Particulars	Activities	No. of Participants
Awareness programmes conducted at Village Panchayat/ Block/ District Level	139	18788
Training Programmes conducted	50	1314
Kisan Melas organized	13	11799
Mobilization of schools and colleges through essay completion, painting, debate etc.	67	7166
Demonstrations conducted (Using CRM Machinery)	3450	4196
Demonstrations conducted (Using Decomposer Technology)	153	203
Exposure visits organized	41	1849
Field days organized	36	1171
Harvest days organized	6	216

Particulars	Activities	No. of Participants
Advertisement in Print media	16	
Column / Articles in newspaper and magazines etc.	111	
Hoarding fixed (at Mandi/ Road side/Market/Schools/Petrol pump/ Panchayat etc.)	209	
Poster/Banner placed	736	
Publicity material - leaflets/ pamphlets etc. distributed	40696	
TV programmes/ panel discussions Doordarshan/ DD-Kisan and other private channels	21	
Wall writing	374	
Webinars Organized/ Lectures Delivered in Webinars on CRM	1	
No. of Jingles on radio/TV and their frequency	344	
Scroll messages on TV	4	
Audio-visual clips on TV	11	

Table 3.4 Details of messages on CRM sent to farmers through various platforms during 2024

WhatsApp Groups formed on CRM	Number of CRM Groups		38
	No. of farmers		10434
	No. of messages sent		442
No. of messages on CRM sent to farmers through other platforms	m-Kisan	No. of farmers	3552
		No. of messages	17
	Facebook	No. of farmers	7620
		No. of messages	25
	Other platforms	No. of farmers	33186
		No. of messages	91

3.5 Agri-Drone Project

The main challenge in agriculture is meeting the food demand of a growing population which is expected to reach 9 billion by 2050. In India, 86% of the land holdings are small and marginal with less than 2 ha size. The modern technologies like drones could help in application of inputs and plant protections chemicals more quickly. The Agri-drone project has been initiated in 2021-22 with the objectives (i) to improve efficiency and accuracy in the field operations; and (ii) to enhanced crop yield and reduced cost of cultivation

In Zone II total of 32 drones were allotted to 25 institutions of Rajasthan and Haryana, including 10 KVKs, 11 ICAR institutes, and 4 SAUs. All 32 drones have been procured and 50 pilots trained. Against a target of 8000 demonstrations, 4460 demonstrations were conducted at 4320.4 ha area of different crops. Total 108448 farmers participated in different outreach and awareness activities conducted by ICAR institutes, SAUs and KVKs.

3.6 Skill Development

ASCI empowered skill development trainings have been conducted by KVKs during 2024-25. The major job roles included were quality seed growers, community service provider, seed processing workers, assistant gardner, organic growers, floriculturist protected cultivation, dairy farmer entrepreneur, vermi-compost producer, agriculture extension service

provider, mushroom grower, beekeeper, nursery worker, greenhouse operator, small poultry farmer, artificial insemination technician, citrus fruit grower, tractor operator etc. Total 7 KVKs organized ASCI trainings on different job roles with duration ranging from 25 to 30 days with registered participants varying from 20 to 25 per training. The job roles were garden keeper (at Ajmer, Pali-I, Hanumangarh-I, Jhalawar), organic cultivator at Sikar-I and honey bee keeper at Karauli. Budget was allotted to KVKs accordingly for different job role trainings viz.; garden keeper, organic cultivator and honey bee keeper during the year under report.

3.7 National Innovations in Climate Resilient Agriculture (NICRA)

The Technology Demonstration under, "National Innovations in Climate Resilient Agriculture" (NICRA) was carried out by 18 KVKs under ATARI, Jodhpur. Different interventions were implemented under Natural Resource Management, Crop Production, Livestock & Fodder Production, Institutional Interventions modules. The specific intervention under each module for a particular village was decided on the basis of climatic vulnerability. The KVKs involved in the project are Alwar-I, Barmer-I, Bharatpur, Bhilwara-I, Bikaner-I, Churu-I, Hanumangarh-I, Jaisalmer-I, Jhunjhunu, Jodhpur-I, Nagaur-I, Pali-I, Sirohi in Rajasthan and Bhiwani, Fatehabad, Hisar, Mahendergarh, Sirsa in Haryana. During 2024-25 total 15953 farmers were covered and 5621 demonstrations (NRM-977, crop production-2416, livestock and fodder production-817, institutional interventions including custom hiring -1411 capacity building-5192 and extension activities-5115 were conducted. The CHC earned a revenue of Rs 118820 from NICRA villages.

Table 3.5 Details of NICRA and Non-NICRA villages adopted by KVKs under ICAR-ATARI, Zone-II, Jodhpur

SN	State	District	Identified villages	
Rajasthan			NICRA	Non-NICRA
1	-do-	Alwar-I	Gurjarpur Khurd, Chandigarh	Manki, Allawara
2	-do-	Barmer-I	Juna Partasar, Bakana	Mithdi
3	-do-	Bharatpur	Sitara, Shenti, Chaksitara	Sabora
4	-do-	Bhilwara-I	Dholikhera, Chavandari	Gadarmala
5	-do-	Bikaner-I	Kanasar, Himtasar	Raisar
6	-do-	Churu-I	Mitasar	Rajasar Bikan
7	-do-	Hanumangarh-I	Hirnawali, Chistiya	Bagulanwali
8	-do-	Jaisalmer-I	Jogidas Ka Gaon	Tejmalta
9	-do-	Jhunjhunu	Bharu, Chakwas	Wahidpura
10	-do-	Jodhpur-I	Lunwas Khara, Lawari	Jhanwar
11	-do-	Nagaur-I	Deshwal, Amarpura	Khajwana
12	-do-	Pali-I	Gajangarh, Sajanpura	Kharda, Artia
13	-do-	Sirohi	Dhanta. Tepli kheda	Makroda
Haryana				
14	-do-	Bhiwani	Lohani, Dhareru, Nathuwas	Sanga
15	-do-	Fatehabad	Bodiwali, Banmandori, Mehuwala	Thuia, Bhattu
16	-do-	Hisar	Sadalpur, Kohli	Framci
17	-do-	Mahendergarh	Gadania, Bairawas	Palh
18	-do-	Sirsa	Rupana, Nirban, Ludesar	Chadiwal

3.8 KVKs as Cluster Based Business Organizations for FPO

Farmer Producer Organization (FPO) have emerged as most powerful catalyst for change in India's Agriculture landscape. FPOs address the challenge of economy of scale of smallholder farmers for access to market and price negotiation as well as facilitate in backward linkages for inputs. The Government launched the scheme Formation and Promotion of 10000 FPOs, the Cluster Based Business Organizations (CBBO) are an integral component of the scheme. Indian Council of Agricultural Research and Department of Agricultural Research & Farmers Welfare joined hands and KVKs were entrusted the responsibility of CBBOS. In Zone-II, the scheme has been implemented successfully in 6 districts; Jalore, Barmer, Sriganganagar (Rajasthan), Ambala, Fatehabad, Rewari (Haryana). ICAR-ATARI, Jodhpur played a key role in assisting 6 KVKs in Rajasthan & Haryana to form and register 13 FPOs. Each FPO has been dedicating "One District One Product" approach focusing on product specialization for development. These FPOs have been entrusted for promoting aggregation and processing of onion, mustard, cumin, pomegranate, kinnow and also their branding, marketing and export.

Table 3.6 Details of KVKs as CBBO under ICAR-ATARI, Zone-II, Jodhpur

KVK as CBBO	FPOs	Target commodity	Membership
Barmer	Baba Badalnath Krishi Utpadan Prasanskaran Evam Vipnan Sahakari Samiti Limited, Gadra Road, Barmer	Bajra based food products	306
	Baba Garibnath Krishi Utpadan Prasanskaran Evam Vipanan Sahkari Samiti Limited, Sheo, Barmer	Bajra based food products	301
Jalore	Jai Jalore Kisan Utpak Sahakari Samiti Ltd	Cumin procurement	96
	Shree Bhadrajun Kisan Utpadak Samiti Ltd	Gram procurement	58
Sriganganagar	Sri Ganganagar Kinnow Utpadak Krishak Sahkari Samiti Limited	Kinnow waxing & grading	445
	Karanpur Farmer Producer Cooperative Society Ltd	Seed & Fertilizers traders	163
Ambala	Raghuram Agro Farmers Producers Cooperative Multipurpose Society Ltd., Dukheri	Seed, Fertilizer, Pesticide sale	
	The Agriterrene Farmers Producers Multipurpose Cooperative Society Ltd., Shahzadpur	Organic Products Sale	
Fatehabad	Mohampadpur Rohi cooperative multipurpose society	Seed, Fertilizer, Pesticide sale	608
Rewari	Bawal Farmer Producer Cooperative Multipurpose Society Ltd Bithwana at Tankri	Deals in Seed, fertilizer, pesticides	
	Innovative Farmer Producer Cooperative Multipurpose Society Ltd Khol	Deals in Seed, fertilizer, pesticides	
	Kosli Farmer Producer Cooperative Multipurpose Society Ltd Bairampur	Deals in Seed, fertilizer, pesticides	

Total 13 FPOs mobilized 3779 farmers with average number of 577 FPO members and added 3757 new FPO members during the year 2024. Board of Directors have been appointed and equity grant of Rs 23.32 lakh has been collected from members, total management cost received Rs 36.97 lakh and total turnover of Rs 430.5 lakh was received in the year 2024. The KVKs organized total 6 different extension activities and training programmes on seed production, value addition and marketing etc. in which 202 FPO registered members actively participated.

3.9 Scheduled Caste Sub Plan

The programme was implemented by 17 KVKs (Ajmer, Ambala, Barmer-II, Bikaner-II, Churu-I, Hanumangarh-I, Hanumangarh-II, Jodhpur-I, Jodhpur-II, Kurukshetra, Mahendragarh, Nagour-II, Panipat, Rewari, Sikar, Srigangangar, Yamunanagar) during 2024-25.

Total 192 training programmes for capacity building of 5794 farmers of SC category was conducted. The on-farm trials at 90 farmers fields, 3967 FLDs at 5322 farmers' fields, 73 awareness camps and exposure visits benefiting 3112 partner farmers of SC community were also conducted. The direct benefit activities of providing improved quality inputs for various agricultural activities including seed, planting material, mushroom unit spawns, small animal units, poultry, small, medium and large equipment, fertilizers, micro nutrients, FYM/ Vermicompost, Soil amendments (Gypsum, lime etc.), Plant protection chemicals, Plant growth Promoter, Animal Feed, Animal Fodder and Animal medicines benefitted 26,245 SC farmers.

The animal health camps, artificial insemination / vaccination, testing samples of soil, plant, water, feed, fodder and livestock, promotion of agri-entrepreneurship, promotion of IFS, IOFS, natural farming, nutri-garden, kitchen garden, orchards etc. benefitted 7762 SC farmers. through distribution of literature reached out to 16,078 SC farmers. Overall 57215 SC farmers were involved in different activities under SCSP during the year 2024, reached to 57,215 SC farmers in the zone.

3.10 Tribal Sub Plan (TSP)

The TSP programme was implemented by 24 KVKs of Rajasthan (Alwar-I, Alwar-II, Banswara, Baran, Bhilwara-I, Bhilwara-II, Bundi, Chittorgarh, Dausa, Dungarpur, Jaipur-I, Jaipur-II, Jalore-I, Jhalawar, Karauli, Kota, Pali-I, Pratapgarh, Rajsamand, Sirohi, S.Madhopur, Tonk, Udaipur-I and Udaipur-II) having concentrated tribal population in the districts/block and villages. During the year 2024, total 228 training programmes were organized for capacity building of 7,208 ST farmers for various agri-enterprises. Besides, 11 on farm trials, 3725 FLDs and 125 awareness camps, exposure visits with participation of 95, 4497 and 5858 ST farmers, respectively.

The direct benefit activities of providing improved quality inputs for various agricultural activities including seed, planting material, mushroom unit spawns, small animal units, poultry; small, medium and large equipment, fertilizers, micro nutrients, FYM/ vermicompost, soil amendments (gypsum, lime etc.), plant protection chemicals, plant growth promoter, animal feed, animal fodder and animal medicines benefitted 21,600 ST farmers.

Animal health camps, artificial insemination / vaccination, testing samples of soil, plant, water, feed, fodder and livestock, promotion of agri-entrepreneurship, promotion of IFS, IOFS, natural farming, nutri-garden, kitchen garden, orchards etc benefitted 7,176 ST farmers. Through Distribution of literature reached to 22,217 ST farmers. Overall, 71112 ST farmers were benefitted under TSP through various activities.

3.11 Seed hub of pulses in Rajasthan and Haryana

ICAR, in collaboration with DA&FW, launched the “Creation of 150 Seed Hubs” project in July 2016. This project is being implementing by eight KVKs (Jhunjhunu, Kota, Udaipur, Ajmer, Jhalawar, Alwar-I, Bundi, Nagaur-I) of Rajasthan and two KVKs (Bhiwani, Sirsa) of Haryana with the following objectives

- Production of quality seed of farmers preferred varieties.
- To ensure availability of seed for farmers/other stakeholders.
- To increase pulse productivity.

It is participatory seed production programme in which each seed hub is given a target of production of 1000 qt seed to ensure seed availability at affordable price. Partnership with National Seed Cooperation and State Seed Development Cooperation is also envisaged. The project aims at gradual improvement in varietal replacement rate as well as SRR. Establishment of seed processing plant & storage godown is an integrated part of the seed hub. The KVKs are providing B/S or F/S to partner farmers as critical inputs and do regular monitoring and facilitation in certification.

In the year 2024, a total of 3366.97 quintals of pulse seeds was produced in the Zone. Among the crops Chickpea accounted for the highest production with 2588.24q, followed by mung bean (598.76q), Urd bean (135.87q), and Lentil (44.1q) (Table 1). Among the 10 seed hubs, KVK Alwar-I produced the highest pulses seed (751.5q), followed by KVK Ajmer (730.2q). The lowest production was reported by KVK Sirsa (75q) (Table 3.7).

Table 3.7 Seed production under Seed hub project during 2024

KVK	Mungbean	Urdbean	Chickpea	Lentil	Total
Ajmer	240.20	0.00	490.00	0.00	730.20
Alwar-I	51.50	0.00	700.00	0.00	751.50
Bundi	0.00	44.00	72.00	44.1	160.10
Jhalawar	0.00	4.40	591.34	0.00	595.74
Jhunjhunu	83.70	0.00	260.00	0.00	343.70
Kota	15.00	87.47	239.00	0.00	341.47
Nagaur-I	114.10	0.00	0.00	0.00	114.10
Udaipur-I	0.00	0.00	90.90	0.00	90.90
Bhiwani	94.26	0.00	70.00	0.00	164.26
Sirsa	0.00	0.00	75.00	0.00	75.00
Total	**598.76**	**135.87**	**2588.24**	**44.1**	**3366.97**

Season-wise Seed Production

Rabi 2023-24

During the Rabi season of 2023–24, seven KVKs from Rajasthan and two from Haryana collectively produced 2632.34 quintals of chickpea and lentil seeds (Table 2).

Table 3.8 Seed production under Seed hub project during Rabi-2023-24

KVK	Crop	Variety	Quantity (q)
Ajmer	Chickpea	HC-7	490.00
Alwar-I	Chickpea	GNG-2144	700.00
Bundi	Chickpea	GNG-2144	72.00
	Lentil	KM-3	44.10
Jhalawar	Chickpea	GNG-2171	591.34
Jhunjhunu	Chickpea	GNG-2171	260.00
Kota	Chickpea	GNG-2144 and GNG-2171	239.00
Udaipur-I	Chickpea	GNG-2144	90.90
Bhiwani	Chickpea	HC-6	70.00
Sirsa	Chickpea	GNG-2171	75.00
		Total	**2632.34**

Summer 2024

In the summer of 2024, four KVKs from Rajasthan along with KVK Bhiwani (Haryana) produced 90.44 quintals of mung bean and urd bean seeds (Table 3.9).

Kharif 2024

During the Kharif season of 2024, seven KVKs from Rajasthan and KVK Bhiwani (Haryana) produced a total of 644.19 quintals of mung bean and urd bean seeds (Table 3.10).

Table 3.9 Seed production under Seed hub project during Summer-2024

KVK	Crop	Variety	Quantity (q)
Alwar-I	Mungbean	MH-1142	35.00
Bundi	Urdbean	Kota Urd-3	4.00
Jhalawar	Urdbean	Kota Urd-4	4.40
Kota	Urdbean	Kota Urd-3 and Kota Urd-4	14.50
	Mungbean	MH-1142	15.00
Bhiwani	Mungbean	MH-421	17.54
		Total	**90.44**

Table 3.10 Seed production under Seed hub project during Kharif-2024

KVK	Crop	Variety	Quantity (q)
Ajmer	Mungbean	MH-1142	240.20
Alwar-I	Mungbean	MH-1142	16.50
Bundi	Urdbean	Kota Urd-4	40.00
Jhunjhunu	Mungbean	MH-1142	83.70
Kota	Urdbean	Kota Urd-4	72.97
Nagaur-I	Mungbean	GM-6	114.10
Udaipur-I	Pigeon pea	AL-882, PAU-881, KU-4	Crop failed
Bhiwani	Mungbean	MH-1142	76.72
		Total	**644.19**

3.13 District Agro-Met Unit (DAMU) under Gramin Krishi Mausam Sewa (GKMS)

The Gramin Krishi Mausam Sewa programme was initiated in 2018. In Phase I, 16 DAMUs were established at 9 KVKs in Rajasthan, 6 in Haryana, and 1 in Delhi and 13 Subject Matter Specialists (SMSs) and 14 observers appointed. Phase II added 18 more DAMUs at 10 KVKs in Rajasthan and 8 in Haryana, with 7 additional SMSs recruited. Currently, due to a court case, only 14 KVKs have active SMSs. DAMUs receive bi-weekly weather advisories from IMD, which are disseminated to farmers in both English and regional languages.

Farmer awareness programme

Gramin Krishi Mausam Seva Kendras organize farmer awareness programs that also train scientists on using mobile apps and other media to deliver weather-related information to farmers.

Table 3.11 Farmer Awareness by DAMU districts in 2024

Name of unit	Block	Total FAP	Total Farmers
Dholpur	2	2	60
Karauli	2	2	73
Baran	6	9	289
Sirohi	3	3	63
Dungarpur	1	2	104
Rohtak	5	5	263
Kurukshetra	25	25	1964
Fatehabad	7	9	1702
Panipat	6	9	285
Sonipat	3	3	72
Yamunanagar	10	10	313
Total	**73**	**70**	**5188**

Agro advisory services

Each week, the District Agromet Unit (DAMU) issues a five-day agricultural weather advisory covering rainfall, temperature, wind speed and direction, humidity, and cloud cover, based on medium-range forecasts from IMD Pune and other centers. Prepared every Tuesday and Friday, the advisory is shared with district farmers through various channels, including WhatsApp, Facebook, email, newspapers, print materials, radio, television, and other agencies.

Table 3.12 Agro-advisories issued during 2024

Medium of Transfer	No. of Agro Advisory	No. of Farmers
Whatsapp	2635	168070
Facebook	163	55280
0E-Mail	338	14608
NEWS Paper	224	165150
T.V.	8	20200
Radio	4	200
Total	**3372**	**423508**


धौलपुर भास्कर

फेंगल चक्रवात का असर घटते ही बढ़ी सर्दी, अब चलेगी शीतलहर


दैनिक भास्कर यमुनानगर भास्कर 13-12-2024

मौसम • पहाड़ों पर बर्फबारी व हवा चलने से मैदानी क्षेत्र में बढ़ी ठंड

Farmer scientist interaction

Direct interaction between scientists and farmers is one of the most effective ways to share scientific knowledge. With this approach, farmers were educated about the sources and benefits of accessing weather information during events organized by Krishi Vigyan Kendras such as World Water Day, World Bee Day, National Science Day, World Earth Day, Mother's Day, and World Environment Day as well as through various institutional and non-institutional training programmes, melas, and farmer seminars.

Table 3.13 Farmers-Scientists interface held during 2024

Name of KVK	Interaction with farmers
Baran	138
Dholpur	140
Sirohi	19
Panipat	165
Kurukshetra	85
Total	**547**

Model Pulse Village

During Kharif 2024, under Model Pulse Village programme Frontline Demonstrations (FLDs) on black gram were conducted across two clusters located in two model pulse villages namely Bhoyal and Kankarda in Baran district by KVK Baran, Rajasthan on total area of 30 ha at 75 farmer's field.

Table 3.14a Yield performance of Black gram under MPV during kharif-2024

District	Village	Variety (s)	Targets		Achievements	
			Area (ha)	FLDs	Area (ha)	FLDs
Baran	Bhoyal	Kota Urd-3	125	312	14	35
	Kankarda	Kota Urd-3	125	313	16	40
Total/Average			**250**	**625**	**30**	**75**

Table 3.14b Yield performance of Black gram under MPV during kharif-2024

District	Village	Variety (s)	Average yield (kg/ha)		Yield increase (%)	Yield gap (kg/ha)
			FLDs	Local		
Baran	Bhoyal	Kota Urd-3	12.41	9.32	33.15	3.09
	Kankarda	Kota Urd-3	12.46	9.59	29.92	2.87
Total/Average			**12.44**	**9.46**	**31.50**	**2.98**

Fig . Field Evaluation of Black gram under Model Pulses Village Programme

A significant enhancement in crop yield was observed under FLD conditions, with an overall average yield of 31.50% compared to traditional farmer practices. The FLDs at village Bhoyal and Kankarda exhibited yield improvement of 33.15% and 29.92%, respectively, underscoring the effectiveness of FLDs interventions in enhancing productivity. The average BC ratio of FLD was 2.38, which was higher than the farmers practices (1.73).

Table 3.14c Economic performance of Black gram under MPV during Kharif-2024

District	Village	Economics of FP (Rs/ha)				Economics of FLD (Rs/ha)			
		Gross cost	Gross Income	Net Income	BC ratio	Gross cost	Gross Income	Net Income	BC ratio
Baran	Bhoyal	25726	69010	43641	1.70	27679	93529	65851	2.38
	Kankarda	25793	70985	45300	1.77	27727	93927	66199	2.39
Total/Average		25759	69997	44470	1.74	27703	93728	66025	2.39

3.16 Oilseeds Model Village

Oilseeds play a significant role in human nutrition particularly for low-income populations in developing nations. The National Development Council (NDC) in its 53rd meeting held on 29th May, 2007 adopted a resolution to launch a Food Security Mission in holistic approach to boost oilseeds production in India. To impart this, a Centrally Sponsored Scheme, National Food Security Mission; (NFSM), was launched in October 2007.The main objective of Oilseed Model Village project is to significantly increase the production of oilseed crops within a designated village by implementing advanced agricultural techniques, promoting high-yielding varieties, and providing comprehensive farmer training,

ultimately aiming to achieve self-sufficiency in edible oil production at the local level and contribute to national food security. During Rabi 2024-25, Demonstration's on Mustard (RH-725) in 2 villages at 100 partner farmers' fields in covering area of 60 ha. implemented by 1 KVK Karauli.

3.17 Awareness and Demonstration on Fermented Organic Manure (FOM)/Liquid Fermented Organic Manure (LFOM)

Chemical fertilization has significantly boosted agricultural production in India. However, intensive land use combined with increased fertilizer application caused environmental issues, such as nitrogen runoff contributing to watershed pollution. The continuous and higher use of chemical fertilizers has not only escalated fertilizer subsidy costs but also adversely impacted air and water quality, soil productivity, and ultimately, the health of people and the planet. There is growing interest in identifying alternative sources of plant nutrition and soil fertility management to curb rising subsidy expenses, lessen dependency on chemical fertilizers, and enhance soil and water health.

Among these alternatives, fermented organic manure (FOM) has gained attention for its environmental benefits. Compressed Biogas (CBG) plants utilize the anaerobic digestion of organic biomass to produce clean energy, generating semi-solid and liquid by-products i.e. sludge and slurry in the process. These by-products are rich in organic matter and essential nutrients. Sludge improves soil fertility and stimulates microbial activity, while slurry provides readily available nutrients to plants and enhances soil microbial properties and functions. Incorporating these products into an Integrated Plant Nutrition System (IPNS) can contribute to the long-term sustainability of agricultural systems.

Recognizing these benefits, Indian Council of Agricultural Research (ICAR) and Ministry of Chemicals & Fertilizers, Government of India, have launched an initiative to popularise and promote use of FOM and Liquid FOM (LFOM). The project is implemented at 25 KVKs of Rajasthan and Haryana during 2024-25.

(i) Creating awareness about FOM/LFOM amongst farmers; and conducting FOM demonstrations/pilot study at KVK farm and farmers' field.

(ii) Assessing the impact of FOM application on the soil health, crop performance and farm profitability.

(iii) To analyse the adoption behaviour and opinion of farmers about field applicability of FOM in the selected districts.

Three major activities were conducted under FOM/LFOM Project. They are:

(i) Awareness/Training programmes;

(ii) CBG personnel participated/delivered lectures; and

(iii) Benchmark survey.

During 2025, total 45 trainings were conducted. The benchmark surveys 0f 349 respondents was conducted in Rajasthan and Haryana. These initiatives engaged 1,238 participants. Representatives from Compressed Biogas (CBG) units delivered 31 lectures in the training sessions.

A performance review meeting for the Fermented Organic Manure (FOM)/Liquid FOM (LFOM) project in Rajasthan and Haryana was held online on 18th February 2025, under the chairmanship of the Director, ICAR-ATARI-II, Jodhpur. Additionally, a national-level sensitization seminar-cum-workshop“Nature-Positive Agriculture: Towards Healthy People and Planet” was organized by ICAR-Agricultural Technology Application Research Institute (ATARI), Jodhpur, at the Rajasthan Agricultural Research Institute (RARI), Durgapura, Jaipur, on 20th March 2025. Total 137 delegates, including Nodal Officers and project team of ICAR-ATARI, Jodhpur, Senior Scientists & Heads of KVKs, Nodal Officers of KVKs, Representatives of CBG units, researchers and farmers participated in the sensitization workshop.

Table 3.15 Achivements under FOM/LFOM Project during 2024

State	KVKs (No.)	Awareness/Training programmes		CBG personnel participated/delivered lectures	Benchmark survey
		No.	Participants	No.	No.
Rajasthan	14	25	726	9	265
Haryana	11	20	512	22	84
Total	**25**	**45**	**1238**	**31**	**349**

3.18 Institute Research Project

3.18.1 Characterization of Salt-Affected Soils, Restoration Strategies, and Their Impact on Farmers' Livelihoods in Pali District, Rajasthan

PI : Dr. H.N. Meena, PS (Agro)

Saline and alkali soils are widespread in Pali district of Rajasthan which is a major problem to crop production leading to low productivity. Despite a wide spread problem, the issue has been inadequately researched and documented. The farmers often lack the effective know-how of restoration techniques and crop diversification strategies that could enhance productivity and overall output. To address these concerns, an institutional project titled "Characterization of Salt-Affected Soils, Restoration Strategies, and Their Impact on Farmers' Livelihoods in Pali District, Rajasthan" has been initiated with the following objectives:

(i) To assess the extent and severity of salt-affected soils;

(ii) To evaluate the quality of ground and irrigation water;

(iii) To develop region-specific restoration strategies; and

(iv) To analyse the impact of soil salinity on farmers' livelihoods;

The soil salinity mapping in Pali district, designed to assess block-wise salt-affected areas, characterize salinity stress, evaluate water quality, and develop region-specific mitigation strategies, has been done. The sampling technique has been finalized and salinity-prone zones mapped and geographic coordinates of sampling sites identified. Field sampling has begun with 210 soil samples and 45 water samples collected from four blocks, representing about 25% of the total planned sampling. In addition, initiation and data collection though questionnaire of 25 farmers have been conducted to assess impacts of soil salinity on socioeconomic conditions of farmers and their livelihoods. Water sample analysis is ongoing, and route maps for the next phase of sampling prepared.

3.18.2 Impact Assessment of Climate Resilient Practices for Improving Animal Performance

PI : Dr. P.P. Rohilla, PS (LPM)

Objectives

- To evaluate the effect of Climate Resilient Practices on animal performance.
- To document farmers' perception about adoption of Climate Resilient Practices in livestock management.

The project started in April 2024 involving 5 cooperating centres viz; Barmer, Bharatpur, Jhunhunu, Jodhpur and Sirsa. Survey for conducting baseline data on livestock management under identified centres has been initiated in the selected NICRA & Non-NICRA villages. The NICAR and non-NICRA villages identified for the project are as under:-

NICRA villages: Juna Partasar, Sitara Shenti, Bharu, Chakwas, Lunawas Khara, Rupana.

Non-NICRA villages: Mithdi, Sabora, Wahidpura, Jhanwar, Chadiwal.

Fifteen farmers are identified from each village having at least two milking animals and two calves. Thus, a total of 150 farmers and 600 animals sample size of the study. The selected CR Practices are being studied at farmer's field to measure the effect on animal performance and to study farmer's perception about the use of CR Practices in the villages. A pre-tested interview schedule has been used for data collection. Frequency distribution and MPS would be used for arriving at findings.

CHAPTER 4

DIRECTORATES OF EXTENSION EDUCATION

Directorate of Extension Education (DEE) in State Agricultural Universities (SAUs) is responsible for agricultural extension activities and promoting linkage on agricultural extension with the line departments of the States. DEEs provide an overarching governance and coordination framework for on-farm testing and front line demonstrations through KVKs as well as all activities of KVKs through the institutional mechanism for planning, implementation, monitoring and evaluation. The Directorate of Extension Education works in close co-ordination of Department of Agriculture, Animal Husbandry, Horticulture, Forestry, Co-operatives, Panchayati Raj Institutions and other agencies involved for socio-economic development of the rural areas.

The broad objectives of DEEs are:

- To develop mechanism of diagnosis, identification, prioritization of field problems and their communication to research system of university.
- To impart the trainings to the in-service, extension functionaries of State Agriculture Departments, line departments of state government, non-governmental organisations, private dealers and agencies.
- To coordinate short and long-term vocational trainings for farmers, farm women, youth & school dropouts.
- To develop partnership with research system for technological backstopping to KVKs staff especially various technological packages under their jurisdiction including NGO's KVKs., and
- To provide farm advisory/information services including literature for fostering dissemination process of agricultural technologies.
- To develop close linkages with different ICAR Institutes, development departments, NGOs, local traders, SHGs, FPOs, FIGs, etc.

Total seven DEEs, 6 in Rajasthan and 1 in Haryana are functioning for delivering extension services. The distribution of DEEs is given in Table 4.1.

Table 4.1 Director of Extension Education & Technology Backstopping to KVKs

S.No.	Director's name	SAUs	Technological backstopping for KVKs (no.)				
			SAU/CAU	ICAR	NGO	DU	Others
1	Prof. Neena Sareen	SKRAU, Bikaner (Rajasthan)	7	0	1	0	1
2	Dr. R. L. Soni	MPUA&T, Udaipur Rajasthan)	8	0	1	0	0
3	Dr. P. Pagaria	Agricultural University, Jodhpur	8	2	1	0	0
4	Dr. Pratap Singh	Agricultural University, Kota	6	0	0	0	0
5	Prof. S. R. Dhaka	SKNAU, Jobner	8	1	1	0	1
6	Dr. Hemant Dadhich	RAJUVAS, Bikaner	1	0	0	0	0
7	Dr. Balwan Singh Mandal	CCSHAU, Hisar	14	2	2	0	1
		Total	**52**	**5**	**6**	**0**	**3**

4.1 Human Resource Development

DEEs have been functioning for enhancing knowledge and upgrading skills of subject matter specialists and Senior Scientist & Heads under human resource development activity. During 2024, 324 training programmes under capacity development programmes were organized by DEEs with 190705 participants.

Table 4.2 HRD activities organized by DEEs in Zone-II

DEEs	Training areas	Trainings (no.)	Participants (no.)	KVKs (no.)
DEE, MPUAT, Udaipur	Elimination of malnutrition through coarse cereals and bakery products under Scheduled Caste Sub Plan	1	30	2
	15 Days Retail Fertilizer Dealer Certificate course	11	360	9
	15 days training on Fashion Designing and Tailoring under SC-SP project	1	20	1
	Organized training programme on Natural Farming	21	802	8
	Organized Vocational Training on Poultry farming, Goat farming, IFS and Soybean processing	6	186	6
	KVKs participating in Viksit Bharat Sankalp Abhiyan	243	185727	8
	Organized one day plantation programme on Ek Ped Maa Ke Nam	9	235	9
	Total (a)	**292**	**187360**	**43**
DEE, AU, Jodhpur	Agro-Food System: challenges and elements of consideration for crop production	2	100	8
	Monthly meetings with KVKs	10	250	10
	Total (b)	**12**	**350**	**18**
DEE, SKNAU, Jobner	Six days 1st Induction & Orientation Trainings programme for Farm Manager/T.A. and Ag Sup. during 27 May to 2 June, 2024 Jointly organized by HRD & DEE	1	55	8
	Four days 2nd Induction & Orientation Trainings programme for Lab Asstt. Jointly organized by HRD & DEE during 24 to 27 June, 2024.	1	31	8
	3rd Induction and Orientation Training Programme for Stenographers, Clerk Gr-II and Information Assistant from 2 to 5 July, 2024.	1	40	8
	A 3 days training programme entitled "Success Story Writing Skill for Print & Electronic Media" was organized at Directorate of Extension Education, SKNAU, Jobner in collaboration with Extension Education Institute, Anand (Gujarat) from 09 to 11 Dec, 2024. In which 27 participants were participated from different KVKs, colleges and ARS of SKNAU, Jobner and other Agri. Universities.	1	27	11
	A 3 days training programme entitled "The Art of Professional Presentation Skill" was organized at Directorate of Extension Education, SKNAU, Jobner in collaboration with Extension Education Institute, Anand (Gujarat) from 11 to 13 Dec, 2024. In which 25 participants were participated from different KVKs, colleges and ARS of SKNAU, Jobner and other Agri. Universities.	1	25	11
	Total (c)	**5**	**178**	**46**

DEEs	Training areas	Trainings (no.)	Participants (no.)	KVKs (no.)
AU, Kota	"Common Induction Training Programme" on April 15, 2024 organized by AU Kota	1	48	6
	The farm and laboratories management training program at ICAR-IIFSR, Modipurm Meerut Conducted by AU Kota during 20-25 May, 2024.	1	20	4
	Advance Administrative and Financial Management Training" organized by AU Kota during 22-27 July, 2024.	1	44	6
	Farm and laboratories management training program at ICAR-CSSRI, Karnal, Haryana by AU Kota during 17-23, October, 2024.	1	20	3
	Time and Stress Management Skills for Better Performance (16-18 December, 2024)	1	25	6
	Optimizing Training Impact: Techniques and Skills in Training Management (19-21 December, 2024)	1	25	6
	Total (d)	**6**	**182**	**31**
CCSHAU, Hisar	Farmers Scientist Interface "Kisan Diwas" on 23.12.2024	1	2500	20
	Capacity building of newly recruited Scientists	2	60	12
	Communication skills and review of Action Plan & Progress Report	6	75	20
	Total (e)	**9**	**2635**	**52**
	Grand Total	**324**	**190705**	**169**

4.2 Workshops/Meetings Organized

The meetings and workshops for guiding, advising and supervising the activities of KVKs were also organized by DEEs. Details of workshops/meetings organized by the DEEs and participation of KVKs are given in the table 4.3.

Table 4.3 Workshops/meetings organized by DEEs

S.No.	Workshop/meeting conducted	No. of KVKs participated
SKRAU, Bikaner, Rajasthan		
1	Workshop for innovative farmers (8.1.24)	7
2	Meeting regarding Kisan Chaupaland Innovative farmers	7
3	Extension Advisory Committee meeting (03.04.24 & 19.11.24)	18
4	Mashaal Farmer Golden Jubilee 2024(6.5.24)	9
5	Press conference for 20th Convocation (10.6.24)	48
6	38th Foundation day farmers motivation committee meeting (26.7.24)	2
7	Workshop of KVKs for Annual Progress Report, 2023-24 and action Plan, 2024-25 (31.7.24)	7
8	Meeting of KVKs with Hon'ble V.C, SKRAU, Bikaner (8.8.24)	7
9	Meeting related to formatting SHG in Village Pemasar(16.08.24)	10
10	Meeting related to foods and refreshment (17.08.24)	9

S.No.	Workshop/meeting conducted	No. of KVKs participated
11	Press conference regarding National seminar "Natural Farming Awareness Programme, 29th & 30th Aug., 2024(28.08.24)	31
12	Workshop on Natural Farming-Brain storming (31.12.24)	7
MPUAT, Udaipur, Rajasthan		
1	Extension Education Council	8
2	Monthly Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at DEE on dated 26.02.2024	11
3	Monthly Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at DEE on dated 05.03.2024	11
4	Monthly meeting of KVKs was organized by DEE, SKNAU, Jobner at at KVK, Bharatpur on dated 06-04-2024	11
5	Annual meeting of 'Coordination committee of University adopted village Sunderpura' was organized at DEE on dated 15-03-2024.	13
6	Monthly meeting of KVKs was organized at KVK, Bharatpur and also visited Central Institute of Goat Research, Makhdoom, Itawa, U.P. on dated 05 to 06 April, 2024	11
7	**Scientific Advisory Committee (SAC) Meeting organised by DEE, SKNAU, Jobner:** at KVK Dausa on dated 25.06.2024, KVK Chomu on dated 26-06-2024, KVK Ajmer on 27.06.2024, KVK Kotputli on dated 28.06.2024, KVK, Fatehpur on 01.07.2024 (30 participants), KVK Arnia on dated 02.07.2024 (Participants:27), KVK Alwar-1 on dated 04.07.2024 (25 participants), at KVK Bharatpur on dated 15-07-2024 (Participants: 51), KVK Dholpur on date 16 July, 2024 (Participants: 23). KVK, Bansur-Alwar II on dated 25-07-2024.	11
8	**Evening Choupal Programme:** New initiation started by DEE, SKNUA, Jobner to organized Evening Choupal programme at each KVK during evening time. First 3 days evening Choupal programme was organized by KVK, Dausa during 14 to 16 May, 2024 and second programme was organized by KVK, Kotputli 22 to 24 May and next by KVK, Ajmer from 27 to 29 May, 2024, KVK Fatehpur from 4 to 6 June, KVK Arnia from 8-9 June, KVK Alwar from 11-13 June, KVK Bharatpur from 19-21 June, KVK Dholpur from 22 to 24 June and last Evening Choupal Programme was organized by DEE at University HQ, Jobner on dated 05 July, 2025 in which …. Farmers benefitted, respectively.	8
9	**Extension Education Council Meeting:** DEE, SKNAU, Jobner organized 3rd Extension Education Council Meeting on dated 10th July, 2024 in the Chairmanship of Hon'ble Vice Chancellor, SKNAU, Jobner Prof. Balraj Singh in which all member of council's like Dean & Directors of SKNAU, Jobner, HODs of SKNCOA, Jobner, Sr. Sci. & Head of KVK's and progressive farmers were participated. All Sr. Sci. & Head of KVK's they were presented their progress report of respective KVKs for the year 2017 to 2024 through power point presentation.	11
10	Monthly Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at KVK, Kota on 08.08.2024 in which Senior Scientist & Head of KVKs were participated and visit demonstration units of KVK Kota	11
11	Zonal Workshop Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at DEE, Jobner on 29.08.2024 in which Senior Scientist & Head of KVKs were presented their reports.	11
12	Monthly Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at DEE, Jobner on dated 30.09.2024 on occasion of Inauguration of Skill Development Centre at DEE, Jobner &	11
13	Monthly Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at DEE on dated 15.10.2024 Chaired by Dr N.K. Gupta, Director of Directorate of Extension Education, SKNAU, Jobner in which all Senior Scientist & Head of KVKs were presented their progress report of Oct., 2024 and Action plan of November 2024.	11

S.No.	Workshop/meeting conducted	No. of KVKs participated
14	Monthly Online Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at DEE on dated 30.11.2024 Chaired by Dr S. R. Dhaka, Director of Directorate of Extension Education, SKNAU, Jobner in which all Senior Scientist & Head of KVKs were presented their progress report of Nov., 2024 and Action plan of December 2024.	11
15	Monthly Online Review Meeting of KVKs was organized by DEE, SKNAU, Jobner at DEE on dated 27.12.2024 Chaired by Dr S. R. Dhaka, Director of Directorate of Extension Education, SKNAU, Jobner in which all Senior Scientist & Head of KVKs were presented their progress report of Dec., 2024 and Action plan of January 2025.	11
SKNAU, Jobner		
1	Monthly meeting of KVKs on dated 05-01-2023 at DEE	11
2	Monthly meeting of KVKs on dated 14-02-2023 at RARI, Durgapura	11
3	Monthly meeting of KVKs on dated 10-03-2023 at KVK, Kotputli	11
4	Monthly meeting of KVKs on dated 13-04-2023 at KVK, Vansthali-Tonk	11
5	Monthly meeting of KVKs on dated 28-06-2023 at DEE	11
6	Monthly meeting of KVKs on dated 29-09-2023	11
7	Monthly meeting of KVKs on dated 06-11-2023 at KVK Ajmer	11
AU, Kota, Rajasthan		
1	KVKs monthly review meeting	6
RAJUVAS, Bikaner		
1	SAC Meeting	1
2	Review Meeting	1

4.3 Visits of Directorate of Extension Education Personnel to KVKs

During 2024, Directorate of Extension Education personnel made 279 official visits to KVKs for participation in various programmes and activities (Fig.4.1). The maximum visits (72) were made for visits for participation in training programmes followed by 69 visits for Field Days, 56 visits were done for SAC meetings of KVKs, 43 visits were made for workshops, 36 visits were made for others and 3 visits were for technology week celebrations of KVKs.

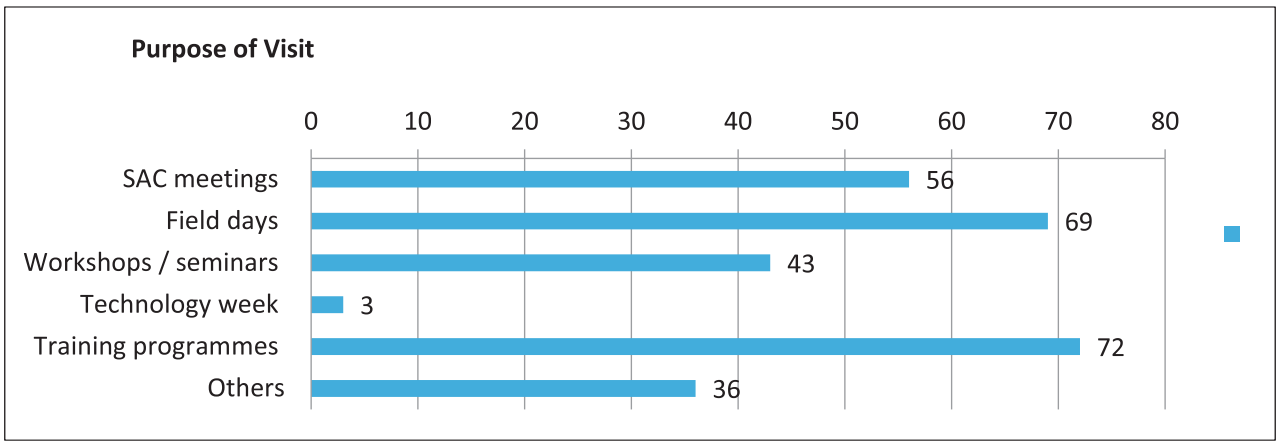


Fig. 4.1 Visits of Directorate of Extension Education personnel to KVKs.

4.4 Publication and Updating of Technology Inventories

Assessing demonstrations of agricultural technologies for its best suitability in local conditions is one of the important functions of DEEs. In the current year, 48 technology inventories published by DEEs, while 33 technology inventories updated for benefit of farming community (Fig. 4.2).

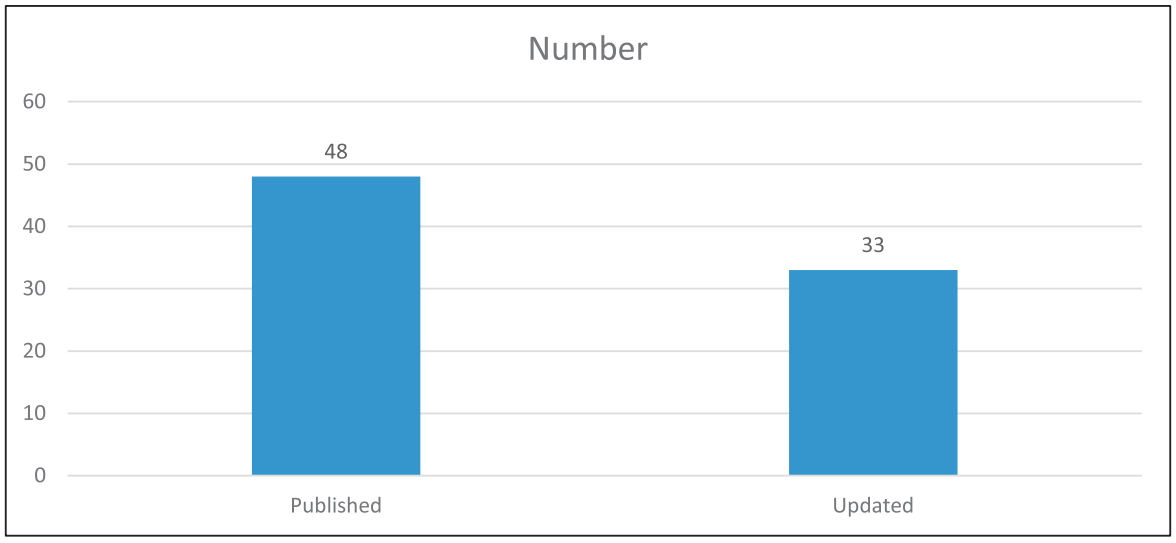


Figure 4.2 Technology inventory published & updated by DEEs.

