

वार्षिक प्रतिवेदन Annual Report 2022



ICAR-AGRICULTURAL TECHNOLOGY APPLICATION RESEARCH INSTITUTE
ZONE-I, PAU CAMPUS, LUDHIANA, PUNJAB

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भा.कृ.अनु.प.-कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान
क्षेत्र-1, पं.कृ.वि. परिसर, लुधियाना-141004, पंजाब

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Edited by

Preeti Mamgai
Rajesh K. Rana
Arvind Kumar
Pragya Bhadauria
Ashish Santosh Murai

Compilation & Designing assistance

Harinderjeet Singh Jassi

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Director

ICAR-Agricultural Technology Application Research Institute
Zone-I, PAU Campus, Ludhiana- 141 004, Punjab, India
Tel. : 0161-2401018; Fax : 0161-2412719
Email : zcu1ldh@gmail.com, atari.ludhiana@icar.gov.in
Website : <https://atariz1.icar.gov.in>

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Dr. Parvender Sheoran
Director



भा.क्र.अनु.प.-कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान
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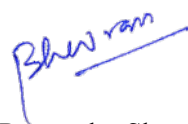
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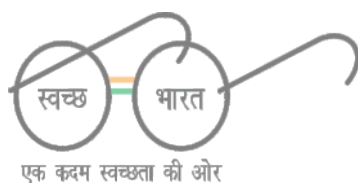
PREFACE

Indian Council of Agricultural Research has built a strong network of 732 KVKs over the years, as its frontline extension system in the country. KVK system has created a niche for itself and is the most dependable network for delivering the science led technology services at grass root level. In the changing scenario of agriculture, KVKs are also addressing newer challenges and actively involved in execution of need-based programmes along with their routine activities to stakeholders. ICAR-Agricultural Technology Application Research Institute (ICAR-ATARI), Ludhiana has responsibility for coordination and monitoring the extension activities of 72 Krishi Vigyan Kendras in Zone-I comprising Punjab, Himachal Pradesh, Jammu & Kashmir, Ladakh and Uttarakhand. Farmers are the ultimate stakeholders of the KVK system who not only require knowledge and understanding of the intricacy of technologies, but they also need skills in various complex agricultural operations for adoption at their farms. In this regard, many of the KVKs made liaisoning with Rashtriya Krishi Vikas Yojna (RKVY), National Beekeeping and Honey Mission (NBHM), NABARD, APEDA, IMD etc. for organizing various trainings and awareness programme among farming community as a part of their linkage and collaborative activities. I sincerely thank Dr. Himanshu Pathak, Secretary, DARE and Director General, ICAR; Dr. U.S. Gautam, Deputy Director General (Agricultural Extension); Dr. Ranjay Singh and Dr. R.R. Burman, ADGs (Agricultural Extension) for their valuable advice and guidance. I also extend my thanks and acknowledgement to all the Vice-Chancellors, Directors of Extension Education of the State Agricultural Universities, Programme Coordinators of KVKs, ATIC Managers and all the staff of KVKs for their valuable contribution during the period under consideration. I sincerely acknowledge the efforts of the dedicated editorial team of this Annual Report for bringing out this important document.

Simultaneously, I also look forward to the feedback from the readers on the contents of this annual report so that it can be further improved. I am quite confident that the untiring efforts of the KVK system will further add to the valuable inputs for the overall agricultural development in the country.

Place: Ludhiana
Date: 26.05.2023


(Parvender Sheoran)



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ACRONYMS

AAS	- Agromet Advisory Service
ACROSS	- Atmospheric & Climate Research Modeling Observing & Services
AICRP	- All India Coordinated Research Project
APEDA	- Agricultural and Processed Food Products Export Development Authority
APMC	- Agricultural Produce Marketing Committee
ARYA	- Attracting and Retaining Youth in Agriculture
ATARI	- Agricultural Technology Application Research Institute
ATIC	- Agricultural Technology Information Centre
ATMA	- Agricultural Technology Management Agency
BDOs	- Block Development Officer
BIS	- Bureau of Indian Standards
CAZRI	- Central Arid Zone Research Institute, Jodhpur
CDPO	- Child Development Project Officer
CFLD	- Cluster Frontline Demonstrations
CRIDA	- Central Research Institute for Dryland Agriculture, Hyderabad
CRRID	- Centre for Research in Rural and Industrial Development
CSKHPKV	- Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya
DAMU	- District Agro meteorological Unit
DIC	- District Industries Centre
DMI	- Directorate of Marketing and Inspection
DMR	- Directorate of Mushroom Research, Solan
DRDA	- District Rural Development Agency
Farmer's FIRST	- Farmer's Farm, Innovations, Resource, Science and Technology
GADVASU	- Guru Angad Dev Veterinary And Animal Sciences University
HRD	- Human Resource Development
ICAR	- Indian Council of Agricultural Research
CSWCRTI	- Central Soil & Water Conservation Research & Training Institute
CIPHET	- Central Institute of Post-Harvest Engineering and Technology
CSWRI	- Central Sheep and Wool Research Institute
GBPUAT	- Govind Ballabh Pant University of Technology and Agriculture
GKMS	- Gramin Krishi Mausam Seva
IARI	- Indian Agricultural Research Institute
IGFRI	- Indian Grassland and Fodder Research Institute
IIMR	- Indian Institute of Maize Research
IISWC	- Indian Institute of Soil and Water Conservation
IVRI	- Indian Veterinary Research Institute
ICDS	- Integrated Child Development Scheme
ICM	- Integrated Crop Management
IDM	- Integrated Disease Management
IDPM	- Integrated Disease and Pest Management
IFFCO	- Indian Farmers Fertilizer Cooperative Limited
IFS	- Integrated Farming System
IIM	- Indian Institutes of Management



IMD	- Indian Metrological Department
INM	- Integrated Nutrient Management
IPM	- Integrated Pest Management
IWM	- Integrated Weed Management
JICA	- Japan International Cooperation Agency
KMA	- Kisan Mobile Advisory
KRIBHCO	- Krishak Bharati Cooperative Limited
KVIC	- Khadi and Village Industries Commission
KVK	- Krishi Vigyan Kendra
LCC	- Leaf Colour Chart
MANAGE	- National Institute of Agricultural Extension Management, Hyderabad
MARKFED	- Punjab State Co-op Supply & Marketing Federation Ltd.
MGMG	- Mera Gaon Mera Gaurav
NABARD	- National Bank for Agriculture and Rural Development
NARI	- Nutrition-sensitive agricultural resources and innovations
NARS	- National Agricultural Research System
NBHM	- National Beekeeping and Honey Mission
NEMA	- New Extension Methodologies and Approaches
NFL	- National Fertilizer Limited
NHB	- National Horticulture Board
NICRA	- National Innovations in Climate Resilient Agriculture
NRM	- Natural Resource Management
NTRS	- North Temperate Regional Station
NYKs	- Nehru Yuva Kendra
OFT	- On Farm Testing
PAMETI	- Punjab Agricultural Management & Extension Training Institute
PAU	- Punjab Agricultural University, Ludhiana
PEDA	- Punjab Energy Development Agency
PNB	- Punjab National Bank
RCT	- Resource Conservation Technique
RSETI	- Rural Self Employment Training Institutes
SAC	- Scientific Advisory Committee
SAMETI	- State Agriculture Management & Extension Training Institute
SAU	- State Agricultural University
SCSP	- Scheduled Caste Sub Plan
SKUAST	- Sher-e-Kashmir University of Agricultural Sciences and Technology
SRI	- System Rice Intensification
TSP	- Tribal Sub Plan
UKSTDC	- Uttarakhand State Tourism Development Corporation Limited
ULDB	- Uttarakhand Livestock Development Board
ZCU	- Zonal Coordinating Unit
ZPD	- Zonal Project Directorate

कार्यकारी सारांश

कृषि विज्ञान केंद्रों का एक विशाल नेटवर्क भारतीय कृषि अनुसंधान परिषद (भा.कृ.अनु.प.) द्वारा भा.कृ.अनु.प.-कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थानों (अटारी) के अन्तर्गत कार्यरत है। इसका उद्देश्य कृषि और कृषि संबंधी क्षेत्र में प्रौद्योगिकियों का आंकलन, शोधन और प्रदर्शन करना है। भा.कृ.अनु.प.-कृषि विस्तार संभाग, उप महानिदेशक (कृषि विस्तार) की अध्यक्षता में देश के विभिन्न हिस्सों में स्थित 11 कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थानों (भा.कृ.अनु.प.-अटारी) के माध्यम से कृषि विज्ञान केन्द्रों की प्रगति पर निगरानी रखता है और समीक्षा करता है। भा.कृ.अनु.प.-अटारी, क्षेत्र-1, लुधियाना, भारतीय कृषि अनुसंधान परिषद के प्रौद्योगिकी प्रसार परियोजनाओं की योजना, निगरानी, समीक्षा आदि अपने 72 कृषि विज्ञान केन्द्रों द्वारा करता है जो कि पंजाब (22), हिमाचल प्रदेश (13), उत्तराखंड (13), जम्मू-कश्मीर (20) और लद्दाख (4) राज्यों एवं केंद्र शासित प्रदेशों में स्थित हैं।

राज्य कृषि विश्वविद्यालयों और भा.कृ.अनु.प. संस्थानों से तकनीकी बैकस्टॉपिंग में किसानों और अन्य हितधारकों के साथ सांझेदारी व कृषि विज्ञान केन्द्रों द्वारा प्रौद्योगिकियों का आंकलन और परिष्करण किया जाता है। कृषि विज्ञान केन्द्र हितधारकों के लिए आवश्यकता आधारित क्षमता विकास कार्यक्रम आयोजित करते हैं और उपयुक्त अग्रपंक्ति प्रसार कार्यक्रमों के माध्यम से उन्नत कृषि प्रौद्योगिकियों के बारे में जागरूकता पैदा करते हैं। प्रौद्योगिकियों के प्रारंभिक प्रयास को सुविधाजनक बनाने के लिए गुणवत्ता वाले बीज, रोपण सामग्री, पशुधन नस्लों, पशु उत्पादों और जैव उत्पादों का उत्पादन और उनकी आपूर्ति भी की जाती है। इस प्रकार, कृषि विज्ञान केन्द्र, जिले की कृषि अर्थव्यवस्था के लिए ज्ञान और संसाधन केंद्र के रूप में कार्य कर रहे हैं। प्रतिवेदन वर्ष के दौरान प्रमुख उपलब्धियों का उल्लेख निम्नलिखित है:

प्रौद्योगिकी आंकलन एवं परिष्करण

वर्ष 2022 के दौरान 3035 परीक्षणों के माध्यम से कुल 646 खेतों पर परीक्षण आयोजित किए गए। इनमें से फसलों पर 429 खेतों पर परीक्षण, पशुधन एवं मत्स्य पालन पर 107 तथा अन्य पहलुओं पर 110 खेतों पर परीक्षण आयोजित किए गए थे। कृषि विज्ञान केन्द्रों द्वारा फसलों के अन्तर्गत, कुल 614 प्रौद्योगिकियों का मूल्यांकन 2919 परीक्षण द्वारा किया गया, जिसमें कि विभिन्न किस्मों का मूल्यांकन (66), एकीकृत पोषक प्रबंधन (81), एकीकृत रोग प्रबंधन (41), एकीकृत कीट प्रबंधन (63), एकीकृत फसल प्रबंधन (42), एकीकृत खरपतवार प्रबंधन (28) विषयगत क्षेत्रों में किया गया। अन्य विषयगत क्षेत्रों जैसे तकनीक प्रसंस्करण और मूल्यवर्धन (13), संसाधन संरक्षण प्रौद्योगिकी (20), कृषि मशीनरी (5), एकीकृत कृषि प्रणाली (9), भंडारण तकनीक (3) तथा विविध विषयों पर (20) प्रौद्योगिकी मूल्यांकन किया गया।

अग्रिम पंक्ति प्रदर्शन

कुल 32229 प्रदर्शनों द्वारा जिसमें 6818 अनाज और मोटा अनाज, 1735 तिलहनों, 3108 दालों, 1679 हाइब्रिड, 680 सब्जी और 734 फल, 32 फूलों, 1264 चारा फसलों, 2933 पशुधन एवं मत्स्य पालन, 10956 अन्य पहलुओं जैसे कि मशरूम उत्पादन (485), ग्रह वाटिका (2125) तथा ग्रह विज्ञान (5084) पर प्रदर्शन आयोजित किए गए, जो कि 6389.24 हेक्टेयर और 7407 इकाइयों के क्षेत्र को कवर करते थे।

क्षमता विकास

कृषि विज्ञान केन्द्रों ने 1.14 लाख प्रतिभागियों के साथ किसान और कृषक महिलाओं के लिए 4723 क्षमता निर्माण कार्यक्रम, 18636 ग्रामीण युवाओं के लिए 717 पाठ्यक्रम और 5865 विस्तार कार्यकर्ताओं के लिए 292 पाठ्यक्रम का आयोजन किया

गया। इनमें 5681 प्रतिभागियों के साथ 167 प्रायोजित प्रशिक्षण पाठ्यक्रम और 6534 हितधारकों के साथ 318 व्यावसायिक प्रशिक्षण पाठ्यक्रम में शामिल थे।

अन्य प्रसार गतिविधियां

अटारी लुधियाना के केवीके ने 2022 के दौरान 49374 अन्य विस्तार गतिविधियों का आयोजन किया, जिसमें 9.29 लाख किसान लाभान्वित हुए, जिनमें से 5.41 लाख पंजाब से, 1.77 लाख जम्मू और कश्मीर से और 1.03 लाख उत्तराखंड से किसान शामिल थे।

किसान मोबाइल सलाहकार

कृषि विज्ञान केंद्रों ने 13.63 लाख किसानों को 40248 लिखित परामर्श संदेशों को किसान मोबाइल के माध्यम से भेजा गया। फसलों से संबंधित लगभग 14961 लिखित संदेश, मौसम की जानकारी पर 6720, 4725 पशुधन के लिए, जागरूकता पर 3279, अन्य उद्यम संबंधित 1620 तथा विपणन संबंधी जानकारी पर 829 संदेश भेजे गए।

तकनीकी आदानों का उत्पादन

कृषि विज्ञान केंद्रों ने 13942.10 क्विंटल विभिन्न फसलों का बीज उत्पादन किसानों के लिए किया। इसके अतिरिक्त 47.85 लाख पौध रोपण सामग्री, 4353 पशुधन, 183596.8 कि.ग्रा. जैव उर्वरक, 38 कि.ग्रा. जैव कीटनाशकों आदि का उत्पादन कर किसानों को प्रदान किये।

मृदा, पानी और पौधे के नमूने विश्लेषण

इस क्षेत्र के कृषि विज्ञान केन्द्रों ने कुल 10733 नमूनों का विश्लेषण किया है जिसमें 8123 मिट्टी के नमूने, 1472 पानी के नमूने और 1138 पौधों के नमूने शामिल हैं।

कृषि प्रौद्योगिकी सूचना केंद्र (एटिक)

वर्ष 2022 के दौरान 4447 किसान तकनीकी सलाह के लिए 6 कृषि प्रौद्योगिकी सूचना केन्द्रों पर गये। जबकि 7340 किसानों ने संस्थानों द्वारा विकसित उत्पादों को प्राप्त करने के लिए शैक्षणिक भ्रमण किया। एटिक ने 61197 किसानों को माइक्रोबियल इनोकुलेंट, बीज और रोपण सामग्री, मशरूम कल्चर, जैव-कीटनाशक, कृषि उपकरण, पशु आहार सामग्री आदि जैसे कृषि इनपुट भी प्रदान किए गए। एटिक ने 15423 किताबें, 1586 तकनीकी बुलेटिन, 600 प्रौद्योगिकी सूची, 98 वीडियो फिल्म और 36854 अन्य (फ़ोल्डर, पत्रक और पेन आदि) उपयोगकर्ताओं को प्रदान किये। खेती से संबंधित विभिन्न तकनीकी जानकारी के लिए कुल 7255733 किसानों ने एटिक का दौरा किया और एटिक ने कुल ₹: 10861775/- का राजस्व अर्जित किया गया।

विस्तार शिक्षा निदेशालय

अटारी लुधियाना में आठ विभिन्न विश्वविद्यालयों के विस्तार शिक्षा निदेशालयों के अधिकारियों ने 54 मानव संसाधन विकास गतिविधियों का संचालन किया और उनके अधिकारियों ने 58 वैज्ञानिक सलाहकार समिति की बैठक में भाग लिया। इसी तरह, उन्होंने 42 खेत-दिवस, 23 कार्यशालाओं/सेमिनारों, 5 प्रौद्योगिकी सप्ताह, 59 प्रशिक्षण कार्यक्रमों, 134 खेत पर परीक्षण, 243 अग्रिमपंक्ति प्रदर्शन में भाग लिया।

जलवायु अनुरूप कृषि पर राष्ट्रीय पहल (निकरा)

जलवायु की दृष्टि से सर्वाधिक संवेदनशील जिलों में लागू की गई निकरा परियोजना में प्राकृतिक संसाधन प्रबंधन मॉड्यूल के

अन्तर्गत 1024.72 हेक्टेयर में प्राकृतिक संसाधन प्रबंधन प्रौद्योगिकियों पर 2437 प्रदर्शनों का आयोजन किया गया और 1800.48 हेक्टेयर में फसल उत्पादन प्रौद्योगिकियों पर 6886 प्रदर्शनों का आयोजन किया गया। इसी तरह, पशुधन और मत्स्य पालन मॉड्यूल के अन्तर्गत 2029 प्रदर्शनों का आयोजन किया गया जिसमें 11316 पशु/पक्षी शामिल थे। इसके अलावा, 338 क्षमता निर्माण कार्यक्रमों और 1208 विस्तार कार्यक्रमों के साथ संस्थागत हस्तक्षेप के अन्तर्गत 1738 प्रदर्शनों का आयोजन किया गया।

दालों पर सामूहिक अग्रिमपंक्ति प्रदर्शन

परियोजना के तहत दलहन जैसे उरद, मूँग, चना, मसूर और मटर की वैज्ञानिक खेती पर अग्रिम पंक्ति प्रदर्शन आयोजित किए गए। 2021-22 के दौरान, रबी में 496.175 हेक्टेयर पर 3045 सीएफएलडी और गर्मी के मौसम में 20 हेक्टेयर पर 50 सीएफएलडी का आयोजन किया गया। इसी तरह, 2022-23 के दौरान, खरीफ के दौरान 686.83 हेक्टेयर पर 3690 सीएफएलडी और रबी के दौरान 735.55 हेक्टेयर पर 3666 सीएफएलडी का आयोजन किया गया।

तिलहन पर सामूहिक अग्रिमपंक्ति प्रदर्शन

तिलहन पर सामूहिक अग्रिमपंक्ति प्रदर्शन के अन्तर्गत खरीफ और रबी मौसम के दौरान चार राज्यों में 1446.5 हेक्टेयर क्षेत्र पर कुल 5227 अग्रिम पंक्ति प्रदर्शन आयोजित किए गए। पंजाब में, इन अग्रिमपंक्ति प्रदर्शनों के अन्तर्गत तिल, मूँगफली और राई व सरसों की औसत उपज क्रमशः 3.3 और 14.5 क्विंटल/हेक्टेयर थी जो कि स्थानीय उपज से क्रमशः 45.5 और 19.3 प्रतिशत अधिक थी। हिमाचल प्रदेश में तिल, सोयाबीन और राई व सरसों के अग्रिमपंक्ति प्रदर्शन में क्रमशः 40.0 और 34.7 प्रतिशत स्थानीय उपज से अधिक प्राप्त हुई। जम्मू और कश्मीर में राई व सरसों के अग्रिमपंक्ति प्रदर्शन में 63.2 प्रतिशत स्थानीय उपज से अधिक प्राप्त हुई। उत्तराखंड में अग्रिमपंक्ति प्रदर्शन में तिल, सोयाबीन और राई व सरसों की उपज स्थानीय उपज की तुलना में क्रमशः 63.2 प्रतिशत अधिक पाई गयी।

दालों पर बीज हब

केवीके ऊना और केवीके देहरादून में दालों पर बीज केंद्रों ने काले चने, मसूर और चना के बीज का उत्पादन किया।

फसल अवशेष प्रबंधन

फसल अवशेष प्रबंधन के अन्तर्गत 6500 हेक्टेयर से अधिक में मशीनरी का उपयोग करते हुए इन-सीटू फसल अवशेष प्रबंधन पर प्रदर्शन आयोजित किए गए एवं 190 हेक्टेयर से अधिक क्षेत्र पर डीकंपोजर प्रौद्योगिकी के प्रदर्शन किए गए। केवीके द्वारा विभिन्न स्तरों (जिला, ब्लॉक और गांव) पर आयोजित 331 जागरूकता शिविरों में 20000 से अधिक किसानों ने भाग लिया। इसके अतिरिक्त, 93 प्रशिक्षण कार्यक्रम आयोजित किए गए जिनमें 2197 हितधारकों ने भाग लिया। केवीके ने 43 किसान मेलों का भी आयोजन किया जिसमें 1.15 लाख से अधिक किसान शामिल हुए और 22672 छात्रों को पराली जलाने के खिलाफ स्कूल और कॉलेजों में विभिन्न गतिविधियों का आयोजन कर जागरूक किया गया। केवीके ने 130 अध्ययन भ्रमण, 85 खेत/फसल दिवस तथा 101 वेबिनार भी आयोजित किए गये।

जिला कृषि मौसम इकाई

वर्ष के दौरान डी.ए.एम.यू.के तहत 16 केवीके के बीच 14 एसएमएस ने 146 किसान जागरूकता कार्यक्रम आयोजित किए, किसानों को 3368 एग्रोमेट एडवाइजरी बुलेटिन भेजे गए और किसानों को जिले में बदलते मौसम की स्थिति के बारे में 1857 एडवाइजरी भेजी गई ताकि किसान इसका लाभ उठा सकें। किसानों ने इन सलाहों का लाभ उठाया और अपने खेतों में उपयुक्त गतिविधियाँ की।

फार्मर फ़र्स्ट कार्यक्रम

इस कार्यक्रम के अन्तर्गत 59 प्रशिक्षण पाठ्यक्रम चलाए गए जिससे 1860 किसान लाभान्वित हुए। इसके अतिरिक्त 26 जागरूकता शिविर और 24 अध्ययन भ्रमण भी करवाए गए, जिनमें क्रमशः 729 और 593 किसानों ने भाग लिया।

कृषि में युवाओं को आकर्षित करना और बनाए रखना (आर्या)

आर्या परियोजना के अन्तर्गत 101 प्रशिक्षण पाठ्यक्रम आयोजित किए गए, जिसमें 2011 ग्रामीण युवाओं को लाभ मिला, जिनमें से 368 ने अपने उद्यम स्थापित किए हैं। युवा उद्यमियों के बीच मशरूम की खेती (14 पाठ्यक्रमों में प्रशिक्षित 384 युवाओं में से 82 इकाइयों की स्थापना की), मूल्य संवर्धन/प्रसंस्करण (22 पाठ्यक्रमों में प्रशिक्षित 551 युवाओं में से 43 ने इकाइयों की स्थापना की), मुर्गी पालन (17 पाठ्यक्रमों में प्रशिक्षित 284 युवाओं में से 70 इकाइयों की स्थापना की), संरक्षित खेती (7 पाठ्यक्रमों में प्रशिक्षित 132 युवाओं में से 37 इकाइयों की स्थापना) वाणिज्यिक फूलों की खेती (8 पाठ्यक्रमों में प्रशिक्षित 188 युवाओं में से 32 इकाइयों की स्थापना) और मधुमक्खी पालन (7 पाठ्यक्रमों में प्रशिक्षित 157 युवाओं में से 40 इकाइयों की स्थापना) बहुत लोकप्रिय रही। आर्या परियोजना के अन्तर्गत विचाराधीन अवधि के दौरान जम्मू और कश्मीर के बाद (814 युवाओं ने 58 पाठ्यक्रमों से 144 इकाइयों की स्थापना की), हिमाचल प्रदेश (542 युवाओं ने 18 पाठ्यक्रमों से 86 इकाइयों की स्थापना की) और पंजाब (393 युवाओं ने 13 पाठ्यक्रमों से 86 इकाइयों की स्थापना की) ने प्रगति के विभिन्न पहलुओं पर अच्छा प्रदर्शन किया।

जनजातीय उप योजना (टी.एस.पी)

अटारी लुधियाना के 11 कृषि विज्ञान केंद्रों ने जनजातीय उप योजना के अन्तर्गत 184 खेत पर प्रशिक्षण एवं 2739 अग्रिम पंक्ति प्रदर्शन लगाये। इस योजना के अन्तर्गत आयोजित 618 प्रशिक्षण कार्यक्रमों में कुल 19472 किसानों और विस्तार कर्मियों ने भाग लिया एवं किसान मोबाइल सलाहकार सेवाओं से 43891 किसान लाभान्वित हुये।

नए विस्तार के तरीके और दृष्टिकोण (एन.ई.एम.ए)

किसानों की आय दोगुनी करने (डीएफआई) के तहत भारत सरकार की दो बहुत महत्वपूर्ण पहल यानी 75000 डीएफआई की सफलता की कहानियों का दस्तावेजीकरण और डीएफआई पर सर्वेक्षण अध्ययन इस परियोजना के तहत किए गए। 75000 डीएफआई की सफलता की कहानियों के संबंध में तीन महत्वपूर्ण प्रकाशन किए गए और आय वृद्धि के प्रमुख घटकों में कृषि और गैर-कृषि उद्यम (5.64 गुना), मत्स्य (4.59 गुना), पशुधन (4.30 गुना), बागवानी (3.19 गुना) और फसलें (1.64 गुना)। डीएफआई पर सर्वेक्षण अध्ययन जोन-1 के 13 उप-कृषि-जलवायु क्षेत्रों में किया गया, जिसमें 1280 किसान शामिल थे। अध्ययन की अवधि के दौरान गोद लेने वालों की शुद्ध आय 20% सीएजीआर पर 2.08 गुना बढ़ी, गैर-गोद वालों में यह वृद्धि 14.2% सीएजीआर पर सिर्फ 1.7 गुना थी।

अनुसूचित जाति उपयोजना (एस.सी.एस.पी)

अटारी लुधियाना के 28 कृषि विज्ञान केंद्रों ने अनुसूचित जाति उपयोजना के अन्तर्गत 1529 खेतों पर परीक्षण एवं 15213 अग्रिम पंक्ति प्रदर्शन आयोजित किये गए। इन कृषि विज्ञान केंद्रों ने 2361 प्रशिक्षण कार्यक्रम आयोजित किये तथा 0.58 लाख से अधिक किसान लाभान्वित हुए। इसके अतिरिक्त 0.26 लाख प्रसार गतिविधियों में 5.75 लाख से अधिक किसानों एवं प्रसार कार्यकर्ताओं ने भाग लिया।

EXECUTIVE SUMMARY

Indian Council of Agricultural Research (ICAR) has established a vast network of Krishi Vigyan Kendras (KVKs) under the umbrella of ICAR-Agricultural Technology Application Research Institutes (ATARIs) with an aim to assess, refine and demonstrate technologies in agricultural and allied sectors. ICAR-Division of Agricultural Extension headed by the Deputy Director General (Agricultural Extension) monitors and reviews the progress of KVKs through its eleven Agricultural Technology Application of Research Institute (ICAR-ATARI) located in different parts of the country. ICAR-ATARI, Zone-I, Ludhiana plans, monitors, reviews and supports ICAR initiated technology dissemination projects mainly through 72 KVKs of Punjab (22), Himachal Pradesh (13), Uttarakhand (13), Jammu & Kashmir (20) and Ladakh (4).

Assessment and refinement of technologies is carried out with technological backstopping from SAUs and ICAR institutes and partnering with farmers and other stakeholders in the system, as the most important mandated activities of the KVKs. KVKs organize need based capacity development programs for the stakeholders and create awareness about improved agricultural technologies through appropriate frontline extension programmes. Production and supply of quality seeds, planting materials, livestock breeds, animal products and bi-products are also being undertaken to facilitate initial uptake of technologies. Thus, KVKs are serving as knowledge and resource centres for agricultural economy of the district. Salient achievements during the reporting year are summarized as follows:

Technology Assessment and Refinement

During 2022, a total of 646 OFTs were conducted through 3035 trials by the KVKs of the zone-1. Out of these, 429 OFTs on crops, 107 on livestock & fisheries and 110 on others aspects were conducted during the reporting period. Under crops, a total of 614 technologies assessed by KVKs by conducting 2919 trials in thematic areas such as varietal evaluation (66), integrated nutrient management (81), integrated disease management (41), integrated pest management (63), integrated crop management (42), and integrated weed management (28). Technologies assessed in other thematic areas are processing & value addition (13), resource conservation technology (20), farm machinery (5), integrated farming system (9), storage techniques (3) and miscellaneous (20).

Frontline Demonstrations

Under FLDs a total of 32299 demonstrations including 6818 cereal & millets, 1735 on oilseeds, 3108 pulses, 1679 on hybrids, 2680 on vegetable, 734 fruit crops, 32 on flowers, 1264 on fodder crops, 2933 on livestock & fisheries, 10956 on other aspects viz. mushroom production (484), Nutritional gardening/Kitchen gardening (2125), Home Science (5084) and Value addition (376) were conducted covering an area of 6389.24 ha and 7,407 units.

Capacity Development

KVKs organized 4723 capacity building programmes for farmer and farm women with 114236 participants, 717 courses for 18636 rural youth and 292 courses for 5865 extension functionaries. These included 167 sponsored training courses for 5681 participants and 318 vocational training courses for 6534 stakeholders.

Other Extension Activities

KVKs of Zone-1 organised 49374 other extension activities during 2022 benefiting 9.29 lakhs farmers out of

which 5.41 lakhs were from Punjab followed by 1.77 lakhs from Jammu & Kashmir and 1.03 lakhs from Uttarakhand.

Kisan Mobile Advisory (KMA)

In Zone-1, 13.63 lakhs farmers were benefited through Kisan Mobile Advisories with 40248 text messages. The messages were mainly on crops (14961), weather (6720), livestock (4725), awareness among the farmers about agriculture related technologies (3279), other enterprises related to agriculture (1620) and marketing (829).

Production of Technological Inputs

KVKs have produced 13942.10 q of seed material of different crops and made available to 250926 farmers. KVKs also produced 47.85 lakh planting materials, 4353 livestock including fisheries, 183596.8 kg of bio fertilizers, 38 kg of bio-pesticides, 992 kg bio-agents and 113932.4 kg other bio-products made available to 10 farmers.

Soil, Water and Plant Samples

During the year, KVKs have analysed a total of 10733 samples including 8123 soil samples, 1472 water samples and 1138 plant samples.

Agricultural Technology Information Centres (ATIC)

In six ATICs of Zone-I, 4447 farmers visited for technical advice whereas, as much as 7340 visited to obtain products developed by the host institutes. ATICs also provided farm inputs such as microbial inoculants, seeds and planting materials, mushroom cultures, bio-pesticides, farm implements, animal feeding materials, etc. to 61197 farmers. As much as 15423 books, 1586 technical bulletins, 600 technology inventories, 98 video films and 36854 others (folders, leaflets and pens etc.) were provided by the ATICs to its end users. A total of 7255733 farmers visited the ATIC for different technical information related to farming and total revenue of ₹ 10861775/- was generated during the year.

Directorate of Extension Education (DEE)

DEEs of various host universities conducted 54 human resource development (HRD) activities and 1273 officials have participated in 58 Scientific Advisory Committee meeting. Similarly, they have attended 42 field days, 23 workshops seminars, 5 technology weeks, 59 trainings programs, 6 extension council meeting, 134 on farm testing (OFT) and 243 front line demonstrations (FLD) programs

National Innovations in Climate Resilient Agriculture (NICRA)

Under the project, 2437 demonstrations on Natural Resource Management technologies were organized in 1024.72 ha and 6886 demonstrations on crop production technologies were organized in 1800.48 ha. Similarly, 2029 demonstrations under livestock and fisheries module were organized covering 11316 animals/birds. Moreover, 1738 demonstrations under institutional interventions were organized along with 338 capacity building programs and 1208 extension programs.