4.5 Technological Products Provided to KVKs

DEEs provided technological products to KVKs under their jurisdiction in Zone-II as given in fig.4.3. Seed materials supplied **to** 45 KVKs, planting material to 25 KVKs, Bio-products to 34 KVKs, Livestock breed to 20 KVKs, Livestock product to 18 KVKs, Poultry breeds to 19 KVKs and poultry product to 9 KVKs. The details about technological products provided to KVKs are given in fig. 4.3.

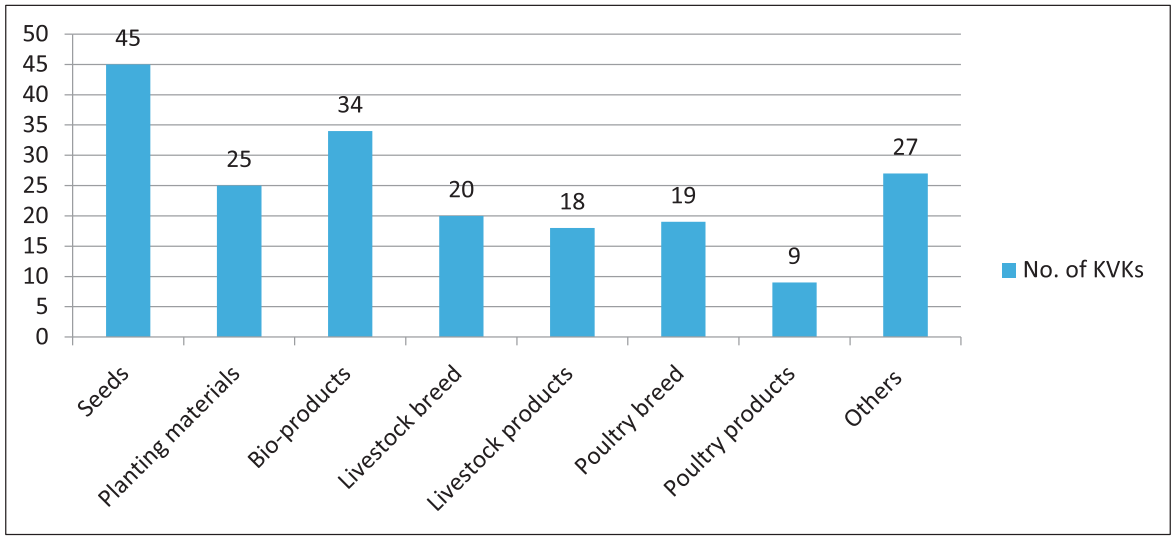


Fig. 4.3: Technology/planting material/breeds/products provided to KVKs.

CHAPTER 5

AGRICULTURAL TECHNOLOGY INFORMATION CENTRE

Agricultural Technology Information Centre (ATIC) is a single window delivery system which provides the services and information on recent technologies to the farmers for the jurisdiction area of State Agricultural Universities, ICAR Institutes. This also acts as a delivery system for the technological products available at ICAR institutes or SAUs to the farmers and other interested groups. It also facilitates the farmers to access the institutional resources available in terms of technology, advice, technology products, etc. for reducing technology dissemination losses; and also provides mechanism for feedback from the users to the institutes/SAUs. Presently seven ATICs are working in Rajasthan, Haryana and Delhi (Table 5.1). The details of activities undertaken by the ATICs during 2024 are listed in Tables 5.2 to 5.7, respectively.

Table 5.1 ATICs functioning in Rajasthan, Haryana and Delhi

S.No.	Name of ATIC	Host Institute	ATIC Manager
1.	CAZRI, Jodhpur	CAZRI, Jodhpur	Dr. S.P.S.Tanwar
2.	SKRAU, Bikaner	SKRAU, Bikaner	Dr. M. Choudhary
3.	MPUA&T, Udaipur	MPUA&T, Udaipur	Dr. R.S. Rathore
4.	IARI, New Delhi	IARI, New Delhi	Dr. N. V. Kumbhare
5.	NDRI, Karnal	NDRI, Karnal	Dr. B.S. Meena
6.	CCSHAU, Hisar	CCSHAU, Hisar	Dr. A.K. Godara

5.1 Farmers' visit to ATICs

A total number of 35293 farmers visited ATICs to get first hand technology information followed by 6624 farmers to purchase technology products developed by research institutes or agricultural universities for diagnosis of plant, soil and animal etc. Details of farmers' visits and the purpose of visits to ATICs are given in Table 5.2.

Table 5.2 Farmers' visits to ATICs during 2024

S.No.	Purpose of visit	Number of farmers' visited
1	Technology Information	35243
2	Technology Products	6624
3	Others	0

5.2 Operational Facilities in ATICs

ATICs are having the facilities of exhibition/ technology museum and farmers' feedback register. Six ATICs are having reception counter and sales counter. Touch screen Kiosk, cafeteria facilities are available in three ATICs. The details of operational facilities available ATICs of Zone-II are given in Table 5.3.

Table 5.3 Operational Facilities in ATICs

S.No.	Particulars	Availability (Please √ mark)	Number of ATICs
1	Reception counter	√	6
2	Exhibition / technology museum	√	6
3	Touch screen Kiosk	√	2
4	Cafeteria	√	3
5	Sales counter	√	6
6	Farmer's feedback register	√	6

5.3 Technology information provided by ATICs

All the ATICs are responsible to provide latest information to the farmers on the various components like varieties / hybrids, pest and disease management, agro-techniques, soil and water conservation, post-harvest technology and value addition, animal husbandry and fisheries. The number of farmers benefiting by the information provided on these commodities through Kisan Call Centre / other phone calls from farmers (17822), Video Shows (2693), letters received and replied (86) and training to farmers / technocrats / students (2). The details of technology information provided by ATICs are given in Table 5.4.

Table 5.4 Technology information provided by ATICs in Zone-II during 2024

		Means for Information on Technology				
		Kisan Call Centre / other Phone calls from farmers	Video shows	Letters received	Letters replied	Training to farmers/ technocrats / students
No. of ATICs		6	3	2	1	2
No. of Farmers benefited		17822	2693	70	86	57
Category of Information	**Varieties / hybrids**	10636	810	42	58	201
	Pest management	1927	1200	5	5	1
	Disease management	1780	312	6	6	51
	Agro-techniques	2059	0	0	7	1
	Soil and water conservation	784	0	2	0	100
	Post harvest technology and Value addition	993	5	4	0	0
	Animal husbandry and fisheries	5134	3896	11	11	292

5.4 Publications (Print & Electronic Media)

ATICs of Rajasthan, Haryana and Delhi are actively involved in distribution of information to the farmers through publications viz. print and electronic media related to agriculture and allied sectors. Various publications benefited the large number of farmers viz. books (1645) and technical bulletins (3520). The details of publications (print & electronic media) provided by ATICs are given in Table 5.5.

Table 5.5 Publications (Print & Electronic media) provided by ATICs in Zone-II during 2024

S.No.	Particulars	Number sold	Revenue generated (Rs.)	Farmers benefited
1	Books	1645	75503	2161
2	Technical bulletins	3520	870	3520

5.5 Technology Products

ATICs provided technology products like seeds (2491.30 q) and planting materials 87150 nos.), and bioproducts (279.85 q) to 7976, 2699 and 6998 number of farmers, respectively. The details of technology products provided by ATICs are given in Table 5.6.

Table 5.6 Technology Products provided by ATICs during 2024

S.No.	Particulars	Quantity	Unit of quantity	Value (Rs.)	Number of farmers benefited
1	Seeds	2491.30	Quintal	8091480	9776
2	Planting materials	87156	Numbers	1700495	2699
3	Bio-products	279.85	Quintals	73391	6998

5.6 Technology services

ATICs provided technology services like soil and water testing, plant diagnostics and services to line departments benefiting 432, 1090, 5627 and 2178 number of farmers, respectively. The details of technology services provided by ATICs are given in Table 5.7.

Table 5.7 Technology services provided by ATICs in Zone-II during 2024

S. No	Particulars	Number of farmers benefited
1	Soil and water testing	432
2	Plant diagnostics	1090
3	Services to line departments	5627
4	Others	2178

CHAPTER 6

ON FARM TESTING

One of the core areas of working of frontline extension system is the testing of viable alternate technological options against farmers practice and existing recommendations for a given micro farming situations popularly called as on-farm testing (OFT). The OFTs offer an evidenced based advocacy for the alternate technologies developed for some other but similar situations for inclusion in a new area for practice and help the research organizations and the state government to include these technologies in their package of practices based on the evidence generated by the KVKs after due evaluation by the SAUs. During 2024, total 1588 OFTs were conducted across various thematic areas (Table 6.1). The maximum of 746 OFTs were under natural resource management broad group followed by 646 OFTs under plant protection.

Table 6.1 OFTs conducted under various thematic and problematic areas during 2024

Group of Technology/Practices	Thematic Area of OFTs	No. of OFTs	Number of Trials
Crop Varieties	Varietal Evaluation	23	165
Crop and Plant Protection	Integrated Disease Management	25	163
	Integrated Pest Management	55	409
	Seed / Plant production	7	74
Soil fertility and nutrient Management	Integrated Nutrient Management	45	323
	Nutrition Management	11	74
	Resource conservation technology	15	73
	Integrated Farming System	2	4
	Weed Management	31	272
Mechanization	Drudgery reduction	1	5
	Farm machineries	3	16
LPM and Others	LPM, Nutrition and Others	1	10
Total		**219**	**1588**

VARIETAL EVALUATION

KVK, Ajmer

Problem definition: low yield due to poor quality culled and mixed varieties bulb

Technology Assessed: Onion variety Arpita (RO-59)

Source of Technology: Directotate of Onion & Garlic Research, Pune

KVK, Ajmer conducted on-farm trial to find out the performance of quality onion bulb on yield of onion. The assessed practice of sowing of improved variety of Onion RO-59 (Arpita) recorded 18.46 % increased (T2-30.09 t/ha) as campared to farmers practices (25.40 t/ha) yield and gave an additional return of Rs 67168/- per ha with B: C ratio of (5.38) (Table 6.2).

Table 6.2 Varietal assessment of onion

Technology option	No.of trials	Yield (t/ha)	Yield increases (%)	Cost of Cultivation	Gross Return	Net Return	Additional return	B:C Ratio
(Farmers Practice)	10	25.40		80568	381000	300432		4.72
Improved variety of Onion Arpita (RO-59)		30.09	18.46	83750	451350	367600	67168	5.38

KVK Delhi

Problem Definition: Low yield of mustard due to saline irrigation water

Technology Assessed: Assessment of CS-60 variety of mustard

Source of Technology: ICAR-CSSRI Karnal

The on-farm trial was conducted on mustard crop in the rabi season 2023-24 to assess the effect of salt tolerant varieties of mustard (CS-60) under salinity on yield and yield attributes of mustard crop to enhance the productivity of mustard. The higher average mean yield (2150kg/ha) of mustard crop Variety CS-60 was reported as compared to farmer practices (Table 6.3).

Table 6.3 Performance of salt tolerant varieties of mustard under salinity

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
T1- Farmers practice (Jadiya)	5	2.0	1800	71800	2.74
T2- Improved practice (CS-60)	5	2.0	2150	87700	3.35

KVK, Faridabad

Problem definition: Low yield of existing wheat varieties.

Technology Assessed: Assessment of WH-1270 wheat variety

Source of Technology: CCSHAU, Hisar

An On-farm trial was conducted at village Arua of Block Ballabgarh and village Chirsi of Block Faridabad at 5 farmers fields on yield performance of wheat varieties under timely sown conditions. Latest variety WH 1270 was tested against farmers practice variety HD 2967. The technology tested yielded 5.91 tons /ha of wheat yield against 5.24 tons/ha under farmer's practice. The net return increased by 0.14 lakh/ha due to use of latest variety under testing over farmers practice (Table 6.4).

Table 6.4 Assessment of wheat varieties under timely sown conditions

Technology option	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
HD- 2967 (Farmers Practices)	5	2.0	5240	82560	2.91
WH-1270 (Recommended)	5	2.0	5910	96640	3.13

KVK, Hanumangarh-II

Problem Definition: Low productivity of wheat due to salt affected soil

Technology Assessed: Assessment of salt tolerant wheat variety KRL 213

Source of Technology: CSSRI, Karnal

KVK, Nohar-Hanumangarh in Rajasthan conducted on-farm trial at Bherusari village in Rawatsar Block to assess salt tolerant variety of Wheat using (T1)-variety HD 3086 and (T2) KRL 213. The results of the trial indicated that new variety KRL 213 had obtained 27.2 per cent higher yield (33.6 q/ha) as compare to farmers practice (26.4 q/ha) with 1.93 B:C ratio in the salt affected area of the district. Net return under T2 treatment earned was also maximum (Rs 36860 with B:C ratio 1.93) followed by T-2 (Rs 20480 with B:C ratio 1.52, respectively. Farmers were satisfied with the results of KRL 213 new Wheat variety (Table 6.5).

Table 6.5 Assessment of salt tolerant wheat variety KRL 213

Technology options	No. of trials	Area (ha)	Yield (qt/ha)	Net Return	B:C Ratio
Farmers practice (Wheat variety HD 2967 or HD 3086)	10	0.1	26.4	21980	1.58
Improved practice (T2) Wheat variety KRL 213	10	0.1	33.6	36860	1.93

KVK, Kaithal

Problem definition: Comparatively lower yields of already adopted wheat varieties

Technology Assessed: Assessment of wheat varieties DBW 222

Source of technology: IIWBR Karnal

The above OFT was conducted at Siwan, Guhna, Dera Gadla and Sajuma. KVK, Kaithal conducted on-farm trial to assess wheat varieties DBW 222 vs DBW 371. DBW 370 gave 3.4 per cent more yields than DBW 222 (Table 6.6).

Table 6.6 Assessment of wheat varieties

Technology options	No. of trials	Area	Yield (q/ha)	% Increase in yield	Net Returns (Rs./ha)	BC Ratio
DBW 222	4	1.6 ha	58.0	-	90950	1.97
DBW 371			60.0	3.4	95500	2.07

KVK, Nagaur-I

Problem definition: Poor yield in the selected area due to lack of awareness regarding improved varieties of onion variety

Technology Assessed: Evaluation of high yielding and salt tolerant onion variety

Source of Technology: IIHR, Bengaluru

KVK, Nagaur-I conducted an on-farm trial at Roon and Gawalu village of Mundwa Block at 10 farmers field to evaluate the performance of NHRDF Red-4 onion variety (T_2), comparing farmer's Nasik Red variety (T_1). The results showed that under the recommended

practices, the NHRDF Red-4 variety achieved a yield of 265.00 q/ha, with a net return of Rs. 399839.47/ha and a benefit-cost (B:C) ratio of 3.07. In contrast, the farmer's practice (Nasik Red) yielded 193.33 q/ha, with a net return of Rs. 266316.28/ha and a B:C ratio of 2.21 (Table 6.7).

Table 6.7 Evaluation of high yielding onion variety NHRDF Red-4

Technology options	No. of trials	Area (ha)	Yield (q/ha)	Net Return	B:C Ratio
T-1: Cultivation of farmers onion variety Nasik Red (Farmers Practice)	10	1	193.33	266316.28	2.21
T-2: Cultivation of Onion variety NHRDF Red-4 (Recommended Practice)		1	265.00	399839.47	3.07

KVK, Nagaur-II

Problem definition: Lower productivity and profitability in onion due to non-availability of high yielding variety

Technology Assessed: Evaluation of onion var-NHRDF Red-4

Source of Technology: NHRDF, New Delhi

KVK, Maulasar (Nagaur II) in Rajasthan conducted on-farm trial to evaluate onion variety NHRDF Red-4 to assess effect on productivity and net return of onion. The results indicated that variety has given 15.73 per cent increase in yield over farmer practice. The trial clearly showed that onion yield was the maximum (378 q/ha) under T_2 group with a net profit of Rs 455719 and good B:C ratio 5.10, whereas it was (372.93 q/ha) with net profit of Rs 372930 and B:C ratio 4.16 in farmer practice (Table 6.8).

Table 6.8 Performance of HYV of onion at farmers' fields

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
T_1: Farmers practice	10	1.0	32700	372930	4.16
T_2: NHRDF Red-2	10	1.0	3780	455719	5.10

KVK, Sriganganagar

Problem Definition: Lower yield of Carrot

Technology Assessed: Evaluation of Carrot variety PC-161

Source of Technology: PAU, Ludhiana

Carrot is one of the major vegetable that grown extensively in Sri Ganganagar District during *rabi* season. One of the major constraints is most of the farmer's grow traditional and unrecommended varieties, which are not only gives lower yield but also produce poor quality of carrot roots. To increase the production, productivity, and quality of carrot An OFT was carried out by KVK Sriganganagar at 5 farmers field in 54 F and 10 LL village of Sri Ganganagar District to assess the performance of carrot variety PC-161 with Local Variety. The results reveled that that variety PC-161 recorded the root length (22.6 cm) root diameter (2.90 cm) and higher yield (385 q/ha) compared to the Local variety. In terms of economics also carrot variety PC 161 was found economically superior with higher B : C ratio of (5.24) as against over the Local Variety (4.16). (Table 6.9)

Table 6.9 Performance of carrot varieties in Sriganganagar district

Technology options	No. of trials	Area (ha)	Root length (cm)	Root diameter (cm)	Yield (Q/ha)	Net Return	B:C Ratio
1. Farmers practice (details)	5	0.2	22.6	2.90	312.00	237000	4.16
2. Improved practice (T2) PC-161	5	02	19.1	2.52	385.0	311520	5.24

WEED MANAGEMENT

KVK, Ajmer

Problem definition: Heavy infestation of weed in Cumin

Technology Assessed: Weed control measures on cumin yield

Source of Technology: NRCSS, Ajmer

KVKs , Ajmer took up on-farm trial on chemical weed management in cumin. The results indicated that the use of Oxyflurofen @ 1 kg. a i/ha gave 25.95 per cent increase in yield over hand weeding. The maximum net return (Rs 189750/-) was achieved by T2 (Oxyflurofen @ 1 Kg ai/ha as early post emergence i.e ,20-25 DAS) as compared to farmer's practice. It is evident from the table that the assessed practice gave an additional net return of Rs. 36180/- (Table 6.10).

Table 6.10 Effect of Oxyflurofen on weed control and yield

Technology options	No. of trials	Yield (qt./ha)	Yield increases (%)	Cost of Cultivation	Gross Return (Rs./ha)	Net Return (Rs./ha)	B:C Ratio
T1:Three times hand weeding (Farmers Practice)	10	6.55		44830	150650	105820	3.36
T2:Oxyflurofen @ 1 Kg ai/ha as early post emergence i.e ,20-25 DAS		8.25	25.95	47750	189750	142000	3.97

KVK, Alwar-I

Problem Definition: Yield reduction due to heavy weed infestation in wheat

Technology Assessed: Weed Management in wheat

Source of Technology: HAU, Hisar

An assessment trial on weed management in wheat has been conducted by KVK, Alwar-1 in Rabi-2023-24 at Gurjarpur Khurd village. Alwar district covers 1.92 Lac hectare area of wheat in which broad leaf weeds like *Chaenopodium album*, *Chaenopodium murale*, *Rumex dentatus*, *Convolvulus arvensis are* major problem which reduce the wheat yield. In wheat crop farmers use metsulphuron methyl @ 4 gm *a.i.*/ ha. for management of broad leaf weeds in wheat[T_1] . In T_2 application of carfenrtazone ethyl 40 E.C. @ 20 gm. *a.i.*/ha after 30-35 DAS at 10 farmers field.

The result revealed that the broad leaf weed density was found lower in the T_2 as compared to T_1. T_2

recorded the 54.1 a/ha yield as compared to T_1 (50.5 a/ha) which was 3.6 q higher than T_1. The net return and B:C ratio in the accessed technology have been found Rs. 93450 and 3.38, respectively as compared to farmers practices of Rs. 85250 and 3.18, respectively. The farmers are received higher yield and profit with application of carfenrtazone as compare to farmers practice. (Table 6.11)

Table 6.11 Title of table (Varietal and NRM)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmers practice -Application of metsulphuron @ 4 gm. *a.i.*/ ha after 30-35 DAS	10	1.25	50.5	85250	1:3.18
2. Improved practice -Application of carfentrazone ethyl 40 E.C.@ 20gm *a.i.*/ha after 30-35 (T2)	10	1.25	54.1	93450	1:3.38

KVK Delhi

Problem Definition: Low Yield of wheat crop due to severe weed infestation

Technology Assessed: Assessment of Premix Broad Spectrum Herbicide for weed management in Wheat (*Triticum aestivum* L.)

Source of Technology: ICAR-IIWBR, Karnal

On Farm Trial was designed on weed management in wheat crop at 5 farmers' fields in Jhatikara and Sarangpur villages of S-W District of NCT Delhi During *rabi* season 2023-24. Two treatments were comprised of T_1 - Farmers practice and T_2- Recommended practice-

sulfosulfuron 75% + metsulfuron methyl 5% @ 32 g a.i./ha (at 25 DAS as post emergence) replicated 5 times at farmers' fields. The results of the trial revealed that the seed yield of wheat crop was found higher (5250kg/ha) in T2 treatment as compared to T1 (Farmer's Practice) (4700 kg/ha). Similar trend was reported in economics, maximum net return (Rs. 71437.5/ ha) with 2:4 B: C ratio was reported in T2 treatment as compared to T1 (Farmer practice) (Rs. 59675/ ha) with B: C ratio 2:26 (Table 6.12).

Table 6.12 Impact of weed management practice on yield, economics, and weed density

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return (Rs./ha)	B:C Ratio	Weed intensity (%)
1. Farmers practice (2,4 D)	5	0.5	4700	59675.00	2.26	8.50
2. Improved practice (T2) (sulfosulfuron 75% +metsulfuron methyl 5% @ 32 g a.i./ha at 25 DAS as post emergence)	5	0.5	5250	71437.5	2.48	3.35

KVK, Faridabad

Problem definition: Unsatisfactory control of grassy weeds in paddy.

Technology Assessed: Assessment of newer chemical for control of grassy weeds in Paddy.

Source of Technology: PAU, Ludhiana

An On-farm trial was conducted at village Arua of Block Ballabgarh and village Chirsi of Block Faridabad at 5 farmers fields on assessment of new herbicide for control of grassy weeds in Paddy. Use of Penoxsulam 240 SC @ 100 ml/ha at 10-12 days after transplanting was tested against farmers practice Pretilachlor 50 EC@2 l/ha at 2-3 days after transplanting. The yield of paddy with the use of Penoxsulam 240 SC @ 100 ml/ha at 10-12 days

after transplanting was 4.25 tons /ha and with use of Pretilachlor 50 EC@2 l/ha at 2-3 days after transplanting yielded 3.84 tons/ha. The net return increased by 0.164 lakh/ha due to use of latest chemicals over farmers practice (Table 6.13).

Table 6.13 Effect of Penoxsulam 240 SC on yield of paddy

Technology options	No. of trials	Area (ha)	Yield (Kg/ha)	Net Return	B:C Ratio
Pretilachlor 50 EC@2 l/ha at 2-3 days after transplanting (Farmers Practice)	5	2.0	3840	91700	2.40
Penoxsulam 240 SC @ 100 ml/ha at 10-12 days after transplanting. (Recommended Practice)	5	2.0	4250	108100	2.66

KVK, Hisar

Problem Definition: Heavy infestation of weed in Direct seeded rice (DSR)

Technology Assessed: Spray of 225 g/ha Council active 30 WG (triafamone 20% + Ethoxysulfuron 10 %) at 15-25 DAS.

Source of Technology: PAU, Ludhiana

Weed problems are a significant challenge in direct seeded rice because weeds emerge simultaneously with crop, leading to intense competition for resources and potentially large yield losses. To tackle Weed problems in direct seeded rice KVK, Hisar conducted on-farm trial by using Council active 30 WG (triafamone 20% + Ethoxysulfuron 10 %) herbicide @ 225 g/ha at 15-25 DAS. It is found effective in controlling weed flora in DSR and found better with 8.33 % increase in yield as compared to other technological options (Table 6.14).

Table 6.14 Effect of Council active 30 WG on weed control and yield at DSR

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio	Weed intensity (%)
1. Farmers practice (Nominee gold)	7	2.8	43.2	106590	2.0	
2. Improved practice (T2)			46.8	118280	2.15	

KVK, Jhunjhunu

Problem Definition: Heavy infestation of weed in Pearl millet

Technology Assessed: Weed management in Pearl millet

Source of Technology: IARI New delhi

Krishi Vigyan kendra, Abusar Jhunjhunu took up on-farm trial on chemical weed management in Pearl millet at Kumas village at ten farmers field. The results indicated that the use of Tembotrine 42% SC @ 120 g. a.i/ha increase in 18.71 % yield over hand weeding (Table 6.15).

Table 6.15 Effect of Tembotrine 42% SC on weed control and yield of pearlmillet

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmers practice (only hand weeding)	10	0.2	11.06	20573	1.76
2. Improved practice (T2)	10	0.2	13.13	28569	2.02

KVK, Karauli

Problem Definition: Yield reduction due to heavy weed infestation in wheat.

Technology Assessed: Weed Management in wheat.

Source of Technology: HAU, Hisar.

An assessment trial on weed management in wheat has been conducted by KVK, Karauli in Rabi-2023-24 at Jagdarpura village. Karauli district covers 52695 hectare area of wheat in which broad leaf weeds like *Chaenopodium album*, *Chaenopodiummurale*, *Rumexdentatus*, *Convolvulusarvensis are* major problem which reduce the wheat yield. In wheat crop farmers use Post emergence application of 2,4-D @ 0.5 kg a.i./ha (T1-Farmer's practice) and Sulfosulfuron 75% WG + Metsulfuron Methyl 5% WG @ 32 gm a.i. /ha (T2) after 30-35 DAS at 10 farmers field.

The result revealed that the broad leaf weed density was found lower in the T_2 as compared to T_1. T_2 recorded the 43.50. q/ha yield as compared to T_1 (39.50 q/ha) which was 4 q higher than T_1. The net return and B:C ratio in the accessed technology have been found Rs. 52450 and 2.21, respectively as compared to farmers practices of Rs. 44150 and 2.03, respectively. The farmers are received higher yield and profit with application of Sulfosulfuron 75% WG + Metsulfuron Methyl 5% WG @ 32 gm a.i./ha and the farmers like to adopt this technology for future. as compare to farmers practice (Table 6.16).

Table 6.16 Title of table (Varietal and NRM)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmers practice- Post emergence application of 2,4-D @ 0.5 kg a.i./ha	10	1.25	39.50	44150	1:2.03
2. Improved practice- Sulfosulfuron 75% WG + Metsulfuron Methyl 5% WG @ 32 gm a.i. /ha (T2)	10	1.25	43.50	52450	1:2.21

KVK, Nagaur-I

Problem definition: Low yield of Pearl millet due to heavy weeds infestation

Technology Assessed: Use of Tembotrione (42% SC) @ 120 g a.i./ha at 20 days after sowing for the control of weeds in Pearl millet.

Source of Technology: ICAR-IARI, New Delhi

Weed species found during the course of investigation were monocot, dicot and sedges. The major weed populations of weed species viz., *Dactyloctenium aegyptium* (Crow foot grass), *Cyperus rotundus* (Motha), *Cynodon dactylon* (Dhoob grass), *Parthenium hysterophorus* (Congress grass), *Amaranthus viridis* (Jungali chaulayi), *Digera arvensis* (False Amaranth), *Digitaria sanguinalis* (hairy crabgrass) and *Eragrostis minor* (smaller stinkgrass).

KVK, Athiyasan, Nagaur-I conducted on-farm trial on weed management in Pearl millet crop during Kharif-2024, Among three weed management treatments. An economic evaluation of treatment Tembotrione (42% SC) @ 120 g a.i./ha at 20 DAS fetched the highest gross return (Rs. 68594 ha^{-1}), net return (Rs. 40944 ha^{-1}) and B: C ratio (2.48) followed by Atrazine (50% WP) @ 500 g a.i./ha at PE fetched gross return (Rs. 59524 ha^{-1}), net return (Rs. 32149 ha^{-1}) and B: C ratio (2.17) (Table 6.17).

Table 6.17 Effect of weed control treatments in Pearl millet

Technology optiona	Total weed density (No./m)		Total Dry matter of weeds (g/m)		Plant height (m)	Grain yield (q/ha)	Cost of Cultivation (Rs./ha)	Gross Return (Rs./ha)	Net Return (Rs./ha)	B:C Ratio
	20 DAS	40 DAS	20 DAS	40 DAS						
T-1: Use of Atrazine (50% WP) @ 500 g a.i./ha at Pre emergence (Farmer Practice)	21	36	16	71	1.76	17.84	27375	59524	32149	2.17
T-2: Use of Tembotrione (42% SC) @ 120 g a.i./ha at 20 DAS (Recommended Practice)	47	5	45	10	1.92	20.39	27650	68594	40944	2.48
T-3: Weedy check (Unweeded)	46	63	46	132	1.54	15.03	24995	48900	23905	1.96

Selling price of grain (MSP) @ Rs.2625/qtl. and Selling price of straw @ Rs.200/qtl. Farmer practice (T_1)

KVK Pratapgarh

Problem Definition: Low yield of soybean due to weed infestation

Technology Assessed: Sodium acifurofen 16-5% + Clodinofop 8 %

Source of Technology: DWR, Jabalpur

An OFT was conducted at village Ranpur, Block Pratapgarh at 10 farmers fields to manage weeds in soybean causing severe loss in yield. Spray of Sodium acifluorfen 16-5% + Clodinofop 8 % @ 1.0 lit. per ha at 20 DAS was tested against farmer's practice and recommended practice. The technology tested yielded 18.4 q /ha of soybean against 17.2 q/ha and 12.2 q/ha under recommended and farmer's practice, respectively. The net return increased by Rs. 12160/ha due to spray of Sodium acifluorfen 16-5% + Clodinofop 8 % @ 1.0 lit. per ha at 20 DAS over farmers' practice (Table 6.18).

Table 6.18 Effect of spray of NAA on yield and return of chilies under Phalodi conditions

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
Farmer's practice (Hand weeding/ mechanical weeding)	10	0.2	15.2	41440	2.54
Imazethapyr 10 SL @ 1.0 lit. per ha (14-25 DAS)		0.2	17.2	48800	2.71
Sodium acifluorfen 16-5% + Clodinofop 8 % @ 1.0 lit. per ha (14-25 DAS)		0.2	18.4	53600	2.84

KVK, Rohtak

Problem Definition: Early weed emergence and higher weed density in DSR conditions causing lower yield of rice

Technology Assessed: Assessment of different herbicides in direct seeded rice

Source of Technology: PAU, Ludhiana

AN OFT was conducted under KVK Rohtak in villages Madina, Shimli, Farmana, Humayunpur, Kiloi, Kharak Jatan, Marodhi Jatan, Pakasma at 8 number of farmers fields. Pre emergence application of pendimethalin + pyrazosulfuron (RM) provided effective management of broad spectrum weed flora for initial crop growth period and 90 % visual weed control was observed up to 40-45 DAS with post emergence application of council active herbicide. Thus, this practice was suitable under DSR sowing in district (Table 6.19).

Table 6.19 Integrated weed management in Title of table (IWM)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio	Visual weed control efficiency (%)
Farmers' practice (only post emergence herbicide Byspribac sodium 10EC @250g/ha)	8	0.8	37.8	111120	3.33	50
PRE pendimethalin 30 EC @ 3.25 l/ha + pyrazosulfuron ethyl 10 WP @ 250 g/ha fb POE council active (triafamone 20 + ethoxysulfuron10 WG) @ 225 g/ha (T2)	8	0.8	43.2	129925	3.52	90



KVK, Udaipur-I

Problem definition: Low Soybean yield due to high infestation of weeds

Technology Assessed: Management of weeds to increase Soybean yield

Source for Technology: AU, Kota

An OFT (On-Farm Trial) was carried out in Turgarh village, located in the Phalasiya Block, at 10 farmers' fields to address weed infestation in soybean crops. A spray combination of Sodium Acifurofen 16.5% + Clodinofop-Propargyl 8% at a rate of 1.0 liter per hectare (applied between 14-25 DAS) was tested against the farmer's standard practice of using Imazethapyr 10 SL at 1.0 liter per hectare. The combination of Sodium Acifurofen 16.5% + Clodinofop-Propargyl 8% effectively controlled both broadleaf and narrowleaf weeds, resulting in a yield increase of 2.2 quintals per hectare and a net return rise of Rs 9,100 per hectare (Table 6.20).

Table 6.20 Effect of application of weedicide on weed intensity and Soybean yield

Treatments	Weed density (no. m^{-2})	Grain yield (q ha^{-1})	Gross Income (Rs ha^{-1})	Cost of Cultivation (Rs ha^{-1})	Net Returns (Rs ha^{-1})	B/C ratio
T_1 (Hand Weeding)	36.2	9.3	45570	28785	16785	1.58
T_2 (Imazethapyr 10 SL @ 1.0 lit. per ha)	22.7	12.1	59290	30860	28430	1.92
T_3 (Sodium acifurofen 16.5% + Clodinofop-Propargyl 8%	20.5	14.3	70070	32540	37530	2.15

KVK Yamunanagar

Problem Definition: Lower yield of Paddy under direct seeded rice due to weed pressure

Technology Assessed: Pre + Post emergence application of herbicides for weed management in paddy under DSR

Source of Technology: PAU, Ludhiana

The results of On Farm Trials on weed management revealed that the higher yield under Pre emergence application of Pendimethalin 30 EC @ 1.5 litre/acre *fb* Post emergence application of Triafamone 20 % + Ethoxysulfuron 10 % WG) @ 90 g/acre at 25 DAS may be due to lower weed population under this treatment. Results obtained from the trials showed an increase of 14.4 % in yield and higher B:C ratio in

assessed treatment where pre and post emergent herbicides were applied as compared to farmer's practice where post emergence herbicide was applied in the fields (Table 6.21).

Table 6.21 Comparative performance of Post emergence herbicide application *vs* Pre + Post emergence application of herbicides for weed management in paddy under DSR (Weed management)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmers practice (Post Emergence application of Bispyribac-sodium at 25 DAS)			6075	95,750	3.18
2. Improved practice (Pre emergence application of Pendimethalin 30 EC @ 1.5 litre/acre fb Post emergence application of Triafamone 20 % + Ethoxysulfuron 10 % WG) @ 90 g/acre at 25 DAS)	5	2	6950	1,13,565	3.45

INTEGRATED CROP MANAGEMENT

KVK, Kaithal

Problem definition: Lower productivity and profitability under existing methods of paddy sowing of paddy with Puddled TPR and unpuddled TPR method was assessed. Sowing with puddled method enhanced the yield by 3.8 per cent compared to unpuddled method. (Table 6.22)

Table 6.22 Assessment of sowing methods in paddy (CSR-30)

Technology options	No. of trials	Area	Yield (q/ha)	Increase in yield (%)	Net Returns (Rs./ha)	BC Ratio
Puddled TPR	4	1.6	36.1	-	1,23,550	1.65
Unpuddled TPR			36.4	3.76	1,35,200	2.08

KVK Jodhpur-II

Problem Definition: Lower yield of chilli due to higher flower and fruit drop

Technology Assessed: NAA application in chilli

Source of Technology: PAU, Ludhiana

An OFT was conducted at village Mokheri, Block Phalodi at 5 farmers fields to manage flower and fruit drop in chilies causing severe loss in yield. Spray of NAA @ 4gm/20 lit after 45 and 55 days after transplanting was tested against farmer's practice. The technology tested yielded 26.5 tons /ha of green chilies against 22.0 tons/ha

under farmer's practice. The net return increased by 1.28 lakh/ha due to foliar spray of NAA@4 g/20 liter of water at 45 and 55 DAT (Table 6.23).

Table 6.23 Effect of spray of NAA on yield and return of chilies under Phalodi conditions

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
Farmers practice	5	0.2	22000	312000	3.5
Spray of NAA @ 4 g/20 lit water at 45 and 55 DAT	5	0.2	26500	440000	5.8

KVK, Jhunjhunu

Problem Definition: Fruit drop in Sweet orange

Technology Assessed: Spray of 2,4D in sweet orange

Source of Technology: PAU Ludhiana

KVK Jhunjhunu conducted an on farm trial at Lamba Gothra village of Jhunjhunu district in sweet orange orchard to manage fruit drop during summers. Spray of 2,4-D (Horti. Grade) @ 1 gram + Propiconazole 25% EC @ 100 ml in 100 litre water thrice during the month of April, June & September which increased fruit set resulted 31.41 % higher fruit production than farmer practice (Table 6.24).

Table 6.24 Effect of Spray of 2,4-D (Horti. Grade) & Propiconazole 25% EC on sweet Orange

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmers practice (No spray of PGR)	10	0.2	208.8	322000	2.61
2. Improved practice (Spray of 2,4-D (Horti. Grade) @ 1 gram + Propiconazole 25% EC)	10	0.2	274.4	486000	3.43

KVK, Jhajhar

Problem Definition: Sudden wilting in Bt cotton and no timely management leading to low productivity

Technology Assessed: Assessment of management of parawilt in Bt cotton

Source of Technology: ICAR-CICR, Nagpur

Bt cotton is an important commercial crop of Haryana. However, there is high incidence of sudden wilting in Bt cotton and no timely management leading to low productivity. KVK Jhajjar conducted five on-farm trial in village Machroli to assess the control measure. The treatments viz., spray of Cobalt chloride @ 10 ppm and drenching of copper oxychloride 25 g+200g Urea/10L of water immediately after the appearance of the wilting symptoms on the affected plants resulted in recovery of para wilt affected plants by 75 and 66 per cent, respectively. Timely management of para wilt using spray of cobalt chloride increased net returns by Rs. 11400/ha over farmers practice (Table 6.25).

Table 6.25 Assessment of management of parawilt in Bt cotton (IPM)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return (Rs./ha)	B:C Ratio	Pest/ Disease intensity (%)
T1-Farmers practice (No treatment)	5	1.5	1760	52400	1.74	100
T2- Improved practice (Spray of Cobalt chloride @10ppm)			1940	63800	1.88	25
T3- Improved practice (Drenching of Copper oxychloride 25 g +200gUrea/10L immediately after the appearance of the wilting symptoms on the affected plants)			1900	59500	1.80	33

KVK Jalore-I

Problem Definition: Low production and poor quality of pomegranate due to sun burn.

Technology Assessed: Management of sun burn in pomegranate.

Source of Technology: ICAR, CIAH, Bikaner

Details of OFT: An OFT was conducted at village Bawtara, block Sayla of Jalore district at 10 farmers fields to manage sun burn in pomegranate causing several loss in total yield as well as fruit quality. Application of 5% Kaolin at fruit development stage was tested against farmer's practices. The technology tested yielded 16.70 ton/ha. of pomegranate fruit against 12.91 ton/ha under farmer's practices. The net return increased by 1.83 lakh/ha due to foliar spray of 5% Kaolin (Table 6.26).

farmers practices

Application of 5% Kaolin

Table 6.26 Effect of 5% Kaolin on yield and return of pomegranate under Jalore conditions.

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmer's practice (No spray)	10	01	12.91	5.60	3.73
2. Improved practice (Application of 5% Kaolin)	10	01	16.70	7.43	4.25

KVK, Jaipur-I

Problem Definition: Low Yield due to early drought and moisture stress

Technology Assessed: Spray of Kaolin @ 2 % solution at 25 DAS

Source of Technology: SDAU, SK Nagar, Gujrat

An OFT was conducted at village- Chimanpura, Block- Govindgarh, District- Jaipur at 10 farmers fields to work out suitable agro-chemical for mitigate the drought and improve the yield and quality of pearl millet was tested against farmer's practice. The technology tested yielded 21.53 q/ha of pearl millet yield against

17.67 q/ha under farmer's practice. The net return increased by 43.04 % due to Spray of Kaolin @ 2 % solution at 25 DAS (Table 6.27).

Table 6.27 Effect of anti-transpirant on yield and economics of Pearlmillet Crop

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
Treatment T-1 (Farmers Practice): No Use of Anti-transpirant	10	0.2	1767	20,984	1.83
Treatment T-2 (Assessed Practice): Spray of Kaolin @ 2 % solution at 25 DAS	10	0.2	2153	30,016	2.13

KVK, Fatehabad

Problem definition: Low yield

Technology Assessed: Effect of growth regulator on yield of tomato

Source of Technology: PAU, Ludhiana

KVK, Fatehabad conducted on-farm trial to assess the efficacy of growth regulator on yield of tomato. The results indicated that the foliar spray of Vipul booster (triacontanol 0.1%) @ 625 ml per hectare, five times at 15 days interval after transplanting gave 6.77 % increase in yield over farmer's practice (no spray of vipul booster) (Table 6.28).

Table 6.28 Effect of growth regulator on yield of tomato

Technology options	No. of trials	Av. Yield (q/ha)	Increase in yield (%)	Economics			
				Gross cost (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	B C ratio
T1: Farmer's practice (no spray of vipul booster)	10	295	-	73000	206500	133500	2.82
T2: Foliar spray of Vipul booster (triacontanol 0.1%) @ 625 ml per hectare, five times at 15 days interval after transplanting		315	6.77	75000	220500	145500	2.94

KVK, Churu-I

Problem Definition: Low yield of Cluster bean under heat stress

Technology Assessed: Foliar spray of TGA to manage heat stress in cluster bean

Source of Technology: AU, Jodhpur

Cluster bean is the third important pulse crop after mung bean and moth bean in the district covering 212683 ha area under rainfed condition. Scanty rainfall and long dry spell during monsoon season crop faces heat stress resulting decrease in yield. To address this problem an OFT was conducted in participatory mode with 10 farmers field at Devipura Block Ratangarh to assess the Thio-Glycolic Acid (TGA) @ 100 ppm at vegetative and

flowering stage as a foliar application during heat stress period in cluster bean. The technology tested yielded 7.62 q /ha grain yield of Cluster bean against 6.40 q/ha under farmer's practice. The net return increased by Rs 7604/ha with 2.16 BCR (Table 6.29).

Table 6.29 Effect of foliar spray of TGA at vegetative and flowering stage in cluster bean

Technology options		No. of trials	Area (ha)	Yield (kg/ha)	Net returns (Rs/ha)	B:C ratio
T_1	Farmer practice: No use of chemical	10	2.5	6.40	18598	1.83
T_2	Spray of TGA @ 100 ppm at vegetative and flowering stage		2.5	7.62	26206	2.16

KVK, Bharatpur

Problem Definition: Low productivity of chilli and fennel in mono cropping

Technology Assessed: Relay cropping of Fennel in chilli

Source of Technology: ICAR-NRCSS, Ajmer

KVK Bharatpur conducted on-farm trial on relay cropping of fennel in chilli at farmers field of villages Bhopar, Jagjivanpura, Nagla Idamda and Morwa Block Weir- Bhusawar. Seedlings of chilli transplanted during last week of July to first week of August and sowing of fennel seeds in this chilli field during first week of August. Relay cropping of chilli and fennel had enhanced the net return by 31.84 % and reduced cost of cultivation by 5.02% (Table 6.30).

Table 6.30 Title of table (ICM)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return (Rs./ha)	B:C Ratio
Farmers practice T1 (Chilli Monocrop) LxP- 1.5'X1.5'	10	1.0	66400	299470	2.56
Improved Practice: T2.1 (Chilli) LxP- 1.5'X1.5'			58700	219920	3.04
Improved Practice: T2.2 (Fennel LxP- 6'X2'			2240	174900	

KVK Sikar-II

Problem definition: Lower productivity and profitability in onion cultivation due to imbalance application of nutrients

Technology Assessed: Nutrient management in onion

Source of Technology: DOGR, Pune

KVK, Sikar-II conducted an on-farm trial to determine the most effective nutrient management practice for enhancing onion productivity. The trial's results clearly showed that the highest onion yield (420.23 q/ha) was obtained under treatment T_3, which involved: Recommended Dose of Fertilizers (RDF) (100:50:50 NPK kg/ha) and 2 sprays of NPK 13:00:45 @ 5 g/liter of water. This treatment resulted in a net profit of Rs. 233,484 and a favourable benefit-cost ratio (B:C ratio) of 3.27. The next best treatment, T_2, which involved RDF (100:50:50 NPK kg/ha) alone, recorded a bulb yield of 382.90 q/ha, resulting in a net profit of Rs. 207,170 and a B:C ratio of 3.0. In contrast, the farmers' existing practices yielded the lowest results, with a yield of 334.11 q/ha, earning a net profit of Rs. 183,082 and a B:C ratio of 2.84. (Table 6.31)

Table 6.31 Effect of foliar spry of nitrogen and potassium fertilizer on yield and economics of onion

Treatments	Yield (kg./ha)	Increase in Yield (%)	Gross cost (Rs/ha)	Gross return (Rs/ha)	Net Returns (Rs./ha)	B:C Ratio
T_1: 70 kg N, 40 kg P2O5 and 10 kg K/ha (Farmers Practice)	334.11	-	94220	267288	173068	2.84
T_2: RDF (100:50:50 NPK kg/ha) (Recommended Practice)	382.90	14.60	99150	306320	207170	3.09
T_3: RDF (100:50:50 NPK kg/ha) + 2 spray of NPK 13:00:45 @ 5 g/lit of water	420.23	25.78	102700	336184	233484	3.27

KVK, Panipat

Problem Definition: Alternate cropping system for crop diversification

Technology Assessed: Diversified cropping system with muskmelon.

Source of Technology: IARI, New Delhi

An OFT was conducted to assess productivity and profitability of different cropping system. Cropping pattern of Rice (PB1509) - mustard (P45S46) – Muskmelon was tested against Rice (PB 1509) – wheat (DBW 327) cropping system as T1 and Rice (PB 1509) - wheat (DBW 327 & muskmelon in relay system as T2. The technology tested yielded 244.80 q/ha wheat equivalent yield against 149.10 q/ha and 256.93 64.12 q/ha under T1 and T2 respectively. The net return increased by Rs. 162117/ha, Rs. 7359/ha over T1 and T2 respectively due to Rice (PB1509) - mustard (P45S46) – Muskmelon cropping pattern (Table 6.32).

Table 6.32 Nitrogen management in wheat sown with/after paddy straw incorporation

Treatments	No. of trials	Area (ha)	Wheat Equ. Yield (q/ha)	Net returns	B:C Ratio
T1- Rice (PB 1509) – wheat (DBW 327)	5	0.5	149.10 (54.4+60.2)	257124	4.13
T2- Rice (PB 1509) - wheat (DBW 327 & muskmelon in relay system		0.5	256.93 (54.4+51.5+132)	411882	3.39
T3- Rice (PB1509) - mustard (P45S46) - Muskmelon		0.5	244.80 (54.4+19.5+140.0)	419241	4.05

Problem Definition: Diversification of rice-wheat system for additional income.

Technology Assessed: Alternate cropping system for rice-wheat system.

Source of Technology: IARI, New Delhi

An OFT was conducted to access the productivity and profitability of alternate cropping system for diversification of rice–wheat cropping system. Two cropping pattern i.e. Rice-cole crop-late sown wheat (T2) and Rice-cole crop-late sown wheat (T3) were tested against Rice-Wheat system (T1). The technology tested yielded 243.27 q/ha wheat equivalent yield under T2 and 264.64 q/ha wheat equivalent yield under T3 against 149.10 q/ha under T1. The net return increased by Rs. 159023/ha due to Rice - cole crop - late sown wheat and Rs. 202975/ha due to Rice-potato-late sown wheat system. (Table 6.33)

Table 6.33 Assessment of the productivity and profitability of alternate cropping system for diversification of rice-wheat cropping system

Treatments	No. of trials	Area (ha)	Wheat Equ. Yield (q/ha)	Net returns	B:C Ratio
T1 :-Rice-Wheat	5	0.5	149.1 (54.4+60.2)	228647	3.2
T2:-Rice-cole crop-late sown wheat		0.5	243.27 (54.4+ 206.2+46.2)	387670	3.2
T3-Rice-potato-late sown wheat		0.5	264.64 (54.4+362.5+41.4)	431622	3.38

PEST AND DISEASE MANAGEMENT

KVK, Ajmer

Problem definition: Lower productivity of okra due to yellow mosaic virus disease

Technology Assessed: Improved variety Pusa Bhindi - 5 against YMV

Source of Technology: IARI, New Delhi

KVK Ajmer conducted 10 On-Farm Trials in the village Dungaria Khurd (Pisangan) to minimize losses of yellow vein mosaic virus disease in okra crops at the flowering and fruiting stage during the rainy season. It is estimated that farmers face a 15-20% yield reduction due to this problem and they do not fetch fair market prices. Keeping this problem in view, KVK Ajmer conducted 10 on-farm trials in 2 ha. area on the farmers' fields.The assessed practice of sowing of improved variety Pusa Bhindi - 5 recorded a 15.64 % increased yield over the farmer's practice and gave an additional return of Rs 35140/- per ha. Besides this, in suggested practice disease incidence was negligible after 105 days of sowing (DAS) with a mean disease incidence of 3.30 %, whereas, in farmer's practice disease appeared early (75 DAS) with a higher mean disease incidence of 18.20% (Table 6.34).

Table 6.34 Performance of Improved variety Pusa Bhindi - 5 against YMV

Technology options	Average yield q/ha	Increase in yield (%)	Gross cost (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	Mean disease incidence % & appearance (DAS)	BC ratio
T1:Farmer practice – Use of improved seed Pusa Sawani	138.20	-	58520	207300	148780	18.20	3.54
T2:Use of improved seed Pusa Bhindi - 5	162.40	15.64	59680	243600	183920	3.30	4.08

KVK, Alwar-II

Problem Definition: White rust in mustard

Technology Assessed: Application of new fungicides with biopesticides against white rust in mustard

Source of Technology: GBPUAT, Pantnagar

White rust caused by Albugo candida (Pers. Ex Hook) O. Kuntze, is an important disease of a wide variety of Brassica crops. Its infection causes disfiguring white pustules on leaves, flowers stems and pod leading to yield losses. Mustrad is an important rabi oilseed crop of Alwar district in Rajasthan. The on Farm trilas on White rust managemnt was conducted in 1ha area in 4 villages namely, Khori, Bilat ,Ramnagar and Shapur among the 10 farmers. The trials were conducted at each farmers having 0.1 ha area. (Table 6.35)

Seed treatment with Metalaxyl 35 SD and FS Metalaxyl 8%+ Mancozeb 64% @ 2g/l showed the maximum disease control (54.9%)and minimum disease incidence(10.5%) and yielded highest 21.5q/ha followed by treatment T3: Seed treatment with Metalaxyl 35 SD

and FS Azoxystrobin 25% EC @ 1ml/litre disease control 53.6%, disease incidence 10.8% and Yield 20.3/ha. These 2 treatment are at par with each other and treatment T4 : Seed treatment with Trichoderma viride @ 10g/kg seed and FS @ 5g/litre yielded 18.4q/ha and disease control and disease incidience was 29.2% and 16.5%, respectively. The B:C ration was also higher of Treatment T2(3.33) and T3(3.12).

Table 6.35 Result on Application of new fungicides with biopesticides against white rust in mustard

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
T1. Farmers practice Farmers practices: Late sowing, no seed treatment and frequent irrigation by sprinkle	10	0.1	15.5	49975	2.63
T2: Recommended practice: Seed treatment with Metalaxyl 35 SD and FS Metalaxyl 8%+ Mancozeb 64% @ 2g/l		0.1	21.5	78220	3.33
T3: Seed treatment with Metalaxyl 35 SD and FS Azoxystrobin 25% EC @ 1ml/litre		0.1	20.3	71710	3.12
T4: Seed treatment with Trichoderma viride @ 10g/kg seed and FS @ 5g/litre		0.1	18.4	62430	2.84

KVK, Ambala

Problem definition: Low yield was found due to attack of larvae of stem borer insect

Technology Assessed: Management of Stem borer in Rice

Source of Technology: PAU, Ludhiana

KVK, Ambala was conducted this OFT in village Khudda Kalan on 10 number of farmers field at 4.0 ha area were covered. Its results indicated that the use of Coragen 18.5 SC @ 150ml / ha gave 4.39% increase in yield and increase in B:C ratio 2.83 % respectively included this the reduction in infestation of Stem bore was found 33.33%. farmers were very satisfied with this technology because only 12 percent infestation was recorded into the demonstration field as compare of farmer practice where infestation was found 16 percent.

Table 6.36 Management of Stem borer in Rice

Technology options	No.of trials	Infestation of stem borer (%)	Yield (q/ha)	Net Returns (Rs./ha)	BC Ratio
T1 : Use of Chlorpyriphos 20 EC (F.P.)	10	16	39.17	122187.00	3.88
T2 : Coragen 18.5 SC (Chlorantraniliprole @ 150 ml/100 lit. of water) (Ass.)		12	40.89	128761.00	4.0

KVK Barmer-II

Problem Definition: Infestation of nematode, Meloidogyne incognita in pomegranate

Technology Assessed: Nematode Management in Pomegranate

Source of Technology: TNAU, Tamil Nadu

An OFT was conducted at village Bedana, Block Gudamalani at 10 farmer's fields to nematode management. Spray of Pocconia chlamydosporia at 30 ml/ plant is applied near the root zone during pruning through drip irrigation. The technology tested yielded 15.03 kg/plant of pomegranate against 12 kg /plant under farmer's practice. The net return increased by 18000/ha due to application of Pocconia chlamydosporia @ 30 ml/ plant near root zone through drip application at the time of pruning. (Table 6.37)

Table 6.37 Effect of Pocconia chlamydosporia on yield and return of pomegranate under Barmer conditions

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
Farmers practice	10	0.2	8.55	342000	2.66
Application of Pocconia chlamydosporia @ 30 ml/ plant near root zone through drip application at the time of pruning	10	0.2	11.50	360000	3.55

KVK, Bhiwani

Problem definition: Heavy infestation of pinkbollworm in cotton causing loss in yield

Technology Assessed: Pink bollworm management in cotton

Source of Technology: CICR, Nagpur

Cotton is an important cash crop of Bhiwani district. However, there is high incidence of pink bollworm resulting in yield loss. KVK Bhiwani conducted on farm trial to assess the control measure. The technology of spray of emamectin benzoate @ 250ml/ha for pink bollworm reduced the percentage of insects population from 37 to 6 per cent in case of thrips (Table 6.38).

Table 6.38 Effect of emamectin benzoate in cotton

Technology options	No. of trials	insect population (%)	Yield (kg/ha)	% Increase in yield over farmer's practice
FP (indiscriminate use of pesticides)	5	37	1425	-
Spray of emamectin benzoate @100ml for thrips		6	1663	14.28

KVK, Bikaner-I

Problem Definition: Damage due to Helicoverpa in chickpea

Technology Assessed: Integrated management of H armigera

Source of Technology: NCIPM, New Delhi

Pod borer, *Helicoverpa armigera* is the serious pest of gram. The caterpillar not only defoliates the tender leaves but also makes holes in the pods and feed upon the developing grains. OFT was conducted in Kawani and Govindsar village of Bikaner district (Table 6.39).

KVK, Bikaner-I assessed low yield of gram due to the infestation of pod borer in gram. Treatments, T_1- Farmer practice: Spray of quinalphos 25 EC @ 1.0 lit/ha; T_2- Installation of pheromone trap 12 & Spray of Neem oil 3 ml/lit of water were assessed. The results revealed that under T_2 maximum seed yield and lower per cent pod damage (17.85 q/ha, 9.65 respectively) recorded, maximum net returns of Rs 48350 /ha with more B:C ratio (1.82) was obtained in T_1 as compared to T_1 with net returns of Rs 30542/ha with B:C ratio of 1.15.

Table 6.39 Management of pod borer, *Helicoverpa armigera* in gram.

Technology options	No. of trials	Per cent pod damage (%)	Yield (q ha^{-1})	Per cent increase in yield over farmers practice	Net return (Rs/ha.)	B:C ratio
T_1- Spray of quinalphos 25 EC @ 1.0 lit/ha.	10	26.75	13.64	-	30542	1.15
T_2- Installation of pheromone trap 12 &Spray of Neem oil 3 ml/lit of water		9.65	17.85	30.86	48350	1.82

KVK, Bikaner-I assessed low yield of gram due to the infestation of pod borer in gram. Treatments, T_1- Farmer practice: Spray of quinalphos 25 EC @ 1.0 lit/ha; T_2- Installation of pheromone trap 12 & Spray of Neem oil 3 ml/lit of water were assessed. The results revealed that under T_2 maximum seed yield and lower per cent pod damage (17.85 q/ha, 9.65 respectively) recorded, maximum net returns of Rs 48350 /ha with more B:C ratio (1.82) was obtained in T_1 as compared to T_1 with net returns of Rs 30542/ha with B:C ratio of 1.15.

Installation of pheromone trap at farmers field

Collection of adult moths of pod borer

KVK, Churu-I

Problem Definition: Heavy incidence of *Alternaria* blight in Sesame

Technology Assessed: Thiophanate methyl to management *Alternaria* blight in Sesame

Source of Technology: ICAR-IIOR Hyderabad

Sesame is an important kharif rainfed oil seed crop of Churu district. It is severely infested by *Alternaria* blight resulting in defoliation of leaves and decrease in yield. Further, repeated use of same chemicals is less effective in management of disease. Simultaneously farmers are using higher dose of chemicals than recommended one resulting in hazardous effect on

human as well as plant health. To address the problem, KVK, Sardarshahar, Churu-I (Raj) designed an on-farm trial at village Devipura Block Ratangarh at 10 farmers field to manage *Alternaria* blight in sesame. Spray of Thiophanate methyl 70 WP @ 1ml/liter of water at 35 and 50 DAS as foliar application was followed to manage *Alternaria* blight in sesame. Grain yield of sesame under treatment was recorded 3.62 q /ha of against 2.95 q/ha under farmer's practice. The net return increased by Rs 7640/ha with 2.59 BCR by scheduled timely foliar spray of Thiophanate methyl (Table 6.40).

Table 6.40 Effect of spray of Thiophanate methyl for management of *Alternaria* blight in Sesame

Technology options		No. of trials	Area (ha)	Disease Incidence (%)	Yield (kg/ha)	Net returns (Rs/ha)	B:C ratio
T_1	Farmer practice: Spray of Mancozeb at appearance of disease symptom	10	2.5	14	2.95	19075	2.17
T_2	Seed treatment with Trichoderma @ 6 g/kg + Two spray (at 35 & 50 DAS) of Thiophanate methyl 70 WP @ 1ml/liter		2.5	4	3.62	26715	2.59

KVK, Dungarpur

Problem Definition: Heavy infestation of early blight of tomato effecting in a yield loss of 30-40%

Technology Assessed: Management of early blight of tomato

Source of Technology: UAS, Bangaluru

An OFT was conducted at Mada village Block Bichhiwara at 6 farmers fields to manage early blight of tomato. The technology of soil treatment with FYM enriched Trichoderma harzianum (2Kg in 50 kg FYM)+ foliar spray of Azoxystrobin 11% +Tebuconazole 18.3% SC @ 750ml/ha at the initiation of infestation and repeat at 15 days interval reduced the percentage of disease incidence from 26.87 to 15.18 and yield was increased by 34.67 per cent (Table 6.41).

Table 6.41 Effect of Azoxystrobin 11% +Tebuconazole 18.3% SC in control of early blight of tomato

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio	Pest/ Disease intensity (%)
T1- Spray of Mancozeb 75 WP@ 1.0kg/ha (Farmers Practice)	6	1.2	16900	388700	2.27	26.87
T2- soil treatment with FYM enriched Trichoderma harzianum (2Kg in 50 kg FYM)+ foliar spray of Azoxystrobin 11% +Tebuconazole 18.3% SC @ 750ml/ha at the initiation of infestation and repeat at 15 days interval	6	1.2	22760	614520	3.25	15.18

KVK, Hanumangarh-I

Problem Definition: Heavy yield loss in cotton due to pink bollworm

Technology Assessed: Mass trapping for male adults of pink bollworms by installing Pheromone traps @16 per acre +IPM

Source of Technology: SAU, Junagarh (Guarat)

KVK, Hanumangarh-I conducted field trials on 10 farmers in 3 villages (Nagarana, Sangaria, Dhaban) of Sangaria block of Hanumangarh district; to assess the possible solution for management of pink bollworm in cotton crop and found that as potential solution is adoption of mass trapping of male adults of the pest to stop or minimize its population dynamics, ultimately management of the pest (Table 6.42).

Table 6.42 Effect of mass trapping & IPM practices in management of Pink bollworms in cotton

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio	Pest/ Disease intensity (%)
1. Using various insecticides for pink bollworm management (Farmers Practice)	10	4	1600	59889	2.07	22
2. Mass trapping for male adults of pink bollworms by Installing Pheromone traps @16 per acre +IPM (Assessment)	10	4	1795	72707	2.27	9

KVK, Jaipur-I

Problem Definition: Incidence of Gummy Blight in Muskmelon

Technology Assessed: Combined use of Tebuconazole 50% + Trifloxystrobin 25%

Source of Technology: NRIIPM, New Dehli

An OFT was conducted at village-Jaisinghpura, Block- Govindgarh, District- Jaipur at 10 farmers fields to manage gummy blight that leads to stem cracking, oozing of gum and finally death of plants before fruiting. Foliar spray of Tebuconazole 50% + Trifloxystrobin 25% @ 1.0 gm/liter of water (Ist at last week of February and 2nd at 10 days of first spray) was tested against farmer's practice. The technology tested yielded 29 ton/ha of grain

yield against 24 ton/ha under farmer's practice. The net return increased by 30.26 % due to Foliar spray of Tebuconazole 50% + Trifloxystrobin 25% @ 1.0 gm/liter of water (Ist at last week of February and 2nd at 10 days of first spray) (Table 6.43).

Table 6.43 Foliar spray of Tebuconazole 50% + Trifloxystrobin 25% @ 1.0 gm/liter of water (Ist at last week of February and 2nd at 10 days of first spray)

Technology options	No. of trials	Area (ha)	Yield (Ton/ha)	Net Return	B:C Ratio
Treatment T-1 (Farmers Practice): One spray of Carbendazim 12% + Mancozeb 63% @ 2 gm/liter of water	10	0.1	24	342000	2.85
Treatment T-2 (Assessed Practice): Foliar spray of Tebuconazole 50% + Trifloxystrobin 25% @ 1.0 gm/liter of water (First spray 25 DAS and Second Spray 32 DAS)	10	0.1	29	445500	3.31

KVK, Jaipur-II

Problem Definition: Reduction in yield and quality of Wheat due to termite attack

Technology Assessed: Management of Termites in Wheat through Entomopathogenic Fungi as biological control agents

Source of Technology: SDAU Gujarat

Production of wheat is massively affected by termite. KVK, Jaipur-II carried out on farm testing (OFT) on eco-friendly management technology against termites in Wheat. The entomopathogenic fungi *Metarrhizium anisopliae* was applied as biological control agents. *Metarrhizium anisopliae* is a widely distributed soil-inhabiting fungus. It is used to control termites which results in better crop emergence and vigorous growth. The OFT involved 10 farmers of Karwas village in 2.5 ha area. The intervention included 750 gm *Metarrhizium anisopliae* 1% WP mix in 30 Kg well decomposed FYM/compost/field soil. 1st application was done at the time of field preparation and 2nd application at the time of 1st irrigation. The biological control yielded about 9% higher yield than the farmers practice (Table 6.44).

Table 6.44 Effect of Eco-friendly management of termite in Wheat

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio	Pest/ Disease intensity (%)
1. Farmers practice	10	2.5	3934	83992	3.44	13.7
2. Improved practice (T2)	10	2.5	4284	99742	3.76	3.4

KVK, Jhalawar

Problem definition: Bio-ecological management of gram pod borer in Chickpea

Technology Assessed: Pest management in chickpea through Inter/trap crop sunflower, Pheromone traps and spray of Nomuraea rileyi

Source of Technology: BHU, Varanasi (UP)

It is evident from the data depicted in tables that larval population and pod damage recorded minimum 0.36/plant and 3.70 per cent in Nomuraea rileyi treated plots, respectively. The maximum yield was observed in the Nomuraea rileyi treated plots (22.30 q/ha) which was followed by Quinalphos and control plots with significant difference. The economic analysis based on the yield was worked out and highest B:C ratio was found in case of Nomuraea rileyi (3.11) (Table 6.45-6.47).

Table 6.45 Efficacy of Bio-ecological Management on Gram Pod Borer Population

Technology options		No. of Trial	No. of Avg. Larva/plant (*H. armizera*)		Reduction in Pod Borer Larva (%)
			Before Spray	After Spray	
T_1: (FP)	Indiscriminate use of pesticide (chlorpyriphos 20% @ 1.50 ltr./ha).	05	1.46	0.52	-
T_2: (RP)	Quinalphos 25 EC@1.50 ltr./ha after 45 DAS.		1.52	0.45	13.46
T_3: (Asses)	Inter/trap crop sunflower (50 g seeds ha−1) along with chickpea seeds & pheromone traps @ 5/ha and spray of Nomuraea rileyi @ 1kg/ha after 45 DAS.		1.45	0.36	30.76

Table 6.46 Efficacy of Bio-ecological Management on Gram Pod Borer

Treatment	No. of Avg. Larva/plant	Pods/plant	No of pod damage /plant	Damaged Pods (%)
T_1	0.52	66.23	3.85	5.81
T_2	0.45	66.42	3.60	5.42
T_3	0.36	71.45	2.65	3.70

Table 6.47 Efficacy of Bio-ecological Management on Yield and Economics

Treatment	Yield (q/ha)	Cost of Insecticide (Rs. /ha)	Cost of Cultivation (Rs. /ha)	Gross Return (Rs. /ha)	Net Return (Rs. /ha)	BC Ratio	% Increase in yield over farmer's practice
T_1	19.60	1650	28650	104566	75916	2.64	-
T_2	21.90	2250	29250	116836	87586	2.99	11.73
T_3	22.30	1900	28900	118970	90070	3.11	13.78



KVK Jodhpur-II

Problem Definition: Low yield of groundnut due to infestation of leaf eating caterpillar

Technology Assessed: Management of leaf eating caterpillar in groundnut crop

Source of Technology: ICAR-DoGR, Junagarh (Gujarat)

KVK Jodhpur-II conducted an on-farm trial at four farmers of village Netaji Nagar, Block Lohawat to manage leaf eating caterpillar in groundnut. The

technology, application of Flubendiamide 480 SC @ 0.2 ml/lit at ETL i.e. 2 larva/plant or 20-25% defoliation at 40 days of crop age reduced the percentage of pest incidence from 15.56 to 8.47 and yield was increased by 24.47 per cent. The net return increased by Rs. 0.32 lakh/ha due to application of Flubendiamide 480 SC @ 0.2 ml/lit. (Table 6.48).

Table 6.48 Effect of Flubendiamide on pest management, yield and return of groundnut under Phalodi conditions

Technology options	No. of trials	Area (ha)	Yield (q/ha)	Net Return	B:C Ratio	Pest incidence (%)
Three to four applications of Quinalphos 25 EC @ 2 ml/lit after observation of infestation of leaf eating caterpillar in the field (Farmer's Practice: T1)	4	1.6	21.90	90888	2.86	15.56
Installation of Pheromone trap @ 10 traps/ha (at vegetative as well as flowering stage) and application of Flubendiamide 480 SC @ 0.2 ml/lit at ETL i.e. 2 larva/plant or 20-25% defoliation at 40 days of crop age (Improved Practice: T2)			27.26	123301	3.43	8.47

Problem Definition: Low yield in fenugreek crop due to infestation of powdery mildew

Technology Assessed: Management of powdery mildew in fenugreek crop

Source of Technology: ICAR-NRCSS, Tabiji, Ajmer

An OFT was conducted at village Kalimali, Block Lohawat at 4 farmers fields to manage powdery mildew in fenugreek causing severe loss in yield. Hexaconazole 5 SC @ 1 ml/lit at disease initiation stage and repeat need based application at 15 days interval was tested against farmer's practice. The technology tested reduced the percentage of plant disease index (disease severity) from

23.50 to 14.50 and yield was increased by 16.60 per cent (Table 6.49).

Table 6.49 Effect of Hexaconazole on disease management, yield and return of fenugreek under Phalodi conditions

Technology options	No. of trials	Area (ha)	Yield (q/ha)	Net Return	B:C Ratio	Disease severity (%)
Application of wettable sulphur @ 2.5 kg/ha or Dinocap 48 EC @ 1 ml/lit after heavy infestation (Farmer's Practice: T1)	4	1.6	13.25	42,595	2.57	23.50
Application of Hexaconazole 5 SC @ 1 ml/lit at disease initiation stage and repeat need based application at 15 days interval. (Improved Practice: T2)			15.45	52,467	2.85	14.50

KVK, Kota

Problem Definition: Reduction in yield of soybean due to severe incidence of foliage feeders

Technology Assessed: Spray of Beauveria bassiana

Source of Technology: ICAR-NSRI, Indore

Soybean is a major kharif crop with 1.82 lakh ha area in Kota district. The incidence of leaf eating caterpillars have been a major problem in the district for soybean farmers. An OFT was conducted using microbial insecticide at 10 farmers' fields of Bagtari village of

Sultanpur block. The Results indicated that spray of Beauveria bassiana (1x10^8 cfu) @ 1 liter/ ha after initial incidence of leaf eating caterpillars and 2nd Spray after 15 days interval found effective and 2.41 average larval population per meter row length (mrl) was recorded as compared to farmers practices (3.50) during 2023 and 2024. The average yield of T2 was 15.08 q /ha which was increased by 8.41 per cent over farmers practices (13.91 q/ha). (Table 6.50-6.51)

The result (Table 2) indicated that the average net returns of T2 was Rs.37485 which was 24.51 per cent higher over T1 (Rs. 30105) during 2023 and 2024. The B:C ratio of T2 was 2.11 and 2.08 during 2023 and 2024 respectively.

Table 6.50 Efficacy of *B. bassiana* for management of leaf eating caterpillars in soybean

Technology options	No. of trials	Mean larval population per meter row length (mrl)			Yield q/ha			% Increase in yield over farmer practice
		2023	2024	Avg.	2023	2024	Avg.	
T_1- Injudicious use of pesticides (Emamectin benzoate 5 SG @ 180 gm/ha, Clorantraniliprole 18.5 SC @ 100 ml/ha and Profenophos 50 EC @ 1.25 l/ha after severe incidence of leaf eating caterpillars (FP)	10	3.00	4.00	3.50	14.50	13.33	13.91	-
T_2- Spray of *Beauveria bassiana* (1x10^8 cfu) @ 1 liter/ ha after initial incidence of leaf eating caterpillars and 2nd Spray after 15 days interval (AP)		2.33	2.50	2.41	15.66	14.50	15.08	8.41

Table. 6.51 Economic parameters of the Efficacy of *B. bassiana* for management of leaf eating caterpillars in soybean

Technology options	Net return (Rs/ha)			% Increase in Net return	B:C Ratio	
	2023	2024	Avg.		2023	2024
T_1- Injudicious use of pesticides (Emamectin benzoate 5 SG @ 180 gm/ha, Clorantraniliprole 18.5 SC @ 100 ml/ha and Profenophos 50 EC @ 1.25 l/ha after severe incidence of leaf eating caterpillars (FP)	31500	28710	30105	-	1.89	1.78
T_2- Spray of *Beauveria bassiana* (1x10^8 cfu) @ 1 liter/ ha after initial incidence of leaf eating caterpillars and 2nd Spray after 15 days interval (AP)	38036	36934	37485	24.51	2.11	2.08

Problem Definition: Low yield of chickpea due to severe incidence of collar rot disease

Technology Assessed: Integrated seed and soil application of *T. viride*

Source of Technology: NIPHM, Hyderabad and POP Zone IIIa of Rajasthan

Chickpea is a major Rabi pulse crop which have 39.18-thousand-hectare area in the Kota district, however, the incidence of collar rot disease at initial stage of plant causes yield losses in chickpea. Therefore, an on-farm testing carried out to assess the efficacy of Trichoderma as soil and seed treatment for management of collar rot in chickpea during three consecutive years 2021-22, 2022-23 and 2023-24 The Results indicated that seed treatment with Trichoderma viride at 10 g/kg seed plus application of T. viride at 5 kg/ha multiplied on decomposed with 100 kg FYM at the time of sowing found lowest mean per cent disease incidence (4.79) as compared to farmers practices (20.16). The average yield of T2 was 22.41 q /ha which was increased by 18.19 per cent over farmers practices (18.96 q/ha) during three consecutive years 2021-22, 2022-23 and 2023-24 (Table 6.52).

The result (Table 2) indicated that the average net returns of T2 was Rs.86748 which was 26.17 per cent higher over T1 (Rs. 68750). The B:C ratio of T2 was 3.93, 3.75 and 3.52 during 2021-22, 2022-23 and 2023-24 respectively.

Table 6.52 Efficacy of *T. viride* for management of Collar rot disease in Chickpea

		Technology option	
Details of OFT and Paramertes		**T_1-** Seed treatment with vitavex (Carboxin 37.5% + Thiram 37.5%) at 1g/kg seed (FP)	**T_2-** Seed treatment with *T. viride* at 10 g/kg seed + Application of *T. viride* at 5 kg/ha multiplied on decomposed with 100 kg FYM at the time of sowing (AP)
No. of trials		10	
Percent Disease Incidence (PDI) at 40 DAS	**2021-22**	18.33	2.5
	2022-23	20.66	4
	2023-24	21.5	7.88
	Mean	20.16	4.79
Yield q/ha	**2021-22**	19.5	23.74
	2022-23	18.9	22.5
	2023-24	18.5	21
	Mean	18.96	22.41
% Increase in yield over farmer practice			18.19
Net return (Rs/ha)	**2021-22**	70885	92560
	2022-23	69170	87450
	2023-24	66197	80235
	Average	68750	86748
% Increase in Net return			26.17
B:C Ratio	**2021-22**	3.27	3.93
	2022-23	3.23	3.75
	2023-24	3.03	3.52

KVK, S. Madhopur

Problem Definition: Heavy infestation of phyllody disease in sesame in the district

Technology Assessed: Management of Phyllody disease in sesame crop

Source of Technology: Agriculture University, Jodhpur

Sesame is one of the major oilseed crops in the district. Phyllody is one of the most burdensome diseases and a limiting factor for sesame cultivation in many parts of the country. Sesame crop suffers from phyllody caused by a phytoplasma. The effect of different treatments on the disease incidence in percentage. Therefore, a feasibility study was conducted in Dubbi Banas village on five farmers' fields to manage phyllody disease in sesame cultivation. Use of Resistant variety RT 372 and seed treatment with imidachloprid at 5 ml/kg seed +

spraying imidachloprid 17.8% SL at 0.5 ml/liter water at the onset of the disease recorded the lowest disease incidence (8.40%) and maximum seed yield (4.65 q/ha). The results regarding the benefit/cost ratio revealed that the highest benefit/cost ratio was recorded with treatment T2 (3.17) (Table 6.53).

Table 6.53 Management of Phyllody disease in sesame crop

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio	Disease intensity (%)
1. Farmers practice (Use of local varieties without seed treatment, no spray of any pesticide)	5	1.0	320	32465	2.65	15.20
2. Resistant variety RT 372, Seed treatment with imidachloprid @ 5 ml/kg seed and also spray of imidachloprid 17.8 % SL @ 0.5 ml/ litre water	5	1.0	465	38560	3.17	8.40

KVK, Sonipat

Problem definition: Heavy infestation of aphid in mustard crop

Technology Assessed: Management of aphid in mustard Source of Technology

Source of Technology: PAU, Ludhiana

Details of OFT: An OFT was conducted in Kharkhoda block at 5 farmers fields to manage the aphid in mustard crop causing severe loss in yield. Spray of Thiomethoxam 25 WG @100gm/ha at ETL level was

tested against farmer practice. The technology tested yielded 1.77 tons/ha mustard against 1.40 tons/ha under farmer practice. The net return increased by Rs. 18975/ha due to spray of Thiomethoxam 25 WG @100gm/ha at ETL level (Table 6.54).

Table 6.54 Effect of Thiomethoxam 25 WG in control of aphid in mustard

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
Farmer Practice	5	0.5	1400	45230	2.33
Spray of Thiomethoxam 25 WG @100gm/ha at ETL level	5	0.5	1770	64205	2.79

KVK, Udaipur-I

Problem Definition: Low yield of Colocasia due to leaf blight and sucking pest

Title: Management of leaf blight and sucking pest in Colocasia.

Source of technology: ICAR-NCIPM, New Delhi

An on-farm trial was conducted to address the infestation of leaf blight and sucking pests in Colocasia crops. The trial was carried out on the fields of 10 farmers in a village within the Phalsiya Block of Udaipur district. To manage leaf blight and sucking pest infestations, the treatment involved seed treatment with Thiophanate Methyl (5 gm per kg of seed) and soil drenching with a mixture of Mancozeb 64% + Metalaxyl 4% WP (2 gm/kg), along with need-based sprays of Dimethoate 30 EC (1.3 ml/liter) and Thiophanate Methyl (2 gm/liter). In contrast, the farmer's standard practice was limited to foliar spraying with M-45 at 5 gm/liter.

The results showed that treatment T-2 resulted in a higher yield (148.89 q/ha) and a lower incidence of sucking pests. Additionally, the disease incidence was significantly lower in T-2 (16.41%) compared to T-1 (77.08%) (Table 6.55).

Figure 6.55 Udaipur 1 OFT on management of leaf blight in colocasia

Treatments	Plant infected (disease incidence %)	Yield (q/ha)
T1-Farmers practice (Farmers practice (foliar spray with M-45 @5 gm/lit))	77.O8	88.66
T2- Seed treatment with thiophenate methyl 5 gm per kg seed + Soil drenching with mixture (2 gm/kg) (Mancozeb 64 % + Metalaxyl 4 %WP) and need based spray with dimethoate 30 EC@ 1.3 ml/l and thiophenate methyl @2gm per liter	16.41	148.89

KVK, Udaipur-I

Problem Definition: Low yield of Tomato due to fruit borer and blight

Title: Management of fruit borer and blight in tomato

Source of technology: ICAR NCIPM, New Delhi

KVK Udaipur-I conducted on-farm trials on tomato to manage fruit borer and blight infestations. The trial involved a package of practices, including planting Marigold as a trap crop, installing bird perches (25 per hectare), using pheromone traps (12 per hectare), and applying two neem oil sprays (5 ml/liter) at 20 and 35

days after sowing. Additional need-based sprays with Emamectin benzoate (10 gm/15 liters) were applied. The first spray was done 45 days after transplanting, followed by a second spray 15 days later, with further need-based applications based on disease diagnosis using bactericides and fungicides.

The results showed that following Integrated Pest Management (IPM) approaches not only increased the yield (11.2 t/ha) but also made the practice eco-friendly and reduced cultivation costs. It was also concluded that the treatment reduced the number of sprays from 11 to 4,

which is beneficial for both the environment and human health (Table 6.56).

Table 6.56 Effect of IPM on incidence of disease and yield in tomato

Treatment	Fruit damage (%)	Disease incidence (%)	No. of sprays	Yield (t/ha)
T1 (Indiscriminate and continuous use of Foliar spray with profenophos 44 EC, not at ETL and also at higher dose	39.2	48.7	11	18.5
T2 Trap crop Marigold, Bird perches @ 25/ha., pheromone traps @ 12/ha), and Two spray with neem oil (5ml/lit) 20 and 35 days after sowing and then need based spray with Emamectin benzoate (10 gm/15 Lit). First spraying was applied after 45 days of transplanting followed by second spraying at 15 days interval also need based spray after correct diagnose disease by bactericide and fungicide	9.2	8.1	4	29.7

NATURAL RESOURCE MANAGEMENT

KVK, Jhajhar

Problem definition: Problem of paddy crop residues

Technology Assessed: Assessment of performance of different machines for sowing of wheat under crop residue management

Source of Technology: CCS HAU, Hisar and PAU Ludhiana

KVK, Jhajjar in Haryana conducted on-farm trial to assess the performance of different machines-seed cum fertiliser drill (conventional sowing), Zero till machine and Super seeder for sowing of wheat under crop residue management.Zero till machine resulted in highest yield (52.0 q/ha) with a net return of Rs.78195/ha as compared to Rs.71390/ha by super seeder and Rs.69725/ha by Seed cum fertilizer drill (conventional sowing),respectively. Zero till machine resulted in 15% higher germination of wheat in salt affected soils than the others .Weed population was 25% less in zero till sown plots as compared to the others. Moreover, there was less lodging in zero till sown plots than the others (Table 6.57).

Table 6.57 Assessment of performance of different machines for sowing of wheat under crop residue management (RCT)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
T1- Farmers practice (Seed cum fertiliser drill)	2	0.8	5050	72000	2.55
T2-Improved practice (Zero till machine)			5200	78195	2.97
T3-Improved practice (Super seeder)			5080	71390	2.64

KVK Yamunanagar

Problem Definition: Sugarcane residue burning

Technology Assessed: *In situ* crop residue management

Source of Technology: PAU, Ludhiana

Villages: Jhaguri, Kapuri Kalan.

The energy efficiency ratio of super seeded wheat was found to be higher (5.17) as compared to the conventional method (4.44). The yield and net returns were also found higher in supper seeder sown wheat by 7.7% and Rs 9785 per hectare respectively (Table 6.58).

Table 6.58 Comparative performance of superseeded wheat *vs* conventionally sown wheat (RCT)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmers practice (conventionally sown wheat)			4630	74665	2.71
2. Improved practice (superseeded wheat)	5	2	4980	84450	2.96

INTEGRATED NUTRIENT MANAGEMENT

KVK, Alwar-II

Problem Definition: Low Productivity

Technology Assessed: Nutrient Management in Watermelon

Source of Technology: MPKV, Rahuri

KVK, Gunta, Bansur, Alwar II in Rajasthan conducted an on farm trial to assess 10 g/ltr foliar application of NPK 15:15:15 at 15 and 23 days after sowing, 15:30:15 at 28 and 35 days after sowing and 08:12:24 at 42 and 50 days after sowing with recommended dose of fertilizers in watermelon to see the effect on fruit weight (kg), no. of fruits/plant, yield kg/ha and B:C ratio. The results are given in Table 6.59.

Table 6.59 Nutrient Management in Watermelon

Technology options	No. of Trials	Area (ha)	Yield (qt/hac)	Net Return (Rs./hac)	B:C Ratio
T_1:Farmer's Practice (Indiscriminate use of fertilizers)	10	2.93	470.16	342431	2.58
T_2: Foliar Spray of following NPK grades with RDF 1. 15: 15:15 @10 g/ltr at 15 and 23 DAS 2. 15:30:15 @ 10 g/ltr at 28 and 35 DAS 3. 08:12:24 @ 10 g/ltr at 42 and 50 DAS		3.68	558.92	432792	2.85

KVK (ICAR-IIRMR), Gunta, Bansur, Alwar-II conducted an on farm trial on "Nutrient Management in Watermelon" at 10 farmers' field in 4-hectare area in different villages of Bansur, Alwar, Rajasthan in Summer 2024. The experiment was carried out by dissolving 10 g/ltr foliar application of NPK 15:15:15 at 15 and 23 days after sowing, 15:30:15 at 28 and 35 days after sowing and 08:12:24 at 42 and 50 days after sowing with recommended dose of fertilizers, timely irrigation, weeding and other cultural practice were also followed.

In case of physical parameters, the foliar application of different grades of NPK exerted highest average 3.68 kg fruit weight; 4.7 fruits/plant; 558.92 quintal/hectare yield. Whereas local cultivation of watermelon i.e. indiscriminate use of fertilizers showed lowest average 2.93 kg fruit weight; 4.15 fruits/plant; 470.16 quintal/hectare yield. Economical observations of foliar application of different grades of NPK treatment of trial revealed maximum average Rs. 233558/hectare cost of cultivation; Rs. 666150/hectare gross return; Rs. 432792/hectare net return and 2.85 benefit cost ratio. However, the local cultivation practices .i.e. indiscriminate use of fertilizers of watermelon gave average minimum Rs. 217218/ha cost of cultivation; Rs. 559648/ha gross return, Rs. 342431/ha net return and 2.58 benefit cost ratio. The cost of treatment opting foliar application of different grades of NPK was Rs. 16140/ha extra than local which gave Rs. 90361/ha additional income to farmer as compared to local cultivation of watermelon i.e. indiscriminate use of fertilizers. The foliar application of different grades of NPK fertilizers appreciated by farmers due to less incidence of insect and pest attack, tenderness and higher yield. Results were observed as higher yield and yield attributes as well as economies of assessed technology as compared to farmers practices

KVK, Faridabad

Problem definition: Low yield and poor quality of tubers of Potato

Technology Assessed: Foliar spray of micronutrients in Potato

Source of Technology: PAU, Ludhiana

An OFT was conducted at village Karnera, Block Ballabgarh and village Chirsi,Block Faridabad at 5 farmers fields on foliar spray of micronutrients in potato to manage yield loss in potato . Spray of Ready-mix spray@625 ml in 250 L water/ha at 45 and 60 days after transplanting (DAS) was tested against farmer's practice. The technology tested yielded 38.7 tons /ha of potato against 33.5 tons/ha under farmer's practice. The net return increased by 0.43 lakh/ha due to foliar spray Ready-mix @625 ml in 250 L water/haat 45 and 60 DAT (Table 6.60).

Table 6.60 Effect of foliar spray of Readymix spray on yield & economics in Potato

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
No use of Foliar spray of micronutrients (Farmers Practice)	5	1.0	33500	349650	3.54
Two foliar spray of micronutrients Ready mix (Zn+5.0%,Fe+2.0%,Cu+0.5%,Mn+2.0%,B+0.5%))@625ml in 250L water/ha at 45 and 60 days after planting (Recommended Practice)	5	1.0	38700	392400	3.84

KVK, Hanumangarh-II

Problem Definition: Lower productivity due to Mg deficiency in Bt. cotton

Technology Assessed: Management of Mg deficiency in Bt. cotton

Source of Technology: CICR- RS, Sirsa

KVK, Nohar-Hanumangarh in Rajasthan conducted on-farm trial to assessed lower productivity due to Mg deficiency in Bt. cotton under two groups viz. T2 -Farmer's practice- no use of MgSO4 and T2 - Foliar application of MgSO4 @ 0.5% at 60, 75 and 90 DAS. A perusal of data in recorded that seed cotton yield influenced significantly due to use of MgSo4. Data indicated that foliar application of MgSO4 recorded significantly 11.48 percent higher seed cotton yield (26.2 q/ha) over to farmers practice treatment (23.5 q/ha). Net return under T2 treatment earned was also maximum (Rs 96570 with B:C ratio 2.07) followed by T-2 (Rs 78344 with B:C ratio 1.88, respectively. (Table 6.61)

Table 6.61 Management of Mg deficiency in Bt. cotton

Technology options	No. of trials	Area (ha)	Yield (qt/ha)	Net Return	B:C Ratio
T1-Farmer's Practice (no use of MgSO4	10	0.1	23.5	78344	1.88
T2-Foliar application of MgSO4 @ 0.5% at 60, 75 and 90 DAS	10	0.1	26.2	96570	2.07

KVK Jaisalmer-I

Problem Definition: Lower yield of groundnut due to low zinc and sulphur content soil

Technology Assessed: Effect of Zinc sulfate on Groundnut crop

Source of Technology: PAU, Ludhiana

An OFT was conducted at village chandan, Block jaisalmer at 10 farmers fields to manage nutrients through application of zinc and sulphur in groundnut causing loss in yield. Basal application of Zinc sulfate @ 25 kg/acre + 100% RDF (20: 32:0 kg/ha NPK) was tested against farmer's practice. The technology tested yielded 20.18 q/ha of yield against 18.47 Q/ha under farmer's practice. The net return increased by Rs. 80282/ha due to basal application of Zinc sulfate @ 25 kg/acre + 100% RDF (20: 32:0 kg/ha NPK) (Table 6.62).

Table 6.62 Effect of Zinc sulfate on yield and income of Groundnut crop

Technology options	No. of trials	Area (ha)	Yield (Q/ha)	Net Return	B:C Ratio
Farmers practice	10	0.4	18.47	80282	2.78
Basal application of Zinc sulfate @ 25 kg/acre + 100% RDF (20: 32:0 kg/ha NPK)	10	0.4	20.18	102129	3.12

KVK Jaisalmer-I

Problem Definition: Lower yield of cumin due to low sulphur content soil

Technology Assessed: Effect of Sulphur application on cumin yield

Source of Technology: SDAU, Datiwada

An OFT was conducted at village Jogidas Ka gaon, Block Fatehgarh, Jaisalmer at 10 farmers fields to manage nutrients through sulphur application in cumin crop causing loss in yield. Basal application of sulphur @ 30 kg/ha + 100% RDF (40: 30:20 kg/ha NPK) was tested against farmer's practice. The result of OFT is awaited (Table 6.63).

Table 6.63 Effect of Sulphur application on cumin yield

Technology options	No. of trials	Area (ha)	Yield (Q/ha)	Net Return	B:C Ratio
Farmers practice	10	0.4	Result awaited		
Basal application of Zinc sulfate @ 25 kg/acre + 100% RDF (20: 32:0 kg/ha NPK)	10	0.4			

KVK, Jhajhar

Problem Definition: Deficiency of micronutrients in onion causing loss in productivity and profit

Technology Assessed: Foliar application of multiplex in onion

Source of Technology: PAU, Ludhiana

KVK, Jhajjar in Haryana conducted five on-farm trial in village Dulina to find out appropriate nutrient management practice to enhance the onion productivity. The assessed practice of RDF + Micronutrient (Multiplex*) spray (Zn9%,Fe 8%,Bo 0.25%,Mn 0.50%,Cu 0.50%) @ 2.5 ml/lt. of water after one month and bulb formation stage. The application of multiplex has realized yield of 311.8 q /ha and a net return of Rs.211270/ha as compared to the farmers practice with yield and net returns of 276.5 q/ha and Rs.176530/ha, respectively (Table 6.64).