CFLD on Pulses

Under the project, frontline demonstrations were organized on scientific cultivation of pulses like black gram, green gram, chick pea, lentil and field pea. During 2021-22, 3045 CFLDs on 496.175 ha in rabi and 50 CFLDs on 20 ha in summer season were organized. Likewise, during 2022-23, 3690 CFLDs on 686.83 ha during kharif and 3666 CFLDs on 735.55 ha during rabi season were organized.

CFLD on Oilseeds

Under CFLDs on Oilseeds a total of 5227 CFLDs were conducted on an area of 1446.5 ha in four states during 2022. In Punjab, the average yield under these CFLDs was 3.3 q/ha and 14.5 q/ha of sesame and soybean which was 45.5 per cent and 19.3 per cent higher than the check yield, respectively. In Himachal Pradesh, 40.0 and 34.7 per cent higher yield was recorded in sesame and soybean respectively. In Jammu & Kashmir, 63.2 per cent higher yield was recorded from sesame. In Uttarakhand, the recorded average yield of CFLDs was 63.2 per cent higher over the local check in sesame.

Seed Hubs on Pulses

Seed hubs on Pulses at KVK Una and KVK Dehradun produced seeds of black gram, lentil, chick pea and pigeon pea.

Crop Residue Management (CRM)

Demonstrations on in-situ crop residue management using CRM machinery were conducted on more than 6500 hectares and demonstrations on decomposer technology were laid out on more than 190 hectares involving 223 farmers. More than 26000 farmers participated in 331 awareness camps organized at different levels (district, block & village) by KVKs. Further, 93 training programmes were organized in which 2197 stakeholders were participated. KVK organised 43 Kisan Melas also in which more than 1.15 lakh farmers were mobilised and 22672 students were sensitised by organising various activities in school and college against residue burning. KVKs also organized 130 exposure visits, 85 field days/ harvest days, 101 webinars.

District Agro-Met Unit (DAMU)

During the year 14 SMS among 16 KVKs under DAMU conducted 146 Farmer awareness programmes, 3368 numbers of Agromet Advisory bulletins were sent to the farmers and 1857 numbers of advisories were sent to farmers regarding changing weather conditions in the district so that farmers could take advantage from these advisories and undertake suitable activities in their fields.

Farmers FIRST Programme (FFP)

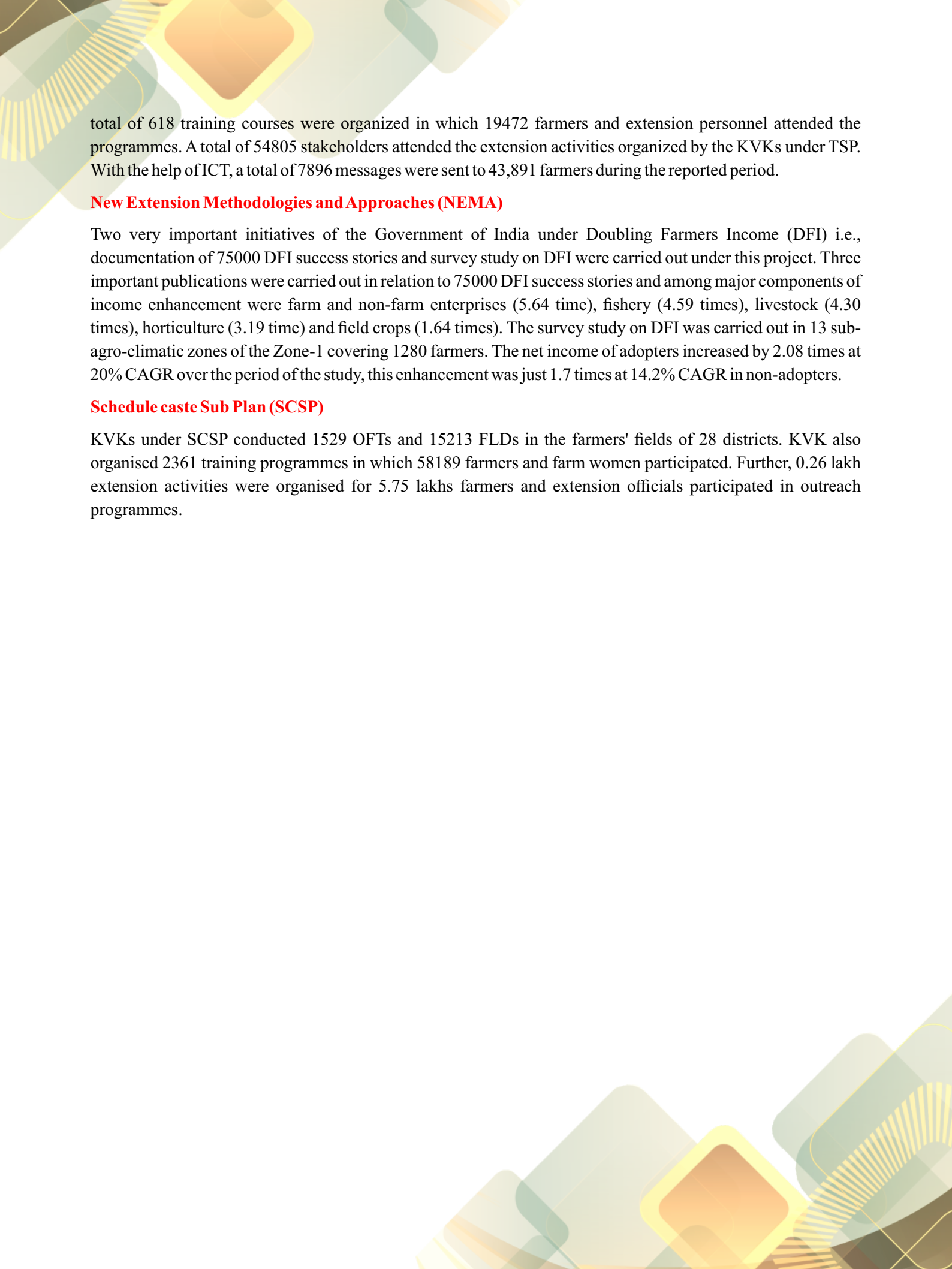
A total of 59 training courses were conducted wherein 1860 farmers benefited. In addition, 26 awareness camps and 24 exposure visits were also conducted in which 729 and 593 farmers were benefited, respectively.

Attracting and Retaining Youth in Agriculture (ARYA)

During 2022 101 training courses were conducted in Zone-1 under the ARYA project benefiting 2011 rural youth out of which 368 have established their enterprises. Mushroom cultivation (384 youth trained in 14 courses and 82 established the units), followed by value addition/ processing (551 youth trained in 22 courses and 43 established the units), Poultry farming (284 youth trained in 17 courses and 70 established the units), protected cultivation (132 youth trained in 7 courses and 37 established the units), commercial floriculture (188 youth trained in 8 courses and 32 established the units) and bee keeping (157 youth trained in 7 courses and 40 established the units) and were very popular among the young entrepreneurs. Jammu & Kashmir (814 youth trained in 58 courses and 144 established the units) followed by Himachal Pradesh (542 youth trained in 18 courses and 86 established the units) and Punjab (393 youth trained in 13 courses and 86 established the units) showed very good performance on various fronts of progress under the ARYA project during the period.

Tribal Sub Plan (TSP)

During the 2022 year, 11 KVKs under the TSP scheme conducted 148 OFTs and 2739 FLDs in farmer's fields. A



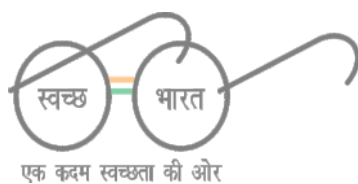
total of 618 training courses were organized in which 19472 farmers and extension personnel attended the programmes. A total of 54805 stakeholders attended the extension activities organized by the KVKs under TSP. With the help of ICT, a total of 7896 messages were sent to 43,891 farmers during the reported period.

New Extension Methodologies and Approaches (NEMA)

Two very important initiatives of the Government of India under Doubling Farmers Income (DFI) i.e., documentation of 75000 DFI success stories and survey study on DFI were carried out under this project. Three important publications were carried out in relation to 75000 DFI success stories and among major components of income enhancement were farm and non-farm enterprises (5.64 time), fishery (4.59 times), livestock (4.30 times), horticulture (3.19 time) and field crops (1.64 times). The survey study on DFI was carried out in 13 sub-agro-climatic zones of the Zone-1 covering 1280 farmers. The net income of adopters increased by 2.08 times at 20% CAGR over the period of the study, this enhancement was just 1.7 times at 14.2% CAGR in non-adopters.

Schedule caste Sub Plan (SCSP)

KVKs under SCSP conducted 1529 OFTs and 15213 FLDs in the farmers' fields of 28 districts. KVK also organised 2361 training programmes in which 58189 farmers and farm women participated. Further, 0.26 lakh extension activities were organised for 5.75 lakhs farmers and extension officials participated in outreach programmes.



ABOUT ICAR-ATARIs AND KVKs

1.1 Genesis of ICAR-ATARIs

The ICAR established eight Zonal Coordinating Units (ZCUs) in September 1979 to monitor and coordinate the Lab to Land Programme (LLP) launched on the eve of ICAR's Golden Jubilee celebrations. Zonal Coordinating Unit for Zone-I had its office in Punjab Agricultural University (PAU), Ludhiana. The Unit was converted into a Plan Scheme in 1986 with additional staff and the objective of monitoring/ transfer of technology projects of ICAR viz. KVKs, Trainers' Training Centres, National Demonstration Programme, Operational Research Project, Scheduled Caste & Schedule Tribe Project, Special Project on Oilseeds and National Pulse Project.

The Zonal Coordinating Units were upgraded as Zonal Project Directorates during the XI Five Year Plan (2009) with the same staff strength and infrastructure. The Zonal Coordinators were accordingly re-designated as Zonal Project Directors with upgraded financial and administrative powers akin to the Directors of other ICAR institutes. In July 2015, Zonal Project Directorates were upgraded as Agricultural Technology Application Research Institutes (ICAR- ATARIs) with added responsibilities and functions including research.

KVK system represents a network of KVKs that functions as a pivot for transfer of technology all over the country under the umbrella of ICAR institutes, State Agricultural Universities (SAUs), State Department of Agriculture and Non-Government

Organizations (NGOs) with the objective of assessment, refinement, and demonstration of technologies in agricultural and allied sectors. The ICAR-Division of Agriculture Extension headed by the Deputy Director General (Agricultural Extension) monitors and reviews the progress of KVKs through its eleven Agricultural Technology Application of Research Institutes (ICAR-ATARIs) located in different parts of the country. Details of newly created and reorganized ICAR-ATARIs in the country have been given in Table 1.1.

1.1.1 Mandate of ATARIs

Mandate of the ICAR-Agricultural Technology Application Research Institutes is as follows:

- Coordination and monitoring of technology application and Frontline Extension Education Programs.
- Strengthening Agricultural Extension Research and Knowledge Management

1.1.2 Major Functions of ICAR-ATARIs

- To formulate, implement, guide, monitor and evaluate strategies of technology assessment refinement and demonstration programs in the zone.
- To initiate, plan, coordinate and execute the extension research to support and improve technology dissemination system.
- To link KVK efforts to strengthen approaches viz. consortium, convergence, PPP, farmer led extension and market led extension in the zone.

Table 1.1: Details of ICAR-ATARIs in India

Zone	HQ	KVKs (No.)	Names of States/ UTs administered (No.)
I	Ludhiana	72	Himachal Pradesh, J&K, Ladakh, Punjab and Uttarakhand (5)
II	Jodhpur	66	Delhi, Haryana and Rajasthan (3)
III	Kanpur	89	Uttar Pradesh (1)
IV	Patna	68	Bihar and Jharkhand (2)
V	Kolkata	59	Andaman & Nicobar Islands, Odisha and West Bengal (3)
VI	Guwahati	47	Arunachal Pradesh, Assam and Sikkim (3)
VII	Barapani	43	Manipur, Meghalaya, Mizoram, Nagaland and Tripura (5)
VIII	Pune	82	Goa, Gujarat and Maharashtra (3)
IX	Jabalpur	82	Chhattisgarh and Madhya Pradesh (2)
X	Hyderabad	76	Andhra Pradesh, Pondicherry, Tamil Nadu and Telangana (4)
XI	Bengaluru	48	Karnataka, Kerala and Lakshadweep (3)
Total		732	

- To dovetail technology application programs by coordinating and fostering linkages with technology generation and delivery system and other stakeholders of agriculture development in the zone.
- To coordinate with State/Central government Agencies, Credit institutions and any other organization for successful implementation of KVK programs.
- To maintain liaison with ICAR and other relevant Institutes present over the zone and elsewhere as well as all Subject Matter Division at headquarters for the betterment of the overall functional proficiency of the KVK system in the zone.
- To create an agro-climate zone-wise database and impact analysis.

1.2 ICAR-ATARI, Zone-I, Ludhiana

Zonal Coordination Unit (ZCU) was established at Ludhiana in 1979 by the Agricultural Extension Division of the Indian Council of Agricultural Research to monitor and coordinate transfer of technology projects/ activities in Zone-I. The states of Punjab, Haryana, New Delhi, Himachal Pradesh and Jammu & Kashmir came under the jurisdiction of Zone-1 at that time. These transfer of technology

projects/ activities were merged and implemented under the KVK scheme in 1992. The Zonal Coordination Unit, Ludhiana was upgraded as Zonal Project Directorate (ICAR-ZPD) in March, 2009 which was subsequently further upgraded as ICAR-Agricultural Technology Application Research Institute (ICAR-ATARI) in July, 2015. Presently, the ICAR-ATARI for the Zone-I situated at Ludhiana is engaged in planning, monitoring, reviewing, and facilitating ICAR initiated technology dissemination projects mainly KVKs of Punjab, Himachal Pradesh, Jammu & Kashmir, Ladakh and Uttarakhand.

1.2.1 Staff strength

At ICAR-ATARI for Zone-1, the total staff strength of 18 has been sanctioned and as on 31st December 2022 out of these sanctioned posts, 12 have been filled while 6 are lying vacant as given in Annexure-I.

1.3 Krishi Vigyan Kendras (KVKs)

KVKs also known as Farm Science Centres are grass root level institutions that have been designed and nurtured by ICAR to address issues related to technology assessment and dissemination in agriculture. So far, ICAR has established 732 KVKs across the country under varied host organizations viz. State Agricultural University (SAU), Central



Agricultural University (CAU), ICAR Institutes, Non-government Organization (NGO), Public Sector Undertaking, State Government, Central University, Deemed University, and Other Educational Institution.

1.3.1 Establishment of KVKs

The Education Commission, Government of India (1964-66), under the chairmanship of Dr. D.S. Kothari recommended 'application of science to productive processes, including agriculture' and 'vocalization of secondary and agricultural education'. These recommendations were subsequently reviewed by the Planning Commission of India and Inter-Ministerial Committee and were further recommended by a committee set up by ICAR under the Chairmanship of Dr. Mohan Singh Mehta (1973) which ultimately found the ground of reality in 1974 with the establishment of India's first KVK (Farm Science Centre) in Pondicherry under the aegis of the ICAR, New Delhi through its Division of Agricultural Extension. Zone-I got its first KVK in the district of Karnal in 1976 under ICAR-National Dairy Research Institute, Karnal. There are 72 KVKs functioning under ATARI, Ludhiana as on 31st December 2022. The details of KVK network, year of establishment and contact have been given in Annexure II.

1.3.2 Mandate of KVKs

The ICAR Standing Committee on Agricultural Education, headed by Dr. Mohan Singh Mehta, observed that the KVKs are of national importance and are expected to look after the empowerment of the farming community through trainings and other means for improving the socio-economic conditions of the farmers. Initially, the mandate of KVK was to provide need-based skill oriented vocational training to the farmers, farm women, rural youth and field extension functionaries in agriculture and allied areas. KVK working as frontline extension institution in the district has transformed over a period so its mandate.

Now the vision, mission, mandate of KVK and activities to achieve it are given below:

Vision

Science and technology-led growth leading to enhanced productivity, profitability and sustainability of agriculture.

Mission

Farmer-centric growth in agriculture and allied sectors through application of appropriate technologies in specific agro-ecosystem perspective.

Mandate

Technology Assessment and Demonstration for its Application and Capacity Development.

Activities

- On-farm testing to assess the location specificity of agricultural technologies under various farming systems.
- Organize Frontline Demonstrations to establish production potential of technologies on the farmers' fields.
- Capacity development of farmers and extension personnel to update their knowledge and skills on modern agricultural technologies.
- To work as knowledge and resource centre of agricultural technologies for supporting initiatives of public, private and voluntary sector in improving the agricultural economy of the district.
- Provide farm advisories using ICT and other media means on varied subjects of interest of farmers.

1.3.3 Manpower

Human resources play imperative role in realizing the vision and objectives of various institutions including the KVK system. Accordingly, staff strength of 16 has been sanctioned for each KVK, which includes one Programme Coordinator, six Subject Matter Specialists, three Programme Assistants, two administrative staff, two Drivers and two Supporting

Staff. For the 72 KVKs of this zone, the total sanctioned strength is 1152, out of which, 827 are in position as on 31st December 2022. The State wise summary of manpower in KVKs is given in Table 1.2 and KVK-wise detailed information has been provided in Annexure-III.

1.3.4 Infrastructural Facilities

The basic infrastructural facilities are mandatory for any research and development organization including the KVKs to accomplish their mandated activities.

ICAR have been proactive in providing these infrastructural facilities to their KVKs. In the Zone-1, 64 KVKs do possess their Administrative Building, 50 KVKs have staff quarters, 45 KVKs have Farmer's hostel, 72 KVKs of the zone have 355 demonstration units, 47 Soil & water testing labs, 82 mini soil testing kit, 32 rain water harvesting units, 46 E-Connectivity services and 13 minimal processing units are provided to KVKs of different states of zone-I at the end of year 2022. As on 31st December 2022, 64 KVKs had Jeep/ cars with them, while 54 KVKs had

Table 1.2: State wise summary of manpower in KVKs

Manpower in KVK		Punjab	Himachal Pradesh	Jammu & Kashmir	Ladakh	Uttarakhand	Total
Senior Scientist cum Head	S	22	13	20	4	13	72
	F	16	13	11	3	8	51
	V	6	0	9	1	5	21
Subject Matter Specialist	S	132	78	120	24	78	432
	F	116	72	75	12	61	331
	V	16	6	45	12	17	101
Farm Manager	S	22	13	20	4	13	72
	F	18	12	11	2	7	49
	V	4	1	9	2	6	23
Programme Assistant	S	22	13	20	4	13	72
	F	17	8	12	3	8	48
	V	5	5	8	1	5	24
Computer Programmer	S	22	13	20	4	13	72
	F	16	10	7	3	10	46
	V	6	3	13	1	3	26
Administrative Staff	S	44	26	40	8	26	144
	F	37	22	21	2	14	96
	V	7	4	19	6	12	48
Driver	S	44	26	40	8	26	144
	F	37	21	26	4	19	106
	V	7	5	14	4	7	38
Supporting Staff	S	44	26	40	8	26	144
	F	23	25	27	8	17	100
	V	21	1	13	0	9	44
Total	S	352	208	320	64	208	1152
	F	280	183	190	37	144	834
	V	72	25	130	27	64	318

*S-Sanctioned; F-Filled & V-Vacant

**Table 1.3: State wise summary of infrastructure in KVKs**

Infrastructure	Punjab	Himachal Pradesh	Jammu & Kashmir	Ladakh	Uttarakhand	Total
Administrative Building	21	11	15	4	13	64
Staff Quarters	18	14	7	0	11	50
Farmer Hostel	13	12	9	0	11	45
Demonstration Units	164	67	57	8	59	355
Soil & Water Testing Lab	18	9	6	3	11	47
Mini Soil Testing Kit	28	17	18	3	16	82
Rain water Harvesting Structure	13	8	4	1	6	32
E-Connectivity	16	10	8	1	11	46
Minimal Processing Unit	6	2	0	0	5	13
Tractor	39	11	12	4	10	76
Jeep	21	13	15	4	11	64
Two Wheeler	18	10	12	2	12	54
Solar Panel	9	3	2	2	4	20
Tube well	41	4	14	3	6	68
Generator	23	13	19	4	4	63

two-wheelers and 76 possessed tractors. The state wise summary of infrastructure in KVKs is given in Table 1.3 whereas, details of the infrastructural facilities available in the KVKs have been provided in Annexure IV.

1.3.5 Scientific Advisory Committee

As per the guidelines issued by the Council, all KVKs have constituted their Scientific Advisory Committees (SAC) under the chairperson of the Head of the host organization. Each KVK has to conduct SAC meetings once in a year to get technical and scientific guidance in achieving their targets more effectively and efficiently. The details of SAC meetings conducted by KVKs during the year have been compiled and furnished in Annexure-V. Out of the 72 KVKs, 59 KVKs conducted SAC meetings during the year of 2022.

1.3.6 Thrust Areas of KVKs

As per the agro-ecological conditions, cropping pattern and farming systems of districts, the KVKs

decide the thrust areas and work accordingly. For the KVKs of this zone, the major thrust areas have been grouped in two categories; i.e., those of Plain State and the ones working in Hill States/UTs.

1.3.6.1 Plain State (Punjab)

- Soil & water conservation and improvement of soil health
- Crop diversification
- Hybrid seed production
- Integrated Nutrient/Pest/Weed Management in different crops
- Promotion of resource conservation technologies
- Improvement in the productivity of livestock
- Management of repeat breeding in dairy animals
- Clean milk production and processing of dairy products
- Drudgery reduction of farm-women
- Value addition in agricultural products
- Supplementary source of income for farm-women
- Self-employment for rural youth

- Use of information and communication technologies

1.3.6.2 Hill States/UTs (HP, UK, J&K and Ladakh)

- Water conservation and management
- Promotion of exotic and off-season temperate vegetable cultivation
- Promotion of high density apple plantation
- Protected cultivation of low volume and high value crops
- Rejuvenation of old orchards
- Integrated Nutrient/Pest/Weed Management
- Promoting vermicompost and organic farming
- Promoting cultivation of medicinal and aromatic plants
- Improvement in the productivity of livestock

- Drudgery reduction of farm women

1.4 Budget

A total of ₹ 13,122.77 lakh was sanctioned for the year 2022-23 and out of the total budget, ₹ 256.26 lakh sanctioned under special programmes as given in Table 1.4. The entire sanctioned budget was incurred as expenditure during 2022-23. Head wise details of sanctioned budget and expenditure are given Annexure-VI.

1.5 Revolving fund

A total of ₹ 1386.49 lakh revolving fund was generated by KVKs of Zone-I during the year 2022. Further, the KVKs utilised ₹ 841.75 lakh during the 01.01.2022 to 31.12.2022 and ₹ 3159.32 lakh was available as on 31st December 2022. The KVK-wise details of revolving funds are given in Annexure VII.

Table 1.4: Head-wise Budget of Zone-I

(Rupees in lakhs)

S. No.	Particulars	Grants-in Aid Capital	Grants-in Aid Salary	Grants-in Aid General	Total
A	ICAR-ATARI, Ludhiana	4.67	238.45	63.48	306.60
B	KVKs+DEEs	574.33	10781.55	1140.80	12496.68
C	Total	579.00	11020.00	1204.28	12803.28
D	Special Programmes	73.88	0.00	182.38	256.26
E	Additional Grant (1270)	0.00	0.00	20.00	20.00
F	Agri-drone Training (1270)	0.00	0.00	43.23	43.23
Grand Total (C+D+E+F)		652.88	11020.00	1449.89	13122.77



TECHNOLOGY ASSESSMENT AND REFINEMENT

Technologies developed by National Agricultural Research System are assessed by the Krishi Vigyan Kendras for their location specificity involving farmers as partners through the Technology Assessment and Refinement process. On-farm testing (OFT) is the research conducted in participatory mode involving farming community, extension personnel and scientists. OFT is an indispensable tool for developing and validating farming technologies and improves the reliability of crop management decisions. The goal of OFT is to determine how different management options perform compared to one another under particular agro-eco situation and cropping system. The specific objective of the OFT is to develop recommendations for solving major field problems of representative groups of farmers. In this, farmers participate at every step of the research right from identification of problem, their prioritization, laying out and managing experiments, and evaluating results.

Participatory Rural Appraisal (PRA) is conducted to identify the problems faced by the farmers and based on the priority of the problems, OFT is formulated.

During the period under report, KVKs of Zone-I assessed 614 technologies (407 under crops, 102 related to livestock & fisheries, 77 related to other enterprises and 28 related to women empowerment) by conducting 2919 trials. Furthermore, the KVKs refined 22 technologies related to crops through 75 trials, 5 technologies related to livestock & fisheries through 20 trials and 5 technologies related to other enterprises through 21 trials as shown in Table 2.1.

2.1 Technology Assessment

A total of 407 technologies assessed by KVKs under crops by conducting 1874 trials under various thematic areas such as Integrated Nutrient Management (81), Varietal Evaluation (66), Integrated Pest Management (63), Integrated Crop Management (42), Integrated Disease Management (41), Small Scale Income Generation Enterprises (3), Weed Management (28), Resource Conservation Technology (20), Farm Machineries (5), Integrated Farming System (9), Seed/Plant production (13), Post-Harvest Technology/Value addition (13), Storage Technique (3) and Others (20) as shown in the Table 2.2.

Table 2.1: Technology assessment and refinement by the KVKs of Zone-I during 2022

Particulars	Crops		Livestock & fisheries		Other enterprises		Women empowerment		Total	
	No. of OFTs	No. of trials	No. of OFTs	No. of trials	No. of OFTs	No. of trials	No. of OFTs	No. of trials	No. of OFTs	No. of trials
Assessment	407	1874	102	600	77	284	28	161	614	2919
Refinement	22	75	5	20	5	21	0	0	32	116
Total	429	1949	107	620	82	305	28	161	646	3035

Table 2.2: Thematic area wise technologies assessed under crops

Thematic areas	No. of KVKs	No. of crops/ enterprises	No. of OFTs	No. of trials
Integrated Nutrient Management	46	78	81	398
Varietal Evaluation	36	66	66	290
Integrated Pest Management	37	63	63	326
Integrated Crop Management	24	45	42	207
Integrated Disease Management	27	38	41	164
Small Scale Income Generation Enterprises	3	3	3	12
Weed Management	20	26	28	154
Resource Conservation Technology	15	18	20	78
Farm Machineries	4	5	5	27
Integrated Farming System	5	10	9	25
Seed / Plant production	11	14	13	52
Post-Harvest Technology / Value addition	9	14	13	47
Storage Technique	2	3	3	5
Others	16	21	20	89
Total			407	1874


OFT on Sticky Tape by KVK Lahul & Spiti II

The figures presented in Table 2.3 indicate that the maximum number of crop related technologies (116) were assessed by KVKs of Himachal Pradesh through 458 trials followed by Punjab (109) and Jammu & Kashmir (89). KVKs of Uttarakhand assessed 78 technologies by conducting 582 trials whereas KVKs


OFT on Buckeye fruit rot of tomato, KVK Sirmaur

of Ladakh assessed 15 technologies by conducting 69 trials.

In the case of livestock & fisheries, KVKs assessed 102 technologies under seven thematic areas by conducting 600 trials. There were 29 technologies assessed under Disease Management followed by

Table 2.3: Thematic area wise technologies assessed under crops

State/UT	Number of crops	No. of Technologies	No. of trials
Punjab	106	109	360
Himachal Pradesh	117	116	458
Jammu & Kashmir	87	89	405
Ladakh	15	15	69
Uttarakhand	79	78	582
Total		407	1874

Nutrition Management (29). Technologies assessed in other thematic areas are Evaluation of Breeds (10), Production and Management (9), Feed and fodder (21) and others (4) as shown in Table 2.4.

State wise details of technologies assessed under livestock & fisheries are given in Table 2.5. KVKs of Punjab assessed 33 technologies through 127 trials and KVKs of Jammu & Kashmir assessed 29

Table 2.4: Thematic area wise technologies assessed under livestock and fisheries

Thematic areas	No. of KVKs	No. of Animals/ enterprises	No. of OFTs	No. of trials
Disease Management	22	25	29	176
Evaluation of Breeds	8	11	10	84
Feed and Fodder Management	14	19	21	88
Nutrition Management	20	25	29	160
Production and Management	7	8	9	45
Others	3	3	4	47
Total			102	600

*OFT on Capsicum, KVK Chamoli**OFT on Potato, KVK Kapurthala***Table 2.5: State wise technologies assessed under livestock & fisheries**

State/UT	Number of crops/ enterprises	No. of Technologies	No. of trials
Punjab	35	33	127
Himachal Pradesh	15	14	76
Jammu & Kashmir	19	29	109
Uttarakhand	22	26	288
Total		102	600

technologies through 109 trials while 26 technologies were assessed by KVKs of Uttarakhand with 288 trials and Himachal Pradesh assessed 14 technologies by conducting 76 trials.

As depicted in Table 2.6, a total of 77 technologies assessed related to various enterprises by conducting 284 trials by KVKs of Punjab, Himachal Pradesh, Uttarakhand and Jammu and Kashmir. State wise

details of technologies assessed by various enterprises by KVK are given in Table 2.7.

A total of 28 technologies assessed related to various enterprises for women empowerment by conducting 161 trials by KVKs (Table 2.8). State wise details of technologies assessed various enterprises for women empowerment by KVK is given in Table 2.9.

Table 2.6: Details of technologies assessed under various enterprises by KVK

Thematic areas	No. of KVKs	No. of crops/ enterprises	No. of OFTs	No. of trials
Drudgery reduction	3	4	4	26
Entrepreneurship Development	4	5	4	14
Health and nutrition	7	7	12	74
Processing and value addition	3	5	6	8
Small-scale income generation	3	3	3	9
Storage techniques	1	1	1	3
Household food security	3	3	3	9
Organic farming	5	9	11	30
Agroforestry management	2	2	2	9
Mechanization	2	3	4	13
Resource conservation technology	3	4	4	12
Value Addition	8	13	12	53
Beekeeping	1	1	1	3
Fisheries - Production & Management	1	2	6	6
Mushroom production	2	2	2	11
Others	2	2	2	4
Total			77	284

Table 2.7: State wise technologies assessed under various enterprises by KVK

State/UT	Number of crops/ enterprises	No. of Technologies	No. of trials
Punjab	27	34	143
Himachal Pradesh	21	18	49
Jammu & Kashmir	11	16	37
Uttarakhand	7	9	55
Total		77	284

Table 2.8: Details of technologies assessed under various enterprises for women empowerment

Thematic areas	No. of KVKs	No. of crops/ enterprises	No. of OFTs	No. of trials
Drudgery Reduction	4	4	4	13
Entrepreneurship Development	5	5	5	17
Health and Nutrition	9	11	11	89
Value Addition	7	8	8	42
Total			28	161

**Table 2.9: State wise technologies assessed under various enterprises for women empowerment**

State/UT	Number of crops/ enterprises	No. of Technologies	No. of trials
Punjab	13	13	44
Himachal Pradesh	7	7	32
Jammu & Kashmir	1	1	5
Uttarakhand	7	7	80
Total		28	161

2.2 Technology Refinement

Table 2.10 reveals that a total of 22 technologies refined through 75 trials under crops by KVKs on various thematic areas including Integrated Nutrient Management (3), Integrated Pest Management (4), Integrated Crop Management (1), Integrated Disease Management (6), Weed Management (2), Resource

Conservation Technology (3), Farm Machineries (2) and Seed/ Plant production (1). State wise details of technologies refined are given in Table 2.11.

Table 2.12 reveals that a total of 5 technologies refined through 20 trials under livestock and fisheries by KVKs on three thematic areas including disease management (2), nutrition management (2) and

Table 2.10: Thematic area wise technologies refined under crops

Thematic areas	No. of KVKs	No. of crops/ enterprises	No. of OFTs	No. of trials
Integrated Nutrient Management	3	3	3	10
Integrated Pest Management	3	4	4	14
Integrated Crop Management	1	1	1	3
Integrated Disease Management	5	6	6	23
Weed Management	2	2	2	8
Resource Conservation Technology	3	3	3	10
Farm Machineries	1	2	2	6
Seed / Plant production	1	1	1	1
Total			22	75

Table 2.11: State wise technologies refined under crops

State/UT	No. of crops/ enterprises	No. of Technologies	No. of trials
Punjab	12	12	36
Himachal Pradesh	1	1	3
Jammu & Kashmir	6	6	25
Ladakh	1	1	1
Uttarakhand	2	2	10
Total		22	75

Table 2.12: Thematic area wise technologies refined under livestock and fisheries

Thematic areas	No. of KVKs	No. of animals	No. of OFTs	No. of trials
Disease Management	2	2	2	7
Nutrition Management	1	2	2	10
Production and Management	1	1	1	3
Total			5	20

production management (1). State wise details of technologies refined are given in Table 2.13.

A total of 5 technologies refined related to various enterprises by conducting 21 trials by KVKs (Table 2.14). State wise details of technologies refined are given in Table 2.15.

vitamins and minerals. In Punjab farmers grow onion on a large scale and often use chemical fertilizers injudiciously to harness its maximum yield potential to make it commercially viable. But excessive use of these chemical fertilizers had adversely impacted soil health, environment and other natural resources

Table 2.13: State wise technologies refined under livestock and fisheries

State/UT	No. of animals	No. of Technologies	No. of trials
Punjab	2	2	6
Himachal Pradesh	2	2	10
Ladakh	1	1	4
Total		5	20

Table 2.14: Thematic area wise technologies refined under various enterprises by KVK

Thematic areas	No. of KVKs	No. of crops/ enterprises	No. of OFTs	No. of trials
Household food security	1	1	1	3
Organic farming	1	1	1	5
Resource conservation technology	1	1	1	3
Mushroom production	1	1	1	5
Others	1	1	1	5
Total			5	21

Table 2.15: Thematic area wise technologies refined under various enterprises by KVK

State/UT	No. of crops/ enterprises	No. of Technologies	No. of trials
Punjab	1	1	3
Jammu & Kashmir	2	2	10
Ladakh	1	1	3
Uttarakhand	1	1	5
Total		5	21

2.3 Location specific technologies

Punjab

Evaluating the effect of Integrated Nutrient Management (INM) in onion for better crop productivity and improved soil health

Onion is a major *Rabi* vegetable crop grown for its edible bulbs which are a source of vital nutrients,

including human health. Therefore, it is essential to reduce the use of injudicious chemical fertilizers. To achieve the objective of sustainable vegetable production along with environmental conservation, KVK Mohali conducted an OFT during 2021-22 at five locations in the district. The purpose was to evaluate the effect of Integrated Nutrient Management (INM) in onions for better crop



productivity and improved soil health. The trials were conducted in randomized block design (RBD) with three treatments and three replications. The treatments comprised T1: Non-judicious Use (Farmers Practice), T2: Application of NPK: 40:20:20 Kg/acre along with 20 t FYM. T3: Combined application of 44:16:24:8 Kg/acre NPKS along with organic manures equivalent to 6 tonne FYM and Azospirillum and PSB @ 2 Kg each. The results revealed that T3 provided the highest yield (160 q/acre) with maximum BC ratio of 4.34 followed by T2 (153.33 q/acre) with BC ratio of 3.93 and T1 with yield of 143.67 q/acre and BC ratio of 3.55. It is concluded that use of INM gave higher yields and better returns as compared to control.

Assessment of wheat crop establishment i.e., broadcasting of wheat seed @ 45 kg/acre in standing stubbles of paddy crop *fb* mulcher *fb* irrigation of field

Adoption of high yielding varieties of rice and wheat crops not only made the country self-sufficient in food grain availability but also mothered some environment challenging issues like depletion of groundwater, burning of crop residue, etc. Cultivation of paddy and wheat crops result in production of large quantities of crop residues as by-product. Since the window period between harvesting of preceding paddy crop and sowing of succeeding wheat crop is narrow, farmers usually opt for burning of rice residue to save time and capital. But burning crop residue causes environmental pollution along with loss of huge quantities of plant nutrients. Therefore, to maintain the sustainability of agriculture production, different approaches in a holistic way need to be implemented for addressing various issues like residue burning. Development of appropriate *in-situ* crop residue management technologies may prove propitious to curb the menace of residue burning. Keeping this in view, an OFT was planned and conducted by KVK, Moga, Punjab during *Rabi* 2021-

22 with three treatments namely, T1: Sowing of wheat crop with Happy seeder technology (Recommendation); T2: Conventional sowing of wheat crop (Farmers' practice) and T3: Broadcasting of wheat seed in standing stubbles *fb* mulcher *fb* irrigation of field (Technology assessed).

Results of the OFT reveal that cultivation of wheat crop with broadcasting method and happy seeder technology realized higher grain yield as compared to conventional sowing (18.29 q/acre). Enhancement in grain yield can be attributed to increased number of grains per ear and 1000-grain weight in both T1 & T3 relative to conventional methods. Although highest ear length (10.35 cm) and number of ears/m² (471.61) are recorded in conventional sowing but maintenance of better soil moisture regime during heat stress period in residue retention techniques helped in gaining edge in terms of number of grains/ear and 1000-grain weight in both T1 & T3 treatments. Furthermore, out of both T1 & T3, cultivation of wheat crop by broadcasting method recorded slightly higher wheat yield (18.52 q/acre) than happy seeder (18.37 q/acre) technology mainly due to high 1000-grain weight.

Assessment of different paddy residue management technologies vis-a-vis conventional sowing method of wheat the production and weed control efficiency

Paddy residue management is the main challenge in the rabi season. Various machines are now available for the farmers. Super seeder is becoming popular among the farmers for sowing wheat crop. Super seeder helps plough the standing paddy residue and sow seeds for the next wheat crop, in a single operation. While the happy seeder cuts and lifts rice straw, sows wheat into the soil, and deposits the straw over the sown area as mulch. Clear field in case of super seeder attract the farmers, but in overall performance, happy seeder is better than the super seeder. Thus, in order to assess the effect of these

sowing methods viz. Happy seeder, Super Seeder, Conventional method after complete burning and Super seeder with partial burning, on the productivity of wheat, KVK, Amritsar conducted on farm trials on four locations of the Amritsar district during the year 2019-20 & 2020-21.

Results showed that highest yield was recorded in happy seeder sowing (52.7 and 53.8 q/ha) followed by Super seeder (47.1 and 47.3 q/ha), Super seeder with partial burning (46.02 and 46.3 q/ha) and conventional sowing (46.5 and 46.8 q/ha). Highest lodging observed was in super seeder (40-45 per cent) and conventional sowing (35-45 per cent) in both years. These paddy residue management methods also help to reduce the herbicide resistance in *Phalaris minor*. Lowest weed population was observed in happy seeders followed by super seeders with full straw load. During the month of March 2022, sudden rise in temperature resulted in terminal heat stress in wheat, causing poor yield. But the minimum effect of terminal heat stress was also observed in happy seeder sown wheat as the paddy straw mulch lowered the soil temperature. Highest B: C ratio and weed control efficiency was also observed in happy seeder sown wheat

Assessment of quality parameters surface area and hardness of potato sown in paddy residue managed fields

Kapurthala district is a prime Potato growing district. The crop is sown in 10,000 ha area under the Paddy-Potato-Muskmelon/Maize cropping system. The fields must be very well prepared for sowing crops for better quality and higher yield. As Potato is sown after paddy crop so management of straw is one of the biggest challenges for sowing of these crops as it is time consuming and costly operation. But improvement in tuber quality with increased yield surpasses the additional cost involved in residue management. The OFT was conducted to determine the quality parameters of potato sown with CRM

techniques. Three treatments opted were sowing crops in I) straw burnt fields (control) II) after incorporation of straw in the fields (Mulcher+ RVP+ Rotavator+ leveller) III) after partial burning (burning of loose straw + Disc plough+ Rotavator+leveller). Surface areas, Hardness were determined to assess the quality of Potato tubers. It was observed that the average Surface area of a potato is 4.28 sq cm for treatment 1. There was an increase of 9.2% surface area for treatment II and 7.6% increase for treatment III. Similarly, the hardness parameter for the Control sample is 248.81N (Texture analyser) with 7.2% increase for II treatment and 5.9% increase for III treatment. Increase in yield 3.5% for II treatment and 2.1% for III treatment w.r.t control was observed. Results indicated that straw incorporation enhanced the tuber yield and improved quality.

Assessment of Super seeder for *in-situ* paddy straw management

In order to assess the comparative performance of the new machine super seeder, an OFT was conducted by KVK Sangrur during 2022 at three locations. The machines used other than super seeders were happy seeder, mould board (MB) plough and roto-seeder. The parameters evaluated were field capacity of the machine, crop yield and benefit-cost ratio. The maximum field capacity of 0.33 ha/h was recorded for happy seeder followed by roto seeder (0.29 ha/h). The field capacity for the super seeder was 0.22 ha/h due to its less forward speed. The maximum yield of 45.0 q/ha was recorded for mould board plough closely followed by happy seeder sown wheat (44.5 q/ha). The yield for super seeder sown wheat was 42.5 q/ha. This low yield was attributed to no mulching effect in super seeder sown wheat. The benefit-cost ratio was worked out to be highest for happy seeder (2.0) sown wheat as the cost of production was minimum when wheat was sown with this machine as compared with other machines. The benefit-cost was least for wheat sown after the use of MB Plough (1.50). In case of



super seeder (1.60) it was lagging far behind happy seeder owing to higher operational cost, more fuel consumption and low field capacity. In nutshell, the happy seeder machine performed better in terms of field capacity, productivity as well as economic returns than all other machines used for *in-situ* paddy residue management in district Sangrur.

Assessment of different sowing methods of direct sowing of paddy

The manual transplanting of paddy nursery after puddling is the common method of rice cultivation, which is labour intensive. The puddling operation consumes more irrigation water. Paddy, being water guzzling crop is leading to decline in water table. In addition, higher labour demand during transplanting leads to delay in sowing and increasing cost of cultivation. These factors warrant the attention of farmers to shift towards direct seeding, which requires less irrigation water, less labour and ensures the timely sowing of paddy. The direct seeded rice gives optimum yield by adopting the recommended practices for direct sowing of paddy. There are different methods of direct seeding of paddy which is being adopted by the farmers of Hoshiarpur district. Thus, in order to assess the different methods of direct sowing of paddy, KVK Hoshiarpur conducted on farm trial on different sowing methods of direct sowing of paddy i.e. T1: Broadcasting of paddy seed (Farmers practice); T2: Sowing of paddy with inclined plate planter along with spraying system (Recommended practice) and T3: Sowing with zero till drill with mixing of paddy seed and DAP (Practice under test) at three locations of the district. In T3, farmers usually farmers mixed the paddy seed with fertilizer to maintain seed rate during sowing. Paddy crop stand with all the three treatments were satisfactory. Higher seed rate @ 30 kg/ ha in well tilled soil was used in T1 while seed rate @ 20-25 kg/ha was used in T2 and T3. The urea fertilizer @ 325 kg urea/ha in three equal splits at 4th, 6th and 9th week

after sowing was applied while weedicides: Stomp 30 EC (Pendimethanlin @ 2.5 lt/ha) within one day after sowing followed by Nominee Gold 10 SC (Bispyribac)@ 250 ml/ha. The pre emergence weedicide was sprayed during sowing by the spraying assembly attached to the inclined plate planter (T2). The yield of paddy in treatment T2 was higher (64.5 q/ha) followed by treatment T3 (64.3 q/ha) and treatment T1 (64.0 q/ha). Farmers were satisfied with the technology of direct sowing of paddy but the plants should have emerged well before the onset of monsoons.

Assessment of SAR inducers like salicylic acid (SA) in managing sheath blight of rice

Sheath blight caused by *Rhizoctonia solani* Kuhn has become a major constraint to rice production during the last two decades. The need for sustainable crop production has increased to minimize the damage to environment and health as a consequence of the use of pesticides, it is important to develop safe disease control methods, i.e. Using agents that elicit natural inducible plant defences at low concentrations, like salicylic acid (SA), a plant phenol, it is especially famous for its ability to induce systemic acquired resistance (SAR) in plants. Therefore, KVK Amritsar conducted on-farm trial on Prophylactic spraying 250 ppm salicylic acid followed by one spray of Tilt 25 EC in comparison to two sprays with Tilt 25 EC at 15 days interval to manage sheath blight of rice. Although, two Sprays with Tilt @ 200 ml/acre gave 100% control of disease as compared to 1.6 % disease in SA treated plots but yield of 3.28 quintals per plot size of 500 m² was recorded in both treatments. So, Prophylactic SA treatment can be combined in spray schedule with half dose of systemic fungicide for control of sheath blight, thus reducing fungicide load, moreover 99% saving on cost of spray of tilt which was Rs 1200/- per acre as compared to only Rs 15/acre in case of SA.

Evaluation of thrips management modules in onion

Thrips tabaci Lindeman is a major insect-pest of onion (*Allium cepa* L.) worldwide. Their feeding eventually leads to reduction in bulb size and yield. Although selected cultural control tactics can limit populations of *T. tabaci*, synthetic insecticides continue to be an important component in an onion thrips management program. It has been found that many growers being unaware of the recommended techniques use un-recommended insecticides. They often spray a mixture of un-recommended insecticides/ fertilizers/ their mixture to reduce labour cost thus saving money and time. This may lead to ill effects of insecticides like development of resistance in the pest and toxic residues in the environment. Keeping in view, KVK Bathinda conducted an OFT at 5 locations consecutively for three years (2020-2022) including use of PAU Homemade Neem Extract, blue sticky traps and PAU recommended insecticides against use of un-recommended pesticides (Chlorpyrifos, Thiamethoxam and Cypermethrin) which are generally used by framers. Data on per cent reduction in mean population of thrips over untreated check and yield in different treatments revealed that university recommended practice (foliar applications of fipronil and dimethoate) (T2) resulted in maximum reduction (76.3%) in mean thrips population. Intervention (T3) comprised use of PAU Homemade Neem Extract, installation of blue sticky traps @ 40/ acre and need based use of the recommended pesticides remained on a par with T2 with 75.9 per cent reduction in mean population of thrips over untreated check. Farmers' practice of spraying un-recommended insecticides (T1) without considering thresholds resulted in minimum reduction in thrips population. A similar trend in yield was observed amongst the treatments, being maximum in T2 and T3. Whereas, minimum yield was observed in the treatment comprising non-recommended spray by farmers. As per as the number of spray applications

are concerned, the maximum sprays (4) were done in T1, comprising farmer's practice followed by T3 and T2.

Assessment of different treatment methods to control mastitis in dairy animals

Inflammation of udder is known as Mastitis which may be due to of physical trauma or in response of infectious microbes. It is most common problem which is also related with poor hygiene conditions maintained at the farm. Mastitis can be clinical and subclinical depending upon symptoms shown by an animal. To control mastitis efficiently in dairy animals, it is utmost important to follow good hygienic practices along with proper dry cow therapy and herbal treatment options after parturition up to 10 days. Thus, to improve milk yield and milk quality, different treatment methods were assessed to reduce incidence of mastitis in dairy animals. KVK Moga conducted on farm trials on 15 about to parturate animals. For this OFT, each group contains 5 animals in T1: (Farmer's practice), T2: IM infusion of antibiotic at the time of drying off (dry cow therapy (Recommended practice) and T3: Application of herbal paste on udder 5 days before and 5 days after calving (*Aloe vera* 200g, turmeric 50g and 15g lime) (Practice under test) group. Results of trials revealed that Intra mammary infusion of antibiotics and application of herbal paste both controlled mastitis as compare to no dry cow therapy where after parturition cases of mastitis were noted. B: C ratio of herbal treatment and intramammary treatment was 1.23 and 1.10, respectively.

Assessment of feeding electrolytes on production and reproductive performance in crossbred cows during summer (heat stress)

Heat stress results from the animal's inability to dissipate sufficient heat to maintain homeothermy. Environmental factors, including ambient temperature, radiant energy, relative humidity, and



metabolic heat associated with maintenance and productive processes, contribute to heat stress. Mineral losses via sweating (primarily K) and changes in blood acid-base chemistry resulting from hyperventilation reduce blood bicarbonate and blood buffering capacity and increase urinary excretion of electrolytes.

KVK Hoshiarpur conducted OFTs to assess the performance of three experimental group's i.e. T1: Dry fodder + Green fodder + Concentrate (Farmers' practice), T2: Feeding of TMR (Recommended) and T3: T2 + Electrolytes* (Practice to be tested) *KCO₃ and KCl (1:1) @25gm +25gm per day at four different locations in the district.

Results of the trials revealed that T3 (Practice to be tested) recorded highest yield of milk production: 15 lt./animal/day (avg.), Fat 4.2 % with BC ratio of 1.72, followed by T2 (Recommended) and T1 (farmers' practice) recording milk yield of 14.5 lt./animal/day (avg.), Fat 4.2% and 12.5 lt./animal/day (avg.), Fat 3.9 %, respectively. T3 realized an additional milk yield of 2.5 lt./animal/day (avg.) and Fat 0.3 % which was 20 per cent higher than farmers' practice with additional monetary benefits of about Rs. 3,475 over prevalent practice.

Himachal Pradesh

Assessment of effectiveness of foliar application of nano urea in maize on yield and economics of maize in Mandi district of Himachal Pradesh

Three treatments comprising farmers' practice (FYM @ 5t/ha + IFFCO (12:32:16) @ 80 kg/ha), recommended practice (FYM @10t/ha+NPK (60:40:40) at the time of sowing and 60 kg N in two splits at 30 & 60 DAS) and assessed technology (FYM @ 10t/ha+NPK (60:40:40) at the time of sowing and two sprays of nano urea at 30 and 60 DAS) were evaluated. The results revealed that application of nano urea (assessed technology) resulted in 27 per cent higher yield of maize and 33 per cent higher net

income as compared to farmers' practice. Conventional urea (recommended practice) failed to have the desired impact on crops as its efficiency is less due to leaching. Since nano nitrogen particles are dispersed in liquid form in Nano Urea, it starts acting almost immediately when sprayed on crop leaves, increasing the fertilizer efficiency, production and income.

Evaluation of post-emergence herbicide for weed management in maize

Commelina benghalensis, *Ageratum conyzoides*, *Cyperus rotundus*, *Brachiaria sp.* etc. are major weeds of maize in Una district. If kept unchecked, the yield gets reduced drastically. Presently, only pre-emergence application of atrazine 50%WP (1000g a.i./ha) is recommended for weed management in maize. However, it has been observed that due to absence of sufficient soil moisture in the field immediately after sowing, the pre-emergence application of atrazine does not give effective weed control. Consequently, weeds outgrow maize during early stages. Therefore, need was felt to evaluate some post emergence herbicides for weed management in this major *Kharif* crop of the district. Hence, two new herbicides viz. topramezone 33.6SC (30g a.i./ha) and tembotrione 34.4SC (125g a.i./ha) along with atrazine 50%WP (1000g a.i./ha) were evaluated as post emergence herbicides. T1- Atrazine 50%WP (1000g a.i./ha) as pre-emergence (Farmers' practice). T2- Atrazine 50%WP (1000g a.i./ha) as post-emergence (20DAS), T3- Topramezone 33.6SC (30g a.i./ha) as post emergence (20DAS) and T4- Tembotrione 34.4SC (125g a.i./ha) as post emergence (20DAS).

The weed count was recorded through quadrant method at 40 days after sowing (DAS) in all the four treatments. The results revealed that post emergence application of all the herbicides was more effective than the pre-emergence application of atrazine 50%WP (1000g a.i./ha) in checking weed infestation. However, out of three post emergence herbicides

evaluated, the lowest weed count was recorded in topramezone 33.6SC (30g a.i./ha) and tembotrione 34.4SC (125 g a.i./ha) (6 weeds/m² each) as compared to 14 weeds per square meter in plots that received atrazine 50%WP (1000g a.i./ha) as post-emergence application. The corresponding maize yields were 42, 39, 33 q/ha, respectively. On the other hand, the plots that received pre-emergence application of atrazine 50%WP (1000g a.i./ha) recorded lowest yield (27 q/ha) and highest weed count (26/m²).

Assessment of high yielding and disease resistant cultivars of garden pea

Garden pea has emerged as an important cash crop in Himachal Pradesh in general and in mid hill region of Mandi district in particular. There is a growing demand for garden pea on large scale due to emergence of urban middle class market. However, lack of knowledge quality disease resistant seed and its non-adoption under hilly terrains is the major hindrance in achieving the optimum yields and returns. Thus, in order to assess the suitable high yielding and disease resistant cultivars, KVK Mandi conducted on farm trials on high yielding pea genotypes viz. Him Palam Matar-1, SP-6 and PB 89 at three locations in mid hill condition (September to March), with the objective to enhance farmers productivity and profitability in general and food and nutritional security in particular. Results of the trial revealed that SP-6 recorded highest pod yield (158.39 q/ha) recording 16.73 per cent yield advantage over check variety, followed by Him Palam Matar-1 (149.57 q/ha) as compared to farmers' variety PB 89 (135.72 q/ha). The improved technology gave higher gross return (Rs. 149570/ ha) as well as net return (Rs.72, 000 /ha) with higher benefit cost ratio (2.32).

Evaluation of integrated management of sucking pests in capsicum under protected conditions

Protected cultivation has fast emerged as a boon for marginal and small hilly farmers owing to higher per

unit productivity and profitability. However, intensive vegetable cultivation continuously has invited many biotic threats hindering the successful cultivation of crops under protected conditions. Among these biotic stresses, sucking pests especially whiteflies, thrips, aphids and mites are causing considerable damage to capsicum crop if not managed initially. Being a remunerative crop grown under protected conditions in the district, the farmers use the insecticides injudiciously owing to poor knowledge about symptoms of sucking pests/ mite and proper management. Hence KVK Mandi conducted on farm trials for integrated management of sucking pests in capsicum under protected conditions. Results of the trial revealed that neem cake @ 30g/m² at the time of soil preparation+ installation of yellow sticky traps @ 1 trap/10m²+ drenching with imidacloprid (100 ml of 0.5 ml/ L) + Fipronil 2ml and Bifenthrin 1ml/ (need based) and neem cake @ 30g/m² at the time of soil preparation+ installation of yellow sticky traps @ 1 trap/10m²+ drenching with imida (100 ml of 0.5 ml/ L) + Spiromecifen 1ml/L (need based) not only reduced incidence of sucking pests under protected conditions but also increased yield and profitability. The natural farming formulation Darekastra @ 10 ml/ liter at 15 days interval in addition to neem cake @ 30g/m² at the time of soil preparation+ installation of yellow sticky traps @ 1 trap/10m², though it was least effective among the treatments evaluated but resulted in less incidence of the pests and better profitability than the farmer's practice.

Evaluation of different energy and protein dense feed supplements for increasing the productivity of crossbred cow

Livestock is an essential component of the agriculture sector in Himachal Pradesh. According to the 20th livestock census, there are 10, 68,935 crossbred cattle in Himachal Pradesh. Generally, ruminant animals usually survive on crop residues and natural herbage, which do not provide adequate nutrients for



improving productivity. Low quality crop residues are deficient in fermentable nitrogen, carbohydrates and minerals. Moreover, during lean season scarcity of green fodder is observed. So, during that period the role of different energy and protein dense feed supplements comes into action. The strategic use of feed supplements provides a constant source of fermentable nitrogen throughout the day to promote growth of rumen microbes. Thus, to evaluate the effect of energy and protein dense feed supplements KVK Mandi conducted an on-farm trial to assess the effect of Urea Molasses Brick (UMB) @ licks 10 minutes per day i.e., about 100 g daily and Protein Energy Mineral (PEM) bolus @ 50 g, twice a day in different blocks of district Mandi. The result of the trial revealed that highest milk yield of 126 litre/month was recorded in PEM bolus administration with BC ratio of 1.30, followed by UMB administration having milk yield of 122 litre/month with BC ratio of 1.26 and the lowest yield of 104 litre/month was recorded for Darad administration only (Farmers Practice), with BC ratio of 1.14. An increase of 21.15 per cent was recorded in milk yield due to PEM administration over the farmer's practice. The result of the assessment revealed that Urea Molasses Brick (UMB) lick and Protein Energy Mineral (PEM) bolus supplementation increased milk production and the animal's overall body condition based on visual scores. However, UMB supplementation was reported to be more challenging than PEM bolus in terms of feeding/licking ease. Farmers reported that these supplements had a positive effect on milk production and body condition, but it was also observed that PEM bolus got easily contaminated by mould or fungus, which diminishes its palatability.

Effect of pruning intensity and fertilizers on growth, yield and quality of apple

Apple is one of the most important temperate fruits of high reaches of Mandi District of North Western

Himalayas. Production of fruit trees is influenced by Photosynthesis, which may be altered by management practices such as pruning and fertilizer application. Farmers in Mandi District follow the practice more head back cuts and low thinning out practice leading to imbalance between the reproductive and vegetative growth of apple causing low production in the district. One of the main purposes of pruning is to facilitate light penetration into the bearing areas of the trees but no attempt has been made to study the interactive effect of pruning intensities and fertilizer application on physiological responses in apple crop. Therefore, the present on farm trial was conducted by KVK Mandi to assess the effect of pruning intensity and fertilizers on growth, yield and quality of apple. Four treatments comprising of 20 percent head back + 250 g N & 300 gm K per tree, 25 percent head back + 500 g N & 600 gm K per tree, 33 percent head back + 750 g N & 900 gm K per tree and farmers' practice of more head back and mixed fertilizers were tested in four farmers field in Karsog block of the district. Results of the trial revealed that treatment comprising of 25 percent head back + 500 g N & 600 gm K per tree performed better in terms of shoot growth and yield of apples recording 23.48 and 11.92 percent enhancement as compared to farmer's practice, respectively. The quality of apples in the said treatment was also better in terms of fruit weight, fruit size and TSS.

Assessment of new recommended fungicide for Buckeye fruit rot of tomato in Sirmour district

Tomato is one of the major off season cash crops in lower and mid hills of Himachal Pradesh where Solan, Sirmour and Kullu districts contributes 86% of state's overall production out of which Sirmour district contributes 30% of the total production. However, the crop is affected by number of biotic and abiotic factors. Among biotic factors pathogenic disease like Buckeye rot of tomato are major constraints in its successful cultivation as this disease

results in greater amount of yield losses (40%) and severely affect the crop at all growth stages. Farmers were not using proper spray schedule to manage this disease and using single chemical with repeated sprays without recommended doses. Keeping this in view, KVK Sirmour has designed an OFT to assess the efficacy of fungicides to control the Buckeye fruit rot of tomato. This OFT consists of three treatments namely, T1: Farmer practice (Staking to plant and irregular spray of fungicides); F2: Staking to plants, cutting of lower leaves and 3 spray of Copper oxychloride, Mancozeb and Ridomil and T3: Staking to plants, cutting of lower leaves, 1st spray of Mancozeb (@0.25%) and second spray of Azoxystrobin (@0.1%) or Ridomil gold (@0.25%). The OFT was conducted at three locations with six on farm trials at farmers field in an area of 0.18 ha. The results of the OFT revealed that lowest incidence of disease (10%) and highest B:C ratio (4.31) was observed in T3 as compared to the other two treatments. T3 also recorded 50% higher yield as compared to farmers' practice.

Jammu & Kashmir

Assessment of plastic mulching in chillies to overcome low productivity and high weed infestation

Chilli pepper (*Capsicum annuum L.*) is an important vegetable and condiment crop of Jammu and Kashmir. The fruits are good source of vitamin A (292 IU) and ascorbic acid (111mg/100g of edible matter). Despite many efforts, many times farmers are not able to get proper profits due to excess weeds, high cost of irrigation, difficulty in seed germination, decrease in fruit quality, etc. Applying mulching is an easy way to avoid all these problems. Mulching is an efficient method to conserve soil moisture, inhibit weed growth, maintain soil moisture, repel insect and increase yield. Therefore, the present study was

carried to ascertain the effect of mulch on soil moisture, plant growth and yield of chilli under temperate conditions of Kashmir. Thus, in order to assess the effect of mulching, KVK Budgam conducted on farm trial at three different locations in the district Budgam. Results of the trial reveals that mulching with black polythene has significantly increased fresh yield (312.94 q/ha), decreased weed growth and increase B:C ratio (2.13) as compared to farmers practice which records yield of 176.82 q/ha, higher weed growth and BC ratio of 1.63. The farmers were highly satisfied with the results.

Assessment of different herbicides mixture in Direct Seeded Rice (variety: Basmati 370)

Direct Seeded Rice (DSR) cultivation (Jammu Basmati) has earned very good results in the recent years; this method has reduced the cost of cultivation and time of the farmer in the field, but heavy infestation of weeds in DSR results into reduction in yield of paddy. To address the problem of weed infestation, KVK Jammu conducted an OFT comprising of three treatments; T 1: Pendimethalin 1000 g/ha (PRE) fb Bispyribac-sodium 25g/ha+ Ethoxysulfuron- ethyl 18 g/ha at 25 DAS, T 2: Cyhalofop-butyl + Penoxsulam 135 g/ha at 20 DAS, T3: Bispyribac-sodium 25g/ha (Farmer's practice). Perusal of data showed that treatment of Pendimethalin 1000 g/ha (PRE) fb Bispyribac-sodium 25g/ha+ ethoxysulfuron- ethyl 18 g/ha at 25 DAS was effective in controlling weed density to the tune of 6.67 (no./m²) thereby providing highest yield of 27 qt/ha followed by Cyhalofop-butyl + penoxsulam 135 g/ha at 20 DAS showing weed density (no./m²) with a yield of 18.10 qt/ha, whereas, Bispyribac-sodium 25g/ha (Farmer's practice) was least effective in controlling the weed density (19.33) with a lowest yield of 17.20 qt/ha. Treatment (T 1) also gave higher net return of Rs. 72988/- which is Rs. 33621/- more than prevalent farmer's practice.



Assessment of different Post bloom chemical thinners on the regularity of bearing and quality of Apple under High Density Plantation (HDP)

The introduction of high-density apple orchards is considered as the single most important change in apple production practice as these orchards are capable of not only producing higher early yields but also sustained quality production. Currently, around 4-5 per cent apple area is under High Density plantation and area under high density is increasing rapidly as the growers showing willingness to adopt the change. In High Density Apple Plantation crop load management is very important during the initial years to prevent biennial bearing and to maintain a balance between vegetative and reproductive growth. For obtaining optimum yield of high quality and super grade fruit and breaking the rhythm of biennial bearing, thinning is done either by hand or by using chemicals. Thus, in order to assess the effect of different post bloom chemical thinners on regularity of bearing and quality in apple, KVK-Anantnag conducted On Farm Trials (OFT) at three locations using NAA @ 15 ppm (T1- RP) and BA @ 150 ppm (T2-RP) against the Farmer' practice of no thinning (T0-FP). Results of the trial indicated that both the recommended practices performed better in thinning of fruits enhanced both quality and economic returns and also helped in overcoming ill effects of biennial bearing in apple under HDP. Furthermore, number of percent A grade apples were obtained more in thinned treatments (72.25 % & 73.00%) in T1 & T2 respectively as compared to Farmer's practice (43.50%) which resulted in significantly higher economic returns to the farmers. Similarly, highest return bloom (no. of flower cluster per tree) was obtained in T2 & T1 (123 & 119) respectively as compared to Farmer's practice of no thinning (46).