Table 6.64 Evaluation of foliar application of multiplex in onion (INM)

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return (₹/ ha)	B:C Ratio (over variable cost)
T1- Farmers practice (No Spray of micronutrients)	5	4	2765 0	176530	2.55
T2-Improved practice (Foliar application of Micronutrient)			31180	211270	2.82

KVK, Jhalawar

Problem definition: Micronutrient management in mustard

Technology Assessed: Basal application of 1 kg B/ha

Source of Technology: ICAR-DRMR, Bharatpur

The data depicted in tables revealed that the maximum Plant height (135.20 cm), No. of siliquae/plant (234.60), No. of seeds/siliqua (14.17) and 1000-seed weight (4.19 g) were found in T_3 {FYM (08 Tonne/ha) + RDF (NPKSZn 80:40:30:60:25 kg/ha) + Gypsum (250 Kg/ha) + Soil application of Boron @ 1 kg/ha (Basal dose)}. In relation to economic analysis the highest net return (84725 Rs./ha) and B:C ratio (3.99) were found in T_3 as compared to farmers practice (Table 6.65-6.66).

Table 6.65 Micronutrient management in Mustard

Technology options		No. of Trials	Plant height (cm)	No. of siliquae/plant	No. of seeds/siliqua	1000-seed weight (g)
T_1 (FP) :	No use of B	5	118.30	196.20	11.77	3.58
T_2 (RP) :	FYM (08 Tonne/ha) + RDF (NPKSZn 80:40:30:60:25 kg/ha) + Gypsum (250 Kg/ha)		131.80	228.11	13.23	4.02
T3(Assess):	T_2 + Soil application of Boron@1kg/ha (Basal dose)		135.20	234.60	14.17	4.19

Treatments	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio	% Increase in yield over farmer's practice
T_1 :	13.60	64000.00	3.62	-
T_2 :	16.35	79275.00	3.94	20.22
T_3 :	17.40	84725.00	3.99	27.94

Table 6.66 Soil fertility status before sowing and at harvest of mustard

Parameters	pH	EC (dS/m)	OC (%)	P (g/ha)	K (kg/ha)	B (ppm)
Initial	8	0.41	0.32	28.2	274.2	0.38
After Harvest	8.1	0.43	0.37	29.9	279.6	0.43

Problem definition: Micronutrient management in chickpea

Technology Assessed: Soil application of Mo @ 1 kg/ha

Source of Technology: ICAR-IIPR, Kanpur

It is revealed from the data depicted in tables that the maximum Plant height (41.25 cm), Number of branches per plant (5.08), No. of pods/plant (40.00), No. of seeds/pod (1.99) and test weight (27.69 g) were found in T_3 {FYM (5 Tonne/ha) + RDF (NPKZn 20:40:45:25 kg/ha) + Gypsum (250 kg./ha) + Soil application of Mo @ 1 kg/ha}. In context of economic analysis the highest net return (78300 Rs./ha) and B:C ratio (3.01) were found in T_3 as compared to farmers practice (Table 6.67-6.68).

Table 6.67 Micronutrient management in chickpea

Technology options	No. of Trial	Plant height (cm)	Number of branches per plant	No. of pods/plant	No. of seeds/pod	100-seed weight (g)
T_1 (FP) : Farmers practice (No use of Mo)	5	29.20	4.10	30.15	1.73	22.85
T_2 (RP) : FYM (05 Tonne/ha) + RDF (NPKZn 20:40:45:25 kg/ha) + Gypsum (250 kg./ha)		37.00	4.83	37.20	1.97	25.93
T_3 (Asses): T_2 + Soil application of Mo @ 1 kg/ha (Basal dose)		41.25	5.08	40.00	1.99	27.69

Treatments	Yield (q/ha)	Net Return (Rs/ha)	B:C Ratio	% Increase in yield over farmer's practice
T_1 :	17.50	56900	2.86	-
T_2 :	20.95	69550	2.98	19.71
T_3 :	23.45	78300	3.01	34.00

Table 6.68 Soil fertility status before sowing and at harvest of chickpea

S. No.	1	2	3	4	5	6
Parameters	pH	EC (dS/m)	OC (%)	P (kg/ha)	K (kg/ha)	Mo (ppm)
Initial	7.82	0.44	0.31	29.1	279	0.25
After Harvest	7.89	0.47	0.36	30.9	281.6	0.34

KVK Sirsa

Problem Definition: Lower yield and fruit quality of kinnow due to nutrient deficiency

Technology Assessed: Management of micronutrient deficiency in kinnow

Source of Technology: PAU, Ludhiana

The impact of micronutrient application was assessed by KVK Sirsa in kinnow in on-farm trials conducted at village- Sahuwala-I in Sirsa district of Haryana. Trees were sprayed with $ZnSO_4$ @ 4.7 g/lt water + Manganese sulphate 3.3 g/lt water during end of April and mid-August. As per existing practice, farmers either do not spray any micronutrients or only spray zinc sulphate @ 0.5% in May-June and August-September, however, the plants show deficiency symptoms for multiple nutrients. The results showed that combining the application of two micronutrients enhanced the fruit

yield to 213.50 q/ha while the yield of local practice was recorded 198.35 q/ha. The cost-benefit ratio was also higher with the application of zinc sulphate and manganese sulphate i.e. 5.44 in the demonstrations. The facts state that micronutrient management in kinnow is important to harvest a good yield of improved quality (Table 6.69).

Table 6.69 Management of micronutrient deficiency in kinnow

Technology options	No. of trials	Area (ha)	Yield (q/ha)	Net Return	B:C Ratio
Farmers practice	5	0.4	198.35	321200	5.25
Spray of $ZnSO_4$ @ 4.7 g/lt water + Manganese sulphate 3.3 g/lt water during end of April and mid-August	5	0.4	213.50	348500	5.44

INTEGRATED FARMING SYSTEM

KVK, Faridabad

Problem definition: Low yield of wheat with boundary plantation of poplar

Technology Assessed: Assessment of performance of wheat crop with boundary plantation of poplar (*Populus deltoids*) trees of 7 years age.

Source of Technology: CCSHAU, Hisar

An OFT was conducted at village Bhopani, Block Faridabad at one farmer field to assess yield performance of wheat crop with boundary plantation of poplar (*Populus deltoids*) trees of 7 years age planted at a spacing of 3.0 meter from plant to plant. Wheat variety HD-3086 with 25 per cent higher seed rate (125Kg/ha) was tested against farmer's practice. The technology tested yielded 4.97 tons/ha of wheat against 4.56 tons/ha under farmer's practice. The net return increased by 0.04 lakh/ha due to 25 per cent higher seed rate (125Kg/ha) of wheat.

Table 6.70 Effect of seed rate on yield and return of wheat under poplar(7year old) based agroforestry under Faridabad conditions

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
T1 Wheat with boundary plantation of poplar with normal seed rate (100 kg/ha) (Farmers Practice)	1	0.4	4560	81540	2.81
T2 Wheat with boundary plantation of poplar with 25 per cent higher seedrate. (125Kg/ha) Recommended)	1	0.4	4970	85343	2.94

KVK Yamunanagar

Problem Definition: Suitable spacing for poplar –wheat based agroforestry system

Technology Assessed: Performance of wheat variety under different spacing of poplar

Source of Technology: PAU, Ludhiana

The OFTs were conducted at five different locations with five number of farmers field, with 0.4 ha each farmer.

Table 6.71 Performance of wheat variety under different spacing of poplar

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
1. Farmers practice (conventional variety)	HD-2967	2	44.2 (without poplar)	73140	2:7
2. Improved practice (improved variety)	DBW -303	2	43.7 (with poplar)	893502	18:3

RESOURCE CONSERVATION TECHNOLOGY

KVK, Kaithal

Problem definition: Crop residue problem and less time between harvesting of paddy and sowing of wheat

Technology Assessed: Assessment of sowing methods in wheat

Source of technology: PAU, Ludhiana

The above OFT was conducted at Devigarh, Rasina,, Peodah and Kheri Sikander. KVK, Kaithal conducted on-farm trials to assess effect of sowing methods in wheat. Sowing with super seeder realized a increase in wheat yield by 2.76 per cent.

Table 6.72 Assessment of sowing methods in wheat

Technology options	No. of trials	Area	Yield (q/ha)	Increase in yield (%)	Net Returns (Rs./ha)	BC Ratio
Sowing with happy seeder	4	1.6	52.8	-	79200	2.72
Sowing with super seeder			54.3	2.76	84887	2.95

KVK, Nagaur-I

Problem definition: Productivity enhancement of tomato under drip irrigation with mulching

Technology Assessed: Use of mulching (black polythene mulch of 20 µ thickness) spread at the time of transplanting in field and during growth period, irrigation was supplied through drip irrigation system, uniformly.

Source of Technology: IARI, Pusa New Delhi

An on-farm trial was conducted at Pitholao village block Mundwa at 05 farmers' fields to evaluate the benefits of improved water management and soil moisture conservation to enhance tomato yield and profitability. Under the recommended practice, tomatoes grown with drip irrigation and mulching recorded a significantly higher yield of 491.9 q/ha, with a net return of Rs. 6,05,287/ha and a benefit-cost (B:C) ratio of 4.5. In contrast, the farmer's practice yielded 358.9 q/ha, with a net return of Rs. 4,22,522/ha and a B:C ratio of 3.60.

Table 6.73 Effect of mulching and drip irrigation on growth yield and economics of Tomato crop

Technology options	No. of trials	Area (ha)	Yield (q/ha)	Net Return	B:C Ratio
T-1: Cultivation of tomato without mulching and drip irrigation (Farmers Practice)	5	0.2	358.9	422522	3.6
T-2: Productivity enhancement of tomato under drip irrigation with mulching (Recommended Practice)	5	0.2	491.9	605287	4.5

KVK, Sonipat

Problem definition: Management of crop residue and excessive tillage

Technology Assessed: Assessment of latest wheat sowing technique

Source of Technology: PAU, Ludhiana

An OFT was conducted at villages Nahra, Halalpur, Mehmudpur Majra, Malha Majra And Katlupur at 5 farmers fields to assess the latest wheat sowing technique using super seeder machine for sowing of wheat in paddy residue. This implement drilled the wheat and fertilizer together and simultaneously tilled the soil and buried the long anchored stubble into the soil. The technology tested yielded 5.87 tons/ha of wheat against 5.12 tons/ha of wheat under farmer practice. The technology consumed 3.0 hr/ha while performing tillage operation against 13.0 hr/ha under farmer practice. The ultimate benefit of technology was reduced tillage. The net return increased by Rs. 28820/ha due to management of paddy residue and sowing of wheat by super seeder in a single tillage operation.

Table 6.74 Observations of various parameters in assessment of latest wheat sowing techniques

Technology options	No. of trials	Area (ha)	Yield (kg/ha)	Net Return	B:C Ratio
Farmers practice (conventional Sowing of wheat)	5	0.5	5125	79373	2.62
Wheat sown with super seeder	5	0.5	5870	108193	3.85

LIVESTOCK PRODUCTION & MANAGEMENT

KVK, Jaipur-I

Problem Definition: Low Milk Yield and Fat in Crossbred cow

Technology Assessed: Feeding of By-Pass Fat (VF@ Fat 100 gm/cow)

Source of Technology: NDRI, Karnal

An OFT was conducted at village- Pokharsa Ka Bas, Block- Jalsu, District- Jaipur at 10 farmers fields to assess suitable management practices for mitigate the low milk yield of crossbred cow due to lack of nutrients was tested against farmer's practice. The technology tested yielded 13.90 liter/ crossbred cow yield against

12.66 liter/ crossbred cow under farmer's practice. The net return increased by 9.79 % due to By-Pass Fat (VF@ Fat 100 gm/cow) (Table 6.75).

Table 6.75 Effect of Feeding of By-Pass Fat (VF@ Fat 100 gm/cow)

Technology options	No. of trials	No. of Animals	Milk Yield (Liter/ day)	Net Return	B:C Ratio
Treatment T-1 (Farmers Practice): Dry Fodder + Green Fodder + 4.0 kg Concentrate	10	10	12.66	150.76	1.49
Treatment T-2 (Assessed Practice): T1 + Feeding of By-Pass Fat (VF2 Fat) @ 100 gm/day/cow	10	10	143.90	197.30	1.62

Problem Definition: Low Milk Yield of Goat

Technology Assessed: Effect of Moringa Leaves (feed) of Goat Milk Production

Source of Technology: NDRI, Karnal

An OFT was conducted at village- Ghinoi, Block- Govindgarh, District- Jaipur at 10 farmers fields for better management practices to mitigate the low milk yield of goat due to lack of nutrients was tested against farmer's practice. The technology tested yielded 2.50 liter/goat yield against 2.15 liter/goat under farmer's practice. The net return increased by 16.27% due to

Moringa Leaves (feed) of Goat Milk Production (Table 6.76).

Table 6.76 : Effect of Moringa Leaves (feed) of Goat Milk Production

Technology options	No. of trials	No. of Animals	Milk Yield (Liter/ day)	Net Return	B:C Ratio
(Farmers' Practice) (T-1) Grazing 6-8 hours/day and concentrate 1.5% of body weight	10	10	2.15	41.20	2.13
(T-2) (Assessed Practice) Concentrate 1.5% of body weight + Moringa Leaves 1.0 kg/day/goat	10	10	2.50	48.80	2.19

KVK, Hanumangarh-I

Problem Definition: Higher incidences of repeat breeding, Anestrous in crossbreed cattle due to hormonal imbalance.

Technology Assessed: Dewormer (ivermectin inj) + mineral mixture supplementation & Receptal inj

Source of Technology: GAU, Junagarh (Guj.)

An OFT was conducted on Repeat Breading Cattle of six villages of district namely Amarpura jalu, Santpura, Nukera, Jandwala sikhan, Hanumangarh and sangaria. Total number of farmers are 10 and total number of animals are 10. Key finding was conception of cattle after Artificial insemination (Table 6.77).

Table 6.77 Performance of clinical remedies on conception rate in cross breed cattle. (LPM)

Technology options	No. of trials	No. of animals comes in heat & conceived
T_1- Balanced diet (balance feed with deworming and mineral mixture) (Farmer's practice)	10	------
T_2 - Use of Dewormer (10 ml ivermectin inj.)/animal + Mineral mixture supplementation @ 30 g/bd /animal & Receptal inj 2.5ml (72-96 hrs before AI) (Assessment)		8 Animals conceived out of 10

KVK Delhi

Problem Definition: Low milk production buffaloes due to Parasitic Infestation and repeat breeding

Technology Assessed: Use of Ivermectin (dewormer) and mineral mixture for productive performance of Buffalo.

Source of Technology: SKNAU, Jobner, Rajasthan

KVK conducted OFT at Samaspur, Dansa and Sarangpur villages and there were 4 farmers having buffaloes. Anestrous with low milk yield assessed by KVK. The effect of deworming and mineral supplementation results in better utilization of feed resulting in increased milk production (Table 6.78).

Table 6.78 Use of Ivermectin (dewormer) and mineral mixture for productive performance of Buffalo

Technology options	No. of OFTs	No. of Farmers	No. of buffalo	Milk yield (lit./day/ animal)	Disease incidence (%)	(Net return/ day)	B:C Ratio
Farmers practice (T1)	Feeding of Concentrate ration and green fodder as per season and availability.	4	4	9.5	50	163	1.53
Improved practice(T2)	Use of "mineral mixture" (50gm per day as per standard) with deworming	4	4	10.5	25	202.50	1.64

KVK, Bhilwara-I

Problem definition: Infertility problem in buffaloes

Technology Assessed: Balanced feeding with concentrate mixture/green fodder+ASMM supplementation

Source of Technology: NIANP, Bengaluru

In Mandalgarh block of Bhilwara districts, the farmer are very poor. Due to inadequate feeding in buffaloes, reproductive performance *i.e.* anestrous dry period and calving interval increases. Therefore, it is decided to study the effect of fertility on balance diet of buffalo through supply of nutrient in diet. Farmers practices: Farmers feeding routine conventional feed (grazing four hours + ad lib. maize stover and dry grasses-T1) was tested against improved feeding with balanced feeding (1.5 kg balanced concentrate mixture for maintenance+15 kg green fodder/day/head+50g ASMM supplementation/day/buffaloes-T2) Balance diet along with feeding of Azolla proved helpful in removing infertility problem.

KVK, Ambala

Problem definition: Retarded growth & early life mortality

Technology Assessed: Growth improvement of Buffalo calves

Source of Technology: NDRI, Karnal

KVK, Ambala conducted trial for Growth improvement of Buffalo calves of 10 farmers of kesri & Samlehri villages. The recommended technology showed better result on growth improvement and reduced mortality (none) and morbidity rate (Table 6.79).

Table 6.79 Growth improvement of Buffalo calves

Technology options	No.of trials	Body weight (kg.)	Net return (Rs./ha)	B:C Raio
T1 : No Practice (F.P.)	15	10.80	498.57	1.09
T2 : Supplementation of Mineral Mixture @20gm/head/day with Iron and Vitamin E @20ml/head/day after 45 days of birth (Ass.)		13.60	728.90	1.12

KVK, Kota

Assessment of supplementary feeding of goat kids for higher growth rates

Problem Definition: Poor growth rate of goat kids

Technology Assessed: (Feed + 1.5 % concentrate of body weight)

Source of Technology: ICAR- CSWRI, Avikanagar and ICAR-NRC on goat Makhdoom

Goat husbandry provides glimpses of future hope for employment generation, nutritional security and prosperity of the millions of small and marginal farmers. Goats constitute 26.4 percent of the total livestock population of Rajasthan and the 19th livestock census

puts the no. of goats in the Kota district at 1.37 lakhs. KVK, Kota observed poor growth rates of goat kids in Kota district. Therefore, an OFT was conducted to assess supplementary feeding of goat kids for higher growth rates during 2023 and 2024. Results indicated that feed + 1.5 % concentrate of body weight recorded maximum mean body weight (kg) 13.10 and 13.40 of 3 months goat kids and 23.60 and 23.80 of 6 months goat kids during 2023 and 2024 respectively. The percent increase in mean body weight was 4.74 and 18.50 of 3 months and 6 months goat kids over farmers practices respectively (Table 6.80).

Table 6.80 Assessment of supplementation of supplementary feeding of goat kids for higher growth rates

Technology options	Body weight (kg)								Body weight (g) gain/day	
	At 3 months				At 6 months					
	2023	2024	Mean	Per cent increase over FP	2023	2024	Mean	Per cent increase over FP	2023	2024
T_1= Farmer's practice (Feed + 0.5 % concentrate of body weight)	12.6	12.7	12.65	-	19.8	20.2	20.0	-	80.00	81.00
T_2= (Feed + 1.5 % concentrate of body weight)	13.1	13.4	13.25	4.74	23.6	23.8	23.7	18.50	116.66	117.33

Assessment the efficacy of poly-herbal mixture supplementation on milk production and postpartum reproduction in Gir cows

Problem Definition: Low milk yield in desi cows

Technology Assessed: Poly-herbal mixture (25g of each Saunf, Ajwain, Methi, cardamom, Chandrasur mixed with 250 g Gur)

Source of Technology: ICAR- NDRI, Karnal

Milk yield of desi cow is low due to poor feeding management. Poly-herbal mixture (25g of each Saunf, Ajwain, Methi, cardamom, Chandrasur mixed with 250 g Gur) are believed to assist in the initiation, augmuntation of milk production and improve udder health. Therefore, KVK, Kota conducted on farm trials to assess the efficacy of poly-herbal mixture on milk production and postparturm reproduction in Gir cows during 2023 and 2024. The results indicated that the average milk yield was obtained under T2 (9.95 lt/day) which was 15.02 per cent higher than farmers practices (8.65 lt/day). Its also observed that the timing of expulsion of placenta also lower 3.0 hrs and 2.9 hrs than farmers practices 6.5 hrs and 6.3 hrs during 2023 and 2024 respectively (Table 6.81).

Table 6.81 Assessment the efficacy of poly-herbal mixture supplementation on milk production and postpartum reproduction in Gir cows

Technological options	No. of trials	Milk Yield (lt/day)				Expulsion of placenta (hrs)	
		2023	2024	Mean	% Increase in milk yield over FP	2023	2024
T_1 = Farmers practice (standard feeding practice of farmers)	05 (10 animals)	8.5	8.8	8.65	-	6.5	6.3
T_2= T_1 + Poly herbal mixture supplementation from day of calving day to 10 days of postpartum		9.8	10.1	9.95	15.02	3.0	2.9

KVK Sirsa

Problem Definition: Detection of Antimicrobial Resistance or Sensitive Pattern for Mastitis

Technology Assessed: Antimicrobial Resistance

Source of Technology: LUVAS, Hisar

On-field trials were conducted to detect antimicrobial resistance and sensitivity patterns in cattle having mastitis. A total of 50 milk samples were collected from cattle having mastitis and Antibiotic Sensitivity Testing (ABST) was performed. The table lists antibiotics such as Amikacin, Cefotaxime, Amoxicillin etc. The interpretation categorizes antibiotics as either sensitive (S) or resistant (R). Sensitive antibiotics can be

used for effective mastitis treatment. This study helps identify suitable antibiotics for treating mastitis, improving animal health and productivity by ensuring proper and targeted treatment. (Table 6.82)

Table 6.82 Detection of Antimicrobial Resistance or Sensitive Pattern for Mastitis

Technology option	No. of milk samples	Resistant	Sensitive
Antibiotic Sensitivity Testing (ABST)	50	CEFT, OTC, STREP, PEN-G and TYLO	AMK, GEN, CEPHO, AMOX, LEVO, MOXI, CHLOR and ENRO

*AMK (Amikacin), GEN (Gentamycin), CEPHO (Cefoperazone), AMOX (Amoxicillin), LEVO (Levofloxacin), MOXI (Moxifloxacin), CHLOR (Chloramphenicol), ENRO (Enrofloxacin), CEFT (Cefotaxime), OTC (Oxytetracycline), STREP (Streptomycin), PEN-G (Penicillin-G) and TYLO (Tylosin)

KVK Jaisalmer-I

Problem Definition: Drudgery prone manual weeding

Technology Assessed: Improved weeding tools for farm women

Source of Technology: MPUAT, Udaipur; CIAE, Bhopal

An OFT was conducted at village Badabag and Deva village of Jaisalmer with 20 Farm women who were handling weeding operations in vegetable crops and experiencing manual weeding activity as more labour intensive, postural discomfort with increasing chemical applications in crops over the time. Two weeding tools interventions i.e. gubber weeder and twin wheel hoe weeder were introduced during weeding operations to assess the improvement in work efficiency and drudgery of farm women during activity in comparison of traditional manual weeding operations. The women

workers perceived 58.2% and 69.7% drudgery with use of grubber weeder and twin wheel hoe weeder which is significantly less drudgery about half as compared to perceived drudgery in traditional manual weeding operations (89.28%). Both improved technologies enhanced 52 to 67% work efficiency over traditional practice. Farm women apparently accepted less chemical application in field up to 48% after introducing these improved weeding tools in manual weeding activities of crop (Table 6.83).

Table 6.83 Impact of improved weeding tools on drudgery of farm women and weed management in crops

Treatments	Perceived Drudgery	Drudgery Reduction	Work efficiency improvement
T1: Farmer practice- Manual weeding/Traditional tool for weeding/ Use of Chemical method	89.28	-	-
T2:Manual Weeding with Grubber Weeder	-	58.20	52
T3: Weeding with Twin wheel hoe weeder	-	69.70	67

WOMEN & CHILD CARE

KVK, Jhajhar

Problem definition: Malnutrition among adolescent girls- Anemia in children

Technology Assessed: Assessment of sensory evaluation of value added bajra products

KVK, Jhajjar conducted 10 on-farm testing to assess the sensory evaluation of value added bajra products (Biscuit and Matthi) among adolescent girls in village Dadri Toye. Control group was given normal wheat products. Products having bajra were liked more by the respondents as compared to the control group. The average scores as per 5 point hedonic scale were higher in the assessed technology as compared to control in terms of appearance, colour, taste, texture and overall acceptability. Height, weight and Hb level of girls improved after continued intake of millets in daily diet. So, these recipes can be widely popularized to increase the intake of mineral and protein rich products among all the groups.

Table 6.85 Assessment of the acceptability of sprouted moong bean products (Rabi 2024) (Nutrition)

Technology options	No. of households covered	Total members in household per family	Overall Acceptability*	Initial body weight of adolescent girls	Body weight after intervention	% increase
T1- Farmers practice (Unsprouted moong bean)	10	4-5	3.6	38	38	0
T2-Sprouted moong bean products			4.3	38	38.75	1.97

*Rating on 5 point Hedonic scale

KVK, Jhajhar

Problem Definition: Protein energy Malnutrition in adolescent girls

Technology Assessed: Feeding of sprouted moong bean products

Source of Technology: PAU, Ludhiana

Details of OFT: KVK, Jhajjar conducted 10 on-farm testing to assess the acceptability of sprouted moong bean products (chaat and khichdi) among adolescent girls in rabi 2024 and summer 2024 in village Baghpur. Control group was given unsprouted moong bean recipes. Products having sprouted moong bean were liked more by the respondents as compared to the control group. The average scores as per 5 point hedonic scale were higher in the assessed technology as compared to control in terms of appearance, colour, taste, texture and accessibility. The assessed technology was affordable, acceptable and profitable. So, these recipes can be widely popularized to increase the intake of protein rich sprouted moong bean products among all the groups.

Table 6.84 Assessment of sensory evaluation of value added bajra product (Nutrition)

Technology options	No. of households covered	Overall Acceptability*	Initial body Weight (kg)	Weight after intervention (kgs)	% increase	Initial Hb level (g/dL)	Hb level after intervention (g/dL)	% increase
Conventional wheat products	10	3.6	41.0	41.0	0	7.3	7.3	0
T2- Value added bajra products (Biscuit and Matthi) +Nutrition education		4.5	41.0	41.85	2.07	12.4	12.4	69.86

*Rating on 5 point Hedonic scale

CHAPTER 7

FRONTLINE DEMONSTRATIONS

The Front-Line Demonstrations (FLDs) are a mechanism of transfer and popularization of new technologies much ahead of the field extension and provides opportunity to researchers or technology developers to have direct interface with farmers. The researchers and extension personnel can understand the conditions and resources of the farmers in which the technology is to be adopted. The FLDs in Zone-II were conducted by 66 KVKs under the supervision of ICAR-ATARI, Jodhpur. The extension activities such as field days, off-campus trainings, workshops, seminars, farmers-scientist's interaction were also organized along with FLDs. During 2024, total 28991 FLDs were conducted comprising of 26131 on crops, 1035 of kitchen gardening, 1083 on animal husbandry and dairying, 642 on farm implements and 100 on miscellaneous activities. The area covered under FLDs was 10822 ha and 3506 livestock units (Table 7.1).

Table 7.1 Achievements of FLDs Conducted during 2023 by KVKs of ICAR-ATARI, Jodhpur

S.No.	Crops/Commodities	Rajasthan		Haryana & Delhi		Zone Total	
		Farmers	Area (ha)/Units (No)	Farmers	Area (ha)/Units (No)	Farmers	Area (ha)/Units (No)
A	**Field Crops**						
1	Cereals	2149	761.5	1654	779	**3803**	**1540.5**
2	Pulses (NFSM)	917	386.8	0	0	917	386.8
3	Pulses (Others)	2642	1032.2	402	160.8	3044	1193
4	Millets	1011	642	85	34	**1096**	**676**
6	Oilseeds (NMOOP)	6033	2510.8	0	0	6033	2510.8
7	Oilseed (Others)	8060	3426.7	1532	655.1	9592	4081.8
8	Fodder crops	75	16.2	106	42	181	58.2
9	Commercial crops	0	0	**77**	**23**	**77**	**23**
B	**Horticultural crops**						
10	Fruits	25	5	32	13	57	18
11	Vegetables	674	107.2	182	62	856	169.2
12	Flowers	0	0	10	2	10	2
13	Medicinal Crops	151	60.4	0	0	151	60.4
14	Seed Spices	254	98.3	10	1	264	99.3
15	Mushroom	50	3	0	0	50	3
	Total Crops	**22041**	**9050.1**	**4090**	**1771.9**	**26131**	**10822**

S.No.	Crops/Commodities	Rajasthan		Haryana & Delhi		Zone Total	
		Farmers	Area (ha)/Units (No)	Farmers	Area (ha)/Units (No)	Farmers	Area (ha)/Units (No)
C	**Livestock and Fisheries**						
16	Dairy	491	511	162	162	653	673
17	Goatary	223	23	0	0	223	23
18	Poultry	197	2800	0	0	197	2800
19	Fisheries	10	10	0	0	10	10
	Total Livestock/Fisheries	**921**	**3344**	**162**	**162**	**1083**	**3506**
D	**Agri Engineering, nutrition**						
20	Farm implements	629	171	13	13	642	184
21	Kitchen gardening	1035	12.32	0	0	1035	12.32
22	Nutrition and Drudgery Reduction	70	70	30	30	100	100
	Total Agri Engineering/Nutrition	**1734**	**253.32**	**43**	**43**	**1777**	**296.32**
	Grand Total	**24696**	**12647.42**	**4295**	**1976.9**	**28991**	**14624.32**

7.1 Cluster Frontline Demonstrations (CFLDs)

7.1.1 Pulses

Blackgram: During *Kharif* 2024, CFLDs on blackgram were laid out in 9 clusters in 31 villages by 4 KVKs viz. Bhilwara-I, Bhilwara-II, Bundi and Sawai Madhopur on area of 386.8 ha involving 917 farmers (Table 7.2)

The highest average yield of 1240 kg/ha was recorded in Sawai Madhopur district with 'Kota Urd-3' blackgram. The average yield in CFLDs was 1012.6 kg/ha which was 32.9% higher than yield of blackgram obtained with farmers practice (757.0 kg/ha). The CFLDs recorded highest BC ratio of 1:3.71 with 'Kota Urd 3' variety of blackgram followed by 1:3.69 with 'Kota Urd 4' variety of blackgram under Sawai Madhopur conditions. The average BC ratio was 1:3.07.

Table: 7.2a Yield performance of blackgram under CFLDs during *Kharif*-2024

S.No.	District/KVKs	Variety (s)	Targets		Achievements	
			Area (ha)	CFLDs	Area (ha)	CFLDs
1	Bhilwara-I	Mukundra Urd-2	100	250	100	250
2	Bhilwara-II	Mukundra Urd-2	100	250	100	250
3	Bundi	Kota Urd-3	100	250	86.8	217
4	Sawai Madhopur	Kota Urd-3	100	250	58	116
		Kota Urd-4			42	84
		Total	**400**	**1000**	**386.8**	**917**

Fig: Kota Urd-3 under CFLD in village Kalanala, Nainwa block, Distt Bundi

Table: 7.2b Yield performance of blackgram under CFLDs during *Kharif*-2024

S.No.	District/KVKs	Variety (s)	Average yield (kg/ha)		Yield increase (%)	Yield gap (kg/ha)
			CFLDs	Local		
1	Bhilwara-I	Mukundra Urd-2	750	610	22.9	140
2	Bhilwara-II	Mukundra Urd-2	728	593	22.7	135
3	Bundi	Kota Urd-3	1111	908	22.3	203
4	Sawai Madhopur	Kota Urd-3	1240	884	40.2	356
		Kota Urd-4	1234	790	56.2	444
Average			**1012.6**	**757.0**	**32.9**	**255.6**

Table: 7.2c Yield performance of blackgram under CFLDs during *Kharif*-2024

S.No.	District/KVKs	Variety (s)	Average yield (kg/ha)		Yield increase (%)	Yield gap (kg/ha)
			CFLDs	Local		
1	Bhilwara-I	Mukundra Urd-2	750	610	22.9	140
2	Bhilwara-II	Mukundra Urd-2	728	593	22.7	135
3	Bundi	Kota Urd-3	1111	908	22.3	203
4	Sawai Madhopur	Kota Urd-3	1240	884	40.2	356
		Kota Urd-4	1234	790	56.2	444
Average			**1012.6**	**757.0**	**32.9**	**255.6**

Table 7.2d Economic performance of blackgram under CFLDs during *Kharif*-2024

KVK	Variety	Economics of FP (Rs/ha)				Economics of CFLD (Rs/ha)			
		Gross cost	Gross Income	Net Income	BC ratio	Gross cost	Gross Income	Net Income	BC ratio
Bhilwara-I	Mukundra Urd-2	18,726	40,236	21,509	2.15	19,768	49,478	29,709	2.50
Bhilwara-II	Mukundra Urd-2	17,846	44,157	26,311	2.47	18,768	53,032	34,263	2.83
Bundi	Kota Urd-3	26,600	63,591	36,991	2.39	29,750	77,744	47,994	2.61
Sawai Madhopur	Kota Urd-3	20,230	66,072	45,325	3.27	24,840	91,751	66,903	3.69
	Kota Urd-4	20,230	57,720	37,490	2.85	24,840	92,076	67,228	3.71
	Average	**20,726**	**54,355**	**33,525**	**2.63**	**23,593**	**72,816**	**49,219**	**3.07**

7.1.2 Oilseeds

A total of 6,033 Frontline Demonstrations (FLDs) on groundnut, soybean, sesame, and castor were conducted using a cluster approach across 2,510.8 hectares in Rajasthan during Kharif 2024. The crop-wise summary of these demonstrations is presented in Table 7.3.

Table 7.3 Summary of CFLDs on Oilseeds during kharif 2024

S.No.	Crop (Number of KVKs)	States	Achievement of CFLDs		Average yield (Kg. /ha)		Yield increased (%)	Yield gap (Kg. /ha)
			CFLDs	Area (ha)	CFLDs	FPs		
1	Kharif season 2024							
2	Groundnut (22)	Rajasthan	2355	999.6	2388.23	1939.68	23.13	448.55
3	Soybean (13)	Rajasthan	1863	751.2	1554.31	1283.92	21.06	270.39
4	Sesame (24)	Rajasthan	1790	750	474.80	202.40	134.59	272.41
	Total		**6033**	**2510.8**				

*Sesame Crop fail in seven KVKs and castor in one KVK due to heavy rainfall in August 2024

Frontline Demonstrations (FLDs) were conducted in Rajasthan during Kharif 2024 using a cluster-based methodology. CFLDs were carried out in 56 clusters at 2,355 partner farms located in 222 villages from 48 blocks in 16 districts, with area of 999.6 ha in Rajasthan, implemented by 22 KVKs. In soybean 29 clusters on 751.2 ha were conducted at 1,863 partner farmers' fields located in 137 villages from 37 blocks spread under 13 KVKs in 12 districts. In sesame 54 clusters of 750 ha at 1,790 partner farmers field located in 166 villages if 46 blocks under 24 KVKs in 18 districts. In castor, cluster of 25 partner farmers' fields under one KVK on 10 ha, was conducted in a village.

Groundnut: In Rajasthan, six groundnut varieties- GJG-19, GJG-32, K-1812, RG-510, RG-578, and HNG-123 were demonstrated in the integrated crop management (ICM) mode under CFLDs. A yield advantage of 448.55 kg/ha over farmer practices is shown by the results in Table 7.5. In the Bikaner district, GJG-19 produced the maximum yield of 3056 kg/ha out of the six varieties that were demonstrated. In contrast, GJG-32 recorded the lowest yield (1690 kg/ha) in Chittorgarh.

Table 7.4 Performance of Groundnut under CFLD during 2024

S.No.	Districts/KVKs	Variety (s)	Area (ha)	CFLDs (No.)	CFLDs	FPs	Percent increase
1	Alwar-I	RG-578	20	36	1913	1553	23.19
2	Alwar-II	RG-578	10	25	2250	1872	20.22
3	Bikaner-I	GJG-19	100	250	3056	2055	48.73
4	Bikaner-II	GJG-19	93.6	234	2359	1810	30.30
5	Chittorgarh	GJG-32	20	50	1690	1410	19.87
6	Churu-I	GJG-19	30	75	3013	2360	27.69
7	Churu-II	RG 578, RG 510 and HNG 123	100	200	2664	2214	20.31
8	Dausa	RG 578	40	80	1901	1572	20.94
9	Hanumangarh-II	RG-578	30	75	2689	2465	9.07
10	Jaipur-II	GJG-32	36	60	1861	1660	12.08
11	Jaisalmer-I	RG 578, RG 510 and HNG 123	60	145	2296	2218	3.49
12	Jaisalmer-II	RG 578	60	150	2265	1815	24.80
13	Jalore-II	K-1812	20	50	2280	1651	38.11
14	Jhunjhunu	RG-510	60	150	2734	2304	18.67
15	Jodhpur-I	GJG-32	10	25	2189	1776	23.25
16	Jodhpur-II	GJG-19	20	25	2436	2006	21.44
17	Nagaur-I	GJG-32	10	25	2580	2150	20.00
18	Sikar-I	RG-578	60	150	2371	2036	16.46
19	Sikar-II	RG-578	100	250	2363	1970	19.95
20	Sri Ganganagar	RG-578	60	150	1959	1657	18.20
21	Tonk	RG-578	20	50	2041	1730	18.02
22	Udaipur-I	GJG 32	40	100	1731	1286	34.63
	Total		**999.6**	**2355.0**	**2388**	**1940**	**23.13**

Soybean: Under CFLDs on Soybean, two varieties namely JS-20-116 and JS-20-98 were demonstrated in integrated crop management (ICM) mode in Rajasthan. Results indicate a yield advantage of 270.39 kg/ha over farmer's practices (Table 7.5). In the Rajsamand district, JS-20-116 produced the maximum yield of 2022 kg/ha that were demonstrated. In contrast, Bundi district JS-20-98 recorded the lowest yield (1006 kg/ha) due to some of partner farmers field crop failed by heavy rainfall in the month of July & august 2024.

Sesame: Under CFLDs on Sesame, two varieties namely RT-351 & RT-372 were demonstrated in integrated crop management (ICM) mode in Rajasthan. Results indicate a yield advantage of 272.41 kg/ha over farmer's practices.

In the Bikaner district, RT-372 produced the maximum yield of 640 kg/ha in contrast Hanumangarh-I recorded the lowest yield (261 kg/ha) Table-7.6.

Table 7.5 Performance of Soybean under CFLD during 2024

S.No.	Districts/KVKs	Variety (s)	Area (ha)	CFLDs (No.)	CFLDs	FPs	Percent increase
1	Banswara	JS-20-116	50	126	1840	1490	23.50
2	Baran	JS-20-98	80	200	1918	1510	26.97
3	Bhilwara-I	JS-20-116	30	75	1510	1240	21.77
4	Bundi	JS-20-98	81.2	203	1006	1092	-7.84
5	Chittorgarh	JS-20-98	30	75	1640	1360	20.59
6	Dungarpur	J S 20-116	50	109	1463	1197	22.28
7	Jhalawar	JS-20-98	100	250	1479	1129	30.93
8	Kota	JS-20-116	60	150	1606	1330	20.74
9	Pratapgarh	JS-20 98	50	125	2014	1650	22.06
10	Rajsamand	JS 20-116	20	50	2022	1647	22.82
11	Sawai Madhopur	JS 20-98	80	200	1410	1200	17.50
12	Udaipur-I	J S 20-116	80	200	1330	1052	26.43
13	Udaipur-II	JS-20-98	40	100	1707	1359	25.61
	Total		**751.2**	**1863**	**1554.31**	**1283.92**	**21.06**

Table 7.6 Performance of Sesame under CFLD during 2024

S.No.	Districts/KVKs	Variety (s)	Area (ha)	CFLDs (No.)	CFLDs	FPs	Percent increase
1	Ajmer	RT-372	20	50	511	410	24.65
2	Alwar-I	RT-372	30	60	546	398	37.05
3	Barmer-II	RT-372	60	125	447	347	28.86
4	Bhilwara-I	RT-372	30	75	555	465	19.36
5	Bhilwara-II	RT-372	30	75	563	455	23.74
6	Bikaner -II	RT-372	20	50	578	439	31.58
7	Bikaner-I	RT 372	20	50	640	531	20.60
8	Churu-I	RT 372	60	150	415	304	36.76
9	Churu-II	RT 372	30	75	491	392	25.26
10	Hanumangarh-I	RT-372	30	75	261	200	30.54
11	Jhunjhunu	RT-372	30	75	593	573	3.52
12	Jodhpur-II	RT-372	20	25	438	336	30.36
13	Karauli	RT-372	20	50	577	581	-0.66
14	Pali-I	RT 372	50	125	416	354	17.45
15	Sirohi	RT-351	30	75	429	353	21.58

S.No.	Districts/KVKs	Variety (s)	Area (ha)	CFLDs (No.)	CFLDs	FPs	Percent increase
16	Sri Ganganagar	RT 372	30	75	436	361	20.75
17	Tonk	RT-372	30	60	425	302	41.02
18	Dholpur	RT 372	30	75	Crop Failed due to heavy rainfall (793 mm)		
19	Jaipur-I	RT-372	30	75	Crop Failed due to heavy rainfall		
20	Jaisalmer-I	RT 372	30	70	Crop failed due to heavy rainfall on 4th & 5th August, 2024 causes flooding & field filled with water, water logging.		
21	Jaisalmer-II	RT 372	30	75	Crop Failed due to heavy rainfall		
22	Jodhpur-I	RT 372	40	100	Crop Failed due to heavy rainfall		
23	Pali-II	RT 372	30	75	Crop Failed due to heavy rainfall		
24	Sawai Madhopur	RT-372	20	50	Crop Failed due to heavy rainfall		
	Total		**540**	**1270**	**487.69**	**338.58**	**44.04**

Geo-tagging at farmer field in Nagaur (Rajasthan)


Soybean "JS-20-98" field visit at farmer field in Kota


Field day at farmer field for groundnut variety GJG-19 in Bikaner

Extension Activities: Under the CFLD-Oilseeds program, a range of extension activities were conducted across different oilseed crops. For groundnut, a total of 78 extension events including field days, field visits, and on- and off-farm trainings were organized, with participation from 2,500 farmers. In soybean, 54 such activities were conducted, engaging 2,297 farmers. For sesame, 55 events were held, reaching 1,213 farmers. In castor, a single field visit was organized, attended by 10 farmers.

7.2 Frontline Demonstrations (other than CFLDs)

7.2.1 Pulses

FLDs on pulse production technology were organized on an area of 1193.0 ha involving 3044 farmers in Rajasthan and Haryana. The FLDs on black gram and green gram in Kharif and moth bean and chickpea in rabi season were conducted (Table 7.7).

Table 7.7 Performance of FLDs on Pulse Crops in Rajasthan and Haryana

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Rajasthan								
Blackgram (7)	ICM	1142	442.8	899	720	24.4	1:2.88	1:2.54
Chickpea (13)	ICM	430	138.4	1852	1553	20.1	1:2.99	1:2.65
	IPM	70	26.5	1240	1104	12.3	1:2.44	1:2.20
	Varietal	18	10.0	1507	1263	19.3	1:3.57	1:3.03
Greengram (14)	ICM	707	282.8	811	654	24.5	1:2.66	1:2.24
	Varietal	113	45.2	714	551	29.8	1:2.51	1:2.12
Lentil (2)	ICM	87	42.5	1866	1586	17.7	1:2.95	1:2.57
Mothbean (3)	ICM	75	44.0	461	337	42.4	1:2.09	1:1.70
		2642	1032.2					
Haryana								
Chickpea (3)	ICM	40	16.0	1287	1055	23.2	1:2.22	1:1.81
	Varietal	25	10.0	1800	1700	5.9	1:4.80	1:4.77
Greengram (7)	ICM	175	70.0	1237	1008	20.8	1:2.96	1:2.50
	Natural Farming	12	4.8	624	618	1.0	1:2.27	1:1.97
Lentil (1)	ICM	125	50.0	778	575	35.3	1:3.05	1:2.43
Pigeon pea (1)	ICM	25	10.0	1565	1460	7.2	1:4.32	1:3.94
		402	160.8					
Total		**3044**	**1193**					

Black gram: In Rajasthan, 7 KVKs conducted FLDs on black gram at 1142 farmers' fields covering an area of 442.8 ha.

Green gram: 14 KVKs of Rajasthan and 7 KVKs of Haryana (Yamunanagar, Jhajjar, Bhiwani, Panipat, Mahendergarh, Fatehabad and Sonipat) conducted demonstrations on green gram at 1007 farmers' fields covering an area of 402.8 ha.

Mothbean: KVKs Barmer-I, Barmer-II and Jalore-I conducted FLDs on moth bean at 75 farmers' fields on 44.0 ha area.

Chickpea: FLDs on chickpea were conducted by 13 KVKs of Rajasthan (Banswara, Dholpur, Sikar-I, Dausa, Udaipur-II, Kota, Sikar-II, Udaipur - I, Jaipur-I, Rajsamand, Hanumangarh-I, Churu-I and Jaipur-II) and 3 KVKs of Haryana (Bhiwani, Fatehabad and Jhajhar).

Lentil: FLDs on Lentil were conducted by 2 KVKs of Rajasthan (Bharatpur and S.Madhopur) and 1 KVK of Haryana (Ambala) at 212 farmers' fileds covering an area of 92.5 ha.

Pigeonpea: KVK of Gurugram conducted FLDs on Pigionpea at 25 farmers' field covering an area of 10.0 ha.

7.2.2. Oilseeds

Total 9592 FLDs on 4081.8 ha was conducted on oilseeds through KVK scheme in Rajasthan, Haryana and Delhi. The details are given in Table 7.8.