Assessment of silage feeding on performance of milch animals (crossbred cows)

KVK Rajouri conducted an OFT on assessment of

Silage feeding on performance of milch animals. The study was undertaken on Holstein Friesian (HF) crossbred cows in four different locations to study the effect of feeding maize silage on milk yield during lean period (Nov-Dec) in Dist-Rajouri, Jammu & Kashmir. The control T-1 was maintained without feeding maize silage, while in treatment groups the green fodder was replaced with maize silage on the basis of Dry Matter (DM) @ 25 and 50%, for T-2 and T-3, respectively. The experimental cows were offered pelleted concentrate feed along with Wheat straw as routine practice of farmers. Thus, in present study the inclusion of 50% of maize silage in the diet of lactating Holstein Friesian crossbred cows recorded highest yield with B:C ratio (1:2.39), compared to 25% Silage feeding and Farmer Practice. Hence, it may be concluded that maize silage supplementation in feeding schedule of crossbred cows during lean period is beneficial which is evident by increased milk yield and farmers were satisfied with only constraint of labour in silage making. Returns per rupee invested were also found higher with treatment T-3 (1:2.39) as compared to farmer practice (1:1.33).

Evaluation of different varieties of chickpea in hilly areas of Reasi district

Reasi district of J&K has the potential for chickpea production but the productivity is low due to lack of improved varieties of chickpea and high incidence of pests and diseases. In order to give alternate options to farmers, KVK, Reasi conducted OFTs to assess the performance of three promising basmati chickpea varieties viz. GNG-2144, GNG-1581 and PBG-07 in three locations of the district. Performance of these varieties has attracted the attention of farmers because of high productivity, resistant to insect-pests and diseases. GNG-2144, GNG-1581 and PBG-07 recorded higher yield i.e., 22.8, 21.4 and 20.20 q/ha, respectively which was about 56 per cent higher compared to local varieties.

Uttarakhand

Assessment of post emergence application of new herbicide to control weeds in wheat crop in valley area of Dehradun

In the valley area of Dehradun district wheat grown after rice in the sequence infested with grassy and BLW weeds which resulted low productivity. Farmers in general apply the old recommendation of Sulfosulfuron/Clodinafop propargyl to control the *Phalaris minor* and other grassy weeds in wheat crop which could not able to effective control due to herbicidal resistance. Therefore, KVK Dehradun conducted an OFT to assess the post emergence application of new herbicide ie Pinoxaden 5. 1EC alone at 50 g/ha or in combination with Metsulfuron Methyl 20WG at 4.0g/ha to control weeds in wheat crop under valley area of Dehradun. Post-emergence application of Pinoxaden + Metsufuron-methyl 50 + 4 g/ha recorded lowest weed biomass (5.8g/m²) and higher the weed control efficiency (89.8%) followed by Pinoxaden alone 50g ai/ha (13.6 g/m² and 76.1%) compared to the farmers practice 44.7g/m² and 21.1%, dry matter & WCE, respectively. The highest grain yield of wheat 42.3 q/ha was recorded with the application of Pinoxaden+Metsufuron-methyl 50+4 g/ha fb Pinoxaden anlone (34.8/ha) which was higher by 15.9 q/ha over farmer's practice. The higher productivity might be attributed to more effective tillers produced with minimal weed interference during active growth & development stage in wheat crop under Pinoxaden 50g+ MSM 4.0 g/ha and Pinoxaden 5. 1EC at 50 g/ha. PoE application of Pinoxaden+Metsufuron-methyl had knockdown effect on grassy and broad-leaved weeds which resulted in higher yield attributes.

Evaluation of different cropping systems in Udham Singh Nagar district

Rice-wheat is the major cropping system of District Udham Singh Nagar of Uttarakhand. Traditionally,

paddy is a water-intensive crop and requires water flooded soil for better yield both in *kharif* and in summer rice. In order to give alternate options to farmers, KVK Udham Singh Nagar conducted OFT to assess the performance of three cropping system viz: T1-Rice-Veg Pea-Summer Rice (FP), T2-rice-veg pea-maize and T3-rice-toria-maize. Seven trials of each treatment were conducted. T1, T2 and T3 showed Rice equivalent yield (qt.) as 148.5, 160.0 and 159.0, respectively. Net Return (Rs./ha) was found as Rs. 198700, 223100 and 224000 for T1, T2 and T3, respectively. It was observed that Rice equivalent yield was better in rice-veg. pea-maize cropping system. Rice- Toria- Maize revealed higher B: C ratio due to higher net return in case of T3. Summer maize is more beneficial hence it should be included in cropping system of Udham Singh Nagar.

Assessment of newer insecticides for management of hopper infestation in Mango

Mango leaf hoppers (*Idioscopus sp.*) infest mango orchards all over India. This infestation is especially serious in old and dense orchards. These hoppers cause infestation in large numbers on the flowers and new leaves. Both its adult and nymph suck the plant sap from flowers and young leaves. This leads to browning and drying of flowers. Fruit setting is reduced which causes lower yields. They also excrete sticky fluid called honey dew, which serves as a substrate for growth of black sooty mould. Owing to this leaves turn black and photo synthesis and new growth is reduced. Premature fruit fall also takes place. This may cause up to 60 per cent losses. Mango hoppers are a serious problem in Haridwar. Commonly used insecticides are proving ineffective in the management of the hopper. In order to assess newer insecticides for hopper management in Mango, KVK Haridwar conducted on farm trials at five different locations. Result of the trials revealed that spray of Thiamethoxam 25%WG @ 100gm/ha in 1000 litre water at panicle initiation and repeat spray



after twenty days resulted in the highest hopper mortality (88 to 90%), as also the highest yield of 33000 kg/ha. Spray of Imidacloprid 17.8% SL @4 ml/10 litre of water at panicle initiation and spray of Thiomethoxam 25% WG @ 3.0 gm per 10 litres of water led to 85% to 77.7% hopper mortality and yield of 30000 kg of Mango. Both these were significantly higher than the insect mortality (46% to 37.5%) caused by the conventionally used spray of Lambda-cyhalothrin 5% EC @ 0.5-1ml/lit water at flowering initiation and repeat spray after twenty days which led to mango yield of 18750 kg.

Assessment of Phosphate Solubilising Bacteria and growth hormone (Viradix) for higher mushroom yield

Button Mushroom (*Agaricus bisporus*) production has increased 10 quintal to 100 quintals in last five year in Bageshwar district due to awareness, training and demonstration programmes of KVK and subsequent follow up and support with government schemes by district horticulture department. It is popular among the farmer's due to no adverse effect of wild menace and monkeys but many times low productivity 1.5- 2 q/ ton compost and poor quality is recorded due to poor mycelium run and low numbers of pin heads formation. Keeping this in view KVK, Bageshwar has designed an OFT (October to December) with four treatments namely, T-1 application of phosphate solubilising bacteria at the rate of one percent at the time of spawning, T-2 treatment was spray of 0.1 percent growth hormone Indole Butaric Acid at the time of first three flush stages and T-3 treatment was combining both the two treatments (T1 + T2). The results showed that third treatment that was combining both the two treatments i.e., application of phosphate solubilising bacteria at the rate of one percent at the time of spawning and spray of 0.1 percent growth hormone Indole Butaric Acid at the time of first three flush stages gave maximum yield of 2.7 q/ ton of compost followed by

T1 (2.4 q/ ton compost) and T2 (2.2 q/ton compost). The highest yield under T3 (2.7 q/ ton compost) was 35% higher than the farmer's practice. The maximum B:C ratio was also recorded (2.80) under this treatment, while in farmers practice it was only 2.25.

Evaluation of improved breeds of poultry for backyard poultry production

Poultry is one of the major sources of livelihood to many farmers of Pithoragarh district. There are many local breeds but their productivity is quite low. In order to provide better alternate options to farmers, KVK Pithoragarh conducted an OFT to assess the performance of two promising poultry breeds viz. Kadaknath and CHABRO. A total of 10 trials have been conducted in 10 different locations of District Pithoragarh. Performance of the CHABRO poultry breed was found best and recorded highest body weight of 2.25 kg after 3 months. While body weight of Kadaknath breed was lowest 1.35 kg after 3 months. But the Cost benefit ratio of Kadaknath breed was highest (2.57) as compared to other breeds (2.11 in CHABRO and 1.79 in local breed) as Kadaknath breed fetches more price than the other breeds.

Assessment of effectiveness of Weather Based Agromet Advisories for Vegetable growers in getting higher returns

Timely weather based agro-advisories to farmers is the most efficient means to overcome climatic adversities. It can help farmers particularly small and marginal farmers of hilly terrains in increasing the per unit returns. Garden pea is one of the major vegetable crops of rabi season in district Pithoragarh serving as a source of livelihood to many vegetable growers who have suffered due to unawareness about Agromet Advisories. Keeping this in view, KVK Pithoragarh designed an OFT to assess the effectiveness and usefulness of Weather Based Agro met Advisories for garden pea cultivator in getting higher returns. In this OFT, a total of 30 farmers were selected from five

villages and these farmers were divided into two groups from each village. T1 was the control group of farmers who did not receive agromet advisory. T2: was the group of farmers who were provided weather based agromet advisories regularly by KVK Pithoragarh including scientific practices of pea cultivation. Results of the OFT revealed that Weather Based Agromet Advisories reduced the cost of cultivation of pea by Rs. 14404.00 per ha as control group farmers have sown the pea again due to heavy rains after sowing the crops. The yield of pea was more than 5% higher than the control group. Therefore, net return was also higher than the control group vegetable growers.

Assessment of Nutrient dense food supplement (soy flour+ jaggery) to improve nutritional status of farm women

Under nutrition is a broader term and is defined as the number of people consuming less than the minimum amount of food energy required by the average person to maintain good health while performing. Nutrient

dense food supplements are good for maintaining nutritional status. In order to give Nutrient dense food supplement (70 gm roasted soy flour + 50 gm jaggery per day for 3 month) to female farmers, KVK Rudraprayag conducted an OFT to assess the nutritional status Body Mass Index ($BMI = \text{weight} / \text{height}^2$) of female farmers and clinical symptoms viz., fatigue, breathlessness and mental apathy. Total 20 Subjects were selected on the basis of BMI (less than 18.5). Out of 20 subjects 10 in the control group (dependent on traditional diet) and 10 in the experimental group (dependent on nutrient dense food). Results of Pre and post data of experimental group shows that nutrient dense food supplement increases the BMI from 17.91 (pre) to 19.65 (post) thus the difference is 1.74 and disappeared clinical symptoms like fatigue, breathlessness, mental apathy 100, 90 and 60 percent in female farmers respectively. While in the control group decrease the BMI from (pre) 17.52 and (post) 17.27 data, similarly with the clinical symptoms no change appears in pre and post data collection.



FRONTLINE DEMONSTRATIONS

Frontline demonstration is one of the most important modes of dissemination of farm technologies. The demonstrations play significant role in improving the skill of farmers to perform an activity by their involvement. The frontline demonstrations (FLDs) are conducted under the close supervision of scientists to demonstrate the worth of a technology at the farmer's field to generate the production data and feedback information. The main purpose of conducting FLDs is to convince the farmers as well as extension personnel about the potentialities of the technologies for further adoption and diffusion on large scale for the benefit of farming community. KVKs are playing an important role and are involved in conducting FLDs on new technologies to enhance the skill of the farmers. FLD is one of the mandated activity of KVKs to demonstrate the production potential of newly released crop varieties and production technologies in crops, livestock and fisheries not only to showcase their worth but also for enhancing production and income generation through successful technologies and agriculture related enterprises on the farmers' fields in a given farming situation.

In 2022, a total of 32299 FLDs were conducted by the KVKs of Zone-I covering an area of 6389.24 ha and 7407 enterprise units across the states of Punjab, Himachal Pradesh, Jammu & Kashmir, Ladakh and Uttarakhand. Among crops, maximum numbers of FLDs were conducted under cereals (6447) followed by pulses (3108), vegetables (2680) and oilseeds (1735). Further, the KVKs also conducted 2933 FLDs

related to livestock & fisheries and 10956 FLDs in other enterprises during the period under report as presented in Table 3.1.

3.1 Cereals & Millets

In 2022, KVKs of Zone-I conducted FLDs on various cereal and millet crops covering an area of 1507.72 ha and 71.50 ha respectively. Among FLDs on cereals, the state wise break up includes 811.65 ha in Punjab, 54.95 ha in Himachal Pradesh, 168.16 ha in Uttarakhand, 471.95 in Jammu & Kashmir and 1 ha in Ladakh. Similarly, among the FLDs on millets, the state wise break up includes 36 ha in Jammu & Kashmir and 35.50 ha in Uttarakhand. The State/UT-wise detail of results of FLDs is as under:

3.1.1 Punjab

During Kharif season, FLDs were conducted on barley, maize, paddy, basmati rice, wheat and buck wheat. Technologies such as water management, integrated disease management, integrated pest management, integrated weed management, integrated nutrient management, resource conservation technologies and improved varieties of paddy, basmati, maize and wheat have led to gain in yield as compared to farmers' practices. The highest area under FLDs was paddy covering 536 ha in Punjab immediately followed by wheat (145.55 ha) (Table 3.2). The demonstrations reported better yield as well better benefit cost ratio over that of the respective local checks. Noticeably, the average yield obtained in the demonstrations of wheat was 40.43 q/ha and that in check was 38.68 q/ha, which was due

Table 3.1: Overview of Frontline Demonstrations conducted in Zone-1

Crops Category	Punjab			Himachal Pradesh			Jammu & Kashmir			Ladakh			Uttarakhand			ZONE-I		
	FLDs (No.)	Area (ha)	Units (No.)	FLDs (No.)	Area (ha)	Units (No.)	FLDs (No.)	Area (ha)	Units (No.)	FLDs (No.)	Area (ha)	Units (No.)	FLDs (No.)	Area (ha)	Units (No.)	FLDs (No.)	Area (ha)	Units (No.)
Crops																		
Cereals	2040	811.65		439	54.95		2502	471.95		10	1.00		1456	168.16		6447	1507.72	
Millet							18	36.00					353	35.50		371	71.50	
Pulses	438	162.00		576	85.80		1429	165.40					665	95.20		3108	508.40	
Oilseeds	478	131.10		410	67.00		378	86.30					469	56.96		1735	341.36	
Hybrids	146	55.40		240	12.29		965	250.05		49	0.51		279	13.75		1679	332.00	
Vegetables	28	3.90		659	29.58		551	39.05		271	10.48		1171	44.77		2680	127.78	
Fruit crops	265	6.65		231	28.66		180	15.95		34	0.56		24	4.50		734	56.32	
Fodder crops	275	125.00		349	23.70		328	173.00		51	3.05		261	12.00		1264	336.75	
Flower crops							4	1.00					28	1.00		32	2.00	
Other crops	195	21.15		75	15.24								90	3.08		360	39.47	
Total	3865	1316.85		2979	317.22		6355	1238.70		415	15.60		4796	434.92		18410	3323.30	
Livestock and Fisheries																		
Dairy and cattle	583		424	560		360	252		254	7		2	195		63	1597		1103
Piggery	13		13													13		13
Sheep and goats	37		12	200		200	23		23				55		49	315		284
Poultry	203		178	100		50	433		1982				203		593	939		2803
Fishery	13		12				29		29				27		27	69		68
Total	849		639	860		610	737		2288	7		2	480		732	2933		4271
Other Enterprises																		
Home Science	2241			1558			813			452			20			5084		
Apiculture				5		5	45		2							50		7
Mushroom Production	293		953	27		27	130		135	8		8	27		20	485		1143
Nutri-gardening	1360		1336	577		107				18		18	170		170	2125		1631
Value Addition	228		223	148		28										376		251
Vermicomposting	2		2	17		12	60		57	13		13	20		20	112		104
Farm implements and Machinery	2515	3040.60		38	1.88		161	16.00					10	7.46		2724	3065.94	
Total	6639	3040.60	2514	2370	1.88	179	1209	16.00	194	491		39	247	7.46	210	10956	3065.94	3136
Grand Total	11353		3153	6209	319.10	789	8301	1254.70	2482	913	15.60	41	5523	442.38	942	32299	6389.24	7407

**Table 3.2: Frontline Demonstrations on cereals & millets conducted in Punjab**

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Barley	3	23	8.00	31.21	27.45	13.70	52894	3.86	40729	3.02
Maize	2	80	50.5	48.21	44.63	8.03	60634	2.30	51951	2.11
Paddy	9	1406	536.00	73.13	68.96	6.05	107950	3.62	97464	3.24
Basmati Rice	6	128	65.60	44.61	40.48	10.22	99530	2.97	85634	2.75
Wheat	11	388	145.55	40.43	38.68	4.53	86955	4.01	52983	2.77
Buck wheat	1	15	6.00	54.71	51.30	6.65	80642	3.72	74471	3.58

to the impact of climatic variability like unseasonal rainfall, low sunshine hours and heat wave.

3.1.2 Himachal Pradesh

In Himachal Pradesh, among the frontline demonstrations the average yield of paddy was 34.35 q/ha, which was 17.34 per cent higher than that of the local check (29.28 q/ha) (Table 3.3). Technologies such as integrated disease management, integrated pest management, integrated weed management, integrated nutrient management and improved varieties of paddy, maize and wheat have resulted in increased grain yield as compared to the farmers' practices.

3.1.3 Jammu & Kashmir

KVKs of Jammu & Kashmir conducted FLDs on

scientific cultivation of maize, oats, paddy, basmati rice, coarse rice, scented rice, wheat, pearl millet and sorghum (Table 3.4). The highest area covered under FLDs was on paddy (158.95 ha) followed by maize (137.50 ha), wheat (99.80 ha) and oats (53.80 ha). FLDs on paddy reported an average yield of 65.89 q/ha, which was 33.10 per cent higher than that of the local checks (49.52 q/ha). Similarly, higher yields were observed in the demonstrations of wheat (85.80 %), oats (64.40 %) and maize (42.40 %), when compared to respective local checks. The demonstrations were also organized to popularize millets like pearl millet and sorghum.

3.1.4 Ladakh

A total of 10 FLDs were organized on wheat crop during the year in Ladakh (Table 3.5). Technologies

Table 3.3: Frontline Demonstrations on cereals & millets conducted in Himachal Pradesh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Maize	1	20	1.50	9.60	8.00	20.00	21600	1.59	16200	1.48
Paddy	3	130	12.77	34.35	29.28	17.34	28564	1.65	16089	1.38
Coarse Rice	1	12	0.68	27.00	23.30	15.88	12000	1.42	9350	1.37
Wheat	6	277	40.00	33.68	27.84	20.98	10385	1.20	5431	1.11

Table 3.4: Frontline Demonstrations on cereals & millets conducted in Jammu & Kashmir

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Maize	13	734	137.50	41.65	29.25	42.40	60892	2.58	32916	1.96
Oats	4	467	53.80	17.10	10.40	64.40	60250	2.23	24750	1.53
Paddy	13	609	158.95	65.89	49.52	33.10	87627	2.44	52284	1.89
Basmati Rice	2	24	4.90	38.37	26.80	43.20	88341	3.37	46600	2.32
Coarse Rice	2	45	11.00	35.84	27.80	28.90	77783	3.15	46400	2.32
Scented Rice	1	28	6.00	25.14	23.60	6.50	70216	2.66	52000	2.23
Wheat	8	595	99.80	44.67	24.04	85.80	45070	2.68	28055	2.17
Pearl millet	13	9	18.00	10.25	9.70	5.70	16587	1.95	15295	1.87
Sorghum	4	9	18.00	9.46	9.10	4.00	20596	2.18	19527	2.12

Table 3.5: Frontline Demonstrations on cereals and millets in Ladakh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Wheat	1	10	1.00	41.20	20.40	101.96	90700	1.96	29050	1.32

such as integrated weed management and improved varieties were demonstrated for the cultivation of wheat. The average yield of demonstrations on wheat was 41.20 q/ha, which was only 20.40 q/ha in local

checks. The B: C ratio of the FLDs on wheat crop was also found to be higher (1:1.96) than that of the local check (1:1.32).


Demonstration field visit in Bilaspur, HP

Monitoring of FLD in Bilaspur, HP



3.1.5 Uttarakhand

KVKs of Uttarakhand organized FLDs to popularize scientific cultivation practices like water management, integrated disease management, integrated pest management, integrated weed management, integrated nutrient management and improved varieties of crops such as maize, paddy, barley, wheat, finger millets, amaranth, etc. (Table 3.6). The maximum number of demonstrations were organized on cultivation of wheat (613) followed by basmati rice (362) and paddy (198). Significant numbers of demonstrations were also organized on millets viz. finger millet (168), amaranth (101) and barnyard millet (84). The average yields, net returns and benefit cost ratios obtained in all the demonstrations were substantially higher than that of the respective local checks.

3.2 Oilseeds

A total of 1735 FLDs on various oilseed crops were organized covering an area of 341.36 ha during the

period under report by the KVKs of Zone-I. The State/UT-wise break up of FLDs conducted on oilseed crops includes 478 in Punjab, 410 in Himachal Pradesh, 378 in Jammu & Kashmir and 469 in Uttarakhand. The State/UT-wise details are as under:

3.2.1. Punjab

KVKs of Punjab conducted demonstrations on cultivation of gobhi sarson, which reported an average yield of 18.76 q/ha, which was 16.79 per cent higher than that of the local check (Table 3.7). The B:C ratio in the demonstrations was also observed higher (1:3.52) than the local check (1:2.26).

3.2.2 Himachal Pradesh

KVKs of Himachal Pradesh demonstrated improved technologies of oilseeds cultivation viz. brown sarson (23.68 ha), sesamum (20 ha), gobhi sarson (23 ha) and linseed (0.32 ha) (Table 3.8). The demonstrated crops performed significantly better than the local check and reported higher yields and net returns.

Table 3.6: Frontline Demonstrations on cereals & millets conducted in Uttarakhand

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Barley	1	40	1.00	17.10	14.20	20.42	40000	2.54	21500	1.93
Maize	2	64	13.50	22.90	16.70	37.13	18205	2.21	12215	2.02
Paddy	6	198	20.80	35.53	29.02	22.43	60198	3.10	45839	2.71
Basmati Rice	6	362	68.25	33.29	24.98	33.26	67792	2.68	42033	2.18
Coarse Rice	2	91	3.70	30.70	22.75	34.95	27405	1.73	14955	1.46
Scented Rice	2	88	13.65	41.40	34.16	21.19	74600	2.70	59461	2.48
Wheat	10	613	47.26	37.01	28.09	31.74	50940	2.57	32171	2.03
Barnyard Millet	1	84	7.00	14.29	11.03	29.61	16350	1.99	11188	1.83
Finger millet	2	168	20.50	14.14	11.21	26.16	27783	2.84	19774	2.50
Amaranth	6	101	8.00	16.12	12.95	24.49	54083	6.01	42390	5.50

Table 3.7: Frontline Demonstrations on oilseeds conducted in Punjab

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Gobhi Sarson	10	309	97.10	18.76	16.06	16.79	68523	3.52	44591	2.26

Table 3.8: Frontline Demonstrations on oilseeds conducted in Himachal Pradesh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Linseed	1	12	0.32	2.50	1.80	38.89	10500	1.72	4400	1.32
Brown sarson	3	146	23.68	7.90	6.50	21.54	24750	2.16	20100	2.07
Gobhi Sarson	2	90	23.00	9.70	8.40	15.48	31200	2.46	21350	2.11
Sesamum	1	162	20.00	8.20	6.40	28.13	44150	2.62	34830	2.42



Diagnostic field visit to demonstration on Maize in Una, HP



Diagnostic visit to FLD on cauliflower in Kathua, J&K

3.2.3 Jammu & Kashmir

In Jammu & Kashmir, FLDs on oilseed crops were conducted on brown sarson, gobhi sarson, sesamum and soybean (Table 3.9). Technology demonstrated on various crops under oilseed performed better over local check in terms of yield and economics. In gobhi sarson demonstrations, the average yield obtained was 20 q/ha, which was only 16 q/ha in local check. Similarly, in soybean, higher average yield in FLDs (16.30 q/ha) was observed as compared to the local check (11.70 q/ha).

3.2.4 Uttarakhand

KVKs of Uttarakhand conducted FLDs on sesamum, mustard and soybean crops (Table 3.10). Higher average yields were reported in the demonstrations of mustard (30.38 %), sesamum (40.58 %) and soybean (28.22 %) over that of the local checks.

3.3 Pulses

A total of 3108 FLDs were conducted on various pulse crops covering an area of 508.40 ha during 2022 by the KVKs of Zone-I. The State/UT wise break up of

**Table 3.9: Frontline Demonstrations on oilseeds conducted in Jammu & Kashmir**

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Brown sarson	5	162	48.30	11.92	8.67	37.50	46333	2.38	25167	1.80
Gobhi Sarson	1	60	10.00	20.00	16.00	25.00	52000	2.86	36000	2.29
Sesamum	1	136	20.00	5.90	4.00	47.50	22200	1.89	7000	1.28
Soybean	1	20	8.00	16.30	11.70	39.30	66324	3.66	43116	2.93

Table 3.10: Frontline Demonstrations on oilseeds conducted in Uttarakhand

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Mustard	8	142	37.66	12.82	9.83	30.38	40742	2.75	26740	2.21
Sesamum	1	25	10.00	4.33	3.08	40.58	32908	2.67	19792	2.12
Soybean	4	249	7.30	19.42	15.15	28.22	43478	2.66	28596	2.23

FLDs conducted on pulse crops included 438 in Punjab, 576 in Himachal Pradesh, 1429 in Jammu & Kashmir and 665 in Uttarakhand. The state wise detail of results of FLDs on pulse crops is as under:

3.3.1 Punjab

KVKs of Punjab conducted FLDs on pulse crops such as green gram, black gram, chick pea and lentil (Table 3.11). The technologies demonstrated on various crops under pulses performed better over local check in terms of attributes like yield, net return and benefit cost ratio. In chickpea, the yield obtained in the

demonstrations was 14.87 q/ha, which was 13.42 per cent higher than that of the local check (13.11 q/ha). Likewise, 24.99 per cent higher yield in black gram, 24.70 per cent in green gram and 27.37 per cent in lentil was recorded over that of the respective local checks.

3.3.2 Himachal Pradesh

FLDs on pulse crops were conducted by KVKs of Himachal Pradesh included crop like black gram and rajmash (Table 3.12). Technologies demonstrated on both pulse crops performed better than local check in

Table 3.11: Frontline Demonstrations on pulses conducted in Punjab

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Blackgram	3	74	18.00	14.49	11.59	24.99	59422	4.75	40959	3.49
Chickpea	3	119	33.50	14.87	13.11	13.42	39150	2.11	30825	1.89
Greengram	4	198	82.00	10.86	8.71	24.70	41194	2.66	27253	2.09
Lentil	1	47	28.50	12.10	9.50	27.37	59209	3.04	39613	2.34

Table 3.12: Frontline Demonstrations on pulses conducted in Himachal Pradesh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Blackgram	2	145	23.00	9.40	8.10	16.05	65575	3.81	46150	3.18
Rajmash	2	98	22.80	15.32	11.98	27.84	102356	2.70	54993	2.05

terms of yield and economics. The average yield increase in demonstrations with respect to that of the local check was 16.05 per cent in black gram and 27.84 per cent in rajmash.

3.3.3 Jammu & Kashmir

KVKs of Jammu & Kashmir conducted FLDs on cultivation of pulses viz. green gram, black gram, rajmash and field pea (Table 3.13). The demonstrations reported significantly higher average yields, net returns and benefit cost ratios compared to that of the respective local checks, which can be attributed to technologies like integrated pest and disease management and improved varieties.

3.3.4 Uttarakhand

KVKs of Uttarakhand conducted FLDs of black gram, chick pea, lentil and horse gram (Table 3.14). Demonstrations on black gram reported an average yield of 8.03 q/ha, which was only 6.14 q/ha in case of local checks. Likewise, in chick pea, horse gram and lentil, respectively, 36.96 per cent, 24.30 per cent and 37.03 per cent higher yield was observed compared to that of the local checks.

3.4 Hybrids

A total of 1679 FLDs were conducted on various hybrids of different crops covering an area of 332 ha

Table 3.13: Frontline Demonstrations on pulses conducted in Jammu & Kashmir

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Blackgram	3	352	40.00	5.47	3.83	42.90	33547	2.44	16497	1.74
Field pea	5	315	39.90	10.25	7.00	46.40	41250	3.26	26875	2.47
Greengram	3	414	51.50	8.08	6.43	25.60	94837	3.39	67233	2.91
Rajmah	2	245	32.00	9.77	7.53	29.60	104517	3.72	74750	3.07

Table 3.14: Frontline Demonstrations on pulses conducted in Uttarakhand

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Black gram	4	157	35.20	8.03	6.14	30.66	31528	2.55	20971	2.13
Chickpea	2	66	18.00	15.75	11.50	36.96	46683	2.45	24763	1.78
Horse gram	2	45	2.00	9.97	8.02	24.30	44750	3.56	32625	3.14
Lentil	5	340	38.00	11.96	8.73	37.03	33288	2.08	19596	1.78



during 2022 by the KVKs of Zone-I. The State/UT wise breakup of FLDs on hybrids included 146 in Punjab, 240 in Himachal Pradesh, 965 in Jammu & Kashmir, 49 in Ladakh and 279 in Uttarakhand. The State/UT wise detail of results of FLDs on hybrids is as under:

3.4.1 Punjab

KVKs of Punjab conducted FLDs on hybrids of maize and green pea (Table 3.15). The average yield recorded in the demonstrations of maize and green pea were 36.40 q/ha and 56.80 q/ha respectively, which were 5.51 per cent and 32 per cent higher than that of the local checks.

3.4.2 Himachal Pradesh

KVKs of Himachal Pradesh organized demonstrations on hybrids of maize, brinjal, cauliflower and cucumber (Table 3.16). In cucumber, the yield of demonstrations was 232.80 q/ha as compared to the local check yield of 192.25 q/ha. Likewise, higher yields were also reported in brinjal, maize and cauliflower exhibiting the superiority of demonstrated technologies compared to that of the farmers' existing practices.

3.4.3 Jammu and Kashmir

KVKs of Jammu & Kashmir demonstrated cultivation of hybrids of all kinds of crops like cereals, millets, pulses, oilseeds, vegetables, fruits and fodder crops (Table 3.17). All the demonstrated hybrids performed better over the respective local checks in terms of parameters viz. yield, net return and benefit cost ratio. Along with the varieties of these crops, scientific cultivation practices like irrigation, weed, pest and disease management were also demonstrated in the farmer's field.

3.4.4 Ladakh

In Ladakh, FLDs on hybrids of broccoli, cucumber and watermelon were conducted by the KVKs during the year (Table 3.18). These hybrids reported higher yields of 47.14 per cent (broccoli), 94.44 per cent (cucumber) and 58.31 per cent (watermelon) over that of the local checks. Likewise, the net return over per rupee spent was also found to be comparatively higher in the demonstrations.

3.4.5 Uttarakhand

KVKs of Uttarakhand conducted FLDs on hybrids of cereals namely maize and paddy and vegetables

Table 3.15: Frontline Demonstrations on hybrids conducted in Punjab

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Maize	1	136	54.40	36.40	34.50	5.51	25210	1.98	22550	1.88
Green pea	1	10	1.00	56.80	43.03	32.00	126083	2.15	76532	1.75

Table 3.16: Frontline Demonstrations on hybrids conducted in Himachal Pradesh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Maize	1	6	0.65	35.24	28.51	23.61	26210	1.98	16700	1.68
Brinjal	1	10	0.80	215.90	184.60	16.96	225600	3.30	182590	2.94
Cauliflower	3	199	8.84	210.27	180.96	16.19	200935	2.72	163806	2.45
Cucumber	1	25	2.00	232.80	192.25	21.09	174160	2.66	130950	2.31

Table 3.17: Frontline Demonstrations on hybrids conducted in Jammu and Kashmir

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Maize	5	212	27.90	48.38	35.18	37.52	58477	2.75	39610	2.43
Basmati Rice	1	50	9.70	31.95	23.60	35.38	98394	3.32	52000	2.23
Wheat	1	128	21.30	36.68	31.90	14.98	57956	3.24	31018	2.20
Pearl millet	1	9	18.00	10.25	9.70	5.67	16587	1.95	15295	1.87
Sorghum	1	9	18.00	9.46	9.10	3.96	20596	2.18	19527	2.12
Blackgram	1	222	20.00	4.60	3.20	43.75	19600	2.14	8400	1.49
Gobhi Sarson	1	60	10.00	20.00	16.00	25.00	52000	2.86	36000	2.29
Sesamum	1	136	20.0	5.90	4.00	47.50	22200	1.89	7000	1.28
Cabbage	1	32	0.20	370.00	225.00	64.44	295000	4.93	163000	3.63
Cauliflower	2	63	1.20	280.00	195.00	43.59	205000	3.73	131500	2.92
Apple	1	18	1.35	230.00	190.00	21.05	1009333	3.08	652667	2.43
Berseem	1	5	78.00	588.00	535.00	9.91	53940	3.40	47050	3.09
Fodder Jowar	1	2	0.50	394.00	286.00	37.76	19750	2.33	17350	1.60
Fodder Oat	1	1	23.00	268.00	254.00	5.51	28740	2.47	26220	2.34

Table 3.18: Frontline Demonstrations on hybrids conducted in Ladakh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Broccoli	1	10	0.01	309.00	210.00	47.14	686000	2.25	325000	1.63
Cucumber	1	10	0.01	945.00	486.00	94.44	2571405	3.13	616000	1.57
Watermelon	2	29	0.50	357.00	225.50	58.31	849500	3.12	489250	2.63

namely broccoli, capsicum, cauliflower, tomato and cabbage (Table 3.19). The increase in average demonstration yield over that of the local check ranged from 15.07 per cent in tomato to 71.21 per cent in paddy.

3.5 Vegetable crops

A total of 2680 FLDs were conducted on various vegetable crops covering an area of 127.78 ha during 2022 by the KVKs of Zone-I. The State/UT wise

breakup of FLDs on vegetable crops included 28 FLDs in Punjab, 659 in Himachal Pradesh, 551 in Jammu & Kashmir, 271 in Ladakh and 1171 in Uttarakhand. The State/UT wise detail of results of FLDs on vegetable crops is as under:

3.5.1 Punjab

KVKs of Punjab conducted FLDs on vegetable crops like capsicum, green pea and onion (Table 3.20). Technological package followed while laying

**Table 3.19: Frontline Demonstrations on hybrids conducted in Uttarakhand**

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Maize	1	20	3.00	42.80	26.80	59.70	52000	2.49	24600	1.85
Paddy	1	15	3.00	88.00	51.40	71.21	91024	2.40	46772	1.85
Broccoli	1	60	2.00	218.00	139.00	56.83	692000	4.84	358000	2.81
Cabbage	2	56	1.50	213.00	164.00	29.88	142400	3.10	99250	2.50
Capsicum	1	40	1.25	192.26	114.85	67.40	541040	3.37	301550	2.91
Cauliflower	1	60	2.00	474.00	320.00	48.13	553000	4.35	350200	3.42
Tomato	1	28	1.00	168.00	146.00	15.07	105300	2.68	86320	2.45

Table 3.20: Frontline Demonstrations on vegetable crops conducted in Punjab

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Capsicum	1	5	0.50	194.23	157.04	23.68	301560	2.64	163473	1.90
Green pea	1	8	1.00	60.00	59.50	0.84	57000	1.54	55650	1.53
Onion	2	15	2.40	273.43	249.93	9.40	234281	2.77	140022	2.05

demonstrations included all the aspects including improved varieties, INM, IDM, IPM, IWM etc. In demonstrations on capsicum, 23.68 per cent increased yields over that of the local check were reported.

3.5.2 Himachal Pradesh

Among the demonstrations on vegetable crops in Himachal Pradesh, crops like okra, bottle gourd, green pea, onion, tomato and potato were prominently covered (Table 3.21). The demonstrations recorded an increase in average yield over that of the local check ranging from 12.88 per cent to 69.05 per cent. Similarly, higher net returns and BC ratios were obtained in the demonstration plots as compared to the check plots.

3.5.3 Jammu & Kashmir

KVKs of Jammu & Kashmir conducted FLDs on vegetable crops such as tomato, okra, radish, capsicum, coriander, cauliflower, turnip, fenugreek etc. (Table 3.22). Technological demonstrations

helped farmers fetch better yields and net returns compared to the existing practices in the region. The increase in demonstration yield over local check yield varied from 10.9 per cent in turnip to 47.1 per cent fenugreek.

3.5.4 Ladakh

In Ladakh, FLDs on vegetables included cabbage, french bean, green pea, onion, tomato and potato (Table 3.23). Technologies demonstrated on various crops of vegetables performed better than local check in terms of yield and economics. The demonstrations on green pea recorded an increase of 114.29 per cent yield (180 q/ha) over that of the local check (84 q/ha). Similar higher yields were obtained in other crops with significantly higher net returns.

3.5.5 Uttarakhand

FLDs on vegetables conducted by KVKs of Uttarakhand included crops like okra, brinjal, cabbage, etc. (Table 3.24). Apart from the improved

Table 3.21: Frontline Demonstrations on vegetables conducted in Himachal Pradesh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Okra	4	68	2.12	170.24	133.14	27.86	110060	2.98	72788	2.32
Bittergourd	1	2	0.08	230.00	190.00	21.05	150000	3.00	119000	2.80
Bottlegourd	1	36	8.08	273.00	224.50	21.60	201125	3.82	154500	3.27
Broccoli	1	45	1.03	93.50	78.53	19.06	163373	3.33	127540	2.90
Cabbage	3	82	0.15	208.00	168.00	23.81	133700	2.80	97400	2.38
Capsicum	1	3	0.03	510.00	320.00	59.38	1869400	3.75	1150000	3.56
Cauliflower	1	3	0.12	230.00	195.00	17.95	125000	2.32	109000	2.27
Chilli	1	25	0.03	74.00	52.00	42.31	156800	3.40	92900	2.47
Cucumber	1	2	0.08	135.00	110.00	22.73	109000	3.06	78000	2.50
Cucurbits	1	20	1.80	150.50	124.60	20.79	105100	3.31	82600	2.97
Green pea	1	108	6.58	108.22	87.21	24.09	294855	3.51	190661	2.60
Onion	6	119	3.07	218.41	175.94	24.14	133644	3.02	103004	2.81
Tomato	4	34	2.16	278.57	164.78	69.05	289165	4.78	128330	2.70
Potato	2	21	2.74	272.95	241.80	12.88	383158	3.35	322808	3.01

Table 3.22: Frontline Demonstrations on vegetables conducted in Jammu & Kashmir

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Okra	3	47	26.4	98.40	84.00	17.1	113406	2.92	54400	2.16
Brinjal	1	20	0.25	172.00	155.00	11.0	112000	2.87	99000	2.77
Capsicum	1	21	0.25	205.00	145.00	41.4	181000	3.78	113000	2.85
Cauliflower	1	29	1	240.00	200.00	20.0	165000	3.20	135000	2.80
Coriander leaf	2	91	2.2	79.88	62.00	28.8	93665	2.91	57900	2.13
Knolkhol	2	53	1.1	200.00	169.50	18.0	142850	2.90	104750	2.47
Onion	2	55	0.45	151.00	128.00	18.0	14000	1.58	8000	1.33
Raddish	1	78	2.4	184.00	135.00	36.3	116300	3.40	76000	2.67
Spinach	1	28	0.7	138.00	108.00	27.8	140000	4.50	84080	3.27
Summer Squash	1	6	0.1	200.00	170.00	17.6	148000	3.85	132000	3.75
Tomato	4	21	0.25	196.00	167.00	17.4	133000	3.11	51000	1.88
Turnip	3	27	0.95	224.00	202.00	10.9	116800	3.92	105400	3.93
Fenugreek	1	86	3.5	95.64	65.00	47.1	121169	2.73	68757	1.97

**Table 3.23: Frontline Demonstrations on vegetable crops conducted in Ladakh**

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Cabbage	1	5	0.05	693.00	348.05	99.11	692500	3.09	319375	2.60
French Bean	2	77	3.75	219.70	154.00	42.66	422250	2.69	171075	2.00
Green pea	1	6	1.15	180.00	84.00	114.29	216000	2.50	96500	1.87
Onion	2	57	1.35	245.00	148.00	65.54	401865	6.65	244300	4.87
Tomato	2	34	0.83	515.00	331.50	55.35	630750	3.40	409730	3.55
Potato	1	72	1.80	295.0	180.00	63.89	405000	3.19	210000	2.40

Table 3.24: Frontline Demonstrations on vegetable crops conducted in Uttarakhand

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Okra	1	58	1.00	106.50	84.50	26.04	170300	4.99	130500	4.39
Brinjal	1	20	2.00	262.00	220.50	18.82	188500	3.56	156850	3.20
Cabbage	3	71	3.02	268.78	207.83	29.33	236137	3.63	173817	3.28
Capsicum	1	26	1.00	128.00	112.00	14.29	110600	2.61	92300	2.43
Cauliflower	1	6	0.40	80.00	68.00	17.65	130000	2.63	90000	2.13
Chilli	1	10	1.00	90.40	75.20	20.21	175000	4.43	139860	3.91
Coriander leaf	1	20	0.50	18.77	15.00	25.13	155100	4.64	86600	3.59
French Bean	2	47	2.50	132.75	104.50	27.03	116700	2.75	83800	2.55
Green pea	4	164	7.30	105.00	83.67	25.50	80267	2.18	46133	1.69
Onion	8	366	12.20	210.08	166.00	26.56	221296	2.67	127478	2.08
Tomato	5	133	5.05	289.66	220.38	31.44	471865	3.46	323386	2.77
Potato	6	250	8.80	113.46	90.67	25.13	157238	3.28	100717	2.64

varieties, different improved practices were followed while conducting the demonstrations including pest & disease management, intercultural practices, etc. the demonstrations recorded comparatively higher yields varying from 14.29 to 31.44 per cent the respective local checks.

3.6 Fruit crops

Among total 734 demonstrations (covering 56.32 ha area) conducted by the KVKs of Zone-I, 265 were in Punjab, 231 in Himachal Pradesh, 180 in Jammu &

Kashmir, 34 in Ladakh and 24 in Uttarakhand. The details of which are as follows:

3.6.1 Punjab

FLDs on citrus and guava were conducted by KVKs of Punjab during 2022 (Table 3.25). The demonstration yields were higher by 23.96 per cent and 98.72 per cent in citrus and guava respectively compared to the yield obtained in respective local checks. The net return obtained in the FLDs of citrus was Rs.3,01,560/ha with BC ratio of 1:2.64; whereas,

Table 3.25: Frontline Demonstrations on fruits conducted by KVKs of Zone-I

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Citrus	1	5	2.00	218.42	176.20	23.96	301560	2.64	163473	1.90
Guava	2	110	4.40	387.50	195.00	98.72	210000	3.10	110000	2.10

it was only Rs. 1,63,473/ha in case of local check with BC ration of 1:1.90.

3.6.2 Himachal Pradesh

In Himachal Pradesh, FLDs were conducted by KVKs on fruits namely apple and pomegranate (Table 3.26). The yields obtained in demonstrations were higher (63.05 and 220 q/ha) in both the crops as compared to that of the local checks (118.47 and 156 q/ha). Thus, the demonstrating farmers obtained comparatively higher yields of 17.02 per cent in apple and 10.26 per cent in pomegranate.

3.6.3 Jammu & Kashmir

KVKs of Jammu & Kashmir conducted FLDs on apple and strawberry (Table 3.27). The yield obtained in demonstrations were higher (138.62 and 172 q/ha) in both the crops as compared to the yield of local checks (48.97 and 156 q/ha). Other package of

practices followed in the demonstrations was integrated management of nutrients, weeds, irrigation, pests and disease.

3.6.4 Ladakh

FLDs were conducted on watermelon in Ladakh reported yield of 714 q/ha, which were only 451 q/ha in case of the local check. Thus, an increase of 58.31 per cent yield was observed with much higher net return and return over per rupee spent (Table 3.28).

3.6.5 Uttarakhand

In Uttarakhand, in the demonstrations on guava and mango, average yields of 220 q/ha and 88 q/ha were observed (Table 3.29). Whereas, it were only 185 q/ha and 65 q/ha in case of local checks, taking the yield increase to 18.92 per cent and 35.38 per cent, respectively in guava and mango.

Table 3.26: Frontline Demonstrations on fruits conducted in Himachal Pradesh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Apple	7	209	25.94	138.62	118.47	17.02	650701	3.53	503703	3.06
Pomegranate	1	2	0.40	172.00	156.00	10.26	533000	4.44	466000	3.95

Table 3.27: Frontline Demonstrations on fruits conducted in Jammu & Kashmir

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Apple	5	80	9.15	63.05	48.97	28.8	351117	3.13	239893	2.61
Strawberry	1	18	0.25	220.00	156.00	41.0	458000	2.97	176000	1.94

Table 3.28: Frontline Demonstrations on fruits conducted in Ladakh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Watermelon	1	29	0.50	714.00	451.00	58.31	1699000	3.12	978500	2.63

Table 3.29: Frontline Demonstrations on fruits conducted in Uttarakhand

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Guava	1	4	2	220	185	18.92	595000	4.40	457500	3.41
Mango	2	20	2.5	88	65	35.38	114000	2.84	70000	2.17

3.7 Fodder Crops

KVKs of Zone-I conducted 1264 FLDS on various fodder crops covering an area of 336.75 ha during the year. The State/UT wise break up suggests 275, 349, 328, 51 and 261 FLDs were organized in Punjab, Himachal Pradesh, Jammu & Kashmir, Ladakh and Uttarakhand respectively. The State/UT wise details of results of FLDS on fodder crops are presented as under:

3.7.1 Punjab

KVKs of Punjab organized FLDs on fodder crops viz. pearl millet, napier, ryegrass, maize, oats and berseem (Table 3.30). The demonstration plots reported higher yield over local check ranging from 7.49 per cent in

maize to 39.15 per cent ryegrass.

3.7.2 Himachal Pradesh

KVKs of Himachal Pradesh conducted FLDs on various fodder crops namely guinea grass, maize, napier grass, etc. (Table 3.31). The demonstrational yields were found to be significantly higher over that of the local check ranging from 13.93 per cent to 25 per cent, with higher net returns and BC ratios.

3.7.3 Jammu & Kashmir

KVKs of Jammu & Kashmir conducted FLDs on fodder crops such as bajra, maize, sorghum, oats and berseem (Table 3.32). The FLDs on fodder oat reported an average yield of 302.79 q/ha, which was only 216 q/ha in local check. Similarly, in case of

Table 3.30: Frontline Demonstrations on fodder crops conducted in Punjab

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Pearl Millet	2	35	32.50	575.00	515.00	11.65	52938	2.92	44025	2.60
Berseem	4	60	13.00	973.75	838.05	16.19	75000	2.06	54645	1.77
Maize	5	100	58.50	345.06	321.00	7.49	42617	2.61	38547	2.47
Napier grass	1	10	4.00	1050.00	942.00	11.46	81000	2.06	64800	1.85
Oat	4	50	14.00	682.29	610.96	11.67	37596	1.80	27611	1.55
Ryegrass	1	20	3.00	782.00	562.00	39.15	47640	2.03	18315	1.37

Table 3.31: Frontline Demonstrations on fodders conducted in Himachal Pradesh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Guinea grass	1	100	5	450.00	390.00	15.38	25000	3.50	15000	2.50
Maize	2	14	1.9	387.75	325.75	19.03	83550	2.66	61900	2.23
Napier grass	1	100	5	750.00	600.00	25.00	45000	5.50	22000	3.20
Oat	2	125	11.5	303.75	266.60	13.93	67170	2.49	53173	2.21
Red clover	1	10	0.3	193.00	167.00	15.57	1775	1.05	645	1.02

Table 3.32: Frontline Demonstrations on fodders conducted in Jammu & Kashmir

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Pearl Millet	2	69	37.8	340.80	270.00	26.2	23780	2.64	15200	2.05
Berseem	1	5	78	588.00	535.00	9.9	53940	3.40	47050	3.09
Sorghum	1	46	4.4	339.00	250.50	35.3	29790	2.37	19375	2.00
Maize	1	4	0.4	408.50	325.00	25.7	73125	3.52	53250	2.90
Oat	7	202	52.3	302.79	216.00	40.2	40029	2.55	23182	1.99

maize, it was 339 q/ha in demonstrations and only 250.5 q/ha in local checks.

3.7.4 Ladakh

In Ladakh, FLDs were conducted by KVKs on mixed fodder and oats (Table 3.33). The increment in yield of demonstrations over that of the local checks were 79.31 per cent in mixed fodder and 47.92 per cent in oat.

3.7.5 Uttarakhand

KVKs of Uttarakhand conducted FLDs on fodder crops namely berseem, maize, oat and cowpea (Table

3.34). The demonstrations recorded higher yields, net return and BC ratios over that of the respective local checks. Higher yields obtained in demonstrations ranged from 10.88 to 25.42 per cent over that of the local checks.

3.8 Other crops

KVKs of Punjab, Himachal Pradesh, Jammu & Kashmir and Uttarakhand conducted FLDs on various crops such as garlic, turmeric, eucalyptus, cotton, garlic, marigold and garlic (Table 3.35). The yields obtained in demonstration plots were found to

Table 3.33: Frontline Demonstrations on fodders conducted in Ladakh

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Mixed fodder	1	31	1.55	260.00	145.00	79.31	560000	7.22	292500	5.18
Oat	1	20	1.50	71.00	48.00	47.92	60850	1.75	25880	1.37

**Table 3.34: Frontline Demonstrations on fodder crops conducted in Uttarakhand**

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Berseem	3	65	3.50	486.00	387.50	25.42	57463	3.67	42600	3.06
Maize	1	20	1.00	257.00	212.00	21.23	149587	4.42	116460	3.72
Oat	3	136	2.50	356.25	321.30	10.88	58100	3.18	48000	2.88
Cowpea	1	20	1.00	245.00	215.00	13.95	127411	3.97	102560	3.45

Table 3.35: Frontline Demonstrations on commercial crops conducted by KVKs

Crop	No. of KVKs	No. of Demos	Area (ha)	Yield			Economics of FLD (Rs/ha)		Economics of Check (Rs/ha)	
				Demo (q/ha)	Check (q/ha)	Increase (%)	Net return	B:C ratio	Net return	B:C ratio
Garlic	PB(1)	50	2.00	51.00	43.33	17.70	173500	4.10	118333	3.15
Turmeric	PB(3)	80	2.50	179.50	149.50	20.07	183150	3.11	124700	2.55
Eucalyptus	PB(2)	30	2.55	817.00	554.00	47.47	476403	3.68	269831	2.55
Cotton	PB(2)	35	14.10	14.80	13.00	13.85	72185	2.44	57410	2.16
Garlic	HP(1)	39	8.80	80.88	66.01	22.52	336488	3.27	255933	2.94
Marigold	HP(1)	4	1.00	450.00	380.00	18.42	75000	3.14	35000	2.00
Marigold	JK (1)	4	1.00	120.00	90.00	33.30	240000	5.00	165000	3.75
Garlic	UK(2)	80	2.08	163.75	109.5	49.54	345750	3.47	162000	2.43

be significantly higher compared to that of the local checks, ranging from 13.85 per cent in cotton in Punjab to 49.54 per cent in garlic in Uttarakhand.

3.9 Livestock and Fisheries

KVKs of Zone-I also conducted 1597 FLDs on dairy and cattle, 315 on sheep & goat, 939 on poultry, 69 on fishery and 13 on piggery during the period under report.

3.10 Other demonstrations

KVKs of Zone-I also conducted 5084 FLDs on home science technologies, 2125 FLDs on nutritional garden/kitchen gardening, 485 FLDs on mushroom production, 376 on value addition, 50 on apiculture, 112 on vermicomposting and 2724 on farm implements and machinery.



CAPACITY DEVELOPMENT

Need based training programs were organized by the Krishi Vigyan Kendras of Zone-I for the benefit of farmers, farm women, and rural youth and extension personnel. During the calendar year 2022, 4723 capacity building programs were organized for farmer and farm women in which a total of 114236 beneficiaries were trained. Similarly, 18636 rural youth and 5865 extension functionaries were trained on different aspects of agriculture through 717 and 292 courses respectively.

4.1 Training courses for farmers and farm women

A total of 4723 capacity building courses were organized for farmers and farm women by the KVKs during the period under report, benefitting more than 1.14 lakh participants (Table 4.1). The highest number of courses (1511) was organized in Punjab, followed by 1461 courses in Jammu and Kashmir, 799 courses in Uttarakhand, 686 courses in Himachal Pradesh and 266 courses in Ladakh respectively.

Table 4.1: Overall State wise details of trainings courses organized for farmers/farm women including sponsored training programs

State/UT	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Punjab	1511	21004	4661	25785	3137	1981	5118	24141	6642	30783
Himachal Pradesh	686	5156	5717	10778	4292	5302	9540	9448	11019	20467
Uttarakhand	799	5073	8058	13227	1390	1891	3261	6463	9949	16412
Jammu & Kashmir	1461	23017	5648	28863	3974	2459	6416	26991	8107	35098
Ladakh	266	2698	6018	8730	651	2109	2748	3349	8127	11476
Total	4723	56948	30102	87383	13444	13742	27083	70392	43844	114236



Capacity building for farm women vegetable production by KVK Kullu



Capacity building programme on Vermicomposting at KVK Bandipora

266 courses in Ladakh. These courses involved 70392 men and 43844 women as participants. These courses covered different major themes like crop production, horticultural production, livestock production and management etc. (Table 4.2).

4.2 Training courses for rural youth

KVKs trained 18636 rural youth by organizing a total of 717 training courses. The state wise distribution of these training courses were 309 in Jammu & Kashmir, 198 in Punjab, 130 in Himachal Pradesh, 71 in Uttarakhand and 9 in Ladakh. The number of rural youths who participated in the KVK training courses was 8076 in Jammu and Kashmir, 5445 in Punjab, 3726 in Himachal Pradesh, 1171 in Uttarakhand and 218 in Ladakh. Among the total 18636 rural youth trained, 12036 were males and 6600 were females (Table 4.3). The theme wise details of training

programs organized for the rural youth have been presented in Table 4.4.

4.3 Extension Functionaries

The details of capacity building courses organized for extension functionaries indicate that a total of 292 courses were organized for 5865 participants, including 1808 women participants. Among the different states, 123 courses were organized in Jammu & Kashmir, 110 courses in Punjab, 38 courses in Uttarakhand, 14 courses in Himachal Pradesh and 7 courses in Ladakh (Table 4.5). The theme wise details of trainings organized for the extension functionaries have been given in Table 4.6.

4.4 Sponsored Training Courses

A total of 167 sponsored training courses were organized by the KVKs during the reporting period

Table 4.2: Overall Theme wise details of trainings courses organized for farmers/ farm women including sponsored training programs

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop Production	843	11349	5961	17216	3210	2373	5566	14559	8334	22893
Horticulture	920	11698	5199	16897	2784	2080	4864	14482	7279	21761
Soil Health and Fertility Management	342	5677	1336	6941	957	831	1788	6634	2167	8801
Livestock Production and Management	710	8807	3170	11975	2429	2345	4774	11236	5515	16751
Home Science/Women empowerment	629	1811	8539	10244	786	3648	4402	2597	12187	14784
Agril. Engineering	247	5427	130	5540	399	97	496	5826	227	6053
Plant Protection	542	7205	2315	10162	1620	1011	2577	8825	3326	12151
Fisheries	78	832	248	1080	318	221	539	1150	469	1619
Production of Input at site	150	1977	1382	3351	344	518	862	2321	1900	4221
Capacity Building and Group Dynamics	167	1497	1282	2769	286	310	596	1783	1592	3375
Agro forestry	95	668	540	1208	311	308	619	979	848	1827
Total	4723	56948	30102	87383	13444	13742	27083	70392	43844	114236



Table 4.3: State wise details of training courses organized for rural youth including sponsored training programs

State/UT	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Punjab	198	3131	816	3947	845	653	1498	3976	1469	5445
Himachal Pradesh	130	928	1307	2235	656	835	1488	1584	2142	3726
Uttarakhand	71	505	476	981	94	96	186	599	572	1171
Jammu & Kashmir	309	5109	1573	6679	749	645	1394	5858	2218	8076
Ladakh	9	15	127	142	4	72	76	19	199	218
Total	717	9688	4299	13984	2348	2301	4642	12036	6600	18636

Table 4.4: Theme wise details of training courses organized for rural youth including sponsored training programs

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Horticultural entrepreneurship	206	3328	802	4130	472	325	790	3800	1127	4927
Agri-preneurship development	297	2836	2352	5185	841	1410	2251	3677	3762	7439
Livestock & Fisheries entrepreneurship	214	3524	1145	4669	1035	566	1601	4559	1711	6270
Total	717	9688	4299	13984	2348	2301	4642	12036	6600	18636

Table 4.5: State wise details of training course organized for extension functionaries including sponsored training programs

State/UT	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Punjab	110	1307	426	1673	112	111	222	1419	537	1956
Himachal Pradesh	14	137	108	245	14	32	46	151	140	291
Uttarakhand	38	331	333	664	39	49	88	370	382	752
Jammu & Kashmir	123	1797	322	2119	147	46	193	1944	368	2312
Ladakh	7	173	381	554	0	0	0	173	381	554
Total	292	3745	1570	5255	312	238	549	4057	1808	5865

Table 4.6: Theme wise details of training course organized for extension functionaries including sponsored training programs

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop Production	85	1224	173	1382	99	30	129	1323	203	1526
Horticultural production	44	662	77	739	64	17	81	726	94	820
Agricultural Engineering	9	103	18	121	12	0	12	115	18	133
Gender mainstreaming in agriculture	33	49	446	495	0	100	99	49	546	595
Group dynamics	4	39	7	46	0	0	0	39	7	46
Animal husbandry & others	117	1668	849	2472	137	91	228	1805	940	2745
Total	292	3745	1570	5255	312	238	549	4057	1808	5865



Vocation training on fishery conducted by KVK Mohali



Vocational training on dairy farming conducted by KVK Una

for 5681 participants, including 2123 females. The KVKs of Jammu and Kashmir organized 64 courses followed by Punjab (47), Himachal Pradesh (34), Uttarakhand (20), and Ladakh (2) (Table 4.7). The theme wise details of sponsored trainings have been given in the Table 4.8.

4.5 Vocational Training Courses

During the reporting period, 318 vocational training

courses were organized by KVKs with the participation of 6534 stakeholders, including 2381 women participants. KVKs of Punjab organized the highest 179 courses with a participation of 4023 participants followed by Ladakh, J&K, Himachal Pradesh and Uttarakhand (Table 4.9). The theme wise details of vocational trainings have been given in the Table 4.10.

**Table 4.7: State wise details of sponsored training courses organized by the KVKs**

State/UT	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Punjab	47	1010	264	1274	313	233	546	1323	497	1820
Himachal Pradesh	34	323	480	803	263	322	585	554	753	1307
Uttarakhand	20	361	227	588	68	46	114	429	273	702
Jammu & Kashmir	64	1183	588	1771	100	49	149	1243	567	1810
Ladakh	2	0	0	0	9	33	42	9	33	42
Total	167	2877	1559	4436	753	683	1436	3558	2123	5681

Table 4.8: Theme wise details of sponsored training courses organized by the KVKs

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	72	1081	794	1875	379	382	761	1388	1057	2445
Post-harvest technology and value addition	14	108	230	338	20	45	65	128	275	403
Farm machinery	5	159	27	186	29	52	81	188	79	267
Livestock and fisheries	56	1245	225	1470	258	125	383	1503	350	1853
Home Science	10	61	216	277	26	69	95	87	285	372
Agricultural Extension	10	223	67	290	41	10	51	264	77	341
Total	167	2877	1559	4436	753	683	1436	3558	2123	5681

Table 4.9: State wise details of vocational training courses organized by the KVKs

State/UT	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Punjab	179	2227	786	2990	576	434	1014	2803	1220	4023
Himachal Pradesh	36	284	288	572	157	284	441	441	572	1013
Uttarakhand	9	111	101	212	10	9	19	121	110	231
Jammu & Kashmir	46	606	293	899	100	125	225	706	418	1124
Ladakh	48	30	31	56	52	30	82	82	61	143
Total	318	3258	1499	4729	895	882	1781	4153	2381	6534

Table 4.10: Theme wise details of vocational training courses organized by the KVKs

Area of training	No. of Courses	No. of Participants								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	34	523	81	604	92	89	179	615	170	785
Post-harvest technology and value addition	44	206	460	666	41	139	179	247	599	846
Livestock and fisheries	86	1227	287	1491	495	288	783	1722	575	2297
Income generation activities	145	1075	615	1685	250	356	613	1325	971	2296
Agricultural Extension	9	227	56	283	17	10	27	244	66	310
Total	318	3258	1499	4729	895	882	1781	4153	2381	6534


Vocational training on goatry conducted by KVK Fatehgarh Sahib

OTHER EXTENSION ACTIVITIES

5.1 Frontline Extension Programmes

KVKs made efforts to create awareness about recent developments in agriculture and allied sectors among farmers, extension personnel and other stakeholders through different individual, group and mass contact methods. Further, KVKs are in the forefront of mass media utilization in disseminating timely and relevant technologies to the farming community without any time lag. Frontline extension programmes undertaken by the KVKs helps to disseminate various agriculture related technologies among farmers on a large scale. In this process the coordination with development agriculture and animal husbandry departments and private agencies is crucial for successful executing of extension programmes.

Various extension activities were carried out by KVKs in coordination and collaboration with other line departments/agencies working in the district during the year 2022 are briefly presented here under. The activity wise details of extension programmes organized are furnished in Table 5.1. Data implies that

KVKs' efforts through extension programmes covered a large number of farmers and created awareness about new technologies, activities and agri-enterprises.

A total of 49375 extension programmes were organized through different methods and means wherein technologies related to agriculture and allied sectors were appraised among 9.29 lakh farmers, and 0.24 lakh extension personnel on various aspects like varietal performance, production technologies, Integrated Pest and Disease Management, Animal health and Nutrition, Production technologies of Poultry, Fisheries, Human Nutrition etc. The different participants participated in the various extension activities organized by different KVKs are presented in Table 5.2.

Data further indicated that KVKs in Punjab organized maximum extension programmes (22410) followed by Jammu & Kashmir (11983), Uttarakhand (8900), Himachal Pradesh (5343) and Ladakh (738).