Table 7.8 Performance of FLDs on Oilseed Crops in Rajasthan, Haryana and Delhi

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Rajasthan								
Groundnut (19)	ICM	1726	750.0	2301	1903	21.5	1:3.18	1:2.73
	IPM	70	40.0	1854	1647	12.7	1:1.92	1:1.73
	Varietal	250	100.0	3054	2055	48.6	1:3.72	1:2.53
Mustard (35)	ICM	2327	1012.5	1834	1523	20.7	1:3.34	1:2.86
	INM	40	20.0	2045	1835	11.4	1:3.55	1:3.27
	IPM	75	30.0	2135	1671	27.8	1:4.13	1:3.35
	Varietal	875	330.0	1895	1590	19.8	1:4.02	1:3.30
Soybean (12)	ICM	1627	651.2	1579	1275	23.9	1:2.46	1:2.10
	IPM	15	3.0	2276	1689	34.8	1:2.50	1:1.66
Sesame (16)	ICM	795	340.0	467	360	29.4	1:2.28	1:1.93
	IPM	20	50.0	578	439	31.7	1:3.30	1:2.59
	Varietal	240	100.0	547	453	20.7	1:3.48	1:3.10
Haryana	Total	8060	3426.7					
Mustard (12)	ICM	1344	555.1	1853	1668	12.0	1:3.14	1:2.86
	Varietal	63	50.0	2650	2400	10.4	1:3.28	1:3.20
	Total	1407	605.1					
Delhi								
Mustard	ICM	125	50.0	1950	1600	21.9	1:3.99	1:3.51
Zone Total		**9592**	**4081.8**					

7.2.3. Cereal Crops

FLDs on cereal crops were conducted at 3803 farmers' fields on ha in 2024-25 (Table 7.9). Rice, Maize, Wheat and Barley were the major crops. Detailed information about FLDs on cereal crops are depicted in table

Maize: 7 KVKs of Rajasthan (Banswara, Baran, Dungarpur, Pratapgarh, Rajsamand, Udaipur – I and Udaipur-II) conducted FLDs on 605 farmers' fields covering an area of 181.0 ha. FLDs resulted 28.4% higher grain yield of maize in Kharif season and 20.2% higher yield in Rabi maize with ICM package over the farmer's practice.

Rice: 11 KVKs of Haryana (Ambala, Fatehabad, Jhajjar, Jind, Kaithal, Kurukshetra, Panipat, Rohtak, Sirsa, Sonipat and Yamunanagar) conducted FLDs on rice on 620 farmers' fields over an area of 244.6 ha during 2023-24. The FLDs resulted into 5% and 13.8% higher yields over farmers practice under RCT and ICM practices, respectively.

Barley: 10 KVKs of Rajasthan (Alwar-1, Sikar-I, Bikaner-II, Pali-I, Bharatpur, Jaipur-I, Rajsamand, Churu-I, Jaipur-II and Karauli) conducted FLDs under varying packages on barley along with farmers practices. In Haryana one KVK, Rewari conducted FLDs on Barley.

Maize: 5 KVKs of Rajasthan (Jaipur-II, Pratapgarh, Rajsamand, Udaipur-I, Dungarpur and Udaipur-II) conducted FLDs on Maize. One KVK of Haryana (Yamunanagar).

Paddy: 11 KVKs Jind, Sirsa, Hisar, Rohtak, Jhajjar, Yamunanagar, Panipat, Sonipat, Kaithal

Paddy (Natural Farming): KVK, Fatehabad (Haryana)

Wheat: 22 KVKs Bikaner-II, Dungarpur, Baran, Bharatpur, Alwar-1, Dholpur, Jhalawar, Pali-I, Sikar-I, Sri Ganganagar, Nagaur-II, Sirohi, Dausa, Jaipur-I, Kota, Rajsamand, Hanumangarh-I, Hanumangarh-II, Udaipur-II, Jaipur-II, Sikar-II and Karauli) of Rajasthan. In Haryana 15 KVKs Sirsa, Karnal, Sonipat, Rewari, Bhiwani, Jhajjar, Jind, Mahendergarh, Panipat, Kurukshetra, Rohtak, Ambala, Kaithal, Fatehabad and Faridabad.

Wheat (Natural Farming): 4 KVKs (Bhiwana, Karnal, Sonipat and Ambala) of Haryana.

Table 7.9 Performance of FLDs on Cereal Crops in Rajasthan

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Rajasthan								
Barley (10)	ICM	407	147.2	4569	3881	18.0	1:2.74	1:2.43
	Varietal	96	44.5	4437	3838	15.3	1:2.95	1:2.66
Maize	ICM	449	128.4	3467	2975	19.5	1:2.78	1:2.47
	IPM	100	20.0	3101	2299	34.9	1:1.94	1:1.41
Wheat (22)	ICM	935	349.4	4972	4326	15.3	1:2.95	1:2.57
	Varietal	162	72.0	4988	4424	12.2	1:3.32	1:2.95
	Total	**2149**	**761.5**					
Haryana								
Barley(1)	ICM	8	3.2	5014	4600	9.0	1:2.29	1:2.17
Maize	ICM	10	4.0	10963	8870	23.6	1:3.08	1:2.65

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Paddy (9)	ICM	85	34.0	4156	3991	4.1	1:3.19	1:2.80
	IPM	15	6.0	4147	3717	11.6	1:2.70	1:2.44
	IWM	25	10.0	7250	6250	16.0	1:3.60	1:3.27
	RCT	110	74.0	2283	2087	10.5	1:3.23	1:2.88
	Varietal	113	47.0	5379	4957	8.7	1:1.62	1:1.50
Paddy Natural Farming (1)	Paddy	15	3.0	2300	5000	-54.0	1:1.62	1:2.36
Wheat (15)	CRM	74	78.2	4732	4353	9.0	1:2.61	1:2.21
	ICM	430	204.0	5533	4981	11.1	1:2.76	1:2.45
	INM	5	2.0	5700	5000	14.0	1:3.18	1:2.89
	IPM	30	12.0	7263	6757	7.9	1:4.43	1:4.28
	RCT	360	144.0	5841	5692	2.6	1:3.70	1:3.59
	Varietal	320	138.0	5290	4889	8.5	1:3.14	1:2.96
Wheat Natural Farming (4)	Natural Farming	54	19.6	3775	4446	-5.0	1:3.16	1:2.70
	Total	**1654**	**779**					
	Total	**3803**	**1540.5**					

Pearl millets: Total 1096 demonstrations were conducted on pearl millet in Rajasthan and Haryana on 676.0 ha area during 2024-25 (Table 7.10). FLDs were undertaken by 17 KVKs (Jaisalmer-II, Nagaur-I, Alwar-1, Nagaur-II, Jalore-II, Barmer-I, Barmer-II, Jodhpur-I, Pali-II, Churu-II, Jodhpur-II, Hanumangarh-II, Jalore-I, Alwar-II, Ajmer, Jaipur-II and Jaisalmer-I) of Rajasthan and 3 KVKs (Jhajhar, Rewari and Mahendragarh) of Haryana.

Table 7.10 Performance of Millets under FLDs in Rajasthan and Haryana during 2024-25

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Rajasthan								
Pearlmillet (17)	ICM	936	572.0	1395	1173	18.5	1:2.23	1:1.98
	IPM	20	10.0	2720	2320	17.2	1:2.01	1:1.90
	Varietal	55	60.0	1178	939	28.5	1:2.06	1:1.76
		1011	642					
Haryana								
Pearlmillet (3)	ICM	85	34.0	2965	2631	12.7	1:2.35	1:2.20
	Total	**1096**	**676**					

7.2.4. Commercial Crop

Cotton: FLDs on cotton were conducted at 77 farmers' fields on 23.0 ha in 2024-25 in Haryana (Table 7.11) . FLDs on cotton were undertaken by 5 KVKs (Fatehabad, Hisar, Jhajhar, Rohtak and Sirsa).

Table 7.11 FLDs on cotton in Haryana during 2024-25

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Cotton (5)	ICM	17	3.5	1746	1511	15.6	1:1.42	1:1.26
	INM	30	9.0	1598	1362	17.1	1:6.49	1:1.34
	IPM	30	10.5	1758	1467	20.7	1:1.67	1:1.43
	Total	**77**	**23.0**					

Cluster bean: Total 485 FLDs on Clusterbean were conducted at as many farmers fields covering 179.0 ha area in 2024-25. Six KVKs (Sikar-I, Sri Ganganagar, Nagaur-II, Churu-I, Udaipur-II and Jhunjhunu) conducted FLDs on Clusterbean. In Haryana, demonstrations were undertaken by 2 KVKs (Mahendragarh and Fatehabad).

Table 7.11 Performance of FLD on Other crops in Rajasthan

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Yield (Kg/ha)			BCR	
				Demo	Local)	% increase	Demo	Check
Rajasthan								
Clusterbean (6)	ICM	280	97.0	1777	1497	17.7	1:2.78	1:2.41
	Varietal	25	10.0	1969	1675	17.6	1:2.85	1:2.37
Haryana								
Clusterbean (2)	ICM	120	48.0	1120	950	17.9	1:1.80	1:1.64
	IDM	40	16.0	1670	1520	9.9	1:4.08	1:3.98
	Varietal	20	8.0	1680	1530	9.8	1:4.40	1:3.93
Total		**485**	**179.0**					

7. 2.5 Fodder Crops

FLDs on fodder crops were undertaken by 181 farmers covering 58.2 ha area. in berseem, napier grass, oat,maize and sorghum The details are given in Table 7.12.

Rajasthan

Berseem: FLDs at 52 farmers' fields on 8 ha was conducted by KVKs-Alwar-I and Karauli.

Napier grass: Demonstrations were undertaken by 1 KVK (Pali-I) on 13 farmers' fields in an area of 5.2 ha.

Oat: Demonstrations were undertaken by KVK Hanumangarh-II on 10 farmers' fields in an area of 3.0 ha.

Haryana

Maize: Demonstrations were undertaken by KVK Karnal on 17 farmers' fields in an area of 4.0 ha maize has become popular among farming community.

Sorghum: Demonstrations were undertaken by 2 KVKs (Bhiwani and Fatehabad) on 65 farmers' fields in an area of 26.00 ha. Sorghum has become popular among farming community.

Oat: FLDs on oat were undertaken by 1 KVKs (Bhiwani) on 24 farmers' fields in an area of 12.0 ha. during Rabi. Farmers fetched good remuneration as well as quality fodder.

Table 7.12 Performance of Fodder Crops under FLDs in Rajasthan and Haryana

Crops KVKs)	Theme	No. of farmers	Area (ha)	Yield of green fodder (kg/ha)			BCR	
				Demo	Local	% increase	Demo	Check
Rajasthan								
Berseem	ICM	32	4.0	54000	47300	14.2	1:3.03	1:2.71
	Varietal	20	4.0	53800	47100	14.2	1:3.11	1:2.68
Napier grass	Varietal	13	5.2	65200	41200	58.3	1:4.46	1:3.08
Oat	ICM	10	3.0	39700	34900	13.8	1:3.94	1:3.62
Haryana		75	16.2					
Maize	ICM	17	4.0	40525	38025	6.6	1:2.81	1:2.69
Oat	ICM	24	12.0	22810	17330	31.6	1:2.16	1:1.63
Sorghum	ICM	45	18.0	28767	23421	22.8	1:1.38	1:1.16
Sorghum	Varietal	20	8.0	62575	52625	18.9	1:3.35	1:2.75
Total		181	58.2					

7.3 Horticultural Crops

7.3.1 Fruit crops

KVKs of Rajasthan conducted FLDs on Ber, Kinnow and Papaya on 25 farmers fields at 5 ha area during 2024-25 (Table 7.13).

Ber: FLDs were undertaken by 1 KVK of Rajasthan (Pali-I) at 5 locations over an area of 2.0 ha. area on IPM component.

Kinnow: FLDs were undertaken by 1 KVKs Hanumangarh-I at 10 locations over an area of 0.5 ha area on ICM component. KVKs Sirsa and Hisar conducted

Table 7.13 Performance of FLDs on Fruit Crops in Rajasthan

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Yield (kg/ha)			BCR	
				Demo	Local	Increase (%)	Demo	Check
Rajasthan								
Ber (1)	IPM	5	2.0	11120	7784	42.9	1:3.82	1:2.78
Kinnow (1)	ICM	10	0.5	31100	29530	5.3	1:5.74	1:5.63
Papaya (1)	Varietal	10	2.5	67200	53410	25.8	1:3.81	1:3.46
Haryana		25	5					
Guava (1)	IPM	10	4.0	16200	15000	8.0	1:7.53	1:7.30
Kinnow (2)	IPM	12	5.0	21000	17500	20.0	1:1.57	1:1.27
	ICM	10	4.0	21000	19000	10.5	1:2.78	1:2.57
Total		32	13	57	18			

FLDs on IPM and ICM thematic areas on 12 and 10 locations respectively.

Papaya: FLDs were undertaken by 1 KVKs Pali-I at 10 locations over an area of 2.5 ha on Varietal component.

Guava: KVK-Sirsa conducted FLDs on IPM component in Guava on 10 locations over an area of 4.0 ha.

7.3.2 Vegetable Crops

In Rajasthan, FLDs on vegetable crops were conducted on 674 farmers' fields in 107.2 ha area (Table 7.14).

In Haryana and Delhi FLDs on vegetable crops were conducted at 182 farmers' fields on 62.0 ha area.

Table 7.14 Performance of Vegetable Crops under FLD on in Rajasthan

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Bitter Gourd (3)	ICM	20	1.3	27991	24246	15.1	1:3.27	1:2.87
	IPM	20	5.0	38000	33500	13.4	1:5.98	1:4.35
Brinjal (3)	ICM	22	2.7	28443	25242	12.8	1:3.21	1:2.66
	Varietal	22	6.0	13700	12100	13.2	1:3.04	1:2.51
Broccoli (1)	ICM	10	2.5	13900	12300	13.0	1:3.80	1:3.06
Carrot (3)	ICM	75	22.5	4978	4157	23.0	1:2.89	1:2.43
Chilli (2)	ICM	10	2.0	26300	23500	11.9	1:3.05	1:2.89
	Varietal	30	10.0	26200	23400	12.0	1:3.06	1:2.89
Cucurbits (1)	IPM	10	2.5	50860	47160	7.8	1:3.37	1:2.94
Garlic (1)	ICM	20	0.5	12840	11410	12.5	1:4.05	1:3.80
Garlic (1)	ICM	20	0.5	12840	11410	12.5	1:4.05	1:3.80
Okra (1)	ICM	47	4.0	10860	9280	17.0	1:3.47	1:3.01
Onion (7)	ICM	118	12.7	31940	27383	17.2	1:5.20	1:4.68
Onion (3)	Varietal	50	6.0	23123	19805	16.0	1:2.77	1:2.55
Radish (1)	ICM	15	1.8	23100	19800	16.7	1:2.89	1:2.63
Ridge gourd (1)	Varietal	10	1.0	13800	11350	21.6	1:2.90	1:2.47
Tomato (5)	ICM	90	12.5	38290	33098	13.7	1:4.43	1:4.10
Tomato (1)	INM	10	1.0	41700	36600	13.9	1:4.44	1:3.93
Tomato (1)	IPM	30	1.5	18320	15600	17.4	1:3.80	1:3.59
Tomato (2)	Varietal	25	3.2	35825	32183	13.9	1:3.83	1:3.69
Water Melon (1)	ICM	10	4.0	53299	48310	10.3	1:3.59	1:2.67
Water melon(1)	ICM	10	4.0	59819	54846	9.1	1:3.41	1:2.72
	Grand Total	**674**	**107.2**					

Table 7.15 Performance of Vegetable Crops under FLDs on in Haryana

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Weighted Mean			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Bottle Gourd	Varietal	7	1.0	26000	25000	4.0	1:2.77	1:2.59
Carrot	ICM	10	2.0	36000	30000	20.0	1:3.27	1:2.90
Okra	ICM	20	5.0	13760	11140	22.9	1:4.59	1:3.95
Onion (1)	ICM	10	2.0	39000	32500	20.0	1:3.34	1:2.60
Onion (1)	Varietal	35	12.0	18150	16305	11.2	1:2.78	1:2.56
Tomato	ICM	10	4.0	22833	20252	12.7	1:4.57	1:4.47
Cucumber	ICM	5	2.0	143250	112575	27.2	1:1.50	1:1.20
Pea	ICM	50	20.0	10570	9520	11.0	1:4.92	1:4.21
Potato	ICM	10	4.0	29000	25825	12.3	1:3.42	1:3.14
Potato	IWM	25	10.0	42450	41580	2.1	1:3.79	1:3.54
	Total	**182**	**62.0**					

7.3.3. Flower

One KVK of Haryana i.e., Rewari conducted FLDs on Marigold. FLDs were undertaken by KVK Delhi and Rewari at 10 locations over and area of 2.0 ha area on ICM component. An average yield 20800 kg/ha. was obtained with Rs.3.72 return per rupee invested in marigold cultivation.

7.3.4 Spice Crops

Total 264 FLDs on spice crops were undertaken covering 99.3 ha area in Rajasthan and Haryana. The details about the FLDs are presented in Table 7.16.

Table 7.16 Performance of FLD on Spice Crops in Rajasthan

Crops (KVKs)	Theme	No. of farmers	Area (ha)	Yield (kg/ha)			BCR	
				Demo yield (kg/ha)	Local check (kg/ha)	Increase in yield (%)	Demo	Check
Rajasthan								
Coriander (2)	ICM	28	14.0	1858	1608	15.5	1:5.41	1:4.90
Cumin (4)	ICM	83	34.8	576	481	19.9	1:3.38	1:3.06
Fennel (1)	ICM	25	6.3	2330	1933	20.5	1:3.17	1:2.98
Fenugreek (3)	ICM	75	30.0	1365	1146	19.1	1:2.69	1:2.41
Garlic (1)	ICM	27	10.0	5650	4950	14.1	1:8.95	1:6.27
Ginger (1)	IPM	16	3.2	15133	6167	145.4	1:2.88	1:1.63
Haryana		254	98.3					
Fenugreek (1)	ICM	10	1.0	1720	1550	11.0	1:2.92	1:2.71
Total		**264**	**99.3**					

7.3.5 Medicinal crops

FLDs on isabgol were conducted by 2 KVKs Barmer-I and Nagaur-II. Under Isabgol demonstrations 151 farmers were covered with an area of 60.4 ha. Farmers received 958 kg/ha yield in ICM practices demonstrated under FLDs.

7.3.6 Oyster Mushroom (Spawn)

KVK Alwar-II conducted FLDs on 50 farmers' fields covering 3 units and the details are given below :

Parameters	Units/Tech	Value
No. of Farmer		50
No.of units		3
Major parameters	Demo	0.32
	Check	0.25
% change in major parameter		28
Other parameter	Demo	
	Check	
Economics of demonstration (Rs.) or Rs./unit	Cost of production	1250
	Gross Return	3200
	Net Return	1950
	BCR (R/C)	2.56
Economics of check	Cost of production	1150
	Gross Return	2500
	Net Return	1350
	BCR (R/C)	2.17

7.4 Waste Decomposer

KVK Tonk organized FLD on waste decomposer/organic input consisting of 59 farmers. The waste decomposer solution was prepared in 200 lit water with 2 kg Gud and 1 bottle of waste decomposer. This solution was ready in 21 days. About 18-20 cm layer of waste or dung were wet with solution of waste decomposer and same process was repeated till 30-45 cm height.

Category	No. of Farmer	No. of units	Technology demonstration				Farmer Practice			
			Day to maturity	EC (ds/m)	pH	OC (%)	Day to maturity	EC (ds/m)	pH	OC (%)
Waste Decomposer 2023-24 (SAP)	59	59	60-80	3.53	7.01	19.18	180-200	3.25	7.14	15.86

7.5. Farm Implements

Rajasthan

KVKs Alwar-II, Dungarpur, Udaipur-I conducted 639 FLDs on the farm implements viz, CAZRI Kassi, Serrated Sickle, Hand Hoe, Motorised Maize Sheller and Rotovator (Table 7.17). The application farm machineries proved advantageous in terms enhancing the efficiency of operations and also the quality.

Table 7.17 Performance of FLD on Farm Implements

Implement	Demonstrated Technology	Crop	Area	Parameters	Observation	
					Demo	Check
Alwar-II (125)						
CAZRI - Kassi	Weeding implement	Pearl millet	125	Weeding	4 mandays	6 mandays
Dungarpur						
Serrated Sickle (250)	Harvesting	Maize, Blackgram, Paddy, Wheat, Gram	20	Output/man hour	20.4	27.5
Hand Hoe (200)	Inter culture operations	Tomato, chilli, brinjal, onion	20	Time consumption (hr/ha)	12.4	16.2
Udaipur-I						
Single Phase Motor Operated Maize Sheller (22)	Threshing	Maize	-	Threshing efficiency	100 %	90-92
				Grain breakage loss	0.30 %	1.70%
				Time Require for 1 quintal maize threshing	27-30 Minutes	1-1.2 Mandays
				Expenditure for 1 quintal maize threshing	Rs. 50-55	Rs. 320-350
Rotavator (32)	Soybean, Sunhemp and Wheat	Rotavator	6	Time require to cultivate one ha	3.6 hrs	8 hrs (Cultivator)
				Cost of Operation	1350	2300 (cultivator)
Total (629)			171			
Ambala						
Happy Seeder (10)	Crop Residue Management	Rice-wheat	10	Yield (qtl/ha)	55.75	51.62
				Net Return (Rs./ha)	75517	
				B;C Ratio	3.23	
DSR Paddy (3)	RCT	Paddy	3	Water saving	37%	
				Yield (q/ha)	77.50	
				Net return (Rs/ha)	126950.0	
				-Yield (qtl/ha):: 77.50 -Net Return (Rs./ha) : 126950.00	Water saving (37%)	-

Haryana

In Haryana, 13 FLDs were undertaken at 13 ha land on the farm implements. The results of the FLDs on the farm implements for resource conservation and crop residue management revealed substantial water saving with RCTs and higher B:C ratio with happy seeder (Table 7.17)

7.6. Nutrition

Nutri-graden and Kitchen Garden: For ensuring nutritional security KVKs of Rajasthan, Haryana and Delhi conducted FLDs on Kitchen Gardening covering 1035 farmers and 12.32 ha.

7.7 Livestock Production and Management

Rajasthan

FLDs involving 3364 units at 968 farmers' households were conducted during 2024-25 (Table 7.18). Health, nutrition, feed management and hygiene in livestock; integrated fish farming through cage culture in fisheries, and backyard poultry, breeding, nutrition and disease management in poultry were major thematic areas on which FLDs were conducted. These FLDs established substantial gain in productivity, profit and breed improvement as well significant reduction in mortality and disease infection in livestock, fisheries and poultry.

Table 7.18 FLDs organized on Livestock by KVKs of Rajasthan

	Technology	Farmer	Units	Parameters	Results	
Bovine						
Bharatpur					Demo	Check
Mitigation of Mineral & vitamin deficiency	Mineral mixture @50gm/day	30	30	Milk yield	8.75 ltr	7.34 ltr
Mitigation of Mineral & vitamin deficiency	Urea Molasses Mineral Brix	20	20	Milk yield	8.65 ltr	7.35 ltr
Bhilwara-I						
Mineral Mixture for buffloes	Area Specific Mineral Mixture	300	300	Milk yield	8.70 ltr BC ratio 1: 2.0	8.00 ltr BC ratio : 1:1.86
Pratapdhan chicks	Pratapdhan chicks	36	720	Eggs/hen/ year and BCR	158 eggs BC ratio : 1:3.50	50 eggs BC ratio : 1:1.50
Churu-I						
Feeding management	Mineral mixture feed supplement	38	38	Milk yield BC ratio	6.40 ltr BC ratio : 1.51	5.60 ltr BC ratio : 1.40
Feeding management	Azolla	33	33	Milk yield BC ratio	8.58 ltr BC ratio : 1.74	7.84 ltr BC ratio : 1.67
Feed & fodder technology of sheep	Balance concentrate ration	20	20	No. of kids and BC ratio	33 kids BC ratio : 1.78	23 kids BC ratio : 1.56
Hanumangarh-I						
Composite fish culture	Popularize fish culture in water storage tank	10	10	Fish production	645 kg/ tank	-

	Technology	Farmer	Units	Parameters	Results	
Hanumangarh-II						
Disease Management	Management of sub clinical mastitis through vitamin E and Se in HF crossbred cow	20	20	Milk production & BCR	17.28 (lit/day) BCR 2.05	15.48 (lit/day) BCR 1.83
Nutritional Management	Nutritional Management of crossbred cow by Metho Chelated mineral mixture Supplement	20	20	Milk production & BCR	19.6 (lit/day) BCR 2.24	17.16 (lit/day) BCR 1.88
Disease Management	Deworming (Albendazole and Ivermectin) to prevent parasitic worm infestation	50	50	Milk production, Parasitic worm infestation & BCR	14.28 (lit/day) 0 infestation BCR 2.03	13.47 (lit/day) 11 infestation BCR 1.88
Small Scale income generating enterprises	Backyard Poultry Farming	10	10	Eggs/ bird	120 eggs/bird	-
Poultry						
Udaipur-I						
Breed Improvement	Intro of cross colored chicks	101	2020	Eggs/brids/ year and Kg in 4 months of male BCR	88 Eggs 2.8-3.2 BCR 3.3	43 eggs 2.0-2.4 BCR 2.5
Hanumangarh-I						
Poultry production & management	Backyard poultry (RIR)	50	50	Eggs/bird/ year & BC ratio	2513 eggs BC ratio 5.41	1504 eggs BC ratio 2.90
Sheep & Goat						
Breed Up gradation	Sirohi Breeding Bucks	230	23	Milk production lit/day BCR	0.75 lit BCR 1:3.18	0.55 lit BCR 1:1.36
Total		**968**	**3364**			

Haryana and Delhi

FLDs on Livestock on 162 units in 162 farmers field (Table 7.19). FLDs on use of herbal uterine cleanser, dairy management feeding management were organized on bovine and cattle.

Table 7.19 FLDs organized on Livestock by KVKs of Haryana& Delhi

Category	KVK	Thematic area	Technology demonstrated	Farmer	Units established	Parameters	Results	
							Demo	Check
Cattle	Delhi	Use of Herbal Uterine Cleanser	Reproductive management	12	12	Time required for Expulsion of placenta Disappearance of lochial discharge Appearance of first post partum heat	60%	40%
Cattle	Panipat	Dairy Management	Min. Mix & anthelmintic	50	50	Milk yield/ day & BCR	Milk Yield - 13.0 kg/d BCR 1.37	Milk Yield - 11.5 kg/d BCR 1.29
Buffalo calf	Panipat	Feeding Management	Mineral Mixture	50	50	Milk yield/ day & BCR	Milk Yield - 11.2 kg/d BCR 1.63	Milk Yield - 9.75 kg/d BCR 1.50
Dairy	Panipat	Feeding Management	Balanced feeding	50	50	Milk yield/ day & BCR	Milk Yield - 7.9 kg/d BCR 1.56	Milk Yield - 7.1 kg/d BCR 1.26
		Total		**162**	**162**			

Women Empowerment

KVKs at Churu-I and Faridabad conducted FLDs on drudgery reduction of women. The FLDs proved beneficial in terms of productivity. (Table 7.20).

Table 7.20 FLDs on drudgery reduction

Category	KVK	Technology	No. of demos	Name of observations	Demonstration	Check
Drudgery reduction	Churu-I	Cotton bag	70 farm women	Plucking of cotton (kg /hour/ women & Work efficiency (%)	5.2 kg 57%	4.8 kg 23%
Drudgery reduction	Faridabad	Efficacy of pick bag for drudgery reduction	30 farm women	Picking performance kg/hour	917	718

CHAPTER 8

TRAINING ACHIEVEMENTS

Training for capacity development and skilling of farmers, extension personnel and inputs dealers, agripreneurs is the core activity of frontline extension system. During 2024, total 3766 training courses were conducted with the participation 112278 trainees (farmers, farm women, rural youth and extension personnel). Total 1805 on-campus trainings (1070 in Rajasthan, 711 in Haryana and 24 in Delhi) and 1961 off-campus trainings (1140 in Rajasthan, 792 in Haryana and 29 in Delhi) were conducted (Table 8.1).

Table 8.1 Number of training courses and farmers trained by KVKs of Zone-II

States	On-Campus Trainings									
	No. of courses	Total Farmers (number)			SC/ST Farmers (number)			Share of SC/ST farmers (%) of total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Rajasthan	1070	23854	10500	34354	11048	6531	17579	46.3	62.2	51.2
Haryana	711	13389	8596	21985	2516	5612	8128	18.8	65.3	37.0
Delhi	24	378	226	604	54	22	76	14.3	9.7	12.6
Total	1805	37621	19322	56943	13618	12165	25783	36.2	63.0	45.3
Off Campus Training										
Rajasthan	1140	22432	11326	33758	9821	6291	16112	43.8	55.5	47.7
Haryana	792	15480	5397	20877	2349	2306	4655	15.2	42.7	22.3
Delhi	29	423	277	700	56	25	81	13.2	9.0	11.6
Total	1961	38335	17000	55335	12226	8622	20848	31.9	50.7	37.7
Grand Total	**3766**	**75956**	**36322**	**112278**	**25844**	**20787**	**46631**	**34.0**	**57.2**	**41.5**

The participation of SC/ST farmers was 45.3 % in on-campus trainings and 37.7% in off-campus trainings. In Delhi, the share was lower to 12.6 and 11.6 in on-campus and off-campus trainings, respectively. The KVKs has been able to mobilise large number of females in their on-campus and off-campus trainings and thereby helping in mainstreaming of females aligning well with the State and Central Government's policies of social empowerment of women.

Training of Farmers

Total training courses were conducted in under different thematic groups which provided training to farmers including male and female farmers (Table 8.2). The number of farmers trained in Rajasthan was which was more than those trained in Haryana and Delhi.

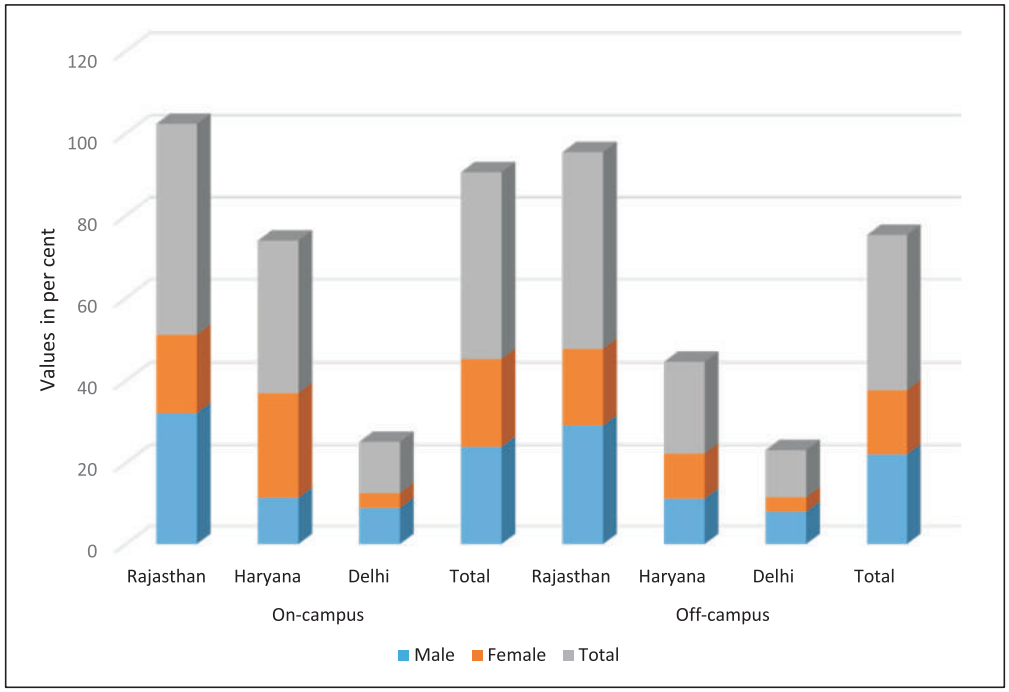


Figure 8.1 Participation of SC/ST farmers in on-campus and off-campus trainings in 2024

Table 8.2 Training of farmers and farm women during 2023 by KVKs of Zone-II

Thematic Area	Rajasthan				Haryana and Delhi				Total of Zone-II			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Crop Production	586	15034	3777	18811	332	8761	994	9755	918	23795	4771	28566
Horticulture	358	7677	2592	10269	185	4285	992	5277	543	11962	3584	15546
Soil Health and Fertility Management	144	3677	590	4267	179	4672	551	5223	323	8349	1141	9490
Livestock Production	246	5617	1887	7504	33	451	611	1062	279	6068	2498	8566
Home Science	259	715	6882	7597	177	140	4975	5115	436	855	11857	12712
Agri Engineering	13	225	356	581	55	1007	187	1194	68	1232	543	1775
Plant Protection	283	6785	1761	8546	134	2747	514	3261	417	9532	2275	11807
Fisheries	3	91	1	92	0	0	0	0	3	91	1	92
Production of Inputs	28	709	180	889	13	325	55	380	41	1034	235	1269
Capacity Building/ Group Dynamics	80	1381	1056	2437	99	1834	546	2380	179	3215	1602	4817
Agroforestry	12	249	218	467	56	1216	145	1361	68	1465	363	1828
Total	**2012**	**42160**	**19300**	**61460**	**1263**	**25438**	**9570**	**35008**	**3275**	**67598**	**28870**	**96468**

8.3 Field Crop

Field crop production and systems based activities attracted 918 training courses with the participation of 28566 farmers including 23795 male and 4771 women farmers (Table 8.3). Integrated crop management constituted about 30.79% of the total participants. The farmers have been benefited with ICM and RCT which are very relevant for arid, semi-arid and irrigated ecosystems in the three States of Zone-II.

Table 8.3 Training organised on field crops during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Crop Production												
Weed Management	68	1484	360	1844	34	822	97	919	102	2306	457	2763
RCTs	18	425	162	587	47	1213	37	1250	65	1638	199	1837
Cropping Systems	29	748	244	992	19	703	26	729	48	1451	270	1721
Crop Diversification	19	430	223	653	16	315	29	344	35	745	252	997
Integrated Farming	50	1325	284	1609	13	311	33	344	63	1636	317	1953
Micro Irrigation	17	492	72	564	5	141	23	164	22	633	95	728
Seed production	29	737	139	876	5	145	26	171	34	882	165	1047
Nursery management	1	22	0	22	8	257	30	287	9	279	30	309
Integrated Crop Management	204	5835	1048	6883	69	1719	194	1913	273	7554	1242	8796
Soil & water conservation	8	184	40	224	31	776	92	868	39	960	132	1092
Integrated nutrient management	39	902	190	1092	22	496	26	522	61	1398	216	1614
Production of organic inputs	27	556	259	815	14	494	62	556	41	1050	321	1371
Others	77	1894	756	2650	49	1369	319	1688	126	3263	1075	4338
Total	**586**	**15034**	**3777**	**18811**	**332**	**8761**	**994**	**9755**	**918**	**23795**	**4771**	**28566**

8.4 Plant Protection

Total 417 training course were organised on plant protection with the participation of 11807 farmers including 2275 women farmers and 9532 male farmers. The male, female and total participants in Rajasthan were 6785, 1761 and 8546, and 2747, 514 and 3261 in Haryana & Delhi respetively (Table 8.4).

Table 8.4 Number of training courses and participants in trainings organised on plant protection measures during 2023 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Plant Protection												
Integrated Pest Management	150	3665	822	4487	66	1437	206	1643	216	5102	1028	6130
Integrated Disease Management	83	1922	519	2441	48	955	160	1115	131	2877	679	3556
Bio-control of pests and diseases	22	612	161	773	6	140	2	142	28	752	163	915
Production of bio control agents and bio pesticides	16	270	167	437	2	0	54	54	18	270	221	491
Others (pl specify)	12	316	92	408	12	215	92	307	24	531	184	715
Total	**283**	**6785**	**1761**	**8546**	**134**	**2747**	**514**	**3261**	**417**	**9532**	**2275**	**11807**

8.5 Horticultural Crops

Arid horticulture, seed spices and medicinal plants are the strategic crops of Rajasthan. While traditional varieties of roses of Puskar region are world famous the state has also pioneered in hi-tech protected horticulture and off-season vegetable production. Total training courses were conducted on different aspects of horticultural crops dominated by vegetable followed by fruits and seed spices. Total farmers including farm women were trained on different horticultural crops (Table 8.5).

Table 8.5 Training on horticultural crops during 2024 by KVKs of Zone-II

Horticultural Crops Group	Rajasthan				Haryana and Delhi				Total Zone-II			
	Course	Male	Female	Total	Course	Male	Female	Total	Course	Male	Female	Total
Vegetables	186	3942	1356	5298	109	2510	634	3144	295	6452	1990	8442
Fruits	123	2547	920	3467	66	1594	328	1922	189	4141	1248	5389
Ornamental crops	8	192	34	226	4	78	10	88	12	270	44	314
Plantation Crops	5	183	32	215	0	0	0	0	5	183	32	215
Tuber Crops	1	41	9	50	4	46	20	66	5	87	29	116
Spices including Seed Spices	30	662	209	871	2	57	0	57	32	719	209	928
Medicinal & Aromatic	5	110	32	142	0	0	0	0	5	110	32	142
Total	**358**	**7677**	**2592**	**10269**	**185**	**4285**	**992**	**5277**	**543**	**11962**	**3584**	**15546**

8.6 Fruit Crops

Trainings to 5389 farmers were provided in 189 training courses during 2024. The participants included 4141 male and 1248 female farmers (Table 8.6).

Table 8.6 Training on fruit crops during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Fruits												
Training and Pruning	15	316	89	405	8	197	35	232	23	513	124	637
Layout and Management of Orchards	46	1046	343	1389	7	197	79	276	53	1243	422	1665
Cultivation of Fruit	27	496	259	755	17	409	57	466	44	905	316	1221
Management of young plants/orchards	15	310	53	363	9	230	30	260	24	540	83	623
Rejuvenation of old orchards	1	16	6	22	2	41	11	52	3	57	17	74
Export potential fruits	1	25	0	25	2	53	13	66	3	78	13	91
Micro irrigation systems of orchards	7	117	83	200	3	92	20	112	10	209	103	312
Plant propagation techniques	6	102	57	159	5	138	25	163	11	240	82	322
Others	5	119	30	149	13	237	58	295	18	356	88	444
Total	**123**	**2547**	**920**	**3467**	**66**	**1594**	**328**	**1922**	**189**	**4141**	**1248**	**5389**

8.7 Vegetable Crops

In vegetable crops, 295 training courses were conducted by KVKs in 2024 with total participation of farmers. The higher number of courses organized a production of low value & high-volume crops which accounted about 28.81% of the total numbers of trainees (Table 8.7).

Table 8.7 Training on vegetable crops during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Vegetable Crops												
Production of low value and high volume crops	43	838	324	1162	42	786	302	1088	85	1624	626	2250
Off-season vegetables	28	638	158	796	10	272	66	338	38	910	224	1134
Nursery raising	48	994	424	1418	15	341	72	413	63	1335	496	1831

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Exotic vegetables	5	114	56	170	3	77	19	96	8	191	75	266
Export potential vegetables	6	147	7	154	2	52	20	72	8	199	27	226
Grading and standardization	3	90	55	145	6	178	51	229	9	268	106	374
Protective cultivation	33	788	125	913	17	439	42	481	50	1227	167	1394
Others	20	333	207	540	14	365	62	427	34	698	269	967
Total	**186**	**3942**	**1356**	**5298**	**109**	**2510**	**634**	**3144**	**295**	**6452**	**1990**	**8442**

8.8 Soil and Water Management

Total 323 training courses on Soil and Water Management were conducted in Zone-II with 9490 trainees' farmers and farm women. Soil fertility management attracted higher participation of 16.05% followed by INM (14.79%) (Table 8.8).

Table 8.8 Training on Soil and Water Management during 2024 by KVKs

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Soil and Water Management												
Soil fertility management	20	494	65	559	30	899	66	965	50	1393	131	1524
Integrated water management	7	196	11	207	10	391	6	397	17	587	17	604
Integrated Nutrient Management	32	733	118	851	25	498	55	553	57	1231	173	1404
Production and use of organic inputs	24	693	125	818	7	233	29	262	31	926	154	1080
Management of Problematic soils	10	215	49	264	18	467	13	480	28	682	62	744
Micro nutrient deficiency in crops	10	196	48	244	14	390	15	405	24	586	63	649
Nutrient Use Efficiency	3	109	7	116	15	357	6	363	18	466	13	479
Balance use of fertilizers	8	179	29	208	10	249	9	258	18	428	38	466
Soil and Water Testing	17	349	102	451	29	838	34	872	46	1187	136	1323
Others	13	513	36	549	21	350	318	668	34	863	354	1217
Total	**144**	**3677**	**590**	**4267**	**179**	**4672**	**551**	**5223**	**323**	**8349**	**1141**	**9490**

8.9 Training on production of Inputs

Total 41 courses were organized during 2024 for capacity development of 1269 farmers on input production at site. Mushroom production and vermi-compost/biofertilizer were preferred courses by the farmers (Table 8.9).

Table 8.9 Training on Production of Inputs during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Production of Inputs at site												
Seed Production	1	25	4	29	1	27	7	34	2	52	11	63
Bio-fertilizer production	1	68	22	90	0	0	0	0	1	68	22	90
Vermi-compost production	10	186	39	225	2	50	10	60	12	236	49	285
Organic manures production	2	46	1	47	0	0	0	0	2	46	1	47
Production of Bee-colonies and wax sheets	0	0	0	0	3	86	7	93	3	86	7	93
Small tools and implements	1	30	1	31	0	0	0	0	1	30	1	31
Production of livestock feed and fodder	3	82	68	150	0	0	0	0	3	82	68	150
Mushroom Production	3	38	26	64	5	106	18	124	8	144	44	188
Apiculture	1	34	0	34	2	56	13	69	3	90	13	103
Others (pl specify)	6	200	19	219	0	0	0	0	6	200	19	219
Total	**28**	**709**	**180**	**889**	**13**	**325**	**55**	**380**	**41**	**1034**	**235**	**1269**

8.10 Agricultural Engineering

Total 1775 farmers (1232 male and 543 female) were trained in 68 training courses in Agricultural Engineering (Table 8.10). Repair and Maintenance of farm implements and micro-irrigation were preferred training courses including others (Table 8.10).

Table 8.10 Training on Agril. Engineering during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Agril. Engineering												
Farm Machinery and its maintenance	2	36	30	66	23	395	48	443	25	431	78	509
Micro irrigation systems	1	18	1	19	7	159	0	159	8	177	1	178

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Use of Plastics in Agriculture	0	0	0	0	5	106	27	133	5	106	27	133
Production of small tools and implements	0	0	0	0	1	11	0	11	1	11	0	11
Repair and maintenance of farm machinery/ implements	0	0	0	0	8	126	28	154	8	126	28	154
Small scale processing and value addition	4	55	99	154	1	21	0	21	5	76	99	175
Post-Harvest Technology	1	27	0	27	1	25	0	25	2	52	0	52
Others	5	89	226	315	9	164	84	248	14	253	310	563
Total	**13**	**225**	**356**	**581**	**55**	**1007**	**187**	**1194**	**68**	**1232**	**543**	**1775**

8.11 Livestock Production and Management

Total 279 training courses were conducted on Livestock Management with 8566 farmers and farm women participants (Table 8.11). Dairy management, diseases management, nutrition, poultry and feed & fodder management were the most preferred training courses.

Table 8.11 Training on Livestock Production and Management during 2023 in Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Livestock Production and Management												
Dairy Management	46	1065	342	1407	8	138	143	281	54	1203	485	1688
Poultry Management	49	1194	506	1700	0	0	0	0	49	1194	506	1700
Piggery Management	3	88	2	90	2	30	0	30	5	118	2	120
Rabbit Management	1	32	0	32	0	0	0	0	1	32	0	32
Animal Nutrition Management	33	764	168	932	7	105	200	305	40	869	368	1237
Disease Management	36	727	222	949	7	68	130	198	43	795	352	1147
Feed & fodder technology	43	877	336	1213	5	34	122	156	48	911	458	1369
Production of quality animal products	14	295	77	372	1	16	11	27	15	311	88	399
Others	21	575	234	809	3	60	5	65	24	635	239	874
Total	**246**	**5617**	**1887**	**7504**	**33**	**451**	**611**	**1062**	**279**	**6068**	**2498**	**8566**

8.12 Home Science/Women empowerment

Total 436 trainings courses were organized on Home Science & Women Empowerment which provided training to 12712 farmers including farm women. The women farmers participation was 90.85% in Rajasthan and 97.26% in Haryana & Delhi (Table 8.12).