In respect of utilizing mass media KVKs popularized



Demonstration on pruning of apple of KVK Kullu



Diagnostic visit by KVK Shimla

Table 5.1: Activity wise details of extension programmes conducted by KVKs during the year

Nature of Activity	No. of Activities	SC/ST (Farmers)			OBC/Other (Farmers)			Extension Officials			Grand Total		
		(I)		Total	(II)		Total	(III)		Total	(I+II+III)		Total
		Male	Female		Male	Female		Male	Female		Male	Female	
Field Day	447	6217	2022	8239	8360	1993	10353	348	159	507	14925	4174	19099
Kisan Mela	215	81591	22709	104300	40042	14916	54958	2814	1795	4609	124447	39420	163867
Kisan Mela (Virtual)	32	14526	1667	16193	5894	985	6879	67	41	108	20487	2693	23180
Kisan Ghosthi	619	8226	6231	14457	9139	4567	13706	693	266	959	18058	11064	29122
Exhibition	501	65891	19744	85635	80245	28217	108462	3243	2076	5319	149379	50037	199416
Film Show	416	9270	3159	12429	10558	4004	14562	644	497	1141	20472	7660	28132
Method Demonstrations	3180	12396	5417	17813	23866	5817	29683	512	248	760	36774	11482	48256
Farmers Seminar	182	1397	540	1937	7710	605	8315	79	37	116	9186	1182	10368
Workshop	228	1299	540	1839	2318	1104	3422	311	159	470	3928	1803	5731
Group meetings	449	1931	878	2809	3089	1564	4653	181	106	287	5201	2548	7749
Lectures delivered as resource persons	5104	44833	16311	61144	58275	16667	74942	2200	1246	3446	105308	34224	139532
Scientific visit to farmers field	10611	14186	7367	21553	26652	7803	34455	951	642	1593	41789	15812	57601
Farmers visit to KVK	19683	30423	16728	47151	52635	14964	67599	1407	779	2186	84465	32471	116936
Diagnostic visits	5404	5517	2440	7957	12881	3680	16561	406	192	598	18804	6312	25116
Exposure visits	774	5798	4424	10222	11467	5308	16775	900	379	1279	18165	10111	28276
Ex-trainees Sammelan	55	506	315	821	654	663	1317	103	75	178	1263	1053	2316
Soil health Camp	76	1067	790	1857	1308	514	1822	167	221	388	2542	1525	4067
Animal Health Camp	110	1524	567	2091	1900	623	2523	176	62	238	3600	1252	4852
Agri mobile clinic	380	425	152	577	491	151	642	69	43	112	985	346	1331
Soil test campaigns	89	2067	531	2598	1418	436	1854	101	210	311	3586	1177	4763
Farm Science Club Conveners meet	87	1464	389	1853	259	185	444	36	27	63	1759	601	2360
Self Help Group Conveners meetings	181	198	922	1120	253	875	1128	85	92	177	536	1889	2425
Mahila Mandals Conveners meetings	66	163	724	887	135	464	599	32	46	78	330	1234	1564
Farmers scientist interaction	1	0	4	4	8	39	47	2	0	2	10	43	53
Farmers interaction with Hon'ble P.M.	4	43	34	77	116	40	156	12	2	14	171	76	247
Important days	38	176	237	413	541	712	1253	21	10	31	738	959	1697
Awareness programme on Natural farming	4	4	13	17	37	66	103	0	0	0	41	79	120
Telephone helpline	92	20	3	23	32	23	55	2	0	2	54	26	80
Swachhita Abhiyan	32	77	41	118	362	144	506	3	1	4	442	186	628
Problem solve on line	314	35	7	42	172	73	245	89	14	103	296	94	390
Grand Total	49374	311270	114906	426176	360817	117202	478019	15654	9425	25079	687741	241533	929274

Table 5.2: State wise extension activities conducted by KVKs during the year

State	OBC/Other (Farmers)			SC/ST (Farmers)			Extension Officials			Grand Total		
	(I)			(II)			(III)			(I+II+III)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Himachal Pradesh	16240	18086	34326	23091	22453	45544	1015	743	1758	40346	41282	81628
Jammu & Kashmir	72207	27665	99872	51106	21822	72928	3293	1357	4650	126606	50844	177450
Ladakh	7741	12075	19816	2401	2161	4562	529	240	769	10671	14476	25147
Punjab	199027	41226	240253	243242	44449	287691	8297	4954	13251	450566	90629	541195
Uttarakhand	16055	15854	31909	40977	26317	67294	2520	2131	4651	59552	44302	103854
Total	311270	114906	426176	360817	117202	478019	15654	9425	25079	687741	241533	929274

technologies through extension literature (70087), newspaper coverage (1821), popular articles (696), radio talks (235) and TV talks (185). State-wise details of extension programmes are presented in Table 5.3. A total of 6125 mass awareness programmes were conducted by the KVKs of Zone-I

during the year.

5.2 Kisan Mobile Advisory

Kisan Mobile Advisory is one of the Information and Communication Technology (ICT) tools for dissemination of requisite and need based

Table 5.3: State wise mass awareness among farmers through Print, Information, and Communication technology

S. No.	Name of Activity	Himachal Pradesh	Jammu & Kashmir	Ladakh	Punjab	Uttarakhand	Total
1.	Extension Literature	359	3203	187	4241	159	8149
2.	News Paper Coverage	253	512	7	702	347	1821
3.	Radio talks	22	56	36	79	42	235
4.	TV talks	14	77	3	37	54	185
5.	Popular Articles	60	87	14	258	277	696
Grand Total		708	3935	247	5317	622	11086



Exhibition at district level camp at KVK Fatehgarh Sahib



Exposure visit of poultry farmers by KVK Bhatinda

information to the farmers at the right time. KVKs are sending information via SMS to farmers advising them on the vital issues of agricultural importance and contingency planning in case of failure of monsoon during the year. During the reporting period, 59 KVKs have advised farmers regularly on the areas of crops, livestock, other enterprises, weather, marketing and awareness of latest agricultural technologies through the text depending on the expertise and facility available with them (Table 5.4). A total of 40248 messages have been sent to 1363210 farmers. The messages were mainly on crops (14961), awareness among the farmers about agriculture related technologies (3279), livestock (4725), other enterprises related to agriculture (1620), weather (6720) and marketing (829).

5.3 Technology Week

Technology week is being organized by KVKs to

demonstrate and create awareness among the stakeholders about the latest technologies on various aspects of agriculture and allied sectors generated by NARS. Normally it is observed for a period of 4 to 6 days. A total of 62052 farmers have participated in technology week programmes organized by 34 KVKs. This programme enabled the KVKs to have strong linkages and collaboration with various line departments of the district, as evident by the involvement of technical programmes including 116 Kisan Gosthies, 407 lectures from eminent scientists and experienced officials, 66 exhibitions, 42 film shows, 17 fair, 270 visits to the KVK farm and 267 diagnostic practical's Table 5.5.

In addition, 278.4 q of high yielding varieties/hybrid seeds, 18915 planting materials and 1.82 bio-fertilizers were made available to more than 25566 participating farmers, farm women, extension officials and other stakeholders.

Table 5.4: State wise details of Kisan Mobile Advisory Services provided by KVKs during the year

State	Type of Messages (text + video)						Total Messages	Total Farmers involved
	Crop	Livestock	Weather	Marketing	Awareness	Enterprise		
Himachal Pardesh	836	609	1173	8	590	27	10696	513953
Jammu & Kashmir	3235	2761	2671	125	387	184	8725	157741
Ladakh	10	3	5	0	29	4	50	25435
Punjab	3444	1165	753	677	2143	1328	9567	624072
Uttarakhand	7436	187	2118	19	130	77	11210	42009
Grand Total	14961	4725	6720	829	3279	1620	40248	1363210



Exposure visit of team from Nepal with team of KVK Ludhiana



KVK Mandi Awareness Programme on Pulses

Table 5.5: State wise details of activities conducted by KVKs during Technology week

Types of Activities	Himachal Pradesh	Jammu & Kashmir	Ladakh	Punjab	Uttarakhand	Total
Gosthies	3	39	1	21	52	116
Lectures organized	0	187	3	66	151	407
Exhibition	1	22	1	22	20	66
Film show	0	13	1	9	19	42
Fair	2	4	0	6	5	17
Farm Visit	2	148	1	50	69	270
Diagnostic Practical's	2	123	0	26	116	267
Distribution of Literature (No.)	0	545	12	2758	294	3609
Distribution of Seed (q)	2	74	0.15	193.25	9	278.4
Distribution of Planting materials (No.)	0	10505	0	3402	5008	18915
Bio Product distribution (Kg)	0	1860	0	55	0	1915
Bio Fertilizers (q)	0	0	0	1.82	0	1.82
Distribution of fingerlings	0	0	0	0	0	0
Distribution of Livestock specimen (No.)	0	500	0	1200	2	1702
Total number of farmers visited the technology week	1476	1544	1001	12926	8619	25566

*Kisan diwas, KVK Faridkot**Kisan Gosthi by KVK Mohali*

5.4 National Nutrition Month

The Ministry of Women and Child Development celebrated the fifth Rashtriya Poshan Maah 2022 from September 1 to September 30, 2022, as part of the National POSHAN Abhiyaan, a Central government initiative which aims to strengthen the efforts to end hunger and malnutrition. This year the theme of Poshan Maah 2022 is “Maahila aur Swasthya” and “Bacha aur Shiksha” focused on various activities related to the health of the women and the children

across the country.

Poshan Abhiyan and Tree Plantation drive during September 2022

On 17th September 2020, the Krishi Vigyan Kendras (KVKs) of ICAR-ATARI Zone-1 in collaboration with IFFCO organized 70 programmes on Poshan Abhiyaan and Tree Plantation drive on KVK campus as well as in the adopted villages. About 6747 farmers and farm women attended these programmes. Live streaming of the address of the Hon'ble Union



Celebration of poshan abhiyan at KVK Pauri Garhwal



Poshan abhiyan and tree plantation

Minister for Agriculture and Farmers Welfare, Govt. of India, Shri Narendra Singh Tomar from KVK Morena, Madhya Pradesh was also arranged to acquaint the participating farmers with all the proceedings of the event. On this occasion, 100 vegetable kits and Agro-forestry plants were distributed by each KVK among the farmers to encourage Nutri- garden at house hold level to fulfil the basic requirements of vegetables and consume balance diet (Table 5.6).

Plantation drives at KVK campus was also carried out after the event. Farmers were also shown the various demonstration units of KVK and stressed them to focus on Integrated Farming Systems. Major emphasis was given on importance of Nutri-garden and its importance in nutritional security among

families. Farmers were made aware about Nutri-garden and bio-fortified varieties by the KVK scientists with a focus on its importance in fulfilling daily nutritional requirements of the households. KVK scientists also delivered lectures on Nutri-cereals and their role on human health during this programme. Two training programmes on “Preparation of Nutritious Khichdi and Processing & Value addition of Bio-fortified Maize” were organized at KVK Ganderbal (J&K). In KVK Udham Singh Nagar, Hon'ble MLA Shri Trilok Singh Cheema had addressed the farmers and highlighted the importance of balanced nutrition in life. Small children from nearby schools were also invited to KVKs to show them diverse food groups and their importance to health.

Table 5.6: Details of participants during poshan abhiyan and tree plantation drive during 17th September 2022

Name of State/UT	No. of KVKs	No. of farmers participated	Samplings planted/ distributed (No.)	Vegetable Seed Packets distributed (No.)	No. of public representatives participated		
					Central Ministers / MPs	State Ministers / MLAs	Others
Punjab	22	2148	1097	2155	0	0	55
Himachal Pradesh	13	1309	865	1241	0	0	66
Jammu & Kashmir	19	1737	1547	1782	1	1	81
Uttarakhand	12	1193	982	1120	0	6	47
Ladakh	4	360	0	364	0	1	16
Total	70	6747	4491	6662	1	8	265



Poshan Maah at KVK Kullu



Tree plantation by KVK Almora

5.5 Kisan Sarathi

Kisan-System of Agri-Information Resources Auto-Transmission and Technology Hub Interface (Kisan-SARATHI) is a joint initiative of Indian Council of Agricultural Research (ICAR) & Digital India Corporation (DIC), Ministry of Electronics & Information Technology, Government of India. The platform features include personalized 'Advisory' based on 'Farm and Farmers' Profile'; 'Live Interaction' in Local language with Domain Experts'; 'Anywhere Anytime Access' on past advisories; Dashboard & MIS for monitoring and evaluation; Call facilities – Call on Mobile, Click to Call, Call Conferencing, Call Recording; Access to Knowledge & Farmer Database Know Your Farmer (KYF); 'Push Alert Message' based on 'Location and Domain'; and, Facility to Register through Toll Free and Web. The services of Kisan-SARATHI can be availed through IVRS/Toll free number: 1800 123 2175 or web portal: www.kisansarathi.in.

During the year 2022, a total of 344088 farmers have

been registered on the portal by the KVKs of Punjab (90984), Himachal Pradesh (81703), Uttarakhand (43699), Jammu & Kashmir (118537) and Ladakh (9165).

5.6 Convergence and Linkages

KVKs work in collaboration with different line departments, organizations of the State and Central Government and well reputed NGOs working on different aspects of agriculture and rural development for sharing experiences and expertise. Such collaborations with line departments will help the KVKs in arranging resources for carrying out different extension activities and developing demonstration and training infrastructure. The organizations having linkage and collaboration with KVKs have been listed in Tables 5.7, 5.8, 5.9, 5.10 & 5.11. Besides, many KVKs are working in collaboration with Agricultural Technology Management Agency (ATMA) and National Horticulture Mission (NHM). KVKs of Punjab provided vocational trainings on bee keeping while

Table 5.7: Linkages of KVKs with other Line Departments in Ladakh

Name of the Line Department	Training	FLD	Extension Activities	Other
Agriculture Department	9	5	7	3
Horticulture Department	7	1	4	2
Animal Husbandry Department	6	0	1	2
Forest Department	1	0	0	1
Fishery Department	0	0	0	2
Rural Development Department	0	0	0	3
Total	23	6	12	13

KVKs of Himachal Pradesh and Jammu & Kashmir provided trainings on different aspects of protected

cultivation, horticulture and off-season cultivation of vegetables.

Table 5.8: Linkages of KVKs with other Line Departments in Jammu & Kashmir

Linkage of J&K with other Line Departments for the year 2022					
Name of the Line Department	Training	FLD	Extension Activities	Other	Funds Received From Departments
Dept. of Agriculture Animal Husbandry, Animal Science, Forest, Fishery, Horticulture. Floriculture, sheep husbandry, sericulture, social forestry, women & child development & poultry & social welfare	294	651	1525	18	100000
SUKAST-Srinagar, SUKAST-JAMMU, GADVASU-Ludhiana, PAU-Ludhiana, ICAR-ITW&BK, IARI-NEP, IARI, IIIM, CRIDA, CITH	2	45	5	1	0
NRLM, SAMETI, NABARD, RESTI, BANK, IFFCO, AIR, NYK, APEDA, IMD, DRMR & cooperative society	23	2	62	5	135000
Central silk board, marketing development board	1	0	5	1	0
District Administration	1	1	1	0	0
Total	321	699	1598	25	235000

Table 5.9: Linkages of KVKs with other Line Departments in Himachal Pradesh

Linkage of J&K with other Line Departments for the year 2022					
Name of the Line Department	Training	FLD	Extension Activities	Other	Funds Received From Departments
ATMA, HRDI, IFFCO, IMD, NABARD, NBPGR, NGOs, RSETI, NHB, ULDB, SAMETI, UKSTDC, VPKAS, SJVNM, IDP, NFL	44	21	51	5	1197005
Dept. of Agriculture Animal Husbandry, Entomology, Animal Science, Forest, Fishery & Horticulture	60	15	43	1	75000
Jica Forestry Project, GBPIHED Mohal Mid Himalayan Watershed Project	20	0	1	0	11702
IARI, Katrain, HPKVK, ICAR, IGFR, CSWRI, CSKHPKV-HAREC, YSPUHF-RHRTC.	29	26	32	0	1171683
Total	153	62	127	6	2455390

**Table 5.10: Linkages of KVKs with other Line Departments in Uttarakhand**

Linkage of J&K with other Line Departments for the year 2022					
Name of the Line Department	Training	FLD	Extension Activities	Other	Funds Received From Departments
ATMA, HRDI, IFFCO, IMD, NABARD, NBPGR, NGOs, RSETI, NHB, ULDB, SAMETI, UKSTDC & VPKAS	42	14	64	36	764995
Dept. of Agriculture Animal Husbandry, Animal Science, Forest, Fishery & Horticulture	89	12	71	57	1260000
Agri-Export Zone	0	0	1	0	0
AT India, Lakhamanadal	0	0	1	0	0
CSWCRTI (ICAR)	0	0	1	0	0
Defence Agriculture Research Lab.	1	1	1	0	0
Directorate of Statistics & Watershed Management	0	0	1	0	0
Doiwala Sugar Company Limited	0	0	1	0	0
Himalayan Action & Research Centre	0	0	1	0	0
INTAS Pharma	0	1	2	3	4
Intervet Pharma	0	0	1	0	0
Jalagam Unit	1	1	1	0	0
Total	133	29	146	96	2024999

Table 5.11: Linkages of KVKs with other Line Departments in Punjab

Linkage of J&K with other Line Departments for the year 2022					
Name of the Line Department	Training	FLD	Extension Activities	Other	Funds Received From Departments
APEDA, ATMA, BIS, CRRID, DMI, DRDA, DIC, IFFCO, KVIC, KRIBHCO, MARKFED, NABARD, NFL, NKS NYKs, PEDDA, SRRT Trust, Trident, Ambuja Cement, Verka, Bank, Cooperative Departments	54	55	94	12	4,517,578
Dept. of Agriculture, Animal Husbandry, Dairy Development, Fishery, Horticulture, Soil & Water Conservation, Women & Child Development, social welfare, social security & rural development	116	50	144	22	171,942
District Administration, Bureau of Indian standards, dairy development board, Punjab energy development, ministry of rural development, veterinary polyclinic, sugar mill, central warehouse board of India, confederation of Indian industries, wwv-india, Punjab agri export, district development agency, director of marketing inspector, Punjab seed certification agency, national seed corporation, forest office & district industry centre	11	0	24	1	0

Contd.

Linkage of J&K with other Line Departments for the year 2022

Name of the Line Department	Training	FLD	Extension Activities	Other	Funds Received From Departments
Ministry of Food Processing	2		2		
National Seed Corporation	0	0	1	0	0
IGFRI, PAU, Ludhiana & GADVASU, Ludhiana	3	0	1	4	0
Punjab Agro Industry	0	0	1	0	0
Radio Station	0	0	1	0	0
Zonal Research Station	0	0	1	0	0
Shaheed Bhagat Singh Krantikari Society, Doaba (Regd.), Bhunga	1	0	0	0	0
Total	187	105	270	39	4,689,520
Grand Total	817	901	2153	178	5184341



SUPPORT SERVICES BY KVKs

6.1 Technological Inputs

Timely availability of good quality seeds, planting materials, livestock breeds and bio-products are the primary requirements to achieve the potential yield in agriculture and allied sectors. KVKs actively involve themselves in production of quality seeds, planting materials, livestock material and bio-products and supply them to needy farmers for achieving the goal of farmers' welfare.

6.1.1 Seed Production

KVKs of the Zone-1 produced 13942 q seed, which was made available to 250926 farmers earning total revenue of more than Rs. 472 lakh (Table 6.1).

Among different states of this Zone, the highest total amount of seed was produced by the KVKs of Punjab (7648.48 q) followed by the KVKs of Uttarakhand,

Himachal Pradesh, Jammu & Kashmir and Ladakh (Table 6.2).

6.1.2 Planting Material

During 2022, KVKs of Zone-I produced 47.86 lakh number of seedlings/plants as planting material worth Rs. 94.62 lakh which was provided to 27899 farmers (Table 6.3). KVKs of Uttarakhand (37.65 lakh) produced the highest numbers of plants/ seedlings followed by Himachal Pradesh (4.01 lakh), Punjab (2.99 lakh), Ladakh (2.12 lakh) and J&K (1.09 lakh) (Table 6.4).

6.1.3 Livestock Production

During the reported period, KVKs of Zone-I produced as many as 4353 livestock including cattle, carps and poultry worth Rs. 9.80 lakh which were provided to 642 farmers (Table 6.5). KVKs of the

Table 6.1: Details of seed production by the KVKs

Crop	Quantity of seed (q)	Value (Rs.)	No. of farmers received seed
Cereal	9073.58	31384702	18363
Oilseed	296.07	2172955	5112
Green Manure	3.80	20000	14
Pulse	828.37	3090965	3939
Commercial	2874.72	8438728	220310
Vegetable	279.70	772557	2106
Flower	0.03	2100	40
Spices	304.88	101180	244
Fodder	268.55	1145540	696
Fiber	10.50	63000	15
Others	1.90	13825	87
Total	13942.10	47205552	250926

Table 6.2: State-wise details of seed production by KVKs (in quintal)

Crop	Punjab	Himachal Pradesh	Jammu & Kashmir	Ladakh	Uttarakhand	Total
Cereal	6950.37	548.76	871.12	0.00	703.33	9073.58
Oilseed	91.98	159.98	18.59	0.00	25.52	296.07
Green Manure	3.80	0.00	0.00	0.00	0.00	3.80
Pulse	39.43	653.31	54.85	0.00	80.78	828.37
Commercial	515.00	1.70	9.14	6.00	2342.88	2874.72
Vegetable	9.48	58.67	3.70	205.00	2.87	279.70
Flower	0.00	0.00	0.03	0.00	0.00	0.03
Spices	0.00	304.88	0.00	0.00	0.00	304.88
Fodder	38.42	16.04	134.00	50.00	30.09	268.55
Fiber	0.00	10.50	0.00	0.00	0.00	10.50
Others	0.00	0.00	0.00	0.65	1.25	1.90
Total	7648.48	1753.83	1091.43	261.65	3186.72	13942.10

Table 6.3: Production of planting material by the KVKs

Category	Number	Value (Rs.)	Distributed to No. of farmers
Vegetable Seedling	4646434	2400649	21696
Fruits	69752	5879400	5178
Ornamental plants	12086	201548	480
Medicinal and Aromatic	325	1450	15
Plantation	11235	224700	30
Spices Crops	100	1000	15
Fodder crop	46013	753000	485
Total	4785945	9461747	27899

Table 6.4: State-wise details of planting material production

Category	Punjab	Himachal Pradesh	Jammu & Kashmir	Ladakh	Uttarakhand	Total
Vegetable Seedling	286807	315322	82047	205769	3756489	4646434
Fruits	644	41389	26220	0	1499	69752
Ornamental plants	0	4706	0	0	7380	12086
Medicinal and Aromatic	0	0	200	0	125	325
Plantation	11235	0	0	0	0	11235
Spices Crops	0	0	100	0	0	100
Fodder crop	0	40000	0	6013	0	46013
Total	298686	401417	108567	211782	3765493	4785945

**Table 6.5: Production of livestock by the KVKs of Zone-I**

Type of livestock	Number	Value (Rs)	Distributed to no. of farmers
Dairy	24	510715	23
Poultry	4329	470126	619
Total	4353	980841	642

state of Jammu & Kashmir produced the highest numbers (1724) of livestock followed by the KVKs of Uttarakhand and Punjab (Table 6.6).

6.1.4 Bio-Products

Various bio-products were also produced by the

KVKs to provide them as input support to the farmers. KVKs of Zone-I, produced 13311 numbers/ bags and 298.56 tonnes of bio-products like bio-fertilizers, bio-pesticides, bio-agents, etc. worth Rs. 18.47 lakh for 2863 farmers (Table 6.7). J&K produced the highest

Table 6.6: State-wise production of livestock

Livestock	Punjab	Himachal Pradesh	Jammu & Kashmir	Ladakh	Uttarakhand	Total
Dairy	4	11	1	4	4	24
Poultry	759	0	1723	300	1547	4329
Total	763	11	1724	304	1551	4353

Table 6.7: Production of bio-products by the KVKs of Zone-I

Category/Bio-product	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Distributed to no. of farmers
Biofertilizers				
Vermicompost	271	157141.0	1378542	1145
Azolla	1	520.0	4525	105
Earthworms	0	318.0	20300	125
Compost	0	24300.0	51000	10
Worms	0	230.8	66100	145
Azotobacter	0	50.0	15000	100
PSB	300	200.0	56250	250
Rhizobium	1674	837.0	66960	210
Total	2246	183596.8	1658677	2090
Bio Pesticides				
Trichoderma harjinum	38	38.0	19000	127
Total	38	38.0	19000	127
Earth Worm				
Eisenia foetida	10995	992.0	53526	163
Total	10995	992.0	53526	163
Others bio product				
Mushroom spawn	32	382.4	47500	122
Mineral Mixture	0	400.0	32000	336
Cow dung (wet)	0	113150.0	36500	25
Total	32	113932.4	116000	483
Grand Total	13311	298559.1	1847203	2863

bio-products in terms of their value followed by Ladakh, Uttarakhand, Himachal Pradesh, and Punjab (Table 6.8).

6.2 Soil, Water and Plant Analysis

During the period, KVKs of the Zone have analysed a total of 10733 samples including 8123 soil samples, 1472 water samples and 1138 plant samples. There were 7766 farmers from 3051 villages who have availed this facility and KVKs earned Rs.4, 40,476/- from this service (Table 6.9). KVKs have also distributed 4837 soil health cards to these farmers.

Data in Table 6.10 shows that KVKs of Punjab analyzed as many as 5149 soil samples followed by

Himachal Pradesh (1393), Jammu & Kashmir (1167) and Uttarakhand (414). Similarly, 871 plant samples were analyzed by the KVKs of Punjab followed by Himachal Pradesh (203) and Jammu & Kashmir (64).

6.3 Rain Water Harvesting Units

Rainwater harvesting with the micro irrigation system were established in 33 KVKs. A total of 63 training programs courses and 108 demonstrations were conducted and 1898.31 q seed and 906717 numbers of planting materials were produced utilizing this facility. Further, 5924 farmer and 197 officials visited these unit and got acquainted with the rain water harvesting technique (table 6.11)

Table 6.8: State-wise details of production of bio-products

State/ UT	Quantity (No.)	Quantity (Kg.)	Value (Rs.)	Distributed to no. of farmers
Punjab	1816	1968.0	106452	608
HP	195	14913.5	273826	354
J&K	500	241738.3	857350	1359
Ladakh	10800	15340.4	328200	475
UK	0	24599.0	281375	67
Total	13311	298559.1	1847203	2863

Table 6.9: Details of samples analyzed during 2022

Particulars	No. of Samples	No. of farmers	No. of villages	Amount realised (Rs)
Soil	8123	5493	1983	352776
Water	1472	1179	444	57250
Plant	1138	1094	624	30450
Total	10733	7766	3051	440476



*Nursery raising in horticultural crops
by KVK, Sangrur*



*Popularization of plug tray technology
in vegetables*

Table 6.10: State-wise details of samples analyzed during 2022

KVK	Soil Samples					Water Samples				Plant Samples			
	Soil samples analyzed	No. of farmers	No. of villages	Amount realized	Soil Health Cards issued	Water samples	No. of farmers	No. of villages	Amount realized	Plant samples	No. of farmers	No. of villages	Amount realized
Punjab	5149	3091	1426	177150	4192	1472	1179	444	57250	871	827	547	0
Uttarakhand	414	302	74	1500	52	0	0	0	0	0	0	0	0
Himachal Pradesh	1393	1040	229	87261	317	0	0	0	0	203	203	56	30450
Jammu & Kashmir	1167	1060	254	86865	276	0	0	0	0	64	64	21	0
Total	8123	5493	1983	352776	4837	1472	1179	444	57250	1138	1094	624	30450

Table 6.11: Details of activities conducted in rainwater harvesting units

State	No. of Trainings	No. of Demonstration	Seed Produced (q)	Planting Material Produced (No.)	Visit of Farmers	Visit of Officials
Punjab	18	22	356.62	0	331	38
Himachal Pradesh	14	63	1538.69	541017	4251	97
Uttarakhand	16	7	1	365000	615	31
Jammu & Kashmir	15	16	2	700	727	31
Total	63	108	1898.31	906717	5924	197

*Duckery at KVK Gandarbhal Farm*



TECHNOLOGICAL BACKSTOPPING

7.1 Agricultural Technology Information Centres (ATIC)

Agricultural Technology Information Centre (ATIC) has been established under the National Agricultural Technology Project (NATP) of the ICAR. Farmer worthy technologies has been developed in various institutions in the form of knowledge, technologies, seed, planting materials and publications. These will be of used only when they are put in to practice by farming community and ATIC facilitates in fulfilling their needs. This also will help in providing agri-business and development of entrepreneurship in frontier technology.

ATIC is a single window delivery system for agricultural information as well as products and technologies developed by the research institute with a view to deliver quality services to the clientele. It tries to strengthen the farm advisory services by adopting a multi disciplinary approach to problem

solving. It provides a mechanism for feedback from the end users to the research system. ATIC functions as a repository of agricultural information pertaining to farming skills & practices, farm inputs and agricultural education. It offers consultancy services to the different stakeholders in the state and training to unemployed youth to equip them to become job providers, rather than job seekers.

7.1.1 Technological services

During the year from these six ATICs the number of visits performed by the various beneficiaries includes 4447 visited for technical advice whereas, as much as 7340 farmer's visited to obtain products developed by the host institutes. Soil and water testing facilities at ATICs were used by 735 farmers. The services provided through ATIC and its beneficiaries are given in the Table 7.1.

7.1.2 Technological inputs provided

During the year these six ATICs also provided farm

Table 7.1: Details of activities conducted by ATICs of the Zone

S. No.	Name of ATIC	Farmers Units		Phone calls from farmers (No.)	Soil & Water samples tested (No.)
		Technical advice (No.)	Technology products (No.)		
1.	PAU Ludhiana	104	0	1156	0
2.	CPRI, Shimla	2	0	200	9
3.	SKUAST-K, Srinagar	697	3694	363	0
4.	Dr. YSPUH&F, Solan	111	9	7445	726
5.	CSKHPKV, Palampur	2249	2536	233	0
6.	GBPUA&T Pantnagar	1284	1101	1227	0
Total		4447	7340	10624	735

inputs such microbial inoculants, seeds and planting materials, mushroom cultures, bio-pesticides, farm implements, animal feeding materials, etc. A total of 61197 farmers were benefitted from the technology products sold by the ATICs of the Zone-I (Table 7.2).

7.1.3 Information provided

ATICs provided information using different means such as books, bulletins, pamphlets, CDs, video shows, phone calls, letters, etc. As much as 15423 books and 1586 technical bulletins were provided by the ATICs to its end users. A total of 1560 farmers were benefitted with video shows organized by the ATICs. A total of 7255733 farmers visited the ATIC for various kinds of technical information's related to farming and total revenue of Rs.10861775/- was generated during the year by the six ATICs of the Zone (Table 7.3).

7.2 Technological Backstopping By Directorate of Extension Education

KVKs are being provided with adequate technological backstopping in agriculture and its allied sectors through Directorate of Extension

Education located in eight State Agricultural Universities (SAUs) viz., PAU, Ludhiana; GADVASU, Ludhiana; GBPUA&T, Pantnagar VCSGUH&F, Pauri Garhwal Dr. YSPUH&F, Solan; CSKHPKV, Palampur; SKUAST, Jammu and SKUAST, Srinagar.

The Directors of Extension Education and their officials coordinate and monitor the mandated activities of all the KVKs under their jurisdiction through Scientific Advisory Committee meetings, Workshops, Review Meetings, Field Visits and organize Human Resource Development Programmes for KVK staff on frontier areas of technologies. Further they also provide technological products like improved seeds, planting materials, livestock, poultry breeds and fingerlings to various KVKs as per their farmer's requirements.