Table 8.12 Training on home science & women empowerment during 2024

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Home Science/Women empowerment												
Household food security -kitchen and nutrition gardening	94	278	2488	2766	42	75	1159	1234	136	353	3647	4000
Design and development of low/minimum cost diet	12	64	297	361	8	0	235	235	20	64	532	596
Designing and development for high nutrient diets	8	3	220	223	12	0	328	328	20	3	548	551
Minimization of nutrient loss in processing	3	0	94	94	8	0	203	203	11	0	297	297
Processing and cooking	14	74	362	436	12	0	299	299	26	74	661	735
Gender mainstreaming through SHGs	18	17	469	486	5	0	124	124	23	17	593	610
Storage loss minimization techniques	4	2	100	102	5	0	146	146	9	2	246	248
Value addition	70	217	1743	1960	56	22	1774	1796	126	239	3517	3756
Women empowerment	7	0	186	186	12	12	303	315	19	12	489	501
Location specific drudgery reduction technologies	16	40	463	503	5	31	114	145	21	71	577	648
Rural crafts	4	0	145	145	2	0	47	47	6	0	192	192
Women and child care	5	0	155	155	8	0	196	196	13	0	351	351
Others	4	20	160	180	2	0	47	47	6	20	207	227
Total	**259**	**715**	**6882**	**7597**	**177**	**140**	**4975**	**5115**	**436**	**855**	**11857**	**12712**

8.13 Capacity Building and Group Dynamics

Total 179 training courses were organized for capacity building and group activities of farmers and farm women providing opportunity to 4817 farmers (2437 in Rajasthan and 2380 in Haryana and Delhi). Leadership development, group formation, entrepreneurship development was the predominant area of trainings (Table 8.13). Interestingly, KVKs have also provided training on trade and IPR issues which could help export promotion and protection of farmers rights.

Table 8.13 Training organised on Capacity building and Group formation activities during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Capacity Building and Group Dynamics												
Leadership development	8	134	54	188	15	167	111	278	23	301	165	466
Group dynamics	5	93	40	133	3	54	14	68	8	147	54	201
Formation and Management of SHGs	17	148	394	542	13	224	141	365	30	372	535	907
Mobilization of social capital	7	144	54	198	8	121	46	167	15	265	100	365
Entrepreneurial development	25	436	373	809	24	591	57	648	49	1027	430	1457
WTO and IPR issues	1	42	0	42	0	0	0	0	1	42	0	42
Others	17	384	141	525	36	677	177	854	53	1061	318	1379
Total	**80**	**1381**	**1056**	**2437**	**99**	**1834**	**546**	**2380**	**179**	**3215**	**1602**	**4817**

8.15 Agroforestry

Total 68 training courses were organized on agroforestry aspects to 1828 farmers (467 in Rajasthan and 1361 in Haryana and Delhi). Production technologies, nursery management of forestry saplings, integrated farming systems, etc were the preferred area of trainings (Table 8.14).

Table 8.14 Training organised on agroforestry during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Agro-forestry												
Production technologies	0	0	0	0	27	583	83	666	27	583	83	666
Nursery management	0	0	0	0	10	181	25	206	10	181	25	206
Integrated Farming Systems	0	0	0	0	14	296	33	329	14	296	33	329
Others	12	249	218	467	5	156	4	160	17	405	222	627
Total	**12**	**249**	**218**	**467**	**56**	**1216**	**145**	**1361**	**68**	**1465**	**363**	**1828**

8.15 Vocational Training Programmes

ICAR-ATARI Zone-II, Jodhpur facilitated and coordinated the KVKs of Rajasthan, Haryana and Delhi to provide vocational training to rural male and female youths. During 2024, total vocational courses of different durations were organised in which male and female youth of rural areas were provided training on crop production, post-harvest technologies, livestock and fisheries, income augmenting activities and agricultural extension (Table 8.15). The ratio of male and female participation in vocational trainings was 2.46:1 in Rajasthan, 0.44:1 in Haryana and 5.43:1 in Delhi. The KVKs in Delhi and Rajasthan shall have to work aggressively to enhance the female participation in vocational trainings.

Table 8.15 Vocational Training organised during 2024 by KVKs of Zone-II

Area of training	Rajasthan			
	Courses	Male	Female	Total
Crop production and management	29	475	380	855
Post harvest technology and value addition	21	24	508	532
Livestock and fisheries	156	5850	786	6636
Income generation activities	146	2603	1978	4581
Agricultural Extension	241	5969	2424	8393
Total of Rajasthan	**593**	**14921**	**6076**	**20997**
	Haryana			
Crop production and management	13	290	110	400
Post harvest technology and value addition	58	154	1584	1738
Livestock and fisheries	35	663	486	1149
Income generation activities	209	1837	4334	6171
Agricultural Extension	220	1953	4557	6510
Total of Haryana	**535**	**4897**	**11071**	**15968**
	Delhi			
Crop production and management	1	21	2	23
Post harvest technology and value addition	1	16	13	29
Livestock and fisheries	2	59	5	64
Income generation activities	3	80	12	92
Agricultural Extension	1	25	5	30
Total of Delhi	**8**	**201**	**37**	**238**
	Total of Zone-II			
Crop production and management	43	786	492	1278
Post harvest technology and value addition	80	194	2105	2299
Livestock and fisheries	193	6572	1277	7849
Income generation activities	358	4520	6324	10844
Agricultural Extension	462	7947	6986	14933
Total of Zone-II	**1136**	**20019**	**17184**	**37203**

8.16 Rural Youth

KVKs of Zone-II organised 348 courses involving 10953 rural youths (5077 male and 5876 female) during 2024. While Rajasthan KVKs organised 126 courses the KVKs of Haryana and Delhi organised 222 courses with 4290 and 6663 participants, respectively (Table 8.16). Beekeeping, value addition Tailoring and stitching and mushroom production attracted the higher participation of rural youths in the training organised by the KVKs.

Table 8.16 Training of rural youth during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Rural Youth												
Nursery Management of Horticulture crops	20	450	147	597	10	253	34	287	30	703	181	884
Training and pruning of orchards	4	87	33	120	1	18	4	22	5	105	37	142
Integrated farming	0	0	0	0	1	30	0	30	1	30	0	30
Seed production	3	54	27	81	1	47	2	49	4	101	29	130
Production of organic inputs	4	30	72	102	1	11	9	20	5	41	81	122
Planting material production	1	30	2	32	2	48	7	55	3	78	9	87
Vermi-culture	9	147	115	262	10	163	249	412	19	310	364	674
Mushroom Production	6	165	28	193	7	184	68	252	13	349	96	445
Bee-keeping	6	167	80	247	5	120	23	143	11	287	103	390
Repair and maintenance of farm machinery and implements	1	2	8	10	2	50	0	50	3	52	8	60
Value addition	16	43	405	448	37	87	970	1057	53	130	1375	1505
Small scale processing	0	0	0	0	10	2	278	280	10	2	278	280
Post Harvest Technology	3	10	70	80	7	40	143	183	10	50	213	263
Tailoring and Stitching	7	0	189	189	30	1	789	790	37	1	978	979
Rural Crafts	1	0	25	25	1	0	18	18	2	0	43	43
Production of quality animal products	0	0	0	0	2	40	42	82	2	40	42	82
Dairying	1	0	41	41	24	499	314	813	25	499	355	854
Sheep and goat rearing	22	827	110	937	3	80	56	136	25	907	166	1073
Piggery	0	0	0	0	1	33	0	33	1	33	0	33
Rabbit farming	1	14	12	26	0	0	0	0	1	14	12	26
Poultry production	2	193	127	320	2	14	32	46	4	207	159	366
Composite fish culture	1	33	2	35	1	16	0	16	2	49	2	51
Shrimp farming	1	36	0	36	0	0	0	0	1	36	0	36
Any other (pl. specify)	17	320	189	509	64	733	1156	1889	81	1053	1345	2398
Total	**126**	**2608**	**1682**	**4290**	**222**	**2469**	**4194**	**6663**	**348**	**5077**	**5876**	**10953**

8.17 Extension Personnel

Total 143 training courses were organised by KVKs involving 4857 extension personnel of Rajasthan, Haryana and Delhi during 2024. It comprised of 2362 extension personnel of Rajasthan, 2495 of Haryana & Delhi (Table 8.17).

Table 8.17 Training of extension personnel during 2024 by KVKs of Zone-II

Thematic area	Rajasthan				Haryana and Delhi				Total of Zone			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Extension Personnel												
Productivity enhancement in field crops	31	709	243	952	17	585	48	633	48	1294	291	1585
Integrated Pest Management	4	65	49	114	6	352	30	382	10	417	79	496
Integrated Nutrient management	2	33	9	42	3	56	15	71	5	89	24	113
Protected cultivation technology	3	68	9	77	0	0	0	0	3	68	9	77
Production and use of organic inputs	2	60	7	67	3	56	30	86	5	116	37	153
Care and maintenance of farm machinery and implements	0	0	0	0	1	12	2	14	1	12	2	14
Gender mainstreaming through SHGs	2	0	60	60	0	0	0	0	2	0	60	60
Formation and Management of SHGs	1	33	7	40	0	0	0	0	1	33	7	40
Women and Child care	1	0	25	25	1	0	23	23	2	0	48	48
Low cost and nutrient efficient diet designing	1	0	60	60	3	0	92	92	4	0	152	152
Group Dynamics and farmers organization	1	17	0	17	0	0	0	0	1	17	0	17
Capacity building for ICT application	1	40	10	50	2	58	7	65	3	98	17	115
Management in farm animals	1	16	4	20	5	53	159	212	6	69	163	232
Livestock feed and fodder production	2	99	10	109	2	45	42	87	4	144	52	196
Household food security	4	133	63	196	8	59	150	209	12	192	213	405
Any other (pl. specify)	16	245	288	533	20	487	134	621	36	732	422	1154
Total	**72**	**1518**	**844**	**2362**	**71**	**1763**	**732**	**2495**	**143**	**3281**	**1576**	**4857**

CHAPTER 9

EXTENSION ACTIVITIES

During 2024, 12321 advisory services, 1438 diagnostic visits, 406 field day, 628 group discussions, 851 kisan ghosthi, 977 film shows, 116 self -help groups, 45 kisan mela, 204 exhibitions, 3778 scientists' visit to farmers field, 79 plant/animal health camps, 91 farmers' seminar/workshop, 608 method demonstrations, 434 important days celebrations, 292 special day celebration, 408 exposure visits etc were conducted with the participation of 2380069 farmers and 18716 extension personnel, input dealers, local traders, Hon'ble MP, MLAs and other public leaders- (Table 9.1 and 9.2). Further, 165175 other extension activities viz. electronic media, newspaper coverage, radio talks, television talks, popular articles, animal health camps (number of animals treated), lecture delivered as a resource person, extension literature, technical bulletin and technical reports were also performed by KVKs.

Table 9.1 Extension Activities at a Glance: Zone II during 2024

Activities	Rajasthan	Haryana	Delhi
Extension activities			
No. of programmes	25103	7459	2101
No. of farmers	2044271	304232	31566
No. of extension personnel	14753	3577	386
Total beneficiaries	2059024	307809	31952
Other extension activities	165175	12221	123

Table 9.2 Details of extension activities of Zone-II during 2024

Activities	Programmes organised (No)	Participation (Number)		
		Farmers	Extension Personnel	Total
Advisory Services	12321	1423049	2936	1425985
Diagnostic visits	1438	16844	1555	18399
Field Day	406	16837	753	17590
Group discussions	628	13311	521	13832
Kisan Ghosthi	851	74186	1003	75189
Film Show	977	30538	716	31254
Self -help groups	116	3447	252	3699
Kisan Mela	45	24948	415	25363
Exhibition	204	267295	2848	270143
Scientists' visit to farmers field	3778	46122	1643	47765

Activities	Programmes organised (No)	Participation (Number)		
		Farmers	Extension Personnel	Total
Plant/animal health camps	79	3907	160	4067
Farm Science Club	29	1757	38	1795
Ex-trainees Sammelan	54	3645	104	3749
Farmers' seminar/workshop	91	5297	379	5676
Method Demonstrations	608	19657	569	20226
Celebration of important days	434	22463	895	23358
Special day celebration	292	18852	733	19585
Exposure visits	408	22061	647	22708
Others	11904	365853	2549	368402
Total	**34663**	**2380069**	**18716**	**2398785**

9.1 Rajasthan

All 47 KVKs of Rajasthan organized various extension activities such as advisory services, field visits, field days, focussed group discussions, organization of kisan mela, exhibitions, technology shows, IEC campaigns for crop residue management, method demonstrations, etc with the participation of 2044271 farmers and 14753 extension personnel, input dealers, local traders, Hon'ble MP, MLAs and other public leaders (Table 9.3).

Table 9.3 Extension activities conducted by KVKs of Rajasthan during 2024

Activities	Programmes organised (No)	Participation (Number)		
		Farmers	Extension Personnel	Total
Advisory Services	7746	1324803	2483	1327286
Diagnostic visits	708	9228	1314	10542
Field Day	285	12418	567	12985
Group discussions	277	6956	313	7269
Kisan Ghosthi	581	62631	836	63467
Film Show	864	25427	590	26017
Self -help groups	75	2434	179	2613
Kisan Mela	12	10458	211	10669
Exhibition	140	252354	2543	254897
Scientists' visit to farmers field	2120	27144	1350	28494
Plant/animal health camps	60	3126	135	3261
Farm Science Club	4	99	11	110
Ex-trainees Sammelan	25	2032	59	2091
Farmers' seminar/workshop	73	4535	354	4889
Method Demonstrations	301	8066	240	8306

Activities	Programmes organised (No)	Participation (Number)		
		Farmers	Extension Personnel	Total
Celebration of important days	307	15039	630	15669
Special day celebration	185	11050	491	11541
Exposure visits	276	16662	451	17113
Others (pl. specify)	11064	249809	1996	251805
Total	**25103**	**2044271**	**14753**	**2059024**

9.2 Haryana

The mandated extension activities such as advisory services, field visits, field days, focussed group discussions, organization of kisan mela, exhibitions, technology shows, IEC campaigns for crop residue management, method demonstrations, etc were carried out by all the KVKs of Haryana during 2024 with the participation of 304232 farmers and 3577 extension personnel, input dealers, local traders, Hon'ble MP, MLAs and other public leaders (Table 9.4)

Table 9.4 Extension activities conducted by KVKs of Haryana during 2024

Activities	Programmes organised (No)	Participation (Number)		
		Farmers	Extension Personnel	Total
Advisory Services	3168	78446	403	78849
Diagnostic visits	681	7334	239	7573
Field Day	120	4369	184	4553
Group discussions	346	6255	206	6461
Kisan Ghosthi	250	9955	158	10113
Film Show	106	3909	119	4028
Self -help groups	31	743	69	812
Kisan Mela	32	14040	184	14224
Exhibition	58	11336	215	11551
Scientists' visit to farmers field	1570	18216	293	18509
Plant/animal health camps	13	497	25	522
Farm Science Club	24	1608	23	1631
Ex-trainees Sammelan	28	1561	41	1602
Farmers' seminar/workshop	17	659	25	684
Method Demonstrations	276	11085	239	11324
Celebration of important days	120	7182	262	7444
Special day celebration	104	7212	235	7447
Exposure visits	125	5140	196	5336
Others	390	114685	461	115146
Total	**7459**	**304232**	**3577**	**307809**

9.3 Delhi

The KVK, Delhi conducted mandated activities under extension alike of advisory services, field visits, field days, focussed group discussions, organization of kisan mela, exhibitions, technology shows, IEC campaigns for crop residue management, method demonstrations, etc involving 31566 farmers and 386 extension personnel, input dealers, local traders, and public leaders (Table 9.5).

Table 9.5 Extension activities conducted by KVK of Delhi during 2024

Activities	No. of programmes	No. of farmers	No. of Extension Personnel	Total
Advisory Services	1407	19800	50	19850
Diagnostic visits	49	282	2	284
Field Day	1	50	2	52
Group discussions	5	100	2	102
Kisan Ghosthi	20	1600	9	1609
Film Show	7	1202	7	1209
Self -help groups	10	270	4	274
Kisan Mela	1	450	20	470
Exhibition	6	3605	90	3695
Scientists' visit to farmers field	88	762	0	762
Plant/animal health camps	6	284	0	284
Farm Science Club	1	50	4	54
Ex-trainees Sammelan	1	52	4	56
Farmers' seminar/workshop	1	103	0	103
Method Demonstrations	31	506	90	596
Celebration of important days	7	242	3	245
Special day celebration	3	590	7	597
Exposure visits	7	259	0	259
Any Other:Viksit Bharat Sankalp Yatra	450	1359	92	1451
Total	**2101**	**31566**	**386**	**31952**

Display of One KVK One Product at KVK Sirohi

Live Telecast of Viksit Bharat Yatra at KVK, Mahendragarh

CHAPTER 10

PRODUCTION OF SEED AND PLANTING MATERIAL

Production of quality seed and planting materials is the key activity of KVKs for the service of the farming community. While this activity helped promotiong the quality seeds of newly released varieties amongst the farmers, it also generated revenue for the KVKs and established KVKs brand value. During 2024, total 15610.52 qtls of quality seeds of various crops worth Rs. 686.89 lakh were produced. Cereal crops including millets seed dominated with more than 68.8% share in the total quantity of seeds produced followed by pulses (15.8%) and oilseeds (9.2%). The seeds produced were distributed to 18795 farmers in respective districts. The crop group-wise seed produced, its value and farmers benefitted in Rajasthan, Haryana and Delhi are given in Table 10.1.

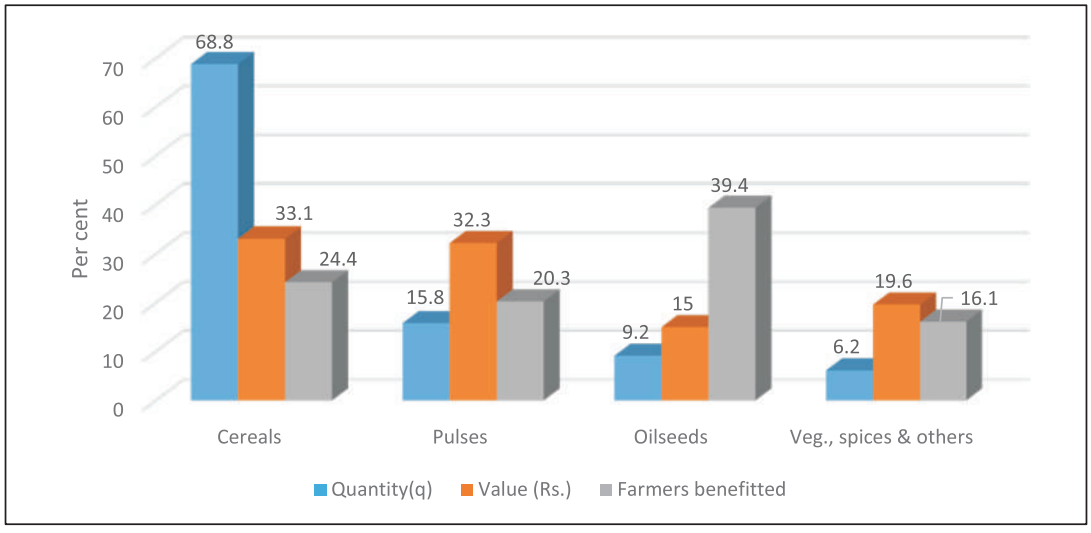


Fig. 10.1 Quantity, Value and Farmers benefitted-under different crop groups in 2024

Table 10.1 Crop Group wise seed production, their value and farmers benefitted during 2024

Crop Group	Quantity (q)	Value (Rs.)	Provided to farmers (No.)
	Rajasthan		
Cereals	6452.39	17681537	3520
Fodder	13.77	192510	68
Medicinal	20.57	483860	170
Millets	204.24	590131	256

Crop Group	Quantity (q)	Value (Rs.)	Provided to farmers (No.)
Oilseeds	1200.31	9298514	7036
Pulses	2064.38	20406816	3242
Spices	365.02	8286020	1112
Others	554.33	4303511	1300
Haryana			
Cereals	3562.29	4216173.02	611
Fodder	14.8	456000	155
Oilseeds	145.41	746819	
Pulses	200.27	1047761	501
Delhi			
Cereals	35.02	140080	110
Oilseeds	42.34	310120	350
Vegetables	23.51	143784	265

10.1 Seed Production

10.1.1 Cereal Crops

Amongst cereals the seeds of following crops and varieties were producred by the KVKs during 2024-25. Total seeds of cereals produced by KVKs was 0 q seeds, valued Rs.220.37 lakhs. This seed was provided to 3203 farmers (Table10.2).

Barley: RD 2799, RD-2035, RD-2715, RD-2786, RD-2794, RD-2849, RD-2899 and RD-2907

Wheat: Raj-4238, BH-393, C-306, DBW-187, DBW-303, DBW-327, DBW-332, DBW-370, DWRB-137, RAJ 4079, Raj-3077, Raj-3765 (BS) , Raj-4037, Raj-4120, Raj-4238 (TFL), PBW-752

Rice: PR-126, PR-126, HKR-47, ARIZE-6129 Gold, PB 1718, PB-1509, PB-1692, PB-1718, PB-1847

Mazie: DHM 117, PHEM 3 and NK-30

Table 10.2 Seed of cereals crops, their value and farmers benefitted during 2024

State	Crop	Quantity (q)	Value (Rs.)	Provided to farmers (No.)
		Cereals		
Rajasthan	Barley	1556.52	4670747	1038
	Maize	75.30	277512	
	Paddy	1003.16	1341080	32
	Wheat	3817.41	11392198	2450
Haryana	Paddy	1229.86	1607677	325
	Wheat	2332.43	2608495	286
Delhi	Wheat	35.02	140080	110
Total		**10049.70**	**22037789**	**3203**

10.1.2 Oilseeds

Seed of oilseed crops of q worth Rs. was produced during 2024-25. Mustard with 1459.52 qtls seed constituted the bulk of the total seed produced with over 73% contribution followed by soybean, groundnut, taramira and sesame (Table 10.3). The seed produced were provided to 7386 farmers. The important varieties of different crops of which seeds were produced are given below:

Mustard: RH 725, BPM, Brijraj, CS-60, Pusa Mustard - 32, DRMR-1165-40, DRMRIJ 31, Giriraj, PM-30, Radhika (TFL), RH-725, RH-749, RH-761, RH-1424, RH-1706, RH-1975 and Rukmani

Sesame: RT-351 and RT-372

Soybean: JS-20-98, JS 20 116 and RKS 24

Groundnut: Raj Mungfali 3, RG-510, GJG-19, RG-638, GJG 32, PM-3 and GJG-19

Taramira: RTM-1351

Table 10.3 Seed of oilseed crops, their value and farmers benefitted during 2024

State	Crop	Quantity (q)	Value (Rs.)	Provided to farmers (No.)
Rajasthan	Taramira	31.54	125283	6
	Groundnut	115.78	1273684	143
	Mustard	825.03	6619475	6795
	Sesame	17.81	63230	42
	Soybean	210.15	1216842	50
Haryana	Mustard	145.41	746819	0
Delhi	Mustard	42.34	310120	350
	Total	**1388.06**	**10355453**	**7386**

10.1.3 Pulses

Total of 2464.65 qtls of seeds valued at Rs 21924685.0 of pulse crops comprising of chickpea (1144.08 q) greengram (793.52 q), blackgram (142.21 q), lentil (51.93 q) cowpea (1.3 q) and mothbean (124.15 q) and pigeon pea (7.46) was produced by the KVKs (Table 10.4). The seed production was more diversified in Rajasthan as compared to Haryana. These seeds produced were made available to 3743 farmers.

Table 10.4 Seed of pulse crops, their value and farmers benefitted during 2024

State	Crop	Quantity (q)	Value (Rs.)	Provided to farmers (No.)
Rajasthan	Lentil	51.93	924406	57
	Blackgram	142.21	1007277	43
	Chickpea	993.81	7273570	1296
	Cowpea	1.3	6360	18
	Green Gram	743.52	9975413	1582
	Moth bean	124.15	1167280	246
	Pigeonpea	7.46	52510	0
Haryana	Chickpea	150.27	1047761	348
	Green Gram	50	470108	153

The seeds of following varieties of different pulses was produced in 2024-25

Chickpea: CSJ-515, GNG-2171, GNG-2144 and RSG-974

Green gram: MH 421, MH-1142, GM-7, GM-4, IPM 205-7 (VIRAT)

Black gram: MTU-2, Kota Urd-4, Kota Urd-3 and PU-31

Lentil: KM-4, RLG-5 and KM-3

Cowpea: RC-101

Pigeonpea: AU-881

Moth bean: RMO-225-1, RMO-435

10.1.4 Seed Spices, Vegetables and Medicinal Plants

Seeds of seed spices such as coriander, cumin, fenugreek of 402.426 q were produced during 2024-25 which worth at Rs. 9061100. This seed was made available to 1385 farmers. Besides, seeds of garlic, onion, kanchri and spinach and medicinal plants were also produced by the KVKs (Table 10.5). Predominantly following varieties' seed of seed spices were produced:

Coriander: Acr-2, RKD-18

Cumin: GC-4

Fenugreek: RMT 1, AM-3, Rmt-305 and AFG-3.

Table 10.5 Seed of seed spices, vegetables and medicinal plants, their value and farmers benefitted during 2024

Seed Spices				
State	**Crop**	**Quantity (q)**	**Value (Rs.)**	**Provided to farmers (No.)**
Rajasthan	Coriander	32.46	106686	5
	Cumin	145.82	5541375	958
	Fenugreek	68.7	467159	189
Vegetable Crops				
Rajasthan	Garlic	133	2250000	
	Kachri	0.496	124000	
	Onion	0.13	15000	13
	Snapmelon	0.26	65000	
	Spinach	0.99	8020	50
Delhi	Spinach	23.51	143784	265
Medicinal Plants				
Rajasthan	Medicinal Crops	20.57	483860	170

10.1.5 Fodder Crops

The important fodder crops of which seeds were produced included oats and berseem. JHO-822 and Kent were the important varieties of oats and berseem BL-44. A total of 28.57 q seeds produced were provided to 223 farmers valued Rs.648510 (table 10.6). (Table 10.6).

Table 10.6 Seed of fodder crops, their value and farmers benefitted during 2024

Fodder				
State	**Crop**	**Quantity (q)**	**Value (Rs.)**	**Provided to farmers (No.)**
Rajasthan	Fodder	13.77	192510	68
Haryana	Fodder	14.8	456000	155

10.2 Planting Materials

During 2024, total 3379951 numbers of seedlings and saplings of fodder, forest, fruits, vegetables, ornamental and medicinal plants were produced worth Rs. 144.88 lakh. These planting materials were provided to 43528 farmers. The d state wise planting materials produced of different crop groups are given in Table 10.7.

Table 10.7 Planting materials, their value and farmers benefitted during 2024

State	Group	Number	Value	No. of Farmers
Rajasthan	Fodder	551217	982339	901
	Forest	3598	86225	374
	Fruits	294243	8879331	11616
	Medicinal	6366	32675	85
	Ornamental	92197	894399	4601
	Vegetable	2363464	3420081	23401
	Total of State	**3311085**	**14295050**	**40978**
Haryana	Forest	3787	55792	305
	Fruits	559	17570	5
	Medicinal	100		100
	Ornamental Plants	177	177	25
	Vegetable	18639	16539	1100
	Total of State	**23262**	**16716**	**1535**
Delhi	Vegetable	45604	176246	1015
	Total of State	45604	176246	1015
	Zone Total	**3379951**	**14488012**	**43528**

10.2.1 Vegetables

Seedlings of vegetables viz. drumstick, tomato, onion, chilli, brinjal, cabbage, cauliflower, broccoli, cucurbits, cabbage, cauliflower, bottle gourd, jackfruit, cole crops, cucurbits (muskmelon, watermelon, ridge gourd, pumpkin and bitter gourd) etc were produced by KVKs. A total of 2427412 seedlings were produced and provided to 25471 farmers which earned Rs. 3609916 to KVKs during 2024.

Table 10.8 Vegetable planting materials, their value and farmers benefitted during 2024

State	Crop	Number	Value	No. of Farmers
Rajasthan	Bitter gourd	716	5882	61
	Bottle gourd	1515	12120	388
	Brinjal	325283	351779	3538
	Broccoli	41160	72271	485
	Cabbage	172569	184380	1344
	Cauliflower	144481	168515	1274

State	Crop	Number	Value	No. of Farmers
	Chilli	475123	722474	3440
	Cole Crops	23125	32189	207
	Cucurbits	5000	2500	30
	Curcubits	582	1746	32
	Drumstick	24341	306400	1229
	Jack Fruit	2141	60600	246
	kakadi	632	4424	54
	Karonda	1340	40200	15
	Kharif onion	14,880	14,880	10
	Lettuce	3000	9000	64
	Muskmelon	710	4970	72
	Onion	267190	102085	705
	Pumpkin	1084	8672	74
	Red Cabbage	2000	6000	0
	Ridge gourd	784	6272	53
	Tomato	855076	1297598	10032
	Watermelon	732	5124	48
Haryana	Bottle gourd	200	0	50
	Brinjal	4475	4475	450
	Chilli	7228	2228	200
	Drumstick	700		350
	Tomato	2636	2636	100
	water melon	3600	7200	0
Delhi	Long melon	90	900	20
	Round gourd	205	2050	25
	Bitter gourd	132	1320	35
	Bottle gourd	600	6000	35
	Brinjal	8393	28031	50
	Broccoli	1940	7560	60
	Cabbage	628	2412	25
	Cauliflower	2124	8492	70
	Chilli	7067	21791	350
	Cucumber	444	4440	25
	Sponge gourd	116	1160	20
	Tomato	23865	92090	300
	Total vegetables	**2427907**	**186082**	**25566**

10.2.2 Fruits

KVKs produced large number of fruits saplings viz., aonla, bael, ber, citrus, custard apple, dragon fruit, ficus, fig, guava, guava, jackfruit, jamun. karonda, kinnow, lasoda, lemon, malta, mango, moringa, mosami, orange, papaya, pomegranate and sapota, etc. The total seedlings produced during 2024 were 294802 which were provided to 9789 farmers fetching a revenue of Rs. 8896901 to KVKs (Table 10.9).

Table 10.9 Fruits planting materials, their value and farmers benefitted during 2024

State	Crop	Number	Value	No. of Farmers
Rajasthan	Anola	29252	711265	321
	Bael	1326	30300	76
	Ber	10982	340845	673
	Citrus	3000	60000	530
	Custard Apple	4195	247500	232
	Dragon Fruit	4	100	
	Ficus	105	5250	7
	Fig	250	700	12
	Guava	36783	1316670	683
	Jack Fruit	2492	102600	331
	Jamun	4736	199570	458
	Karonda	796	18020	153
	Kinnow	16042	600375	1192
	Lasoda	4429	48655	15
	Lemon	24662	812410	1343
	Malta	4381	220360	395
	Mango	18602	1454256	792
	Mosambi	64	8960	29
	Papaya	128022	2457995	3885
	Pomegranate	3201	127590	301
	Sapota	919	115910	188
	Total	294243	8879331	9784
Haryana	Lemon	4	320	3
	Mango	5	750	2
	Papaya	550	16500	0
	Total	559	17570	5
	Total Fruits	**294802**	**8896901**	**9789**

10.2.3 Ornamental crops

The KVKs of Zone II also produced large numbers of saplings of ornamental crops. Total numbers of saplings were produced and provided to farmers which earned Rs. to KVKs (Table 10.10).

Table 10.10 Ornamental Plants planting materials, their value and farmers benefitted during 2024

Rajasthan	**Amaltas**	**4**	**80**	**0**
	Ardoo	1	20	0
	Ashok	819	28600	55
	Bottle brush	13	260	0
	Canna lily	12	480	10
	Chandni	25	750	13
	Chinase palm	40	2600	21
	Chinese Rose	19	380	0
	Chrysanthemum	23000	22500	30
	Croton	5524	146814	2878
	Cycus Palm	9	270	0
	Double Firki Tager	17	340	0
	Dracena	13	910	8
	Duranta	1000	10000	0
	Ficus	45	2925	16
	Firki Tager	25	500	0
	Gailardia	10000	15000	10
	Gudhal	209	10370	10
	Harshringar	22	1210	23
	Hedge	1000	10000	0
	Inarmi	280	2800	25
	Jasmine	3	60	0
	Kaner	19	280	2
	Madhukamini	20	1600	12
	Marigold	32956	376820	534
	Mogra	94	2350	32
	Molshri	22	1100	6
	Money plant	41	2665	17
	Ornamental	413	9425	54
	Peepal	2	40	0
	Pusa Basanti	5000	7500	10

Rajasthan	**Amaltas**	**4**	**80**	**0**
	Pushkari	1000	20000	20
	Ratrani	68	1700	41
	Rayan	60	3000	12
	Rose	10292	205435	712
	Sevra bale	42	1470	19
	Siras	7	140	0
	Tendu	36	1080	9
	Thuja	45	2925	22
	State Total	92197	894399	4601
Haryana	Marigold	177	177	25
	Total Ornamental	**92374**	**894576**	**4626**

10.2.5 Fodder Crops and Foerst Trees

The KVKs of Rajasthan produced 551217 Napier grass which were provided to 901 farmers. Total seedlings of different forest crops were produced by KVKs of Rajasthan and Haryana during 2024 and provided to farmers which earned Rs. to KVKs (Table 10.11).

Table 10.11 Forest and Fodder planting materials, their value and farmers benefitted during 2024

State	Crop	Number	Value	No. of Farmers
Rajasthan	Napier	551217	982339	901
	Total Fodder	551217	982339	901
Rajasthan	Karanj	417	17430	88
	Khejri	199	24720	34
	Neem	2137	23125	150
	Sagon	600	12000	0
	Shisam	245	8950	102
Haryana	Neem	150	0	150
	Poplar	3487	55792	5
	Seesham	150	0	150
	Total Forest	**7385**	**142017**	**679**
	Fodder & Forest Total	**558602**	**1124356**	**1580**

10.2.6 Medicinal crops

The KVKs of Rajasthan and Haryana produced saplings of different medicinal crops and made available to farmers. This resulted into an earning of Rs. (Table 10.12).

Table 10.12 Medicinal Plants planting materials, their value and farmers benefitted during 2024

State	Crop	Number	Value	No. of Farmers
Rajasthan	Curry Leaf	152	3040	75
	Harshringar	4	80	0
	Moll shree	3	60	0
	Shatawari	44	1320	5
	Tulsi	6163	28175	5
Haryana	Tulsi	100	0	100
	Total Medicinal Plants	**6466**	**32675**	**185**

10.3 Production of Bio-products

The KVKs of Zone-II produced kg of bio-products which was provided to farmers and others. It fetched a revenue of Rs. .0 to the producing KVKs. The details of zone are given in Table 10.13.

Table 10.13 Bio-products produced by KVKs of Zone II during 2024

Bio Products	Name of the bio-product	Quantity Kg	Value (Rs.)	No. of Farmers
Bio Agents	Earth worms	614.5	66550	48
	Tricho rich Vermi compost	9850	197000	325
	Trichoderma	1507.5	274000	259
	Vermiculture	1932.89	264183	38052
	Waste Decomposer	6522	75440	474
	Worms	3698.99	539973	464
Bio-fertilizer	Azolla	200	23440	61
	Azotika	34.7	6800	380
	Beejamrit	820	8000	400
	Jeevamrit	4200	40000	400
	Mycorhhiza	2800	224000	240
	NPK Consortia	12.5	2750	25
	Phosphotika	37.8	7560	165
	Vermi compost	163241.5	1352604	29049
	Vermiwash	53	150	1
Bio-pesticide	Neem-Aak-Dhatura	350	3500	40
	NSKE	10	0	0
		195885.38	**3085950**	**70383**

10.4 Livestock

The KVKs of Zone-II produced numbers of cows, goat, sheep, poultry chicks, poultry eggs and pigs of improved breeds. A total of farmers procured these improved materials from KVKs during 2024. The details of zone are given in Table 10.14.

Table 10.14 Production of livestock materials by KVKs of Zone-II during 2024

Livestock	Name of the breed	Number	Value (Rs.)	No. of Farmers
Buffloe	Murra	5	290000	5
Cow	Rathi	4	50000	0
	Tharparkar	22	282600	12
	Cross bread	8	80000	8
	Gir	5	34610	1
	HF	2	28000	1
	Sahiwal	12	58000	2
Fish	Common carp, Grass carp	348	52320	220
	Catla,Rohu, Mrigal	604	90630	315
Goat	Cross breed	4	34000	4
	Marwari	8	56000	8
	Sirohi	355	3860651	180
	Sojat	12	191700	8
	Cross bread	2	16000	2
Piglets	Large White Yorkshire	92	414000	14
Poultry-chicks	Ankleshwar	18000	1800000	818
	Chabron	517	82720	27
	Kadaknath	364	231200	96
	Kroiler	719	125440	60
	Pratapdhan	10224	1356099	422
Poultry-eggs	Kadaknath	5628	107325	658
	Pratapdhan	8347	101480	713
Rabbit	White	6	1200	3
Sheep	Marwari	4	36400	4
Total		**45292**	**9380375**	**3581**

CHAPTER 11

SUCCESS STORIES

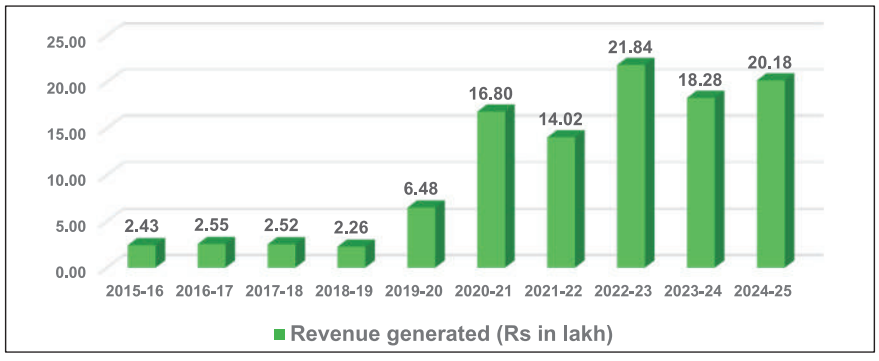
KVK-Dungarpur

1. Quality Planting Material of KVK: Changing Landscape of Agriculture of the District

Poor adoption of newly generated agriculture and allied technologies is main constraint in the district. The reason is predominance of schedule tribe farm families, illiteracy, poor socio-economic condition, limited extension reach, etc. Looking to the problems of farmers, the centre produced large scale planting materials (fruit plants and vegetable seedings) in the KVK model nursery and provided on nominal cost to the farmers for augmentation of vegetable cultivation and orchards establishment in the district.

Year	No. of Fruit plants provided to farmers from KVK, nursery	No. of Vegetable seedlings provided to farmers from KVK, nursery	Revenue generated (Rs)	No of farmers benefited
2015-16	5800	62855	242605	1216
2016-17	3740	64835	255322	1381
2017-18	3262	66322	252265	2001
2018-19	5928	45084	226417	1852
2019-20	16807	98604	648485	9092
2020-21	38114	362597	1679814	8918
2021-22	31634	283269	1402236	7973
2022-23	48936	234300	2184045	7782
2023-24	29363	167529	1828497	3465
2024-25	28987	184007	2017963	3888
Total	**212571**	**1569402**	**10737649**	**47568**

Year wise revenue generation from KVK, nursery (2015-16 to 2024-25)



A nursery is a managed site, designed to produce seedlings grown under favourable conditions until they are ready for planting. All nurseries primarily aim to produce sufficient quantities of high-quality seedlings to satisfy the needs of users. In the nursery, the young seedlings are tended from sowing to develop in such a way as to be able to endure the hard field conditions. The nursery industry is a very wonderful and exciting business, as the production of plants for profit has the potential of providing many personal and financial rewards. A successful nursery producer needs knowledge of plants, soils, fertilizers, pesticides, irrigation, machinery, pruning, harvesting methods, overwintering techniques, packing and conveyance practices.

A model nursery was established at KVK, Dungarpur in the year 2010-11 with the support of National Horticulture Mission, but due to lack of vision and dedication this nursery was not profitable till 2018-19. In the year 2019, SWOT analysis was done, this nursery was completely renovated and started planting material generation, accredited by NHB and simultaneously popularised among the farmers. This is such a unit that not only earns income but this unit is also providing various types of fruit plants to the farmers of the district and the size of this unit is 0.2 ha. beside this, a vegetable nursery unit of about 325 sqm was established in the year 2019 and raised various types of seedlings like tomato, chilli, brinjal, cabbage, cauliflower, broccoli etc. and supplied to the farmers of the district on nominal cost round the year.

SWOT Analysis

Strength

- Suitable geographical condition.
- Availability of raw material.
- Availability of labours
- Personal interest and determination.
- Strong traditional knowledge
- Additional employment generation
- Public demand

Weakness

- Dependence on climatic condition
- Maintenance and skilled labour
- Transportation cost and lack of support from government schemes.

Opportunity

- Increasing market span.
- Scope for KVK revenue generation
- More employment generation.
- Proper utilization of resources.
- Promoting Agribusiness.
- Providing employment to unemployed.
- Scope for KVK visibility.

Threats

- Unexpected competition
- Climatic variation
- Natural calamities
- Cost of modern equipment's.
- Disease outbreaks.

In last ten years, KVK, Dungarpur had supplied more than 2.12 lakh fruit plants to the farmers in the district and out of district. Due to efforts of KVK increased the area of fruit orchards about 900ha in the district and nearby district. This centre also provided more than 15.69 lakh quality hybrid vegetable seedling to

the farmers in 58ha area to promote vegetable cultivation in the district. KVK scientists were facilitated in performing the field operations like sowing, manuring, spraying, weeding, harvesting, curing, grading, packing, marketing etc, and due to all joint efforts, increased the area under vegetable cultivation by four folds and reached upto 700ha in the district.

Sh. Amritlal S/o Shankerlal Parmar has only 0.8 ha land. His family's livelihood was dependent on this small holding and he grew only traditional crops like maize and wheat. He was unable to fulfill his family's requirement. A transformation happened in his life when he attended training on vegetable cultivation organized by KVK, Dungarpur. He came to know about cultivation of hybrid chilli. After training, a help was provided to him for chilli cultivation in the year 2020-21. He took chilli hybrid Navtej in 0.2 ha area and earned Rs 58000/-. Enhanced income from chilli motivated him to grow chilli in more area. In the year 2022, he transplanted chilli seedling in field (0.4 ha) under supervision of KVK Scientists. He earned Rs 132000/- by sale of chilli. Looking to the income from chilli more farmers adopted chilli cultivation.

Sh. Mohan Upadhyay of village Baroda, Aspur owns 2.0 ha cultivable lands. He generally grew traditional crops on his farm like wheat, maize, green gram, etc. He takes tomato variety Dev seedlings from KVK and laid out in 0.2 ha area in the year 2022-23. He sold tomato worth Rs 115000/- in the local market. His investment on fertilizer, insecticides and on other inputs was Rs 39500/-. Net income from 0.2 ha area was Rs 75500/-. Thereafter he adopted cultivation of chilli, tomato, cole crops and other vegetables.

Smt. Manjula W/o Sh. Raju Patel is 35 years old women farmer of village Edrakhet owns 4.5acre land. Cultivation of traditional crops was found less remunerative and risk uncertainty affected crops during Kharif and Rabi season. She came in contact with KVK scientists and participated in different training programmes. After training she was motivated for cultivation of vegetable crops with use of water saving drip and mulching technologies. With the off season vegetable production provided good prices to the farmer and she is getting annual net income of Rs 5.14lakhs besides this generated employment opportunity on regular basis. Livelihood security has also been provided to family members with improving nutritional status.

The KVK, Dungarpur raising hybrid vegetable seedlings like tomato, brinjal, chilli etc. round the year and made available to farmers on remunerative cost. KVK scientists made efforts to attract farmers from adopted villages for vegetable cultivation during Covid - 19 lockdown periods and KVK made available hybrid seedling of vegetables prior to impart the knowledge cultivation practices.

Most of the farmers were resistant to change from soybean-wheat/maize-wheat/maize-gram system and expressed that already they were at the verge of poverty they don't want to take any risk. However, a handful of them came to adopt the innovative low cost income generating interventions of vegetable cultivation. Sh. Dev ji, Mukesh, Shanti Lal, Anil Ahari, Surmal Parmar are typical representative of such farmers who earned their livelihood through cultivation of soybean-wheat/maize-wheat/maize-gram in 0.4 -0.8 ha and one or two bovines. An annual income of Rs. 20000-25000/- was being obtained from agriculture. The land was partitioned as 0.15-0.20 ha for soybean/maize-wheat/gram with varietal change.

Sh. Gatwar Singh Chauhan has 25acre of land. He grew traditional crops but not able to fulfil his family requirements. He participated in trainings organized by

KVK in 2015 and established mango orchard (variety of Mallika, Langra, Dashari, Kesar and Amrapali) in 7.5ha in the year 2015-16 with the guidance and technological interventions such as planting material supply, planting technology by KVK and linked him with Deptt. of Horticulture for drip irrigation system. He got net income of Rs 10.99 lakh in the year 2023-24.

KVK-Alwar-1

2. Youth Empowerment: Achieving the Impossible

Youth entrepreneurship is increasingly recognized as a promising solution to various economic challenges. With many rural young people promoting agriculture-based entrepreneurship becomes a vital strategy to curb rural-urban migration. The ARYA has been designed to assist both existing rural enterprises and aspiring entrepreneurs through capacity building and technological support. A key focus of the program is to engage young people under 35 years old, particularly from rural areas, by providing them with income-generating opportunities in agriculture. These youth groups have the potential to serve as role models, demonstrating the viability of agri-based enterprises and passing on their knowledge by training others.

The introduction of ARYA project in KVK Alwar I reveal a unique and promising opportunity. Here is a success story of youth entrepreneur who is involved in Nursery management is Mr. Mukesh Kumar, a beneficiary of the ARYA Project run at the Krishi Vigyan Kendra Alwar I, who made a successful Vegetable Nursery Unit as his venture from a normal farmer to a successful entrepreneur.

Mr. Mukesh Kumar, a 26-year-old farmer from the small village of Dhawala in Alwar district, Rajasthan, has always been passionate about agriculture. Coming from a modest background, he studied until the 9th grade and worked on his family's 1-hectare land, growing traditional crops like wheat, mustard and nursery of vegetables on small piece of land. Despite his efforts, the income from these crops was limited, and he often worked in the private sector to support his family. However, he found it challenging to fulfill his needs.

In 2019, while looking for ways to improve his agricultural practices and income, Mr. Kumar learned about the various opportunities offered by the KVK Navgaon, Alwar. He got training on nursery management in the year 2019 at KVK, Alwar-I. He acquired the knowledge on screened tunnel house, nursery plastic tray, coco-pit, and Vermi-compost and appears to be very significant in the development of high-quality seedlings. He learnt about growing seedlings on nursery plastic trays utilizing coco-pit and multistoried space allocation to maximize area. He was educated about the costs of production and the profits that may be achieved in the nursery industry.

Impact of training program on better nursery management

Mukesh Kumar successfully leveraged practical, skill-oriented training to adopt advanced technology for producing high-quality vegetable seedlings. He began producing disease-free seedlings, which marked a turning point in his agricultural journey. The KVK scientists used to visit the nursery unit and provide guidance from time to time. Mukesh transited to commercial production of seedlings, focusing on crops like tomato, chili, brinjal, cauliflower, and cabbage. Using improved methods, he ensured better-quality seedlings, which gained popularity among farmers through word of mouth.

Today, Mukesh produces an impressive 5 to 5.5 lakh seedlings annually, catering to local farmers and supplying nearby districts as well as the states of Haryana and Uttar Pradesh. His dedication to quality and market demand has led to significant success, earning him a net annual benefit of Rs. 4 to Rs. 4.5 lakh.

Impact at local Level

Mukesh Kumar, a young farmer, has made a name for himself as a successful nursery entrepreneur in his community. His profitable nursery management business has become a source of inspiration for other young people in the area. Encouraged by his success, several local youths have started producing high quality planting materials at home and selling them in nearby markets.

Conclusion

KVK's attempt to develop the capacity of farmers in emerging areas of entrepreneuship in agricultural operations and services provides unemployed youth with proper guidance and helps them find alternative income-generating opportunities, preventing them to migrate for want of employment elsewhere. Young individuals are gaining hope and are increasingly aspiring to become small-scale or large-scale entrepreneurs.

KVK, Alwar-I

3. स्वरोजगार ने बदली ग्रामीण महिला की किस्मत

भारत में ग्रामीण महिलाएं खाद्य संरक्षण, पैकेजिंग और ब्रांडिंग जैसी गतिविधियों के माध्यम से कृषि उत्पादों के प्रसंस्करण और मूल्यवर्धन में महत्वपूर्ण भूमिका निभाती हैं। उच्च मूल्य वाले उत्पाद बनाकर और बाजार पहुंच बढ़ाकर, विशेष रूप से डेयरी, बागवानी और हस्तशिल्प जैसे क्षेत्रों में ग्रामीण अर्थव्यवस्था में महत्वपूर्ण योगदान देती हैं, जिससे उनकी आजीविका में सुधार होता है और वे आर्थिक रूप से सशक्त होती हैं। भारत विश्व में सब्जियों का दूसरा सबसे बड़ा उत्पादक देश है। परंतु फलों और सब्जियों का प्रसंस्करण, वैल्यू एडिशन विकसित देशों में की तुलना में बहुत कम है।

परिस्थिति विश्लेषण:

श्रीमती वंदना ग्राम धोलापलाश, तहसील मालाखेड़ा जिला अलवर की निवासी है श्रीमति वंदना एवं उनका परिवार पूर्णरूप से कृषि कार्य से जुड़ा हुआ है इनका सम्पूर्ण परिवार कृषि कार्य से प्राप्त आमदनी पर ही निर्भर था। चूंकि श्रीमति वंदना एक शिक्षित महिला है अतः उन्होंने कृषि के अलावा कृषि से संबन्धित अन्य कार्यों द्वारा परिवार की आमदनी बढ़ाने की ठानी, इस सन्दर्भ में उन्होंने कृषि विज्ञान केन्द्र अलवर–1 से सम्पर्क कर कृषि कार्य के अतिरिक्त आय अर्जन हेतु अन्य व्यवसाय करने की जानकारी हासिल की। कृषि विज्ञान केंद्र के वैज्ञानिकों के द्वारा उन्होंने फल सब्जी प्रस्संकरण एवं मूल्य संवर्धन में गहन व्यावहारिक एवं प्रयोगात्मक प्रशिक्षण कृषि विज्ञानं केंद्र अलवर पर प्राप्त किया।

तकनिकी हस्तक्षेप

कृषि विज्ञान केन्द्र अलवर–1 द्वारा श्रीमति वंदना को फल सब्जी प्रस्संकरण एवं मूल्य संर्वधन की विभिन्न वैज्ञानिक तकनिकीयों पर प्रशिक्षित किया। प्रशिक्षण के दौरान विभिन्न तरह के अचार, मुरब्बा, चटनी आदि का सैद्धान्तिक एवं प्रायोगिक प्रशिक्षण दिया गया जिससे फल सब्जी प्रस्संकरण के सभी पहलुओं के बारे मे विस्तृत जानकारी प्राप्त की। प्रशिक्षण पूरा होने के बाद, उन्होंने वैज्ञानिक गृह विज्ञान के माध्यम से एवं कृषि विज्ञान केन्द्र के वैज्ञानिको के तकनिकी पर्यवेक्षण एवं मार्गदर्शन में श्रीमती वंदना ने वर्ष 2021 से फलों एवं सब्जियों को अचार एवं मुरब्बे के रूप में प्रस्संकृत करना शुरू किया। वह गुणवत्ता में सुधार, उत्पादों के मानकीकरण और अन्य उत्पादों की तैयारी के लिए अक्सर केवीके का दौरा करती थीं। केवीके वैज्ञानिक नियमित रूप से प्रस्संकरण इकाई का भ्रमण करते थे और मूल्यवर्धित उत्पादों के प्रसंस्करण के लिए आवश्यक मशीनों की खरीद और उत्पादन के विस्तार के लिए उन्हें लगातार प्रेरित करते थे। केवीके ने उन्हें कच्चे माल के स्रोत, पैकिंग सामग्री, एफएसएसएआई लाइसेंस और ब्रांडिंग के लिए तकनीकी सहायता प्रदान की। साथ ही कृषि विज्ञानं केंद्र की सहायता से अपने उत्पादों को किसान मेलों, प्रदर्शनियों, किसान गोष्ठियों आदि में प्रदर्शित किया गया और इन गतिविधियों ने उन्हें अपने उत्पादों को बाजार में पेश करने और उपभोक्ता प्रतिक्रिया प्राप्त करने का अवसर दिया।

सफलता का विवरण

कृषि विज्ञान केन्द्र अलवर 1 द्वारा प्रस्संकरण एवं मूल्य संवर्धन की तकनिकीयों में ज्ञान एवं दक्षता हासिल करने के बाद और उपभोक्ताओं से अच्छी प्रतिक्रिया मिलने के बाद उन्होंने तहसील स्थानों और जिले में विभिन्न दुकानों को आपूर्ति करना शुरू कर दिया। श्रीमति वंदना वर्तमान में विभिन्न फल एवं सब्जियों जैसे आंवला, नींबू, लाल एवं हरी

मिर्च, हल्दी, केरी, लहसुवा, टीट, लहसुन, कमरख आदि फल एवं सब्जियों 120 क्विंटल अचार बना रही है और बिकी कर लगभग 5.5–6.5 लाख रूपये का शुद्ध मुनाफा प्रतिवर्ष प्राप्त कर रही है। श्रीमती वंदना ने अपने मूल्य वर्धित उत्पादों की बिक्री के लिए वदंना ग्रामोद्योग के नाम से संस्था पंजीयन करवाकर "वदंना अचार एवं मुरब्बा" के नाम से तैयार उत्पादों की बिकी कर रही है।

सफलता का असर

श्रीमती वंदना आज एक सशक्त महिला उद्यमी के रूप में जानी पहचानी जाती है वे अब एक महिला कृषक के साथ साथ महिला उद्यमी है एवं क्षेत्र की अन्य महिलाओं के लिए प्रेरणास्त्रोत एवं परामर्शदाता है।

क्षेत्र में योगदान

श्रीमती वंदना के अथक प्रयासों एवं कठिन परिश्रम के परिणामस्वरूप अपने तैयार उत्पादों की स्थानिय क्षेत्र एवं जिले के अतिरिक्त जयपुर एवं दिल्ली शहर में भी बिकी कर रही है। श्रीमती वंदना एक महिला उद्यमी के रूप में कार्य करने के कारण कई महिला किसानों के लिए प्रेरणा स्त्रोत एवं विकास के पथ का एक आदर्श उदाहरण है।

KVK, Alwar-I

4. मुर्गीपालन से आर्थिक समृद्धि की ओर

भारत में कृषि क्षेत्र की गतिशील प्रकृति युवा शक्ति की सक्रिय भागीदारी की मांग करती है। उचित अवसर मिलने पर उनकी रचनात्मकता और ऊर्जा वर्तमान कृषि परिदृश्य को महत्वपूर्ण रूप से सुधार सकती है। युवा वर्ग कृषि क्षेत्र के विकास में महत्वपूर्ण भूमिका निभा सकते हैं जिससे खाद्य सुरक्षा, पोषण की पूर्ति और आर्थिक स्थिरता सुनिश्चित की जा सकती है। कृषि को आधुनिक और विविधीकृत करना इन मांगों को पूरा करने के लिए आवश्यक है। कई युवा किसान उन्नत क्षेत्रों में कदम रख रहे कृषि विकास में युवाओं की महत्वपूर्ण भूमिका को ध्यान में रखते हुए, भारतीय कृषि अनुसंधान परिषद ने युवाओं को कृषि की और आकर्षित करना और बनाये रखना कार्यक्रम की शुरुआत की है। यह 35 वर्ष से कम आयु के ग्रामीण युवाओं को कृषि और संबंधित उद्यमों के लिए सतत आजीविका प्राप्त करने के लिए प्रेरित करने पर केंद्रित है। कृषि के वर्तमान परिदृश्य को बदलने में युवाओं की भूमिका हमेशा महत्वपूर्ण रही है। आर्या परियोजना के तहत एक सफल उद्यमी की कहानी जो मुर्गी पालन से जुड़ा हुआ है, श्री करण सिंह की है, जिन्होंने मुर्गी पालन को एक सफल उद्यम में बदल दिया।

परिस्थिति विश्लेषण

श्री राजेंद्र कुमार दौलतपुर ब्लॉक, अलवर जिले के +2 पास युवा किसान हैं जिनके पास 3 एकड़ जमीन है। वे पारंपरिक फसलें जैसे गेहूं, जौ और सरसों उगाते थे। उनके क्षेत्र में पानी की कमी के कारण खेत से आय बहुत कम थी। वे सीमित आय में अपनी पारिवारिक जरूरतों को पूरा करने में कठिनाइयों का सामना करते थे। वह प्रशिक्षण से पहले एक साल से ब्रोइलर मुर्गी पालन कर रहे थे लेकिन उन्हें चूजों की मृत्यु दर और वजन कम होने जैसी समस्याओं का सामना करना पड़ रहा था, क्योंकि उन्हें वैज्ञानिक तरीकों जैसे ब्रीडिंग, टीकाकरण और फीड प्रबंधन के बारे में पर्याप्त जानकारी नहीं थी। इसलिए वे अपने खुद के बनाए हुए मुर्गी पालन इकाई से ज्यादा लाभ प्राप्त नहीं कर पा रहे थे।

केवीके हस्तक्षेप

श्री राजेंद्र कुमार ने 2020 में आर्या परियोजना के तहत केवीके, नवगांव, अलवर-I में वैज्ञानिक मुर्गी पालन पर प्रशिक्षण लिया। श्री राजेंद्र कुमार ने प्रशिक्षण से पहले ही अपनी मुर्गी पालन इकाई स्थापित कर ली थी। उस समय मुर्गी पालन के प्रबंधन के बारे में ज्ञान की कमी के कारण चूजों की मृत्यु दर अधिक थी और चूजे कम वजन के थे, जिससे बाजार मूल्य भी कम प्राप्त होता था। वैज्ञानिक मुर्गी पालन पर प्रशिक्षण उनके मुर्गीपालन से सम्बंधित ज्ञान में वृद्धि करने के उद्देस्य से आयोजित किया गया था।

प्रशिक्षण का प्रभाव

प्रशिक्षण के बाद उन्होंने चूजों का सही तरीके से प्रबंधन किया। विभिन्न पहलुओं के बारे में जानकारी प्राप्त करने के बाद चूजों की मृत्यु दर कम हो गई और चूजे बाजार योग्य वजन तक पहुँचने लगे। प्रारंभिक वर्षों में चूजों को वाणिज्यिक मुर्गी दाना खिलाते थे बाद में मुर्गीपालन में लागत कम करने के लिए स्वयं से तैयार दाना भी खिलाने लगे जिससे लागत को कम किया जा सके। समय के साथ उन्होंने इकाई का आकार बढ़ाया और अब वे प्रति बैच औसतन 4500 से 5000 मुर्गी पालन कर रहे हैं और प्रति वर्ष 7 बैच उत्पादन कर रहे हैं। उन्होंने शेड में आधुनिक जल आपूर्ति प्रणाली स्थापित की है जिससे चूजों को 24 घंटे पानी मिलता है और वे अपनी आवश्यकता अनुसार इसका उपयोग कर सकते हैं। उन्होंने गर्मी के मौसम में तापमान को नियंत्रित करने के लिए एक नया पैड कूलिंग सिस्टम भी स्थापित किया है,जिससे गर्मी के दिनों में चूजे अच्छे से जीवित रहते हैं। उन्होंने "सुमन कमल प्राइवेट लिमिटेड" नामक एक कंपनी के साथ समझौता किया है, जिससे वे चूजों को 35 रुपये प्रति चूजे के हिसाब से खरीदते हैं और मुर्गी फ़ीड भी प्राप्त करते हैं। वे चूजों को पांच से छह सप्ताह बाद जब वे 2 से 2.5 किलो वजन के होते हैं तो कंपनी को बाजार दर पर बेच देते हैं। श्री राजेंद्र कुमार मुर्गी पालन से प्रति वर्ष 5 से 6 लाख रुपये की आय अर्जित कर रहे हैं। वह मुर्गी पालन से अच्छी आय प्राप्त कर रहे हैं और अपनी आवश्यकताओं को पूरा कर रहे हैं। वह ग्रामीण युवाओं को कृषि में नवाचार अपनाने के लिए प्रेरित भी करते हैं।

निष्कर्ष

यह सफलता की कहानी उन लोगों के लिए प्रेरणा का स्रोत है जो कृषि के क्षेत्र में नवाचार अपनाना चाहते है। यह दर्शाता है कि सही दृष्टिकोण, प्रतिबद्धता और प्रयास से एक साधारण विचार को लाभकारी और सतत व्यवसाय में बदल सकते हैं। मुर्गी पालन का भविष्य अनंत संभावनाओं से भरा हुआ है और यह सफलता की कहानी भविष्य में आने वाली कई और सफलता की कहानियों की शुरुआत है।

KVK-Banswara

5. Goat Farming: An Attractive Source of Income and Livelihood Support

Mr. Bansi S/o Vakil Makwana, 25 Years old youth of Village Sagdungari , District Banswara is 10th passed unemployed youth. He was farming on 2.5 ha land for earning his livelihood and he was also having 15 goats of local breed, but he was not satisfied in present earning.

He decided to close his Goat Unit due to less income as compared to cost incurred by him. He came at KVK, Banswara for some new opportunities and contacted KVK Scientist, finally he agreed with Commercial Goat Farming. He participated in training Programme of 21 days in two phases on Commercial Goat Farming. After training he purchased 10 Sirohi goats and 2 breeding bucks for breed improvement and increased herd size.

KVK intervention

KVK Imparted 21 days training on Commercial goat farming at KVK, Banswara in 2020 and provided 4 Goats and 2 Breeding Buck. Convergence was made with Department of Animal Husbandry, Banswara, Dept. of Animal Production, RCA, MPUAT, Udaipur, Livestock Research Station, Bojunda, Chittorgarh (RAJUVAS, Bikaner).

Output

Unit size	Produce (Year 2024)	Average Rate (Rs. /Buck)	Gross Return (Rs.)	Expenses (Rs.)	Net Return (Rs.)
40+6	32 Bucks and 22 Goats	7500/ Buck and 6500/ Goat	3,55,000 (Sold 30 Bucks and 20 goats)	1,48,200	2,06,800

*He kept 8 bucks for further breeding purpose

Outcome

Goat farming generated employment opportunity on regular basis for rural youth. Livelihood security has been provided to family members with improving nutritional status. Now he is getting nice social status in his community. He is so much motivated towards Goat farming that he is now extending his unit for Sirohi goat breed.

Impact

Looking to the success of his one year net return many other youth are adopting same profession at present. There are more than 5 goat farmer in Banswara and adjoining areas. Bansi himself also increased his farm size and supplies breeding buck for other farms.

KVK-Banswara

6. Commercial Poultry Transformed Life and Living of a Tribal Youth

Situational analysis

Mr. Heeralal Charpota is 25 years old graduate unemployed tribal youth of village Lohariya Pada, Garhi District Banswara decided for farming on his 5.0 ha of land. But, suddenly he realised alone farming was not fulfilling his own and his family needs. He was upset with the economic situation. Therefore, he wanted to start some new enterprise but was not able to decide what to start. He came to KVK, Banswara and contacted KVK Scientists. He was given vocational training on Commercial Poultry Production at KVK, Banswara.

Technology, Implementation & Support

He started Commercial Poultry Farming with 1200 chicks in his self-made poultry shed. Further, he was also supported with 100 Pratapdhan, Kadaknath chicks (6 week age), Cage, feeder and water drinker with regular monitoring by personnels of KVK, Banswara.

Uptake, Spread and Benefit

After success of Mr. Heeralal Charpota 2 youths from Village also started Poultry units. Mr. Heeralal Charpota earned net return of Rs. 4,13,500 from unit of 1200 birds in year 2024.

Year	Unit size	Produce	Average Rate (Rs.)	Gross Returns (Rs.)	Expenses (Rs.)	Net Returns (Rs.)
2024	1200	13150 Eggs and 1000 Birds	Rs. 20/egg Rs.600/ male bird; Rs 450 /female bird	7,95,500	3,82,000	4,13,500

KVK-Barmer-II

7. Date Palm in Barmer: Becoming a New Attraction

Introduction

Smt Alchi devi w/o Shri Kishana Ram lives in village Bhanwar, Panchayat Samiti Sedva, Barmer and has 25 bigha of Agriculture land. For the last 25 years she grew traditional crops like Guar, Bajra, Moth, Moong, Sarson and Cumin. For irrigating the fields through sprinklers, an electric connection has also been provided on the farm to grow crops but the she has not been able to reap higher dividends.

KVK intervention

In year 2014-15, the department of Horticulture implemented scheme for Date Palm plantation. In this scheme, the farmers have been provided the date palm plants through tissue culture technique on 70% subsidy. She joined a four-day training programme on "Entrepreneurship development through date palm Cultivation" at the KVK.

Output

She grew Khallas variety of date palm in 1.5 ha. After 4 years, the process of fruit bearing started and each tree produced 15 kg of fruit. In the succeeding year each tree bore 40 kg fruit of date palm thus the farmer was able to gain a return of Rs. 3.50 lakh. The total production was 42.5 quintal (kaccha) and 21 quintal (Pind). The net income was Rs 550000 with BC ration 2.83. The farmer sold khallas variety of date palm (Fresh) at Rs. 70 to 100/- per kg. After taking the guidance, the farmer installed solar dryer silpolin 200 Micron sheet (55x12 Feet) on the farm at the cost of Rs. 1.70 lakh. The farmer put the date palm in solar dryer to dry them

Outcome

Initially farmers were suspicious about the date palm but slowly the profits earned by fellow farmers attracted the others too. Initially the date palm cultivation was started at 8 ha area and now a large number of farmers have come forward for the date palm cultivation seeing the large gain earned by the date palm growers. Date palm cultivation is remarkably uplifting the socio-economic condition of the farmers and it is also providing the quality nutrition to the farming family.

Impact

The farmer sold khallas variety of date palm (dry) at Rs. 300 to 350/- per kg. She also have licence of FSSAI. This way, the farmer was able to fetch a higher return.

KVK-Barmer-II

8. Transforming the Life of Rural Youth through Goat Farming

Introduction

Devaram is a farmer from Jhak village of tehsil Batadu. The main source of income was agriculture and animal husbandry. The traditional method was adopted for goat rearing as the main source was grazing.

KVK intervention

He entered into the Goat enterprise after training from Krishi Vigyan Kendra, Barmer-II, under the ARYA Project. He had only 5 goats previously for livelihood and home purposes, but after training, he started increasing the unit as an enterprise. KVK also provided him 4 Goats +1 Buck to support his enterprise

Output

In the next year the number became 105 + 5. In 2022-23 he applied for the National Livestock Mission. In 2023-24 he got sanctioned under NLM. Now, he has 500 goats and 25 bucks and their followers. He is also doing value addition with goat milk, like soap etc. He was also awarded the breed conservation award by NBAGR, ICAR. In 2022-23 the gross income was 2, 12,625 and in 2023-24 it was 11, 15,000.

Outcome

Initially farmer was unsure about the business but slowly the profits started. Initially he started with 20+1 which was 100+5 in the next year. After the sanction of NLM project the herd strength reached upto 500+ 25.

Impact

The success of the farmer inspired many fellow youths to took up this enterprise as profession. Around 42 rural youths started this venture by visiting his farm.

KVK-Bundi

9. Milk Processing: An Employment Oriented Business

Name : **Gaurav Gurjar S/o Shri Premprakash Gurjar**
Address : Village - Govindpur Baori, Taleda, District - Bundi
Mobile No. : 7877777758

Technical: Milk processing is a good option for employment of youth. Milk processing is a profitable enterprise based on animal husbandry. Through this, unemployed rural youth, women, labourers and farmers can get more profit in less time and less cost. For this, milk is collected from the cattle rearers, filtered, heated and various products are made by machines. Such as - Khoya, Paneer, Ghee, Buttermilk, Lassi, flavored milk, pasteurized milk, ice cream etc.

Economic Analysis of Milk Processing in the Year 2024- 25

Agricultural enterprise/ activity	Unit (No.)	Sale (Litre)	Gross Income (in Rs.)	Gross Cost (in Rs.)	Net Income (in Rs.)	BC Ratio
Dairy Farming	1	3,00,000	20.00	12.00	8.00	1.67

Contribution of Krishi Vigyan Kendra: Skill development trainings have been organized by the center to promote dairy business in the district. In the year 2018, Mr. Gaurav Gurjar participated in the training on dairy business organized by the center. With the help of the center, he started his business by taking training from the National Dairy Research Institute, Karnal and taking a loan from the bank. His success story was broadcasted nationally on Akashvani, All India Radio Kota, Doordarshan and DD Kisan.

Basic activity: Mr. Gaurav Gurjar was previously an educated unemployed with an MBA. After training from the center in the year 2018, Mr. Gaurav Gurjar started dairy business and milk processing with the technical guidance of the center and started selling the products under the Savi brand. From which he is earning a net income of Rs 10.5 lakh per year.

Impact of success on other farmers: By getting training from the centre and inspired by Shri Gaurav Gurjar, 4-5 progressive young farmers of the area have adopted dairy business as a profession and are earning 6.00-8.00 lakh rupees per year.

Awards: Shri Gaurav Gurjar has received the farmer's certificate and award for the best dairy business by My.FM for his excellent work in the dairy business.

Milk processing unit established under the technical guidance of the Centre:

KVK-Bundi

10. Nursery of Fruits, Flowers, Vegetables and Ornamental Plants - Earns more Income

Name : **Shri Pappu Lal Meena S/o Banwari Lal Meena**
Address : Village Raghunathpura, Taleda District Bundi
Mobile : 9602562881

Technical: Unemployed youth can earn income throughout the year by setting up nurseries of fruits, flowers, vegetables and ornamental plants. With this, one can get a gross income of Rs 8-10 lakh per year from one bigha of land.

Contribution of KVK: The center provides training on nursery management to promote nursery business in the district. Shri Pappu Lal Meena participated in nursery management training under ARYA Project in the year 2022. With the cooperation of the center, his success story was broadcast on Doordarshan and DD Kisan at the national level. Shri Pappu Lal Meena was formerly a graduate unemployed, with the cooperation and technical guidance of the center, he is preparing saplings of various vegetables, fruits and ornamental plants in the nursery. From which he is earning a net income of Rs 5.00 lakh per year.

Impact of success on other farmers: After receiving training and technical guidance from Krishi Vigyan Kendra, currently two farmers are earning 2.0-3.0 lakh rupees by running nursery and protected farming.

Agricultural enterprise/ activity	Unit (ha)	Production	Gross Income (in Rs.)	Gross cost (in Rs.)	Net Income (in Rs.)	BC Ratio
Nursery Unit	0.2	3 lakh seedlings per year	8.0 lakh	3.0 lakh	5.0 lakh	1.6

Nursery unit established under the technical guidance of the center

Name	Addres	Mobile Number	Annual Income (Rs. in Lakh)
Hariom Khushwaha	Notara, Bhopat	9929179450	3.00
Sanjay Saini	Notara, Bhopat	7023347669	1.0

KVK-Bundi

11. Protected Cultivation: Protection from Unemployment

Name : **Surendra Singh S/o Satnam Singh**
Address : Village-Bichhari, Hindoli, District Bundi
Mobile : 8824885200

Technology: Farmers can earn more income from off-season vegetable production by doing protected farming. In a poly house (4000 square meters), an average of 100-120 tons of cucumber is produced from three crops in a year, from which a gross income of Rs 15-17 lakh can be earned.

Contribution of Krishi Vigyan Kendra: In the year 2022, Shri Surendra Singh received training and technical support on nursery and protected farming at Krishi Vigyan Kendra Bundi and started his own unit. Under the guidance of Krishi Vigyan Kendra, Shri Surendra Singh has also been awarded MFOI, award 2024. Shri Surendra Singh is currently producing vegetables in poly house. He is cultivating vegetables in mulch, low tunnel and poly house. He is also being supported by the Agriculture Department of Rajasthan. Shri Surendra Singh is currently earning a net income of 18.0 lakhs.

Average cucumber production, income and profit cost ratio in the year 2024-25 (polyhouse 4000 square meters)

Production (Q)	Gross Income (in Rs.)	Gross Cost (in Rs.)	Net Income (in Rs.)	BC Ratio
1150	16.50	7.50	9.00	2.20

Impact of success on other farmers: Currently 10-12 farmers are doing protected farming after getting training from Krishi Vigyan Kendra.

Award: Under the guidance of Krishi Vigyan Kendra, Shri Surendra Singh has also been awarded with WTP 2024.

Protected farming unit established under the technical guidance of the center

Name	Address	Mobile Number	Annual Income (Rs. in Lakh)
Mukut Kumar Saini	Bichadi	7073505851	2.0
Morpal Saini	Bichadi	9672102396	1.50



KVK-Chittorgarh

12. प्रसंस्करण एवं मूल्य संवर्धन ने दी नई विकास की दिशा

नाम	:	**श्रीमती सलमा बानो**
पति	:	श्री अहमद हुसैन
आय	:	46 वर्ष
शिक्षा	:	8 वीं पास
पता	:	गाँव: बस्सी, तहसील: बस्सी, चित्तौड़गढ़
फोन नं.	:	9166633752
सफलता का क्षेत्र मूल्य	:	मसाला प्रसंस्करण

पृष्ठभूमि: श्रीमती सलमा बानो महिलाओं के लिए एक शानदार प्रेरणा स्त्रोत है क्योंकि यह एक हाथ से विकलांग है, और विकलांग होते हुए भी न सिर्फ अपनी पहचान बनाई है बल्कि कई महिलाओं को स्वरोजगार उपलब्ध कराकर उन्हें आर्थिक रूप से सशक्त बनाया है। श्रीमती सलमा बानो सामान्य परिवार से सम्बन्ध रखती है तथा शारीरिक विकलांगता के चलते इन्होंने अपने जीवन में काफी संघर्ष किया है। इसी संघर्ष काल के दौरान श्रीमती सलमा बानो ने कौशल विकास हेतु विभिन्न प्रकार के प्रशिक्षण प्राप्त किये। उन्हीं प्रशिक्षणों में एक प्रशिक्षण मसाला प्रसंस्करण ने सलमा बानो को काफी प्रभावित किया और यह कार्य उन्हें अपनी परिस्थिति के अनुकूल भी लगा जिसके चलते उन्होंने मसाला प्रसंस्करण को ही अपना रोजगार बना लिया।

तकनीकी हस्तक्षेप: कृषि विज्ञान केन्द्र, चित्तौड़गढ़ द्वारा प्रशिक्षण व तकनीकी सहयोग के साथ ही श्रीमती सलामा बानो ने एक स्वयं सहायता समूह का गठन किया जिसका नाम समावेश सांई कृपा स्वयं सहायता समूह रखा गया।

सफलता का विवरण: श्रीमती सलमा बानो द्वारा गठित स्वयं सहायता समूह में वर्तमान समय में पांच महिला सदस्य है जिनका मासिक वेतन 6000/– रू. प्रतिमाह है। यह स्वयं सहायता समूह कोरोनो वर्ष से पूर्व ज्यादा सदस्यों युक्त तथा सफलतापूर्वक चलायमान था किन्तु कोरोनाकाल के पश्चात इस स्वयं सहायता समूह में भी गिरावट दर्ज की गई। किन्तु श्रीमती सलमा बानो ने हार न मानते हुए पांच सदस्यो से ही इस समूह को जारी रखा तथा मसाला प्रसंस्करण के अलावा अन्य कार्य जैसे कपड़े के बैग बनाना,

अचारए पापड़ बड़ी, आदि बनाने जैसे कार्यों को भी साथ जोड़ा ताकि स्वयं सहायता समूह द्वारा आय अर्जित होती रहे।

सफलता का असर: सलमा बानो का यह स्वयं सहायता समूह धीरे–धीरे अपनी पहचान बढ़ा रहा है। यह विभिन्न मेलो में समूह द्वारा तैयार विभिन्न प्रसंस्करित उत्पाद तथा सम्बन्धित उत्पाद की प्रदर्शनी भी लगाते हैं तथा यह नाबार्ड एवं कट्स जैसी संस्थाओं से जुड़कर लगातार कार्य करते हुए आगे बढ़ रहे हैं। बस्सी क्षेत्र में चलने वाला यह स्वयं सहायता समूह विभिन्न तैयार उत्पादों की बिक्री से सालाना 5.00 लाख तक की शुद्ध आय अर्जित कर रहा है, साथ ही क्षेत्र में अपनी पहचान बना चुका है।

क्षेत्र में योगदान: इस स्वयं सहायता समूह द्वारा तैयार प्रसंस्करित मसाले जैसे हल्दी, मिर्च, धनिया, गरम मसाला एवं अन्य खाद्य मसाले, अचार, पापड़ तथा व्यर्थ कपड़ों के बैग इत्यादि आपपास के क्षेत्रों में व्यावसायिक तथा घरेलू स्तर न सिर्फ पसन्द किये जाते हैं बल्कि थोक में खरीदे भी जाते हैं। प्रसिद्धि के इस स्तर पर श्रीमती सलमा बानो द्वारा संचालित यह स्वयं सहायता समूह निःसन्देह सराहनीय है।

KVK-Fatehabad

13. Income Augmenting IFS

Name : **Suresh Kumar S/o Omprakash**
Address : Village-Jandli Kalan, District-Fatehabad, Haryana
Age : 32 yrs
Education : B.Tech
Specialization : Integrated Farming
Mobile : 98131 37500

Sh. Suresh kumar is an engineering graduate from agricultural background with his parental agriculture and having 8 acre of land. He received a good job in a reputed company after graduation but to do good for his family and farming community, he left the job and tried to do something new in his parental agriculture of traditional cotton- Wheat cropping pattern. Fortunately, he came into the contact with KVK, Fatehabad in 2012 and impressed to know about IFS. Under the technical guidance of KVK Scientists, he has started several enterprises viz. Bee keeping, Dairy farming, bio gas, vermi- compost, Kinnow orchard, Micro Irrigation at his farm. He established himself as anAgri entrepreneur and registered with FSSAI and sale his products by trade name Ekta Honey Farm. He extract honey from different flora i.e. Shisham, Mustard, Eucalyptus, Jandi, Ber etc. and processed at his own processing plant.

A. Crop Production

S. No.	Component	Area (ha)	Crop	Productivity (qtl/ha)	Adoption of New Variety	IPM Practices	INM Technology	RCT
1.	Kharif	0.2	Bajra	30	HHB-67 improved	Yes	Yes	LLL
2.	Rabi	1.0	Wheat	50	HD-2967	Yes	Yes	LLL/ZTT
3.	Rabi	0.4	Mustard	18	RH-725	Yes	Yes	LLL
4.	Cash Crop	1.2	Cotton	8	RCH -776/773	Yes	Yes	LLL
5.	Fruit Crops	1.6	Kinnow	375	Kinnow	Yes	Yes	Drip Irrigation, Solar system. pond
6.	Fodder Crops	0.2	Jowar, Berseem oats	600	Muscavi/ HJ-8	Yes	Yes	-

B. Allied enterprises

Component Name	Size	Production	Productivity
Bee - Keeping	950 Bee boxes	27000 litre/annum	28.4 litre /Box/Year
Vermi - Compost	900 Sq. feet	100qtl/annum	11 kg/sq. ft.
Dairy	05 Milch animal	9000 litre per annum	10 ltr/animal/day

C. Farm Resources and investment

Component Name	Year of start	Area/ size	Use
Micro irrigation	2012-13	1.6 Ha	Kinnow
Pack house	2015-16	540 sqr feet	Packing of kinnow
Water harvesting Pond	2012-13	65x55 x 12 Feet	Approx. 8.5 lakh ltr.
Photovoltaic Water pump	2018 2020	05 KW 05 KW	Used for drip irrigation and other works

D. Innovative Adoptions

Medicinal & aromatic plants	Packaging & selling of Turmeric & earn Rs.2000/quintal (total earn Rs. 40000/year)
Direct marketing	Direct marketing of Honey & other products through mobile van, sale counter on road side, sale through HAFED, Vita Booth, Haryana Agro and Khadi Gramudhyog in Haryana. Online sale
Crop insurance	Insurance of crops under PMFBY
Bio gas	Two units & gas used for home consumpion

E. Recognition/Honours/Awards

- Awarded as Best Horticulture farmer in 4th Agri. Leadership summit held at Gannour, Sonepat from February, 15-17, 2019 and received Rs 50,000/- as cash prize.
- Acting as Board of Director in FPO namely Atulaya Bee master producer co. Jind from Dec.2017 onwards.
- Acting as Board of Director in FPO namely Jandli Bagwani Producer Co. Jandli Kalan from April, 2019 onwards.
- Received distt. Level progressive farmer award during kisan mela held in HAU during 2019 through Sh. Dushyant Chautala, Honourable Deupty CM, Haryana.

F. Farm Economics

S. No.	Component Name	Year of start	Initial Size/ unit	Status Now	Initial Expenditure (Rs)	Annual Outcome (Rs)
1	Beekeeping	2012	10 Bee Boxes	950 Bee boxes	30000	1800000
2	Orchard	2013	1.6 Ha	1.6 ha	140000	562500
3	Vermi-Composting	2017	524 Sq. Feet	900 Sq. Feet	40000	125000
4	Dairy	2012	02 Milch Animals	05 milch Animals	120000	360000
5	Field crops (Cotton-Wheat)	traditional	3.2 Ha	1.6 Ha.	28500/ha/yr.	220750
6	Spices (Turmeric)	2018	Packaging, Grading & selling	-	12000	40000


Bee-keeping


Honey Processing plant


Sale counter


Dairying

Display of products


Drip irrigation


Photo volataic pump


Vermi Compost


Kinnow production


Progressive farmer of KVK Fatehabad awarded at different occassion

KVK-Gurugram

14. IT Professional to Successful Bee Keeper

Introduction

Shri Manmohan Bahel, a resident of Thada Village, Bhiwadi near the Haryana-Rajasthan border. He is approximately 42 years old. He is well-educated with a background in Information Technology and a diploma in Hotel Management. Previously, he worked at Genpact (GE) but was not satisfied with his job. Seeking a better opportunity, he decided to start his own business which involved less risk and minimum expenditure. In 2017, he visited KVK to learn about training programs for rural youth and subsequently enrolled in a vocational training course on scientific beekeeping.

KVK Intervention

In 2018, he underwent training in scientific beekeeping at Krishi Vigyan Kendra (KVK), ICAR-IARI, in Shikohpur, Gurugram. During the training, he learned various aspects of scientific beekeeping, including handling honey bees, honey extraction, packaging, processing, marketing, honeybee migration, and managing honeybee enemies. After completion of the training, he invested Rs. 1,75,000 to procure 25 bee colonies, fulfilling his hopes and ambitions.

Output

Initially he started bee keeping with 25 boxes in 2018-19 and he kept his boxes at KVK Shikohpur campus. He faced many challenges such as natural enemies' ant's, birds etc. in management of honeybees and he obtained 300 kg processed honey, sold it. Later on he increased the boxes with new enthusiasm and improved techniques and sales increased significantly. By this time, he had diversified the offerings, not only selling honey but also bee hives, which contributed to growing revenue. Third year marked a significant turning point in business, he expanded products like pollen, beeswax, and even live bees, leading to impressive sales of Rs. 6,79,234. During 2020-21, he was honored to be a progressive beekeeper and invited to speak at Maharana Pratap University of Agriculture and Technology, Udaipur on World Bee Day. Fourth year (2021-22) onwards his business had grown exponentially and reached upto Rs. 9,45,000 at this time, he was not only selling honey and its by-products but also providing trainings and mentoring to aspiring beekeepers and farmers of the nearby area. Now he had started working on other value added products such as bees wax, pollen and value added products of honey recovered the losses occurred initially. Last year (2023-24), he achieved sales of around Rs. 5.0 lakhs, signaling a recovery in the business and continue to sell honey and its value-added products, including comb honey and various flavored honeys. His commitment to diversification remains strong; he is still renting out bee boxes, providing training, and producing beeswax and propolis for decorative and cosmetic and medicinal uses.

Year	Key Developments & Achievements	Sales Revenue (₹)
2018-19	Faced challenges in honeybee management. Obtained 300 kg of processed honey, sold at an average price of ₹240 per kg.	₹72,000
2019-20	Improved techniques and sales increased significantly. Diversified offerings by selling bee hives along with honey.	₹3,28,118
2020-21	Expanded product range to include pollen, beeswax, and live bees. Recognized as a progressive beekeeper and invited to speak at Maharana Pratap University of Agriculture and Technology, Karnal, Haryana, on World Bee Day.	₹6,79,234
2021-22	Began providing training and mentoring to aspiring beekeepers and farmers.	₹9,45,000
2022-23	Sales ranged between ₹ 3,00,000 to ₹ 5,00,000.	₹3,00,000 - ₹5,00,000

Outcomes

- Nowadays, he has upgraded his vocation and is producing high-quality honey varieties such as garlic honey, ginger honey, and honey infused with dry fruits. Additionally, he has expanded his business by renting out bee boxes for pollination services and creating beeswax figurines for decorative and cosmetic purposes. He takes pride in contributing to rural empowerment by providing practical training to women and farmers in Pachgaon, Haryana, under the mentorship of KVK Shikohpur, Gurugram. This initiative had helped rural youth to start their bee keeping units and fulfill his social responsibility.
- He shared his technical expertise on the scientific handling of honey bees and delivered a lecture during a beekeeping program organized by Miranda House, Delhi University. In recognition of his valuable contribution, he received an appreciation letter for his role in the faculty development program on beekeeping.

Impact

- Shri Manmohan Bahel's journey from an IT professional to a successful beekeeper has been marked by challenges, learning, and significant growth. Although the transition was not easy, his passion for beekeeping and commitment to sustainability have been the driving forces behind his success. Today, he takes great pride in contributing to the local economy, empowering fellow farmers, and highlighting the crucial role of beekeeping in maintaining the ecosystem. As he continues to expand his business and explore new opportunities, he remains optimistic about the future and excited for the possibilities that lie ahead.
- He continues to sell honey and its value-added products, including comb honey and a variety of flavored honeys. His commitment to diversification remains strong, as he still rents out bee boxes, offers training, and produces beeswax and propolis for decorative, cosmetic, and medicinal uses.

Manmohan Behal training the rural youth

Shri Manmohan Behal taking care of bee boxes

Manmohan Behal training the rural youth

Value added products of Honey

Shri Manmohan Behal taking care of bee boxes

Guidance and Quality testing at IARI, New Delhi

Bee Wax ready for sale

Recognition from Mirinda house, Delhi University

Recognition from MPAUT, Udaipur, Rajasthan

KVK-Hanumangarh-II

15. Successful Pig Farming

Name : **Sandeep Kumar**
Father : Banwari Ram Mahala
Age : 39 years
Education : Graduation and B.Ed
Address : Village: Ujjalwas, Tehsil: Nohar, District: Hanumangarh
Mobile : 9511519435

Successful farmers often say that there is no limit to income in agricultural business, only good prices should be available for production and products. Even today, agricultural business is becoming the most powerful medium of employment. Because now not only people belonging to farmer families but also professional people are coming here. There are many people who have left their jobs and came back to their villages and are doing this work.

Sandeep Kumar, a graduate and B.Ed. resident of village Ujjalwas in Nohar tehsil of Hanumangarh district of Rajasthan, is a farmer who started looking for employment after not getting a job. Because Banwari Ram Mahala, father of farmer Sandeep Kumar, who belongs to traditional farming, had only 10 acres of irrigated and non-irrigated land. They were only able to survive through traditional farming. During this time, he came in contact with Krishi Vigyan Kendra, Nohar and after getting advice from the experts of the centre, he started pig rearing in his village out of his own interest, due to which he has become a role model farmer for the youth of his village.

He started the farm with fourteen female pigs and one male pig. Whose number increased to 125 after one year, out of which he got a total additional income of Rs 5 lakh by selling 65 pigs. Today he has a total of 20 female pigs, 02 male pigs and 38 gilt pigs available on the farm.

Seeing the success, other nearby farmers have also been encouraged to earn more income and become successful.

Livestock farmer with female pig

Livestock farmer with gilt pig

KVK-Hisar

16. Integrated Farming System

Name of Farmer	:	**Darvesh**
Father Name	:	Vijay Singh
Address	:	Village: Surewala,
Age	:	38 years
Total land holding	:	10 Acres
Educational Qualification	:	Graduation, Nursery Training
Contact No.	:	9812073001

Introduction

Darvesh s/o Sh. Vijay Singh is very hardworking, dedicated and having out of the way perception towards farming. He is very innovative and adaptive in mindset. His innovativeness is exactly justified by his age and Energy. He is practicing diversification by having vermicomposting unit, biogas plant, net house, Orchard plantation and State approved nursery unit.

Situation Analysis

He got conventional farming through his ancestors. But he was always willing to practice integrated approach in farming. To diversify income from the limited land he started orchard plantation (8 acres), Biogas plant (6 Cubic meter), Nursery unit and Intercropping. He was supported technically through KVK and State Agricultural university. KVK trained him to raise Pest free nursery and assisted him to start drip irrigation on his farm. Technology of net House (2900 M^2) was also imparted to him through KVK and State Horticulture Department. He tapped the derived demand for fruits and vegetables.

Technology implementation and support

Darvesh, with the help of KVK's training and technological Know-How became innovative farmer and role model for other local farmers too. KVK has put various demonstrations unit on his farm. He is having very dynamic linkage with the KVK scientists. Various field days, kisan gosthi and different extension activities were organized by KVK in collaboration with Horticulture department on his farm. So, through proper guidance and support by KVK he became innovative entrepreneur and followed Integrated farming system model on his farm.

Uptake

He has upgraded his farm and utilizing resource conservation technology through Solar pump, Drip irrigation, bio gas plant Net house in horticulture and vegetable crops. He is following Integrated approach in crop production, pest management and post-harvest technology. He has averted risk through diversification on his farm. He is very passionate about new horticultural avenues. He is practicing intercropping of Watermelon, Muskmelon and cucumber in Low tunnel net house.