Table 7.4 reveals that Directorates of Extension Education of various universities and their officials have participated in 58 Scientific Advisory Committee meetings. Similarly, they have attended 42 Field days, 23 Workshops/Seminars, 5 technology weeks, 61 Training Programmes, 134 On Farm

Table 7.2: Technological Products & service sales provided by ATICs:

S. No.	Particulars	Quantity	No. of farmers benefitted
1.	Seed (q)	49461.14	50046
2.	Planting material (no.)	88583	8039
3.	Livestock (q)	137.5	0
4.	Bio Products (q)	4134	3112
5.	Others (q)	0	0
Total		142315.64	61197

Table 7.3: Publications sold by ATICs to the farmers and students of the Zone during the year

S. No.	Particulars	Copies (No.)	Revenue	Farmers benefitted
1.	Books	15423	9701540	7248564
2.	Technical bulletins	1586	77230	1586
3.	Technology inventory	600	18000	600
4.	Video films	98	0	1560
5.	Others	36854	1065005	3423
Total		61888	10861775	7255733

**Table 7.4: Details of activities attended by Directors of Extension Education of the State Agricultural Universities**

S. No.	Directorate of Extension Education	SAC Meeting Attended	Field Days	Workshops /Seminar	Technology Week	Training Program Attended	Extension Council Meeting	OFT Visited	FLD Visited
1.	PAU, Ludhiana	18	6	5	1	12	2	24	35
2.	GADVASU, Ludhiana	3	0	1	0	0	1	6	10
3.	Dr.YSPUH&F, Nauni, Solan,	3	5	1	0	12	0	30	55
4.	CSKHPKV, Palampur	8	7	0	0	6	0	12	24
5.	UH&F, Pauri Garhwal	2	0	3	0	6	0	0	2
6.	GBPUA&T, Pantnagar	9	4	6	0	2	1	25	38
7.	SKUAST-Jammu	1	13	2	3	17	0	20	52
8.	SKUAST-Srinagar	14	7	5	1	5	2	17	27
Total		58	42	23	5	59	6	134	243

Testing (OFT) and 243 Front Line Demonstrations (FLDs) programmes organized by various KVKs.

7.2.1 Technological information

These Directorates of Extension Education have also published 151 literatures of different kinds of literature including various technology inventories at

their universities. The directorates have also developed 8 mobile apps for the farmers, 201 videos on technologies of agriculture have been uploaded on Youtube and 44 Whatsapp groups of farmers have been created of various districts of state for the reaching the unreached (Table 7.5).

Table 7.5: Details of publications published by Directorates of Extension Education of SAUs

S. No.	Directorates of Extension Education	Publication/ Technology Inventory	Technology Inventory updated	Other Literature/ Updated	Mobile Apps	Video Films	YouTube Video uploaded	WhatsApp Group of Farmer Created
1.	PAU, Ludhiana	15	10	2	3	0	58	12
2.	GADVASU, Ludhiana	15	0	0	2	0	21	0
3.	Dr.YSPUH&F, Solan	14	0	0	0	0	0	0
4.	CSK HPKV, Palampur	2	2	4	0	0	0	0
5.	UH&F, Pauri Garhwal	0	0	0	0	0	0	0
6.	GBPUA&T, Pantnagar	9	0	0	0	0	25	10
7.	SKUAST-Jammu	2	1	2	1		3	2
8.	SKUAST-Srinagar	67	3	3	2	2	94	20
Total		124	16	11	8	2	201	44

7.2.2 Technological inputs

The directorates of Extension Education have also provided the various technological inputs to KVKs such as 47676.18 quintals of improved seed of high yielding varieties, 40632 number of planting materials and 169.01 quintals of bio- products for demonstration at farmer's fields, more than 4509 number of mineral mixture and 3478 packets of UMM blocks was also provided to the KVKs for demonstration purpose in various livestock species (Table 7.6). Along with this, 1677 samples numbers of services such as analysis of fecal matter, deworming,

soil-water testing and other diagnostic services were facilitated by these directorates.

7.2.3 HRD activities organized for KVK staff by the Directorates of Extension Education during January – December 2022 (including Virtual trainings)

During the year eight Directorates of Extension Education organized 54 training programmes for the staff of the KVKs. About 1273 staff of KVKs of 8 Universities from 72 KVKs participated in these capacity building programmes during the year (Table 7.7)

Table 7.6: Details of Technological Products provided to KVKs

S. No.	Directorate of Extension Education	Seed (q)	Planting materials (No.)	Bio-Product (q)	Livestock Breed (No.)	Livestock Products		Poultry Breed (No.)	SWLT
						Mineral Mix. (No.)	UMM B (No.)		
1.	PAU, Ludhiana	47115.00	8813	34	0	0	0	0	1535
2.	GADVASU, Ludhiana	0	0	0	0	1460	410	0	0
3.	Dr.YSPUH&F, SOLAN,	0	1245	0	0	0	0	0	0
4.	CSK HPKV Palampur	2.71	0	0	0	734	2762	0	37
5.	VCSG UH&F, Pauri Garhwal	0	0	0	0	0	0	0	0
6.	GBPUA&T, Pantnagar	52.52	3038	0	2	315	0	1652	0
7.	SKUAST-Jammu	154.60	13975	0.01	0	0	210	0	0
8.	SKUAST-Srinagar	351.35	13561	135	232	2000	96	10398	105
Total		47676.18	40632	169.01	234	4509	3478	12050	1677

Table 7.7: Details of HRD activities organized by Directorates of Extension Education

S. No.	Name of the KVK	No. of Programs	No. of Participants	No. of KVKs involved
1.	PAU, Ludhiana	24	150	18
2.	GADVASU, Ludhiana	7	163	38
3.	Dr.YSPUH& F, Solan	1	28	48
4.	CSK HPKV, Palampur	1	20	6
5.	VCSG UH&F, Pauri Garhwal	0	0	0
6.	GBPUA&T, Pantnagar	4	11	11
7.	SKUAST-Jammu	1	42	9
8.	SKUAST-Srinagar	16	759	104
Total		54	1273	234

SPECIAL PROGRAMMES

8.1 National Innovations in Climate Resilient Agriculture (NICRA)

National Innovations in Climate Resilient Agriculture (NICRA) is a network project of the Indian Council of Agriculture Research (ICAR) which aims to enhance resilience of Indian agriculture to climate change and climate variability. The Technology Demonstration Component (TDC) of NICRA is being implemented through KVKs of most climatically vulnerable districts across the country with an objective to demonstrate the existing technologies with National Agriculture Research system (NARS) to cope up with climate variability on farmers' fields and make the Indian agriculture climate resilient. In Zone-I, during 2022, the vulnerable districts which were covered under Technology Demonstration Component (TDC) of NICRA were namely Bathinda, Faridkot, Moga, Gurdaspur, Kullu, Chamba, Bilaspur, Mandi, Kathua, Bandipora, Anantnag, Poonch, Leh-I, Bageshwar, Champawat, Tehri garhwal and Uttarkashi.

The interventions being implemented are categorized under four modules, i.e. natural resource management, crop production, livestock and fisheries, and institutional interventions. Besides, capacity building to participating farmers on the tools and new technologies to be adopted to mitigate the climate related adversaries in crop production and animal husbandry is also being addressed. The achievements during the year are detailed as under:-

Module I: Natural Resource Management (NRM)

Under NRM, different interventions like in-situ moisture conservation, water harvesting and recycling for supplemental irrigation, water saving irrigation methods, vermi-composting and green manuring for soil health improvement and fertility management, use of baler-cum-knotter were followed. Under these interventions, 2437 farmers were benefitted in selected NICRA villages (Table 8.1 & Table 8.2).

Table 8.1: Details of NRM activities implemented under NICRA by KVKs of Zone-1

Interventions	No. of farmers	Area (ha)
In-situ moisture conservation	482	137.35
Resource Conservation Technologies	316	178.08
Black Polythene Mulching	135	2.34
Water harvesting and recycling for supplemental irrigation	484	131.32
Improved drainage in flood prone areas	42	5.2
Conservation tillage where appropriate	182	90.425
Water saving irrigation methods	407	324.9
Alternate energy source	17	16.096
Any other (LLL, LCC, Baler, etc.)	372	139.008
Total	2437	1024.719

Table 8.2: State-wise details of NRM activities implemented under NICRA

State	No. of Demonstrations	Area (ha)
Punjab	838	743.4
Himachal Pradesh	447	137.98
Uttarakhand	668	32.338
Jammu & Kashmir	484	111.001
Total	2437	1024.719

Module II: Crop Production

Under this module, different crops were grown in the farmers fields to demonstrate effectiveness of drought tolerant varieties, location specific intercropping systems with high sustainable yield index, nutrient management, pest and disease management, short

duration varieties, water saving paddy cultivation methods etc. As many as 6886 farmers were involved to demonstrate these improved climate resilient technologies and demonstrations were laid on 1800.485 ha area (Table 8.3 & 8.4).

Table 8.3: Details of Crop Production module implemented under NICRA by KVKs of Zone-1

Interventions	No. of farmers	Area (ha)
Drought tolerant varieties	1044	161.75
Diversification through vegetable production for higher income	815	78.015
Short duration varieties	904	166.05
Introducing drought tolerant varieties/ crops	274	50.82
Intercropping	296	19.1
Temperature tolerant varieties	192	13.05
Cold tolerant varieties	134	9.6
Contingency crop planning	179	13.85
Varietal evaluation	495	107.9
Advancement of planting dates of rabi crops in areas with terminal heat stress	22	2.5
Water saving paddy cultivation methods (SRI, aerobic, direct seeding)	185	115.8
Nutrient Management	497	220.75
Frost management in horticulture through fumigation	134	2.25
Community nurseries for delayed monsoon	70	3.2
Custom hiring centres for timely planting	702	645.86
Moisture stress management	177	21.74
Low water requiring crops	112	28.35
Any other (IPM, IDM, HDP, etc.)	654	139.9
Total	6886	1800.485

**Table 8.4: State-wise details of Crop Production module implemented under NICRA**

State	No. of Demonstrations	Area (ha)
Punjab	1675	1242.7
Himachal Pradesh	1031	101.44
Uttarakhand	2052	191.85
Jammu & Kashmir	2128	264.495
Total	6886	1800.485

Module III: Livestock and Fisheries

Different interventions like animal health check up camp, breed up-gradation, de-worming in livestock, mitigation of mineral deficiencies in animals,

preventive vaccination etc. were followed in NICRA villages of Zone-I. Under these activities, 4063 farmers were benefitted through 2029 demonstrations (Table 8.5 & 8.6).

Table 8.5: Details of livestock and fisheries activities implemented under NICRA by KVKs

Interventions	No. of demonstrations	No. of farmers benefitted	No. of animals/ birds treated
Animal health check-up camp	26	569	752
Artificial Insemination	12	182	91
Breed up gradation	4	80	40
De-worming in livestock	261	458	825
Improved shelters for reducing heat stress in livestock	12	35	66
Lively hood security	41	85	400
Mitigation of mineral deficiencies in animals	1432	1854	2671
Popularization of backyard poultry	223	319	5301
Preventive vaccination	12	475	1170
Management of fish ponds/tanks during water scarcity and excess water	6	6	0
Total	2029	4063	11316

Table 8.6: State-wise details of livestock and fisheries activities implemented under NICRA

State	No. of demonstrations	No. of farmers benefitted	No. of animals/ birds treated
Punjab	497	973	4087
Himachal Pradesh	1209	2011	3583
Uttarakhand	63	212	256
Jammu & Kashmir	260	867	3390
Total	2029	4063	11316

Module IV: Institutional Interventions

This module consists of interventions such as fodder bank, custom hiring centre, mechanization through custom hiring for timely planting etc. Custom hiring centers in NICRA villages provided required farm

implements to 714 farmers, which were utilized to carry out timely operations besides reducing the cost of cultivation. Under these interventions, services were provided to 3085 farmers (Table 8.7 & 8.8).

Table 8.7: Details of institutional interventions implemented under NICRA by KVKs

Interventions	No. of demonstrations/ activities	No. of farmers	Area (ha)
Climate literacy through a village level weather station	55	664	231
Commodity groups	7	86	
Mechanization through custom hiring for timely planting	330	714	622.6
Fodder bank	53	101	6
Seed bank	35	147	31.6
Community nursery	9	25	0.75
Nutritional garden	879	1197	8.1
Post-harvest losses	10	151	8
Total	1378	3085	908.05

Table 8.8: State-wise details of institutional interventions implemented under NICRA

State	No. of Demonstrations	Area (ha)
Punjab	1076	773
Himachal Pradesh	61	25.05
Uttarakhand	148	27
Jammu & Kashmir	93	83
Total	1378	908.05



Zonal Monitoring Committee visit to NICRA villages in Kullu



Capacity Building

During the year, 338 different capacity building programs were conducted for 9508 farmers including 4495 farm women on various need based aspects like

crop management, enterprises for self employment, live stock management, management of horticultural crops, nutritional garden etc.(Table 8.9 & 8.10).

Table 8.9: Details of capacity building programs carried out under NICRA by KVKs

Theme	Number of trainings	Number of beneficiaries		
		Male	Female	Total
Crop management	46	752	697	1449
Enterprises for self-employment	10	128	83	211
Farm implements and machineries	14	249	143	392
Fish farming	2	18	27	45
Fodder and feed management	22	283	311	594
Forest tree/ agro forestry plantation	5	90	69	159
Irrigation management	4	56	35	91
Live-stock management	28	318	458	776
Management of horticultural crops	26	390	338	728
Micro irrigation systems	5	74	35	109
Natural resource management	20	245	149	394
NICRA awareness	28	570	534	1104
Nutritional garden	20	172	298	470
Pest and disease management	20	294	177	471
Post-harvest technology	14	233	215	448
Resource conservation technology	10	158	42	200
Seed production	8	148	67	215
Soil health management	21	335	256	591
Vegetable production	24	291	443	734
Water saving technology	6	71	36	107
Awareness on abuse on social issues	5	138	82	220
Total	338	5013	4495	9508

Table 8.10: State-wise details of capacity building programs carried out under NICRA

State	No. of Courses	No. of Farmers
Punjab	48	1153
Himachal Pradesh	106	2913
Uttarakhand	90	3184
Jammu & Kashmir	94	2258
Total	338	9508

Extension Activities

For creating awareness about the impact of the climate resilient technologies, a number of extension activities were organized by KVKs under NICRA at the KVK farms as well as in the NICRA villages. A total of 1208 extension programs were organized by the KVKs of the Zone-I in which 17533 farmers participated which included 5707 farmwomen. The details of the extension activities are presented in the Table 8.11 & 8.12.



Monitoring of nursery

Table 8.11: Details of Extension Activities carried out under NICRA by KVKs

Name of the activity	Number of programs	No. of beneficiaries		
		Male	Female	Total
Exposure visit of farmers	64	1154	439	1593
Strengthen - SHG	19	133	319	452
Strengthen - kisan club	2	18	11	29
Integrated farming system	22	240	157	397
Field days	39	1074	401	1475
Method demonstrations	152	1100	350	1450
Awareness	60	1487	726	2213
Group dynamics	4	44	44	88
Kisan Mela	10	540	326	866
Women awareness	27	6	512	518
Group discussion	62	766	320	1086
Agro advisory services	739	5079	2002	7081
Soil Health Day	8	185	100	285
Total	1208	11826	5707	17533

Table 8.12: State-wise details of Extension Activities carried out under NICRA

State	No. of programs	Farmers
Punjab	467	4258
Himachal Pradesh	108	2583
Uttarakhand	287	2200
Jammu & Kashmir	346	8492
Total	1208	17533

8.2 Cluster Frontline Demonstrations of Pulses (CFLDs on Pulses)

The Department of Agriculture and Farmers Welfare (DA&FW), Government of India had launched the project “Cluster Frontline Demonstrations on Pulses” under National Food Security Mission (NFSM) to boost domestic production of pulses. The project had an annual budget provision of INR 139.712 lakh for ICAR-ATARI, Zone-I, Ludhiana for financial years 2021-22 and INR 260.456 lakh for 2022-23. The project aims at popularizing the cultivation of pulses with adoption of scientific package of practices and latest technologies at the farmer's field.

CFLDs on Pulses conducted during Rabi season (2021-22)

During the season, 17 KVKs of Punjab organized demonstrations on cultivation of chickpea varieties PBG-7, PBG-8 and GNG-2144; likewise, 6 KVKs from the state demonstrated lentil variety LL-1373.

Similarly, GNG-2144, HC-2 and CSJ-515 varieties of chickpea; and, Vipasha and Markandey varieties of lentil were demonstrated in Himachal Pradesh. KVKs of Jammu & Kashmir demonstrated scientific cultivation of chickpea (GNG-1581 and PBG-7), lentil (Shalimar Lentil-1 and IPL -316) and field pea (Shalimar Pea-I) crops. Whereas, the varieties of pulses demonstrated in Uttarakhand were PG-4 and PG-5 (chickpea) and PL-4, PL-9, PL-10, VL Masoor-126, VL Masoor -133 and VL Masoor-514 (lentil). Thus, 3045 cluster frontline demonstrations were organized covering an area of 496.175 ha across the states of Zone-I (Table 8.13).

CFLDs on Pulses conducted during summer season (2021-22)

During summer season, 50 demonstrations were organized on scientific cultivation of pulses using SML-1827 variety of green gram in 20 ha area in Punjab (Table 8.14).

Table 8.13: Achievements of demonstrations organized during Rabi (2021-22)

Crops (No. of KVKs)	Achievements of FLDs		Average yield (q/ha)		Yield increase (%)	Yield gap (q/ha)
	FLDs (No.)	Area (ha)	FLDs	Check		
Punjab						
Chickpea (17)	553	155.9	15.32	12.51	22.43	2.81
Lentil (6)	141	47.8	9.61	7.75	24.05	1.86
Himachal Pradesh						
Chickpea (5)	296	43.825	8.06	5.92	36.15	2.14
Lentil (2)	67	12.35	9.1	4.975	82.91	4.13
Field Pea (1)	115	11.5	15.2	11.5	32.17	3.7
Jammu and Kashmir						
Chickpea (4)	433	40	11.86	8.27	43.39	3.59
Field pea (7)	338	62.3	10.61	7.34	44.67	3.28
Lentil (2)	70	11	7	5	40	2
Uttarakhand						
Chickpea (2)	70	18	15.75	11.5	36.96	4.25
Lentil (11)	962	93.5	10.77	7.82	37.77	2.95
Total	3045	496.175				

Table 8.14: Achievements of demonstrations organized during Summer (2021-22)

Crops (No. of KVKs)	Achievements of FLDs		Average yield (q/ha)		Yield increase (%)	Yield gap (q/ha)
	FLDs (No.)	Area (ha)	FLDs	Check		
Punjab						
Green gram (1)	50	20	10.70	7.85	36.31	2.85


Diagnostic visit to rajmash in Bandipora

Harvesting of rajmash in Ganderbal

CFLDs on Pulses conducted during Kharif season (2022-23)

The demonstrations on scientific cultivation of pulses were organized in 686.83ha across the states of Zone-I during the kharif of 2022-23. In Punjab, Mash-114 and Mash-883 varieties of black gram and ML-1808 and ML-2056 varieties of green gram were demonstrated. Similarly, in Himachal Pradesh, black gram (Mash-114, Him Mash-1, UG-218, and Palampur-93), green gram (Shikha) and rajmash (Baspa, Jwala, Triloki, Chitra and Capsule) crops were exhibited. Likewise, in Uttarakhand, PU-9, PU-

10, PU-31 and PU-35 varieties of black gram and PM-9 variety of green gram were used for result demonstrations. Moreover, in Jammu & Kashmir, cultivation of black gram (PU-31 & Mash-114), rajmash (Shalimar rajmash-1 and Shalimar rajmash-2) and green gram (Virat & Shalimar moong-1) crops were demonstrated (Table 8.15).

CFLDs on Pulses conducted during Rabi season (2022-23)

KVKs of Zone-I conducted 3666 demonstrations on cultivation of chickpea, lentil and field pea crops on an area of 735.55 ha during Rabi 2022-23 (Table 8.16).


Intercropping of rajmash in Kinnaur

Method demonstration in Chamba

Table 8.15: Achievements of demonstrations organized during Kharif (2022-23)

Crops (No. of KVKs)	Achievements of FLDs		Average yield (q/ha)		Yield increase (%)	Yield gap (q/ha)
	FLDs (No.)	Area (ha)	FLDs	Check		
Punjab						
Black gram (3)	158	56	7.18	5.88	22.12	1.3
Green gram (2)	72	38.5	10.11	8.1	24.81	2.01
Himachal Pradesh						
Black gram (8)	1036	153.35	8.07	5.95	35.68	2.12
Green gram (1)	50	20	6.7	4.5	48.89	2.2
Rajmash (1)	36	10	17.41	10.65	63.47	6.76
Uttarakhand						
Black gram (6)	489	80	7.91	5.67	39.45	2.24
Green gram (1)	33	12.38	5.5	3.5	57.14	2
Jammu & Kashmir						
Black gram (6)	604	82.5	6.455	4.37	47.82	2.09
Green gram (6)	562	114.4	8.25	5.67	45.50	2.58
Rajmash (7)	650	119.7	10.00	7.56	32.14	2.43
Total	3690	686.83				

Table 8.16: Achievements of demonstrations organized during Rabi (2022-23)

State/UT	Crops	Area (in ha)	FLDs (No.)
Punjab	Chick pea	119	348
	Lentil	44	131
Himachal Pradesh	Chick pea	101.35	565
	Lentil	40	210
	Field pea	20	50
Jammu & Kashmir	Chick pea	67.2	710
	Lentil	20	100
	Field pea	170.5	468
Uttarakhand	Chick pea	12	45
	Lentil	141.5	1039
Total		735.55	3666

*Method demonstration on seed treatment in Mandi**Monitoring of black gram crop in Hoshiarpur*

8.3 Cluster Frontline Demonstrations on Oilseed

The Department of Ministry of Agriculture Cooperation and Farmer's Welfare (DAC&FW) with cooperation of Division of Extension Education, ICAR, New Delhi initiated the project "Cluster Frontline Demonstrations on Oilseed" since the year 2015-16 in order to promote the indigenous production of oilseed in India. The main objective for conducting demonstrations to show the production potential of registered oilseed varieties, as well as package of practices and technologies for oilseed crops for higher production, better productivity and remunerative profitability for farmers. The project was implemented by ICAR-ATARIs through KVKs during 2015 to 2022 with the aim to enhance the oilseed production and production throughout the country.

ICAR-ATARI, Zone-I, Ludhiana implemented the project in different KVKs across Punjab, Himachal Pradesh, Jammu & Kashmir, and Uttarakhand during 2022-23 (Table 8.17). The budget for each crop i.e.;

Soybean (Rs 7500/ha), Sesame & Linseed Rs. (5000/ha), Groundnut (Rs. 12000/ha) and Rapeseed & Mustard (Rs. 6000/ha) was provided to the respective KVKs for providing critical inputs like seed, bio fertilizers, etc. to the farmers for conducting demonstrations.

Details of CFLDs conducted during Kharif season 2022

During Kharif season of 2022, a total of 1044 demonstrations were conducted covering an area 248 ha. For Sesame crop, demonstrations recorded 45.5, 40.0, 63.2 and 63.3 per cent higher yield over local check in Punjab, Himachal Pradesh, Jammu & Kashmir and Uttarakhand, respectively as depicted in Table 8.18 the average yield recorded for soybean crop under demonstration plots was 19.3 and 34.7 per cent higher than local check in Punjab and Himachal Pradesh. Under CFLDs, improved varieties of Sesame viz. Punjab Til Number 2, Brijeshwari, LTK-4, HT-2 and RT 351 were demonstrated whereas SL 958, Palam Hara Soya 2, Himsoya/Shiwalik and Harit soya varieties of soybean were demonstrated.

Table 8.17: Details of CFLDs conducted on oilseeds

S. No.	Crops	State	CFLDs conducted on Oilseeds	
			Area (in ha)	No. of Demonstrations
1. Kharif Season				
I.	Sesame	Punjab	80	204
		Himachal Pradesh	71	413
		Jammu & Kashmir	30	184
		Uttarakhand	10	25
ii.	Soybean	Punjab	20	50
		Himachal Pradesh	37	168
Total Kharif Season			248	1044
2. Rabi Season				
I.	Rapeseed & Mustard	Punjab	490	1283
		Himachal Pradesh	190	747
		Jammu & Kashmir	301	1197
		Uttarakhand	200	864
ii.	Linseed	Himachal Pradesh	18.5	92
Total Rabi season			1199.5	4183
Grand Total (1+2)			1446.5	5227

Table 8.18: Details of CFLDs conducted during Kharif season 2022

State	No. of KVKs	Crop Demonstrated	Conducted		Yield (q/ha)		Increase in Yield (%)
			Area (ha)	Demos (No.)	Demos	Local	
Punjab	4	Sesame	80	204	4.8	3.3	45.5
	1	Soybean	20	50	17.3	14.5	19.3
Himachal Pradesh	4	Sesame	71	413	5.6	4.0	40.0
	3	Soybean	37	168	13.2	9.8	34.7
Jammu & Kashmir	2	Sesame	30	184	6.2	3.8	63.2
Uttarakhand	1	Sesame	10	25	4.9	3.0	63.3
Total			248	1044			

Details of CFLDs conducted on Rapeseed-Mustard during Rabi 2022-23

A total of 4183 CFLDs on rapeseed & mustard were conducted in area of 1199.5 ha on by 56 KVKs of Punjab, Himachal Pradesh, Jammu & Kashmir, and Uttarakhand (Table 8.19). The yield data of crop is not available, as the crop yet to be harvested. Different technologies which were demonstrated at farmer's fields while conducting CFLDs were improved varieties, integrated pest management (IPM), integrated disease management (IDM), integrated crop management (ICM), integrated nutrient

management (INM) and integrated weed management (IWM), Seed treatment and Line sowing. During 2022-23, GSC 7 variety of rapeseed and mustard demonstrated in Punjab whereas Neelam, GSC 7, ONK-1, Karan Raya, Surbhi, HPBS-1, PM-25, PBR 357, RLC 3, RH-749, Pusa Tarak varieties of rapeseed and mustard and KL-241, KL-263 and Surbhi varieties of Linseed demonstrated in Himachal Pradesh. Shalimar Brown Sarson-2, Giriraj, RSPN-25 varieties of rapeseed and mustard demonstrated in Jammu & Kashmir and Pusa mustard 30, Pant Hill Toria-1, Pant Pili Sarson-1, PT-508,

Table 8.19: Details of CFLDs conducted during Rabi season 2022-23

State	No. of KVKs	Crop Demonstrated	Conducted	
			Area (ha)	Demos (No.)
Punjab	22	Rapeseed Mustard	490	1283
Himachal Pradesh	9	Rapeseed Mustard	190	747
Jammu & Kashmir	15	Rapeseed Mustard	301	1197
Uttarakhand	12	Rapeseed Mustard	200	864
Himachal Pradesh	3	Linseed	18.5	92

*Demonstration of rapeseed mustard, KVK Gandarbal**Field visit of demonstration, KVK Sangrur*

Uttara, PYS-1, PPS-1, Pant Sweta, RH-761, Pro Agro-5222 & P-45S46 varieties demonstrated in Uttarakhand.

8.4 Creation of Seed Hubs for Increasing Indigenous Production of Pulses in India

The project established Seeds Hubs on Pulses at KVK Una and KVK Dehradun. The KVKs have purchased seed processing machines and established processing yards and storage structures.

During Rabi 2021-22, KVK Una produced 54 q of chickpea (CSJ-515) and KVK Dehradun produced 18 q of lentil (Pant Lentil-9) certified/ foundation seed. Similarly, during Kharif 2022-23, KVK Una produced 6.5 q certified seed of black gram (PB-114) and KVK Dehradun produced 10 q foundation seed of black gram (Pant Urd-10). Moreover, during Rabi 2022-23, the KVKs have sown 7.15 ha for producing seed of chickpea (CSJ-515) and lentil (Pant Lentil-9).

8.5 Crop Residue Management in Punjab

A project under Central Sector Scheme on “Promotion of agricultural mechanization for In-situ management of crop residue in the state of Punjab, Haryana, Uttar Pradesh and NCT of Delhi” was implemented during the period under report. The ICAR-ATARI, Ludhiana through 22 KVKs of Punjab

executed this project during the period under report. An amount of 523 lakh released for smooth implementation of the project during 2022-23.

Different Information, Education and Communication (IEC) activities under this project were carried out by KVKs of Punjab. Table 8.20 depicts that more than 22,000 farmers participated in 255 awareness camps which were organized at different levels (district, block & village). Under capacity development, 73 training programmes were organized for farmers, tractor & machine operators, and custom hiring centre owners, in which 1894 stakeholders were benefitted. Further, more than 0.81 lakh farmers were mobilised by organising 42 Kisan Melas on crop residue management by KVKs of Punjab. School and college students were recognised as prospective stakeholders to reach out to their farming parents, neighbours, and villagers to encourage them to use the latest agricultural residue management technology. There were many schools and colleges involved in creating the awareness about crop residue management and 21,169 students were sensitised by organising 119 activities like essay competition, painting, debate, etc. Demonstrations on in-situ crop residue management using CRM machinery were laid out at important locations

Table 8.20: IEC activities conducted by KVKs of Punjab

S. No.	IEC activities	No. of activities	No. of participants
1.	Awareness camps conducted	255	22278
2.	Training Programme (5 days)	73	1894
3.	Kisan Mela	42	81517
4.	Mobilisation of students of schools and colleges	119	21169
5.	Demonstrations conducted (Using CRM Machinery)	9761	11477
6.	Demonstrations conducted (Using Decomposer Technology)	129	165
7.	Exposure visits conducted	122	5013
8.	Field/ Harvest days organized	96	6525
9.	Webinars Organized/ Lectures Delivered in Webinars on CRM	68	3259



covering more than 9700 hectares, with more than 11,000 farmers participating whereas, in-situ crop residue management using decomposer technology were conducted on more than 120 hectares and 165 farmers participated. KVKs also organized 122 exposure visits, 96 field days/ harvest days in which more than 5000 and 6500 farmers participated, respectively. There were 68 online webinars (organised or lectures delivered) were conducted on Crop Residue Management in which 3259 farmers participated.

KVKs also conducted several other IEC activities across Punjab for creating awareness about In-situ crop residue management (Table 8.21). A total of 115 advertisements appeared in print media and 137 articles and columns were written by KVK scientists and published in newspapers and magazines. More than 950 hoardings were fixed at strategic locations (mandis, roadside, schools, markets, petrol pumps, and panchayats). In order to make people aware,

banners and posters (3688) were also placed at different places including on vehicles. Many publicity materials (221011) such as pamphlets and leaflets were distributed. Catchy slogans and messages were written on the wall of buildings and structures at 4308 prominent locations to drive people's attention on the issue of residue burning, option of residue management and Government support to the adopters. KVK experts also participated in 33 TV programmes and panel discussions on Doordarshan/ DD-Kisan and other private channels.

Social media platforms were also used extensively to send messages regarding residue management. KVKs created 64 WhatsApp groups and send 3481 messages to 6812 farmers. Through m-Kisan portal, 261 advisories were sent to 36,313 farmers across the state. Social media sites like Facebook and YouTube were also used by KVKs to reach farmers as depicted in Table 8.22.

Table 8.21: IEC activities conducted by KVKs of Punjab

S. No.	Activity	No. of activities
1.	Advertisement in print media	115
2.	Column / Articles in newspaper and magazines etc.	137
3.	Hording fixed (at Mandi/Road side/Market/Schools/Petrol pump/Panchayats etc.)	964
4.	Poster/banner placed at different location/buses etc.	4525
5.	Publicity material such as leaflets/ pamphlets etc. distributed	3688
6.	Wall writing	221011
7.	TV programmes / panel discussions Doordarshan/ DD-Kisan and other private channels	33

Table 8.22: Details of messages on CRM sent to farmers through various platforms

WhatsApp Groups formed on CRM			No. of messages on CRM sent to farmers through other platforms							
No. of CRM Groups	No. of farmers	No. of messages sent	m-kisan		Facebook		YouTube		Other platform	
			No. of farmers	No. of messages	No. of farmers	No. of messages	No. of farmers	No. of messages	No. of farmers	No. of messages
64	6812	3481	36313	261	9428	768	860	37	2544	1663



Field day under CRM, KVK Sangrur



Kisan Mela on CRM, KVK Muktsar

8.6 Across Scheme for establishment of DAMU In KVKs of Zone-I

During the year Indian Metrological Department(IMD) provided funds for functioning under Gramin Krishi Mausam Sewa (GKMS) of project Atmospheric & Climate Research Modelling Observing & Services (ACROSS) scheme of IMD, New Delhi for working of District Agro Metrological Unit (DAMU) in 16 Krishi Vigyan Kendra's of Zone-I. With the advancement of observational network and forecasting technology, Agromet Advisory Service (AAS) network is being extended to sub-district

/block level by setting up District Agro-Met Units (DAMUs) in the premises of Krishi Vigyan Kendra (KVKs) of ICAR through ATARIs during 2022. DAMUs were established in 16 districts under Zone-I under the ACROSS Scheme for predication of accurate weather data. During the year about Rs. 1.20 crores funds were provided by IMD, New Delhi for KVKs of Phase-I for setting up the infrastructure and creating awareness among farmers and issuing advisories to farmers by IMD, New Delhi (Table 8.23).