A. Agricultural enterprises

i. **Orchard plantation:** He is having guava orchard (2 acre), Kinnow (3 acre) and peach (3 acre). So, 8 acres area is under orchard

ii. **Forage crop:** Napier grass (Super napier variety) is grown for the fodder purpose in 2 kanal area.

iii. **Vegetable:** Shimla Mirch (Volunty variety) is grown in 929 M^2 area on the farm

iv. **Intercropping:** Muskmelon is intercropped in low tunnel with cucumber and watermelon to increase synergies and reap annidation in the space

B. Allied enterprises

i. **Vermicomposting unit**

ii. **Net house** of around 2900 m^2 having intercropping of watermelon and Cucumber

iii. **Nursery:** He is having government approved nursery of Guava, citrus and vegetable with a target of 10000 seedlings in the year 2022

C. Farmer resources and Investment

i. **Micro irrigation:** Drip irrigation system is installed in orchards and in net house of vegetables.

ii. **Modern Farm Machines:** Tractor (42 hp), Solar pump, Harrow, Cultivator, Seed Drill, Rotary Tiller, Rotavator, Bed Planter and Zero till seed drill.

iii. **Farm Fencing:** To avoid crop damage from stray animals, he surrounded his whole farm with GI Interlock Fencing up to 6 feet.

iv. **Water Harvesting Pond:** To utilize excess runoff water to supply crop saving irrigation during critical period of irrigation.

D. Innovative Adaptions

i. **Maintenance of farm records:** He maintained balance sheet, income sheet and cash flow statement to have records of all cash inflows and expenditure.

ii. **Crop Residue management:** He used crop residue as mulch for vegetables in net house.

iii. **Crop Insurance:** He insured his crops, vegetables and fruits to minimize risk and uncertainty.

iv. **Organic Farming:** almost all his farm area is covered under organic farming practices which involved use of FYM and poultry manures, use of neem-based pesticides, use of pheromone traps, mulching and interculture for weed management, use of desi wheat variety (C-306), etc

Spread

Mr. Darvesh trough his nursery is very popularized among fellow farmers. He has become role model for them. By seeing his progress various farmers also started diversifying enterprises on their farms. 5 farmers are guided by him for orchard plantation. His farm has become a site of demonstration for other farmers which shows potential benefits and components of integrated farming system. On an average 700-1000 farmers and Government officials visit his farm to get acquainted with horizontal and vertical diversification.

Benefit

Presently Mr Darvesh is earning a handsome earning of Rs 10 to 12 lakh per year from nursery sale, Vermicomposting unit, livestock, net house vegetables, orchard and other crops and providing employment to 10 to 20 persons. Gross returns from various components varies from 18 to 22 lakhs annually with a B-C ratio of around 2.8.

KVK-Jaipur-I

17. Exotic Fruit: Dragon Fruit in Desert

Dragon fruit or pitaya is native to Mexico and grown extensively in south-east Asian countries like Thailand, Malaysia, Vietnam and Cambodia. It is a tropical super food that is rich in nutrients and low in calories. It contains vitamins, minerals, dietary fiber and antioxidants. Dragon fruit may help with weight management, ease constipation and lower blood sugar. Cultivation of Dragon fruit is becoming popular in Rajasthan due to its hardy species, does not required much care, can be managed in low fertile soil with less water requirement and fruit plant starts yielding in the second or third year with 20-25 kg fruits per plant annually.

With these characteristics and high market value of Dragon Fruit, Mr. Ram Kumar Yadav is the native village of Dadar Bawadi of Jaipur District impressed and came in touch with KVK scientist in the year 2022. In the month of March-2022, a training programme on Dagon Fruit Cultivation with the assistance of dragon fruit specialists/professional persons, was organized at his farm, in which 15 interested farmers/persons were listed to participate in the said training programme.

After attending the above training programme and gaining other technical support, Mr. Ram Kumar Yadav established a unit of Dragon Fruits in an area of 0.4. ha. at his own farm with 330 cemented poles, in which 1320 dragon fruit plants were planted. The variety of Dragon Fruit was Allis Red which was imported from the person engaged in a Gujarat Private Nursery. The complete unit was established in a scientific manner with using drip irrigation system, timely pruning operations, proper management of nutrients and control measures of disease with regular guidance of KVK Scientists. Approximately Rs. 3.0 Lacs were invested by Shri Ram Kumar Yadav in the establishment of unit of dragon fruit plants.

In this year, i.e. in July-2024, Mr. Ram Kumar Yadav started fruit yield and getting 10-12 fruit per plant from each pole. Each fruit is being sold in the market or at his farm by him obtaining net profit covering and costing of Rs. 60-70 per piece. Almost Rs. 1,80,000/- was earned by him upto the last month and upto Rs. 1.5 Lakhs will be earned by the end of October-2024.

Mr. Ram Kumar Yadav was selected this year as 'District Innovative Farmer' with good new innovation practices by the Department of Agricutlure, Govt. of Rajasthan and awarded with the amount of Rs. 25,000/- and some of the few farmers also following Mr. Yadav from the last year.

KVK-Jaisalmer

18. Scientific Animal Husbandry

Farmer's Name	:	**Bhagwan Singh**
Father's Name	:	Deep Singh
Address	:	Village Gorera, District Jaisalmer
Mobile	:	9983413249
Age	:	34
Education	:	8
Innovative Steps	:	Animal Husbandry
Income in the past (in Rs./Lakh)	:	2.11
Current Income (in Rs./Lakh)	:	13.62

Introduction: Bhagwan Singh, son of Deep Singh, resident of Gorera district Jaisalmer. They had less land useful for farming and due to its low productivity, they took up animal husbandry as their main occupation. In which goat rearing is their main component. In 2019, indigenous breed of goat was reared by them. He also rears Murrah breed of buffalo. Along with reduced productive and reproductive performance of native breed goats, body weight gains slower than improved breeds. The calving rate of goats is also low, about once a year or even less. Due to low body weight, their selling price was low due to which the net income and profit per cost was less. His total annual net income was Rs 2 lakh. Due to this their financial condition was also becoming weak.

KVK intervention: In 2019, Bhagwan Singh started participating in activities and trainings related to animal husbandry at the Agricultural Science Center, Jaisalmer, due to which he started getting information about Scientific animal husbandry practices. They started discussing with the scientists of the center about the problems being faced in goat rearing and about low production from animals by their practices. The scientists of the center advised him to adopt advanced breeds like Sirohi and Barbari in goat rearing. Gave information about methods of making proper housing system to protect animals from stray animals as well as adverse weather situation, methods of preparing balanced diet including all the necessary vitamins and minerals required per animal, fodder management in terms of silage and hay, breeding related problems and their management, disease prevention and vaccination, deworming and proper management to cope up changing climate like extreme heat and cold waves. Scientists also gave information related to modern animal husbandry for Murrah breed of buffalo like balanced diet management, artificial insemination, prevention of diseases etc. so that milk production can increase. Suggested the method of using waste obtained from animals to make fertilizer. From time to time, scientists visited their farms and diagnosed the problems they were facing related to animal husbandry practices.

Output: To start goat rearing as a business, Bhagwan Singh started rearing 50 Sirohi goats in place of the native breed in 2019. He got a permanent shed constructed for residence. Each goat gets ad libidium dry fodder, 1 kg Green fodder, 150-200 grams concentrate 100 g Cotton oil cake, 10-15 grams mineral mixture per day as a feed. Started making the concentrate and store green fodder as hay to be fed to the animals himself. Vaccinated his animals against FMD(Footh and mouth disease), P.P.R (Pestes des petits Rumination)at the appropriate time to protect against diseases etc. Giving liver tonic to kids of goat to increase their digestive power. Deworming is done with Triabendazole medicine every 3 months. To know the heat of the goat, teaser goat is used and for breeding, pure breed buck is used. In the year 2020, he

started dairy farming as a business by purchasing two buffaloes. Each buffalo gets 10 kg dry fodder 3 kg Green fodder 2.5-3 kg Concentrate, 1 kg. Mustard Oilcake, 100 g mineral mixture fed per animal per day respectively. They are earning additional income by making manure and selling cow dung from the waste obtained from animal waste like urine, feces and leftover fodder. Presently Bhagwan Singh has 170 goats and 5 buffaloes due to which his total annual net income is Rs 13.62 lakh.

Before intervention

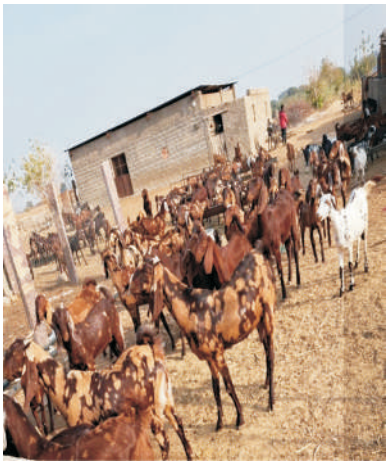
S.No.	Animal	No.	Production litres/animal		Selling rate		Cost of production (Rs)	Gross Income (Rs)	Net Income (Rs)
			Number or milk (li)	Manure (Q.)	Number or milk (li)	Manure (Q.)			
4	Goat farming	42	34	100-8	10000	200	195960	360160	164200
5	Buffalo rearing	1	2160	89	36	180	46700	93780	47080

After Intervention

S.No.	Animal	No.	Production litres/animal		Selling rate		Cost of production (Rs)	Gross Income (Rs)	Net Income (Rs)
			Number or milk (li)	Manure (Q.)	Number or milk (li)	Manure (Q.)			
4	Goat farming	170	135	860	12000	250	756600	1835000	1078400
5	Buffalo rearing	5	8910	540	45	200	225000	508950	283950

Outcome: Rearing of good breed goats and buffaloes instead of local breed animals resulted in increase in net income, the main reason being higher production and purchase rate. Due to which they earn more income than before. For this, Bhagwan Singh has provided employment to about 4 people every day.

Impact: Seeing the success of bhagwan Singh in animal husbandry using scientific methods, nearby cattle farmers also started rearing goats of Sirohi breed. At present Sirohi breed is being reared by 7 dairy farmers.



Goat rearing in farm of sirohi and barbari breed

Isolated kids shelter

Stall feeding of goats

KVK-Keshwana

19. 'GCH-8' Castor for Higher Production and Profit

Introduction:

Castor (*Ricinus Communis* L.) is a vital oilseed crop known for its industrial & medicinal importance. It is grown in arid and semi arid parts of Rajasthan mostly in Sirohi, Jalore, Barmer, Jodhpur, Pali, Jaisalmer and Hanumangarh districts. This is the case of castor low production and old variety shown by Jalore district farmers. Jalore district average area is 42,277 ha area. Among this total castor production area of Jalore district is and farmers grow GCH-4, GCH-7, Avni and Krishna varieties of castor. Farmers facing the major problem of wilt and root rot disease in castor this reduce the production of castor. The introduction of GCH-8 has significantly impacted on castor cultivation, particularly in region with arid and semi arid climate. GCH-8 is a hybrid variety of castor developed and released by Oilseeds Research Station, SDAU, S.K. Nagar, Gujarat in 2018, offering higher yields and better disease resistant to wilt or tolerant to root rot compare to traditional variety. KVK Jalore conducted demonstration to solve the problem of wilt and root root to increase crop yield, for conduction of demonstration under the following objective -

KVK Interventions

KVK Keshwana demonstrate and introduce new variety of Castor GCH-8 for increasing production and productivity of farmers fields under irrigated condition.100 demonstration of castor GCH-8 conducted by KVK in 40 ha area in Jalore district. KVK organized on campus and off campus training programme on improved technology of castor production technology, IDM in castor crop etc. KVK conducted field day at farmer's fields to educate and aware farmers about results of new variety GCH-8 to other farmers.

Performance of FLD on Castor variety GCH 8

Performance of FLD on Castor variety GCH 8 at farmers field

Output

Variety	Yield q/ha				% Increase over control
	Demonstration			Control	
	Max.	Min.	Av.		
GCH-8	17	14	15.5	11.25	37.22

Average Cost of cultivation (₹/ha)		Average Gross Return (₹/ha)		Average Net Return (Profit) (₹/ha)		Benefit-Cost Ratio	
Demo	Control	Demo	Control	Demo.	Control	Demo.	Control
34350	28150	93000	61875	58650	33725	2.71	2.20

Outcome

Farmers adopted GCH-8 reported an average yield increase of 37.22 per cent. Disease incidence of wilt reduced compare to local variety. Average profit margin ranged from 24925 to 27250 ha.

Impact

By demonstration: GCH-8 castor variety is popularizing in the operational area and GCH-8 given better results and wilt resistant than other varieties and area covered 220 hac. Its high yield potential, disease resistance and economic benefits make it preferred choice for farmers.

KVK-Jalore-I

20. Quinoa: The Super Food

Introduction

In recent years, quinoa has been introduced in various countries, including India to address food security challenges. Quinoa (Chenopodium quinoa) is an emerging crop globally, valued for its high nutritional profile and adaptability to diverse climates. quinoa has gained international recognition as a "superfood" due to its high protein content, essential amino acids, and resilience to adverse environmental conditions. Quinoa has immense potential as a newly introduced crop, especially in regions facing water scarcity, poor soil fertility, and malnutrition. Quinoa seeds are very nutritious. Seed, in comparison with other cereals, is higher in protein content (approx. 14.6%). Quinoa is a good source of thiamine, folic acid and vitamin C but has lower content of niacin (B3) in comparison with other cereals. Seeds contain more Ca, P, Mg, Fe, Zn, Na and Cu than cereals. After harvest, the seeds must be processed to remove the coating containing the bitter tasting saponins. The seeds are in general cooked the same way as rice and can be used in a wide range of dishes. This case study explores quinoa's potential as a new crop in Jalore region where it has been recently introduced, with a particular focus on its agronomic performance, economic viability, and challenges faced by farmers. Quinoa was introduced to water scarcity and provide an alternative to water-intensive crops. In Jalore Farmers and consumers are unfamiliar with quinoa's cultivation practices and its nutritional value and lack of region-specific quinoa varieties adapted to local conditions or limited access to certified seeds and agronomic expertise. KVK Jalore conducted awareness programme under International Year of millets and introduce quinoa crop to the farmers community for its nutrition and health benefits to farmers and rural people. KVK Keshwana organized awareness and training programme under the following objectives-

Objectives

1. To evaluate the adaptability of quinoa to new agro-climatic zone.
2. To assess its economic potential for small and large-scale farmers.
3. To identify challenges in its introduction and propose solutions for sustainable production.
4. To explore its role in enhancing food security and nutritional health.

Quinoa Plant and seeds

Quinoa standing crop in field

KVK Interventions

KVK Jalore conducted awareness programme under International Year of millets to Educate farmers and consumers about quinoa's benefits and uses and introduce quinoa crop to the farming community. KVK Keshwana provide specific quinoa varieties (White quinoa regular, White quinoa Bold) to the farmers and also provide information about its value added and processed products of quinoa in local market and also suggested for participatory seed production by the processing industry enterprises to ensure profitable returns. KVK Organized Capacity Building Training programs for farmers on quinoa cultivation, harvesting, and processing.

Output

Economics

Seed rate : 1.5 kg/ha.

Yield : 20-25 qt/ha.

Entrepreneur has contract farming with 200 farmers in 25 ha. Area and 5000 MT quinoa seed per year by contract farming with 200 farmers and engaged 20 labour per day

Outcomes

Farmers adopted new crop quinoa an average yield of ranged from 2,000-2,500 kg/ha. Farmers reported a 40-50% higher net profit compared to wheat due to lower input costs and higher market prices. Adoption Rate: Initial adoption was slow due to lack of awareness and market linkages but gained momentum as buyers and export opportunities increased. 25 ha area covered under quinoa production in the Jalore region.

Impact

By introduction of quinoa production technology to the Jalore region farmers are extent of adoption are 35-40 percent and successful integration of quinoa into local farming systems significantly enhance food security and improve rural livelihoods.

KVK-Jhalawar

21. Protected Cultivation for Income Enhancement

Name : **Sh. Govind Patidar**

Father's Name : Sh. Giriraj Patidar

Address : Village-Kalakhakhra, Tehsil – Jhalrapatan, District- Jhalawar (Raj.)

Mobile No. : 8441985208

Technology: Cucumber cultivation in Net house.

Role of KVK: The KVK, Jhalawar organized skill development training on "Protected Cultivation" under ARYA project in 2023 and Sh. Govind Patidar participated in this training and learned about technical guidance for setting up a polyhouse unit, preparation of bed for off-season vegetables, cutting, mulching, growing seedlings in pro-trays, pest-disease management, integrated nutrient management in various crops, marketing channels, etc.

Economics of Protected Cutivation:

Area under Protected Cultivation	8000 m^2
Protected Cultivation Unit Cost	₹12.00 lakh
Annual Production of Cucumber	165 tonnes
Average Sale Price	₹20.00 per kg
Annual Gross Income	₹33.00 lakh
Annual Expenditure	₹17.50 lakh
Annual Net Income	₹15.50 lakh
Benefit Cost Ratio (BCR)	1.89

Core Activity: Govind Patidar initially set up his own Net house unit at his own expense at his village Kalakhakhra in an area of 4000 square meters. He started cucumber cultivation in the net house. At present he is having net house in an area of 8000 square meters. He is getting name and fame by this startup and earning quite well and he is also providing job to approximately 5 to 8 labours in his unit.

Spread effects on fellow farmers: By the motivation and success of Sh. Govind Patidar, 4-6 rural youth of the area also adopted protected farming as an agri-business and are earning 6.00-7.00 lakh rupees per year.

KVK-Kaithal

22. Resource Conservation through Laser Levelling and DSR

Introduction

Shrinking water resources owing to over exploitation of ground water in Haryana threaten the maintenance of agricultural productivity. As a result, the water is falling in 100 % areas of north eastern parts of the Haryana state *i.e.* Paddy belt. In Kaithal district the average level of water table is about 80 feet and it is declining @ 2-3 feet annually. All the shallow tube wells have become nonfunctional and some of the deep tube wells installed between 200-300 feet in Pundri, Cheeka and Siwan block of the Kaithal are facing threats with low level of discharge at this depth. If the problem continues the small and marginal farm lands will become barren. In the district 68 % water is alkaline and 32 % water is neutral. The problem of alkalinity further add this problem because the water extracted on the ground evaporates or percolates in the ground again leaving a large quantity of undesired salt on the soil surface.

KVK intervention

To arrest this dangerous trend of ground water exploitation, there is an urgent need to conserve irrigation water through various on farm water conservation practices. Levelling the fields through laser leveller is one proven technology i.e. highly useful in conservation of irrigation water. As per the studies conducted, 20-25 percent amount of water is lost during its application at farm due to poor farm designing and unevenness of fields. This problem is more pronounced in case of rice fields. The fields that are not leveled have uneven crop stands, increased weed burden, uneven maturing and damage to the crop particularly in wheat due to stagnation of water. Unevenness of the soil surface has a significant effect on the germination, plant stand and yield of crops. Farmers also recognized this problem and therefore devoted considerable time, resources in levelling their fields. However, even after devoting a long time and resources the traditional method of levelling are cumbersome time consuming, expensive and unreliable. Effective land levelling is meant to maximize water use efficiency, nutrient use efficiency, improved crop yield, reduces the irrigation time and efforts to require managing the crop.

Output

The technology became so popular among the farmers of the district that the number of laser levellers has increased from one in 2006-07 at KVK to 250 in 2024. Farmers have taken it as a vocation by levelling the fields on custom-hire basis. In 2017-2018, village Kheri Lamba was selected for resource conservation exclusively specially for laser levelling, DSR and green manuring. Part of the village was laser levelled and DSR was demonstrated along with laser levelling. The whole village had the problem of brackish water and problematic soil. Now as planned that whole village has been covered in RCT (DSR, Laser levelling, green manuring).

Outcome

The paddy yields have increased substantially along with water saving up to 25-30 per cent.

Impact

The paddy yields have increased substantially along with water saving up to 25-30 peer cent. Adoption of DSR has been a boon for the farmers and adopting villages are also adopting DSR at a rapid rate, realizing the economic benefits of DSR.

KVK-Kota

23. संरक्षित खेती : आमदनी का अच्छा विकल्प

नाम : **श्री मुकेश मीणा**

पिता का नाम : श्री मोडूलाल मीणा

पता : उमरहेड़ी, कनवास, कोटा (राज.)

मोबाईल न. : 9950640762

तकनीकी

किसान संरक्षित खेती करके बेमौसमी सब्जी उत्पादन से अधिक आय अर्जित कर सकते है। पॉलीहाउस (4000 वर्ग मीटर) में वर्ष में खीरे की तीन फसल से औसतन 100–120 टन उत्पादन होता है, जिससे 15.00–17.00 लाख रूपये सकल आय अर्जित की जा सकती हैं।

कृषि विज्ञान केन्द्र का योगदान

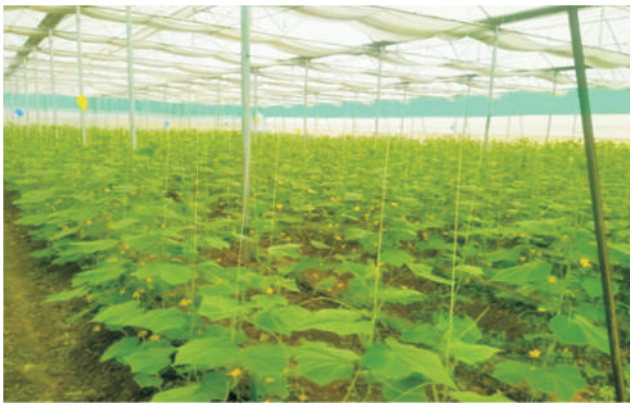
केन्द्र द्वारा जिले में संरक्षित खेती को बढ़ावा देने के लिए निरन्तर व्यावसायिक प्रशिक्षण कार्यक्रम आयोजित किये जाते है, इन प्रशिक्षणों में प्रायोगिक ज्ञान अर्जित करने के बाद जिले के किसान/ग्रामीण युवा संरक्षित खेती को अपनाकर अपनी आय बढ़ा रहें हैं।

मूल गतिविधि

श्री मुकेश मीणा पूर्व में परम्परागत तरीके से खेती करते थे जिससे प्रति एकड़ 1–1.50 लाख रूपये का मुनाफा होता था। केन्द्र से प्रशिक्षण लेने के उपरान्त इन्होंने अपने खेत में 4000 वर्ग मीटर में पॉलीहाउस इकाई की स्थापना की तथा केन्द्र के तकनीकी मार्गदर्शन में खीरा फसल की खेती कर प्रतिवर्ष औसत 16.00–17.00 लाख रूपये सकल आय अर्जित कर रहे हैं।

वर्ष 2022–23 में औसत खीरा उत्पादन, आय और लाभ लागत अनुपात (पॉलीहाउस 4000 वर्ग मीटर)

उत्पादन (क्वि.)	सकल आय (रु.लाख में)	सकल लागत (रु.लाख में)	शुद्ध आय (रु.लाख में)	लाभ लागत अनुपात
1150.00	16.50	7.50	9.00	2.20



अन्य किसानों पर सफलता का असर

केन्द्र से प्रशिक्षण प्राप्त कर एवं श्री मुकेश मीणा की सफलता को देखकर जिले के दर्जनों किसान संरक्षित खेती को अपनाकर प्रतिवर्ष 7.00–15.00 लाख रूपये सकल आय अर्जित कर रहे हैं।

पुरस्कार

श्री मुकेश मीणा को संरक्षित खेती के क्षेत्र में उत्कृष्ठ कार्य करने हेतु आत्मा कोटा द्वारा जिला स्तरीय कृषक प्रशस्ति पत्र पुरस्कार प्राप्त हुआ है।

केन्द्र के तकनीकी मार्गदर्शन में स्थापित संरक्षित खेती इकाई

नाम	पता	मोबाईल नं.	पॉलीहाउस (क्षे.)	वार्षिक सकल आय (रू. लाख में)
श्री कमलेश लोधा	जगपुरा, कोटा	9057273400	4000 वर्ग मीटर	7.00–8.00
श्री प्रतीक मीणा	हेमलखेड़ी, खैराबाद	7417474944	4000 वर्ग मीटर	7.00–8.00
श्री धर्मराज	सोहनपुरा, कोटा	9784308922	3000 वर्ग मीटर	5.00–6.00
श्री रामस्वरूप मेहता	लक्ष्मीपुरा, सांगोद	8290552358	2000 वर्ग मीटर	3.00–4.00
श्री शरीफ अहमद	लक्ष्मीपुरा, सांगोद	9166652232	2000 वर्ग मीटर	3.00–4.00

KVK-Nagaur-I

24. Integrated Farming System for Higher Income

Name of farmer : **Likhma Ram**
Fathers name : Tilok Ram
Address : Village: Tankla, Block: Nagaur, District: Nagaur, Rajasthan
Age : 42
Education : 12th

He has 2.01 ha cultivable land, 25 years of experience in traditional farming and before the intervention of Krishi Vigyan Kendra, Nagaur-I, he was earning around Rs 1.0 lakh per year only from agriculture and allied activities.

Technology intervention provided

The farmer adopted scientific methods for cultivating both horticultural and agricultural crops, as well as managing livestock after learning about the Integrated Farming System model at his farm from Krishi Vigyan Kendra (KVK) in Nagaur-I. He attended vocational trainings, on campus trainings and off-campus training sessions that guided him through every step of farming from preparing the land and managing nurseries to harvesting crops. The training also included important animal management practices, such as proper feeding, milking techniques and vaccination schedules. The KVK scientists also advised him on the balanced use of fertilizers along with managing guidance for orchard of guava, lime, drumstick, pomegranate, ber and a nutrition garden, knowledge about improved cultivation of isabgol, cumin, pearl millet as well as seasonal vegetables.

Integrated Farming System Components adopted

1. **Crop-based farming system:** Around one ha area is being utilized for cultivating Pearlmillet in *Kharif* season and in the same area he used to grown Cumin (Variety GC-4)/ Isabgol in *Rabi* season.
2. **Horticulture-Based Farming:** The farmer has dedicated one hectare of land to a orchard fruits and medicinal plants such as guava (Var.- Lalit), lime (Var.- Kazgi), drumstick (Var- PKM-1), pomegranate (Var.- Sindhuri), ber (Var- Gola & Kashmiri), Arjun, sagwan, bamboo etc. This orchard generates an annual income of approximately Rs. 82,020 from the sale of fruits and vegetables.
3. **Livestock based Farming:** He has Cows unit with 2 milch cows. Mineral mixture was given to cattle to increase milk production.
4. **Nutri-Garden:** The farmer established a nutri-garden in 500-square-meter area where he cultivates 10-12 seasonal vegetables. For soil enrichment, he uses vermi-compost during land preparation. The surplus vegetables yield an additional income of around Rs. 5650 per year.
5. **Vermi-Compost Production:** The farmer produces around 6 tonnes of vermi-compost using farm waste, kitchen scraps, and cattle dung every year. This practice is continuously enhancing the soil health of his farm. The nutrient-rich compost supports the growth of crops in his farm, orchard, and nutri-garden, reducing his reliance on chemical fertilizers and cutting costs.
6. **Efficient Water Management:** To optimize water usage, the farmer employs drip irrigation and dry grass mulching techniques in his orchard and he also developed a farm pond.

Output

Less water required for irrigation. Incidences of Insect-pest were less. Soil health of the farm was increased. Availability of fruits and vegetables for family consumption also increased.

Outcome

Crop production was increased. Fruiting in orchard was also increased, achieved a net return of Rs. 3,02,856/-

Economics and Results

S.No.	Components	Area (ha)/No	Production (Q/Liter)	Cost of Cultivation (Rs.)	Gross Income (Rs.)	Net Income (Rs.)	B:C Ratio
1.	Pearl Millet	0.6	15.25	18245	40031	21786	2.1
2.	Cumin	0.5	6.25	38965	190625	151660	3.89
3.	Guava	0.8	16.50	28450	82500	54050	2.90
4.	Drumstick	0.8	8.25	21530	49500	27970	2.29
5.	Cow	2	1625	19245	65000	45755	3.38
6.	Nutri-garden	0.05	2.08	3780	10816	7036	2.86
Total				**130215**	**438472**	**308257**	**2.903333**

Economics (Cost-benefit): The farmer achieved a net return of Rs. 3,02,856 with a B:C ratio of 2.8 through integrated farming system practices.

Horizontal Spread and adoption of technological intervention: This approach has the potential to increase the seed replacement ratio in the district, leading to higher net returns. Progressive farmer Shri Likhma Ram contributed to the horizontal expansion of these improved crop varieties by distributing seeds from his Cotton and Cumin harvests to 60 to 75 farmers in nearby villages. His efforts have played a significant role in boosting productivity among fellow farmers.


Guava orchard


Cultivation of Isabgol


Vermicompost unit


Nutri-garden


Farm pond

KVK-Panipat

25. Field Pea: An Attractive Option for Diversification of Rice-Wheat System

Situation analysis:

In Panipat district cultivation of field pea after rice provides better crop rotation and cropping intensity is enhanced which utilizes all the natural resources available. Total area of pea crop in Panipat district 869 hecture and production 43890 mt. Therefore, the productivity of field pea can be improved by adopting the improved production techniques. Root rot of pea caused by fusarium spp. is one of the important diseases of pea the causal fungus of the disease isolated from naturally infected pea plant as fusarium solani f. Field pea is an important pulse crop that contains a good amount of digestive protein (22.5%), carbohydrate (61.1%), fat (1.8%) minerals (calcium and iron) and vitamins (riboflavin, thiamine). This makes agriculture the most important profession for the people. Mr. Bijender Singh S/o Sh. Shish Ram Village Badauli Block Panipat came in contact with the scientist of KVK. He said that he is adopting Rice-Wheat cropping sequence but now the yield of both crops are reducing very rapidly every year and we have to utilize massive resources for this cropping sequence. He wanted to replace this cropping sequence. The scientists of KVK discussed in details about the integration of pea for crop diversification in RWCS. To encourage the farmers, the scientists of KVK conducted Front line Demonstration with full package in the field of Sh. Bijender Singh.

Plan, Implement and Support:

KVK Panipat organized training programme on scientific cultivation of Pea and encouraged the farmer to adopt full package of practice of pea crop specially focus on seed treatment with carbendazim and Rhizo + phosphotika. Regular extension activities like field visits, field days, Kisan Gosthi etc. were organized at demonstration field.

Table: Production Technology of Pea

Treatments	Av. Yield (q/ha)	Increase over check (%)	Cost ₹/ha	Gross returns ₹/ha	Net returns ₹/ha	Benefit-cost ratio
Local check	95.20 (90.60-104.60)		75,000	333,200	240400	4.21
Demonstration	105.7 (96.15-115)	11.0	75,200	369950	294750	4.92

Output:

Mr. Bijender Singh adopted the Carbendazim with Rhizo + phosphotika in pea crop as per suggestion of KVK's scientist for his one acre land. Treatment of pea seed lowest disease incidence of demonstration field. His local yield was 98.30 qt with recommended technology. The economic gain in terms of per unit expenditure gross income, net return and BCR are recorded

Outcome:

Pea crop is the major vegetable crop of the district. This variety has been disseminated in neighbouring villages of badauli covering an area of approximately 250 ha. The outcome of this demonstration motivated the farming communities to diversification of rice wheat pea in RWCS, replace their old varieties and adopted full package of practice for the cultivation of all the crops. Mr. Bijender Singh is very happy on improvement in their income, livelihood and set forth example for others farmers of their own village as well as neighboring villagers.

Impact:

Mr. Bijender Singh is becoming one of the progressive and learned farmers for others with regards to popularization of improved varieties of pea. This technology helps him for diversification of rice wheat crop pea production. He is one of the progressive farmers after a becoming a part of KVK activities and get their effectiveness for his own development. Mr. Bijender Singh is very happy with this improved production and management technology and set forth example for other farmers of the district.

KVK-Sikar-II

26. Seed Production: An Attractive Venture for Higher Income

Name of Farmers : **Sh. Sohan Lal Yadav**

Fathers Name : Ramniwas Yadav

Address : Village-Arniya, Block-Srimadhopur, District-Sikar

Use of good quality seed is necessary to achieve satisfactory crop yield. Vegetable seed production is an efficient activity. It is an enterprise related to agriculture, by adopting which farmers can earn more income and also solve the problem of availability of good quality seeds. Cauliflower has an important place in rabi vegetables and its cultivation is done from nutrition garden to commercial level. The availability of quality seeds in the market is limited and the seeds are also expensive. Like other food crops, farmers can prepare cauliflower seeds and earn a gross income of Rs. 12-15 lakh per hectare."

KVK intervention

Krishi Vigyan Kendra, Sikar-II organizes training programs from time to time to promote horticultural crops and prepare their high-quality seeds. Seed production and seed replacement rate are correlated. In this context, KVK, Sikar-II arranged training programmes to train the farmers to produce quality seeds of different vegetble crops. After completion the training programmes, Sh. Sohan Lal Yadav, a small farmer from Arniya village of Sikar district produced seed of cauliflower as per the instructions of the KVK scientists.

Output

Shri Sohan Lal Yadav was also doing traditional farming like other farmers earlier, from which he was getting a profit of only Rs. 2.50-3 lakh per hectare. In 2021, he came in contact with the scientists of the Krishi Vigyan Kendra and started participating in the training programs organized by the center. On the advice of the scientists, he shifted from traditional crops to cauliflower seed production. Initially, he started seed production in 0.2 hectares, which gave him a good profit. For the past two years, he has been doing cauliflower seed production in 1.5 hectares with the technical guidance of the center, from which he is earning an average gross income of Rs. 20 lakh."

Table 1 Average cauliflower seed production, income and benefit-cost ratio (in 1.5 ha. area)

Seed production (qt.)	Gross return (Rs in lakh)	Gross cost (Rs in lakh)	Net benefit (Rs in lakh)	Benefit-cost ratio
4.78	20.07	5.93	14.14	3.38

Outcome and Impact

Inspired by Shri Sohan Lal Yadav's success, around half a dozen farmers in the district have adopted seed production technology and are earning an annual gross income of Rs. 8.00-12.00 lakh per hectare.

KVK-Sirohi

27. Papaya Farming Turns Farmer Millionaire

Background

Amrit Kumar, a farmer from Dodua village, has successfully cultivated papaya on his one-hectare land, earning a substantial income of Rs 4.50 lakh. This case study highlights Amrit Kumar's journey, the factors contributing to his success, and the role of KrishiVigyan Kendra (KVK) scientists in guiding him throughout the cultivation process. Amrit Kumar, a graduate farmer who has achieved success with papaya cultivation: Amrit Kumar, a graduate farmer from Dodua village, has emerged as a pioneer in papaya cultivation in his region. His journey began when he participated in a training program at the Krishi Vigyan Kendra (KVK), where he gained knowledge about the latest techniques and best practices in agriculture. He also attended a farmers' fair, where he was impressed by the potential of papaya cultivation. Inspired by the idea, Amrit Kumar initially started with 500 papaya plants, which yielded a higher income compared to his traditional crops. Encouraged by the results, he decided to expand his papaya cultivation area. The following year, he planted 1500 papaya saplings, which generated a substantial income. Amrit Kumar's success with papaya cultivation did not go unnoticed. His adjoining farmers in Dodua village were inspired by his achievements and soon followed suit. As a result, the area under papaya cultivation in the village increased from 1 hectare to 15 hectares. Amrit Kumar's entrepreneurial spirit and commitment to innovation have enabled him to reap the benefits of papaya cultivation. He sells his produce in the Jalormandi, for which he has even purchased a pickup van to facilitate transportation. Amrit Kumar's story serves as a testament to the potential of papaya cultivation and the impact it can have on farmers' livelihoods. Prior to cultivating papaya, Amrit Kumar grew traditional crops like wheat, gram, mustard, and green gram, earning an annual income of Rs 2.50 lakh. However, he was keen to increase his earnings and explored alternative crops. After consulting with KVK scientists, he decided to cultivate papaya.

Papaya Cultivation

Amrit Kumar planted 2400 papaya saplings on his one-hectare land, procured from KVK. He received guidance from KVK scientists on best practices for papaya cultivation, including soil preparation, irrigation, fertilization, and pest management.

Results

Amrit Kumar's papaya crop yielded a substantial income of Rs 4.50 lakh, a significant increase from his previous earnings. The success of his papaya crop can be attributed to the guidance and support provided by KVK scientists, as well as his own hard work and dedication.

Conclusion

Amrit Kumar's experience demonstrates the potential of papaya cultivation as a lucrative venture for farmers. Amrit Kumar's success has inspired 4 to 5 other farmers in the village to start cultivating papaya, leading to a positive impact on their livelihoods. The increased income has improved the living standard of Amrit Kumar and his family, demonstrating the potential of papaya cultivation to improve the overall well-being of farmers and their family. The success of his crop highlights the importance of seeking guidance from experts and adopting best practices in agriculture. KVK scientists played a crucial role in guiding Amrit Kumarthroughout the cultivation process, and their support was instrumental in his success.

Impact

Amrit Kumar's success with papaya cultivation has inspired other farmers in the region to explore this lucrative venture. His experience demonstrates the potential of papaya cultivation to increase farmers' incomes and improve their livelihoods.

KVK-Tonk

28. Fruit Production and Goat Rearing

Sh. Bharat Raj Meena, a resident of Seedhera village, Block Niwai of district Tonk (Rajasthan) has 1.0 ha cultivable land. He has 35 years of experience in traditional farming. Before Krishi Vigyan Kendra, Tonk intervention, he was earning Rs. 1.0 Lacs per year that was not sufficient to meet his family's need. After taking skill training from Krishi Vigyan Kendra, Tonk on Gardener, Sh. Bharat Raj Meena has started plantation (2020) of fruit plant (Ber) with drip irrigation, goat rearing. Now, he is earning around Rs 6.37 lakh per year from agriculture and allied activities.

Components

1. **Orchard unit:** He started plantation of ber orchard in 1.0 ha land.
2. **Cattles Farming:** Buffaloes - 2 Milch buffalo and Cow - 1milch cow.
3. **Goatry Farming:** This unit started after KVK intervention with 10 dual purpose Sirohi goats rearing as subsidiary enterprises.
4. **Drip irrigation** was used in Ber orchard for water saving and increase input use efficiency.
5. **Fodder unit** has been established in 0.1 ha area for round the year green fodder availability to the livestock. Around Rs. 18000-20000/- per year were saved as feed cost per animal.

S.No.	Name of Components	Area (ha)	Production (Q/Lit/No.)	Gross income (Rs.)	Net income (Rs.)
1	Ber	1.0	660.0	660000	450000
2	Fodder	0.2	95	80000	45000
3	Buffalo	2 no.	2650	119250	65000
4	Cow	2 no.	1350	56000	22000
5	Goats	5 no.	10	105000	55000
6	Drip irrigation	1.0	-	-	80 % water saving
				Total	**637000**

Established Ber orchard at Farmer's Field

KVK-Yamunanagar

29. Integrated Farming System

Name of Farmer	:	**Randhir Singh**
Fathers Name	:	Shri Ram Singh
Address	:	Vill. Nagal, Distt. Yamunanagar
Mobile No.	:	9466465121
Age	:	58 yrs.
Education	:	12th
Size of land holding	:	26 acres

Integrated farming system

- IFS adopted by Sh. Randhir Singh focuses on multi-cropping, inter-cropping, mixed cropping with allied activities like horticulture, poultry, fisheries etc. The system generates year-round income and employment to the farm family. This IFS model is eco-friendly having great potential from small to large landholding farmers of Haryana under irrigated conditions. Awareness created by KVK Yamunanagar has helped Sh. Randhir Singh in adopting secondary agriculture avenues like quality FYM production, organic agriculture, agroforestry, kitchen gardening etc.

Components of IFS at Randhir Singh's farm

- Sh. Randhir Singh had a collective land holding of 48 acres and he used to cultivate it on his own. After the division in family, the land share allotted to him was 6 acres. He came in contact with KVK Yamunanagar to understand different avenues to generate a good income round the year. After KVK intervention, he took 20 acres on lease and adopted IFS model to generate year round income by adopting all the latest techniques for crop production, adopted organic agriculture for vegetable and fruit crops, installed solar system in the farm area and invested in cash generating avenues like poultry and fishery.
- IFS Componenets at Shri Randhir Singh's farm
- Horticultural and vegetable crops
- Agroforestry-Intercropping of wheat with Poplar
- Interdropping of gram and radish
- Fisheries
- Poultry

S.No.	Enterprise	Area (acres)	Production (Q/acre)	Income (Rs./Q)
1	Field crops			
	- Paddy (Sava 127)	5	32	64,608
	-Wheat (HD 2967)	5	22	44,330
	-Sugarcane (CO 238)	14	400	1,44,000
2	Fisheries	2	30	2,00,000
3	Agroforestry	4	10,000	2,00,000
4	Poultry	1	24,000	4,00,000

CHAPTER 12

PUBLICATIONS

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Pramod, Sharma KC, Burman RR, Rohilla PP and Yadav Seema. 2024. Relationship between Farmers Profile and their Knowledge about Polyhouse Cultivation Technology. Journal of Community Mobilization and Sustainable Development. Vol 19(4). Pp:.944-948. (NAAS Rating 5.02).

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Mishra, JP, Rohilla PP, Jangid BL, Meena MS & Meena HN. 2024. "ATARI at a Glance". Published by Director, ICAR-Agricultural Technology Application Research Institute, Zone-II, Jodhpur. Rajasthan. Pp: 1-28.

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Rohilla, PP, Jangid, BL, Matwa, D and Mishra JP. 2025. Climate Resilient Interventions for Livestock Production System in Rajasthan. Paper presented in National Conference & XXXI Annual Convention on, 'Precision Livestock Management Technology Towards Strengthening Farming Efficiency & Animal Welfare" from 26 to 28 February 2025 held at MPUA&T, Udaipur; jointly organized by Department Animal Production, RCA, MPUA&T, Udaipur and Indian Society of Animal Production Management. Pp: 185.

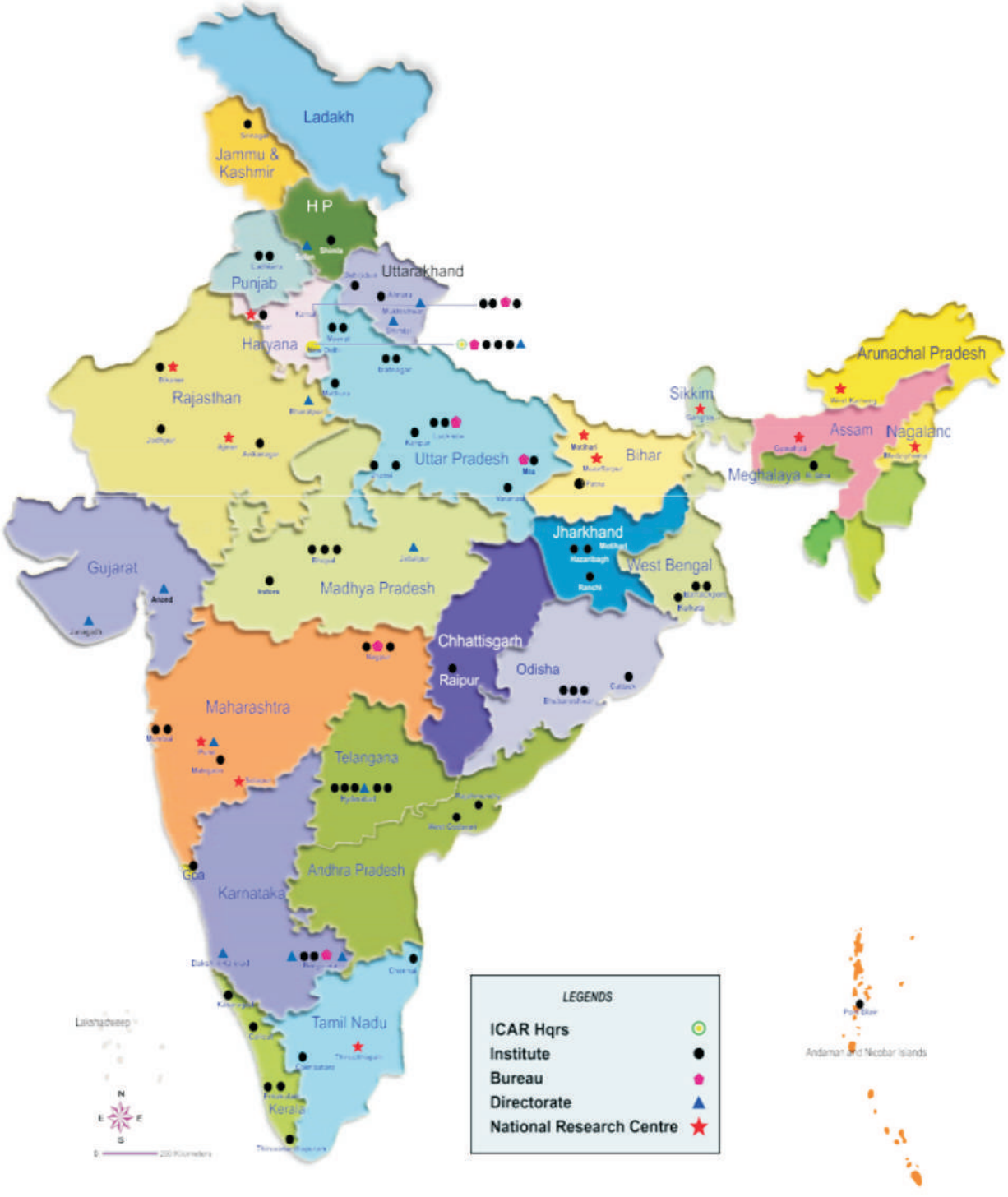
Inauguration of Administrative Building of Alwar-II KVK by DG ICAR

Diagnostic visit of Pomegranate orchard by KVK experts in Budiwada area of Barmer district

NOTES

INDIAN COUNCIL OF AGRICULTURE RESEARCH

Institutes, Bureaux, National Research Centres and Directorates



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