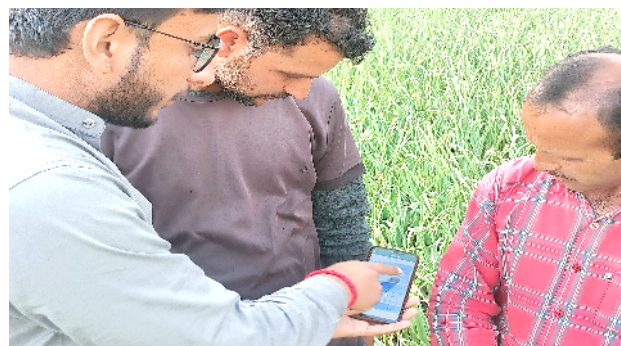
During the year 146 Farmer Awareness

Table 8.23: Details of Farmer Awareness Programmes organized by the KVKs for the farmers

S. No.	Name of KVKs	No. of Farmer Awareness Programs	No. Participants	No. of Trainings courses organized for farmers
1.	Kupwara	1	30	14
2.	Baramulla	3	0	3
3.	Kathua	6	194	0
4.	Reasi	11	229	5
5.	Bilaspur	0	0	0
6.	Mandi	23	773	6
7.	Sirmaur	40	1596	3
8.	Almora	7	334	4
9.	Pithouragarh	20	398	1
10.	Ferozepur	8	282	0
11.	Moga	12	236	0
12.	Ropar	10	548	1
13.	Jalandhar	01	92	0
14.	Barnala	07	149	0
Total		146	4834	34



Weather reading at KVK Ferozepur



Weather App for Farmers

Programmes(FAP) were conducted by the 14 KVKs of Zone-I and rest in 2 KVKs still the recruitment of the staff of the project is yet to be finalized. In these programmes 4834 farmers participated during the year. Scientists under the project prepared bilingual Agro Advisory Bulletins for the farmers so that farmers could take advantage from these advisories and undertake suitable activities in their fields. KVKs were also sending the advisories to the farmers using Kisan portal app and WhatsApp groups. During the year 1857 messages were received by 82379 farmers regarding weather advisories. Fourteen KVKs of this

Zone prepared 3368 Agro Advisory service bulletins biweekly for the farmers during the year (Table 8.24).

During the year amount of one crore twenty lakhs twenty five thousand five hundred sixty four rupees was released to this zone for conducting the activities under the project and an expenditure of Rupees 12000746/- were spent during the year. During the year 14 SMS in the 16 KVKs of this Zone were working under the project and 12 Agromet Observer were also working and preparing advisories for the farmers (Table 8.25).

Table 8.24: Weather related advisories in different KVK of ATARI Zone-I

S. No.	District	Block	Forecast received	AAS Bulletins prepared	m-Kisan SMS	Farmers Benefitted	Publications
1.	Ropar	05	365	98	17	4500	1
2.	Jalandhar	11	365	104	167	6852	10
3.	Ferozepur	06	365	96	15	5000	1
4.	Moga	05	104	82	175	6958	0
5.	Barnala	03	365	70	0	0	0
6.	Chamba	0	0	0	0	0	0
7.	Bilaspur	04	65	70	57	20000	0
8.	Mandi	12	98	98	30	3000	4
9.	Sirmaur	06	365	478	976	1105	0
10.	Baramulla	26	365	107	0	0	0
11.	Kathua	19	97	97	30	23296	5
12.	Kupwara	24	104	1692	14	5692	0
13.	Reasi	12	104	104	104	3850	0
14.	Almora	11	104	165	165	1200	0
15.	Nainital	0	0	0	0	0	0
16.	Pithouragarh	06	107	107	107	926	0
Total		150	2973	3368	1857	82379	20

Table 8.25: Funds received and released to the KVKs during the year

S. No.	Name of the University/Institute	Name of The KVKs	Sanction	Released	Expenditure
1.	SKAUST, Srinagar	Kupwara	1300000	1300000	1300000
2.	CITH, Srinagar	Baramulla	1325564	1325564	1324950
3.	SKAUST, Jammu	Kathua	1300000	1300000	1300000
4.		Reasi	1300000	1300000	1299776
5.	CSKHPKV, Palampur	Bilaspur	700000	700000	700000
6.		Mandi	900000	900000	900000
7.		Sirmaur	550000	550000	549255
8.	GBPUA&T, Pantnagar	Almora	700000	700000	700000
9.		Pithouragarh	700000	700000	700000
10.	PAU, Ludhiana	Ferozepur	585000	585000	584033
11.		Jalandhar	751862	751862	748346
12.		Moga	580000	580000	564854
13.		Ropar	530000	530000	526394
14.	GADVASU, Ludhiana	Barnala	803138	803138	803138
Grand Total			12025564	12025564	12000746


Weather station at KVK Sirmour

Weather reading at KVK Jalandhar

8.7 Farmer FIRST Programme (FFP)

The ICAR took initiative steps to uplift the production and productivity of agricultural outputs particularly in the marginal and risk prone areas by enhancing farmers-scientists contact with multi stakeholders-participation. The Farmer FIRST as a concept of ICAR is developed as a farmer in a centric role for research problem identification, prioritization and conduct of experiments and its management in farmers' conditions. The focus is on farmer's Farm, Innovations, Resources, Science and Technology

(FIRST). Two terms 'enriching knowledge' and 'integrating technology' qualify the meaning of Farmer FIRST in Indian context. Enriching knowledge signifies the need for the research system as well as farmers to learn from each other in context to existing farm environments, perception of each other and interactions with the sub-systems established around. Technology integration is looked from the perspective that the scientific outputs coming out from the research institutions, many times do not fit as such in the farmers' conditions and thus,



certain alterations and adaptations are required at field level for their acceptance, adoption and achievement. Component-wise achievements under farmer FIRST programme are presented herewith:

Component I: Enhancing Farmer-Scientist Interface

The FFP centres under Zone-I organized various programmes to enhance farmer-scientist interface as presented in Table 8.26. Activities like camps, Kisan Goshthies, exposure visits of farmers, trainings, field day and camps were organized on various relevant aspects by respective FFP centres.

Component II: Technology Assemblage, Application and Feedback

FFP centre-wise progress of demonstration conducted on crop, horticulture and NRM based module are depicted in Table 8.27. More than 2000 demonstrations on improved technology and practices under crop production were conducted in more than 200 ha whereas 50 demonstrations (10 ha) under diversification module conducted by FFP centre PAU, Ludhiana. Under horticulture based

modules, 5032 demonstrations were conducted in an area of 32.60 ha whereas 348 demonstrations were laid out on Nutri-garden by the different FFP centres of Zone-I. FFP centres PAU, Ludhiana has conducted 450 demonstrations in 180 ha area on DSR and Happy seeder technology.

Under livestock and poultry based module (Table 8.28), 330 demonstration conducted on mineral mixture and uromin lick whereas 324 demonstrations conducted on parasite control by different FFP centres under Zone-I. There were 50 demonstrations conducted on mastitis detection in 119 animals by FFP centre PAU, Ludhiana whereas 120 backyard poultry demonstration units were established by different FFP centres comprising approximately 4000 birds.

FFP centres under Zone-I also laid out demonstrations in other areas as given in Table 8.29. There were 63 demonstrations conducted on value addition benefiting 453 farmers whereas 71 demonstrations units on beekeeping established by different FFP centres consists of 2300 bee boxes. In case of Mushroom enterprise, 535 units were established by

Table 8.26: Various extension activities conducted under Enhancing Farmer-Scientist Interface module

FFP centre	Camps		Kisan Goshthies		Exposure visits		Trainings		Field day		Other Extension Activities	
	No.	Farmers	No.	Farmers	No.	Farmers	No.	Farmers	No.	Farmers	No.	Farmers
GADVASU, Ludhiana	0	0	0	0	3	230	1	26	0	0	5	141
CSKHPKV, Palampur	4	200	24	465	0	0	4	200	5	160	3	87
CIPHET, Ludhiana	0	0	0	0	3	80	3	35	7	85	1	10
PAU, Ludhiana	17	305	16	365	2	64	30	1122	2	150	1	600
SKUAST, Jammu	0	0	2	34	1	18	11	234	4	104	1	134
ICAR-IISWC, Dehradun	1	180	2	136	1	35	2	45	1	65	0	0
GBPUA&T Pantnagar	4	44	6	156	14	166	8	198	6	156	18	385
Total	26	729	50	1156	24	593	59	1860	25	720	29	1357

different FFP centres Zone-I whereas 26 Jammu and PAU, Ludhiana FFP centres. demonstrations on IFS were laid out by SKUAST,

Table 8.27: FFP center wise demonstrations conducted on crop, horticulture and NRM based module

FFP center	Crop-based module				Horticulture-based module				NRM	
	Crop Production		Diversification		Vegetable Production		Nutri-garden		DSR, Happy seeder etc.	
	Demos (No.)	Area (ha)	Demos (No.)	Area (ha)	Demos (No.)	Area (ha)	Demos (No.)	Area (ha)	Demos (No.)	Area (ha)
PAU, Ludhiana	0	0	50	10	44	5.2	20	0.2	450	180.0
GADVASU, Ludhiana	0	0	0	0	0	0	20	0.2	0	0
CIPHET, Ludhiana	0	0	0	0	0	0	0	0	0	0
CSKHPKV, Palampur	1025	56.0	0	0	4572	23.4	100	1.0	0	0
SKUAST, Jammu	950	154.8	0	0	0	0	100	1.0	0	0
GBPUAT, Pantnagar	59	1.6	0	0	416	4.0	0	0	0	0
ICAR-IISWC, Dehradun	0	0	0	0	0	0	108	1.1	0	0
Total	2034	212.4	50	10	5032	32.6	348	3.5	450	180.0

Table 8.28: FFP centre wise demonstrations conducted on livestock and poultry based module

FFP center	Mineral mixture and uromin lick		Parasite control (Endo and Ecto)		Mastitis detection		Backyard poultry	
	Demos (No.)	Animals (No.)	Demos (No.)	Animals (No.)	Demos (No.)	Animals (No.)	Units (No.)	Birds (No.)
PAU, Ludhiana	50	151	0	0	50	119	0	0
GADVASU, Ludhiana	0	0	144	772	0	0	30	300
ICAR-CIPHET, Ludhiana	0	0	0	0	0	0	0	0
CSKHPKV, Palampur	70	180	180	1961	0	0	25	1250
SKUAST, Jammu	210	500	0	0	0	0	15	1500
GBPUAT, Pantnagar	0	0	0	0	0	0	50	936
ICAR-IISWC, Dehradun	0	0	0	0	0	0	0	0
Total	330	831	324	2733	50	119	120	3986

Table 8.29: FFP center wise demonstrations conducted on others

FFP center	Value addition		Beekeeping		Mushroom		IFS	
	Demos (No.)	Beneficiaries (No.)	Units (No.)	Boxes (No.)	Demos (No.)	Beneficiaries (No.)	Demos (No.)	Beneficiaries (No.)
PAU, Ludhiana	45	90	10	100	50	50	6	6
GADVASU, Ludhiana	5	113	0	0	0	0	0	0
CIPHET, Ludhiana	11	150	0	0	0	0	0	0
CSKHPKV, Palampur	0	0	1	100	332	332	0	0
SKUAST, Jammu	0	0	10	100	110	110	20	20
GBPUAT, Pantnagar	2	100	50	2000	43	43	0	0
ICAR-IISWC, Dehradun	0	0	0	0	0	0	0	0
Total	63	453	71	2300	535	535	26	26

*Demonstration on summer moong, PAU Ludhiana**Mushroom production unit, CSKHPKV Palampur*

8.8 Jal Shakti Abhiyan (JSA)

Under Jal Shakti Abhiyan “Catch the Rain” campaign, it was very essential to generate the

awareness among the masses and Krishi Vigyan Kendra's & Melas play an important role to achieve the objective of campaign. Krishi Vigyan Kendra (KVK) is an integral part of the National Agricultural

*Catch the rain organised by KVK Solan at Vill. Kanda**Kisan Mela on JSA in KVK Taran Taran*

Research System (NARS) aims at assessment of location specific technology modules in agriculture and allied enterprises, through technology assessment, refinement and demonstrations. KVKs have been functioning as Knowledge and Resource Centre of Agricultural Technology supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district and are linking the NARS with extension system and farmers.

During the year the Government of India special programmes were implemented by KVKs during March 29 to 30th November 2022. In JSA KVKs organized training programmes, awareness programmes and Kisan Melas (Table 8.30). During these programmes the KVKs also distributed quality seed and planting material to the farmers in their districts during the year. KVKs in their training programmes during JSA outlined the importance of

effective water management through crop planning and water conservation in agriculture. The farmers were also apprised about the micro-irrigation systems, rainwater harvesting, water conservation in appropriate crops and efficient water management for livestock and aquaculture.

The farmers who participated in any of the programmes organized under JSA were distributed with the 'Vegetable Nutri Kit' and 'Saplings of Nutritious Plants'. During the year in Zone-I 60 training programmes, 19 Kisan Melas, 10799 seed packets and 37908 quality planting material was distributed to farmers in JSA.

8.9 Nutrition-Sensitive Agricultural Resources and Innovations (NARI)

Achieving success in food security as well as nutritional security also needs narrowing the "nutrition gap" which requires increasing availability

Table 8.30: Details of programmes conducted under Jal Shakti Abhiyan by the KVKs of Zone-I

State	Training Programs		No. Seed Packets distributed	No. Saplings distributed	Kisan Mela	
	No. of programs organized	No. of farmers	Number	Number	No. of programs organized	No. of farmers
Punjab	48	1595	4159	15841	17	8839
Himachal Pradesh	9	398	6318	15389	1	132
Ladakh	1	29	140	2463	1	160
Uttarakhand	2	100	182	4215	0	0
Total	60	2122	10799	37908	19	9131



Training under JSA in KVK Champawat



Tree plantation Campaign- KVK Ropar under JSA

and access to the food necessary for a healthy diet and ensuring the intake of those food at recommended quantity. The concept of Nutrition-Sensitive Agricultural Resources and Innovations (NARI) Project Nutrition-sensitive agriculture is a food-based approach to agricultural development that puts nutritionally rich foods, dietary diversity and food fortification at the heart of overcoming malnutrition and micronutrient deficiencies.

Nutrition-sensitive agriculture is an approach that seeks to maximize agriculture's contribution to nutrition. Nutrition-sensitive agriculture also leads to targeting poor households, promoting gender equity and providing nutrition education. Agriculture has great impact on household consumption, as it is primarily associated with nutrition through food preparation, increase expenditure on nutrition-dense food and empowerment of women. It can be possible with value addition of produce, which can meet off-season nutrition requirement, backyard poultry provide protein rich food and also generate source of income for economic empowerment of women.

To tackle the nutritional sensitivity problem, a new initiative has been taken by the ICAR in collaboration with KVKs to establish “Nutri-SMART Villages” (NSV) at block level to showcase the technology & methodology suited for nutritional security at the

grass-root level and increasing availability of healthy foods and wide scale nutritional literacy to overcome challenges of nutritional imbalances. The project NARI was focused mainly on Innovative practices to promote nutrition-sensitive agriculture and food security; capacity development of women institutions, enabling suitable governance and policy, nutrition literacy, improving maternal and child nutrition.

During the year KVKs conducted various activities under the project like OFTs on bio-fortified varieties, FLDs, training programmes, awareness programmes among women and young girls about improving the nutrition literacy among the masses so that nutritional security can be achieved. The details of activities conducted are shown in table 8.31:

During the year KVKs conducted 21 OFTs in various technologies in 75 trials in the farmer's field for achieving the nutritional security among the families of the villages adopted by the KVKs (Table 8.32).

Under NARI programme 4768 FLDs on nutrition garden were laid by different KVKs in three states and one Union Territory of the Zone. In this 4768 farmers were benefitted under this programme (Table 8.33).

Various extension activities were organized by the KVKs under NARI programme for the farming

Table 8.31: Number of OFTs conducted by KVKs under NARI Programme during the year

State	Name of Nutri Smart Village	No. of OFT	No. of farmers/ beneficiaries
Punjab	Nanowal Kalan, Phoos Mandi, Pasiyal, Dargapur, Jallewal, Naushehra Pannuan, Harike, Wada Sher Singh, Booh, Balleyanwala, Nandpur & Dadehar Sahib	11	44
Himachal Pradesh		1	5
Jammu & Kashmir	Kattal Battal, Tangpora, Darbagh, Chaiter, Malad, Nowpora and Shangren	5	6
Uttarakhand	Narayanpur, Bansu, Dhulet, Sherpur Khelmau, Shankarpur & Chharba	4	20
Total		21	75



Field day on nutrition gardening in nutri smart village by KVK, Sangrur



Distribution of Planting material to farmers at KVK Pauri

Table 8.32: Number of FLDs conducted by KVKs under NARI Programme during the year

State	Name of Nutri Smart Village	No. of FLDs
Punjab	Doburji, Jagdev Kalan, Sohiana, Pandori, Hamjia, Mallu Nagal, Handiaya, Kattu, Nimb Wala Morh, Dhaura, Khuddi Kalan, Phoos Mandi, Mumara , Bhangwan, Sallopur, Bachhohi, Chaggran, Bhangala. Taggar, Bhagwanpur, Meripur Bamb, SehjomajraBurj, Dhilwan, Tatariewala, Naglian, Kansala, Khizrabad, Mehrajwala, Chattiana, Kheri Mania, Kherigandiyan, Miani, Patiala, Kular Khurd, Bigarwal, Bungal&Booh	2854
Himachal Pradesh	AbadaBana, AbadaBana, Sunehra, Nangran, Palahuta, Maane, Lidang, Berthin & Bhallu	692
Jammu & Kashmir	Ahan, Repora, Kangan, Lar, Patishalbugh, Wakura, Manguchak, Daboh, Chaiter, Malad, Trich, Nowpora and Shangren.	595
Uttarakhand	Chauna, Matela, Gairigar, Shankarpur, Chharba, Sadauli, Sakuna (Pichaltanda), Gethia, Sakanayana, Bansu, Berani, Kaleth, Semwalgaon, Bidaura, Khairana&Bidaura	627
Total		4768

families in the adopted villages by the KVKs during the year. The total 248 awareness generation programmes were organized in which 5910 farmers and farm women participated during the year (Table 8.34).

Under NARI Programme 189 training programmes were conducted on different topics by different KVKs in three states and one Union Territory of the Zone. In this 5641 farmers participated in these trainings under this programmes.



Awareness about Nutri Garden by KVK Muktsar



Programme under NARI at KVK Bagheswar

**Table 8.33: Number of extension activities conducted by KVKs under NARI Programme during the year**

State	Name of Nutri Smart Village	No. of Extension Activities	No. of farmers/beneficiaries
Punjab	Hamza, Lopoke, Phoos Mandi, Pindi Blochan, Sallopur, Bachhohi, Chaggran, Bhagwanpur Meripur, Bamb, Sehjomajra, Burj Dhilwan, Tatariewala, Dusarna, Naglian, Sahauran, Mehrajwala, Chattiana, Kheri Mania, Kheri gandiyen, Bungal, Booh, Kular Khurd, Bigarwal, Miani & Patiala.	77	2423
Himachal Pradesh	Palahuta, Sunehra, Abada Brana, Thattal & Haroli	23	652
Jammu & Kashmir	Braripora, Wahipora, Lolab, Drugmulla, Kultura, Watayan, Kulangam, Kandi, Bramri, Dedikoot (B), Dedikoor (P), nPohru. Bategam, Poshpora, Hanjishart, Langate, Tikker, Wahipora, Manguchak, Daboh, Tangpora, Darbagh, Ganderbal, On-campus, Kattal Battal, Nowpora and Shangren	83	859
Uttarakhand	Dogda, Pratapgari, Jaipur kheema, Nathupur Chamwal, Devrampur, Sakanayana, Bansu, Semwalgaon, Bidaura, Sadauli, Shankarpur, Chharba & Lodh.	65	1976
Total		248	5910

Table 8.34: Number of training programmes conducted by KVKs under NARI Programme during the year

State	Name of Nutri Smart Village	No. of Training Programs	No. of farmers/beneficiaries
Punjab	Bhalla Pind, Jhangir, Handiaya, Kattu, Nimb Wala Morh, Dhaula, Khuddi Kalan, Phoos Mandi, Pindi Blochan, Sallopur, Bachhohi & Chaggran, Taggar, Bhagwanpur Meripur, Bamb, Sehjomajra, Burj Dhilwan, Tatariewala, Dusarna, Naglian, Sahauran, Mehrajwala, Chattiana, Kheri Mania, Kherigandiyen, Miani and Patiala, Bungal, Kular Khurd and Bigarwal & Booh	89	2520
Himachal Pradesh	Bal Khalsa, Papehar, Jokhri, Salumna, Palahuta, Maane, Lidang, Khater & Sangaswin	25	657
Jammu & Kashmir	Braripora, Wahipora, Lolab, Drugmulla, Kultura, Watayan, Kulangam, Kandi, Bramri, Dedikoot (B), Dedikoor (P), nPohru. Bategam, Poshpora, Hanjishart, Langate, Tikker, Nowpora and Shangren, Chaiter, Malad, Manguchak, Daboh, Tangpora, Darbagh, Gutlibagh, Repora, Patishalbugh, On-campus, Kattal Battal & Trich	46	1911
Uttarakhand	Bidaura, Khairana, Banskhedhi, Kaleth, Bansu, Sakanayana, Dogda, Sadauli, Shankarpur, Chharba & Lodh.	29	553
Total		189	5641

8.10 Out-scaling Natural Farming through KVKs

Project initiation: Out-scaling Natural Farming through Krishi Vigyan Kendras (KVKs) is one of the most ambitious projects of the Government of India (GOI). ICAR notified this project on 27 August 2022 along with brief guidelines for its implementation and communication of budget estimate (BE) of Rs. 191.11 lakh for the year 2022-23. The first release of Rs. 120.99 was then received from the ICAR on 01 September 2022. Later the BE of the project was upward revised by the ICAR to Rs. 475.26 lakh on 25 October 2022 along with the modification in the project implementation guidelines (Table 8.35).

Coverage under the project

The project has covered 414 villages up to December 2022 against the target of 420 till March 2023 in the states/ UTs of the Zone-1. The selected villages are falling under 143 developmental blocks of the five states/ UTs. Himachal Pradesh followed by Uttarakhand had the highest number of villages adopted for the implementation of the project. On the

other hand the CSKHPKV, Palampur and GBPUAT Pantnagar followed by SKUAST Srinagar had the highest coverage of number of villages for the Natural Farming (Table 8.36).

Capacity building

As Natural Farming had not been the component of course curricula of almost all the scientists and SMSs of the KVKs while pursuing their academic goals, a comprehensive capacity building of the project implementing team was very important. Three important events were organized for this purpose (Table 8.37).

Targets: Every KVK under the project was assigned a task of conducting 1 training of two days each for 40 participant farmers. KVKs selected under the project were also assigned the target of undertaking 8 demonstrations on the farmers' fields. In addition the KVKs were also asked to undertake a series of awareness programs for farmers and general masses. However, these targets were up to 31 March 2023.

Progress under the project

Though the KVKs were assigned targets till 31 March

Table 8.35: Key points in the project initiation

Key points	Date
ICAR notification of the project; Communication of national BE (Rs. 191.11 Lakh); and First guidelines of the project	27-08-2022
First release from ICAR (Rs. 120.99 Lakh)	01-09-2022
Revised National BE from ICAR (Rs. 475.26 Lakh); Revised guidelines of the project	25-10-2022



Orientation training on natural farming



KVK staff of Zone-I participating in orientation training

Table 8.36: Host organization and state/ UT wise details of adopted villages

Host Organization/ State UT	No. of adopted villages	No. of blocks covered
Host Organization		
CSKHPVK Palampur	80	29
Dr YSP UHF Nauni	48	14
SKUAST Jammu	50	16
SKUAST Srinagar	70	29
PAU Ludhiana	36	17
GADVASU Ludhiana	10	3
GBPUAT Pantnagar	80	27
VPKAS Almora	20	3
VCSGUUHF Bharsar	20	5
State/ UT		
Himachal Pradesh	128	43
Jammu & Kashmir	80	29
Ladakh	40	16
Punjab	46	20
Uttarakhand	120	35
Zone-1 Total	414	143

Table 8.37: Capacity building of KVK SMSs under the Natural Farming project

Title of the program	Date(s)	Venue	No. of participants
Orientation training on understanding natural farming for its flawless strategies to out scale through KVKs (Zone-I)	10-12 October 2022	Dr. YS Parmar UHF Nauni-Solan, HP	74
National Workshop on Natural Farming	03 December 2022	RVSKVV, Gwalior, MP	44
Orientation cum Training Programs of SMSs of KVKs and Nodal Scientists of ATARIs on Natural Farming	12-13 December 2022 15-16 December 2022	Gurukul, Kurukshetra, Haryana	45



Demonstration on preparation of different bio-farmentations



Awareness camp on Natural Family by KVK Dehradun

2023, the progress of the project till 31 December 2022 indicates that KVKs had reached 11405 farmers in the zone through 220 awareness programs. Further, the KVKs had conducted 29 training programs out of 42 (69 %) covering 1145 out of 1680 participants (68 %). Similarly KVKs conducted 224 demonstrations on farmers' fields out of 336 (67%). Host organization and state/ union territory (UT) wise details of the project progress have also been given in the Table 8.38.

8.11 Agri-Drone Project

The Un-crewed/Unmanned Aerial Vehicle (UAV) popularly known as "Drone" are increasingly available now for use in various sectors of agriculture for increasing the efficiency in production and reduce the labour burden on farmers. This emerging technology can help to reduce time and increase efficiency in soil and field analysis, crop monitoring

and surveillance, crop spraying for pest and disease control, nutrient application, etc. It is being predicted that the agriculture sector will be the second-largest user of drones in the world in the next five years. Keeping this in view, the agri-drone project has been formulated by ICAR, New Delhi and submitted to the Department of Agriculture & Farmer Welfare, Government of India, New Delhi for funding.

The National Agricultural Research System (NARS) comprising ICAR Institutes, Agricultural Universities (AUs) and KVKs are identified as agencies for implementing this project through 11 ATARIs during 2022-23. Accordingly, ICAR-ATARI, Ludhiana has disbursed funds to different Project Implementing Centres (PICs) and target of demonstration to be conducted during 2022-23 as per details given in Table 8.39.

Table 8.38: Host organization wise progress of the project till 31 December 2022

Name of the host organization/ state/UT	No. of KVKs under NF	Awareness programmes		Trainings		Demos	
		No.	Participants	No.	Participants	No.	Participants
SAUs Wise							
CSKHPVK Palampur	8	10	365	1	40	76	213
Dr YSP UHF Nauni	5	13	385	3	120	5	5
SKUAST Jammu	5	55	1870	8	232	23	244
Total SKUAST Srinagar	7	54	3533	8	518	47	59
PAU Ludhiana	4	13	702	1	42	14	236
GADVASU Ludhiana	1	7	402	0	0	1	8
GBPUAT Pantnagar	8	38	2764	3	148	33	116
VPKAS Almora	2	7	699	1	2	16	28
VCSGUUHF Bharsar	2	23	685	4	43	9	21
State/UT Wise							
Himachal Pradesh	13	23	750	4	160	81	218
Jammu & Kashmir	8	79	4096	9	272	42	275
Ladakh	4	30	1307	7	478	28	28
Punjab	5	20	1104	1	42	15	244
Uttarakhand	12	68	4148	8	193	58	165
Total	42	220	11405	29	1145	224	930

Table 8.39: PIC wise sanction of drone and target of demonstrations

S. No.	Name of PIC	No. of Kisan Drones Sanctioned in 2022-23	Demos sanctioned in 2022-23 (ha)	Funds sanctioned for Drones in 2022-23 (₹ in lakh)	Funds sanctioned for Demos in 2022-23 (₹ in lakh)	Total funds released in 2022-23 (₹ in lakh)
1.	KVK Ludhiana	1	250	10.0	7.5	17.5
2.	KVK Moga	1	250	10.0	7.5	17.5
3.	KVK Sangrur	1	250	10.0	7.5	17.5
4.	KVK Barnala	1	250	10.0	7.5	17.5
5.	KVK Solan	1	250	10.0	7.5	17.5
6.	KVK Mandi	1	250	10.0	7.5	17.5
7.	KVK Jammu	1	250	10.0	7.5	17.5
8.	KVK Kulgam	1	250	10.0	7.5	17.5
9.	KVK Ganderbal	1	250	10.0	7.5	17.5
10.	KVK Haridwar	1	250	10.0	7.5	17.5
11.	KVK US Nagar	1	250	10.0	7.5	17.5
12.	PAU, Ludhiana	2	500	20.0	15.0	35.0
13.	GADVASU, Ludhiana	1	250	10.0	7.5	17.5
14.	CSKHPKV, Palampur	2	500	20.0	15.0	35.0
15.	YSPUH&F, Solan	1	250	10.0	7.5	17.5
16.	SKUAST, Jammu	2	500	20.0	15.0	35.0
17.	SKUAST-K, Srinagar	1	250	10.0	7.5	17.5
18.	GBPUAT, Pantnagar	2	500	20.0	15.0	35.0
19.	ICAR-IIMR, Ludhiana	2	500	20.0	15.0	35.0
20.	ICAR-CIPHET, Ludhiana	1	250	10.0	7.5	17.5
21.	ICAR-CPRI, Shimla	2	500	20.0	15.0	35.0
22.	ICAR-VPKAS, Almora	2	500	20.0	15.0	35.0
23.	ICAR-IIS&WC, Dehradun	2	500	20.0	15.0	35.0
24.	ICAR-CITH, Srinagar	1	250	10.0	7.5	17.5
Total		32	8000	320.0	240.0	560.0



*Demonstration of Agri-Drone,
KVK Kulgam*



*Nutrient spray through drone technology,
ICAR-IISWC, Dehradun*

8.12 ARYA

During the period under consideration i.e., the calendar year 2022, ARYA project was implemented in 10 KVKs, three states and one Union Territory in

Zone-1. Bathinda district of Punjab conducted 5 trainings under four enterprises covering 216 youth. Moreover, 65 trained youth established their enterprises in the district. Hamirpur and Kathua also

Table 8.40: KVK wise progress report of ARYA project during January to December 2022

State	Name of KVK	Name of enterprise established	No. of training programs organized	No. of Youth Trained		No. of Units established in villages	
				Male	Female	Male	Female
Punjab	Bathinda	Beekeeping	1	38	16	14	1
		Value addition & processing	2	2	52	1	12
		Mushroom Cultivation	1	34	24	6	10
		Poultry Farming	1	49	1	21	0
	Barnala	Beekeeping	1	13	2	10	0
		Mushroom Cultivation	2	28	0	4	0
		Backyard Poultry Farming	3	64	7	5	0
		Processing of milk and meat	2	0	63	0	2
Himachal Pradesh	Hamirpur	Mushroom Cultivation	1	6	37	3	18
		Post-harvest and value addition	7	4	233	10	6
		Nursery Raising & Protected Cultivation	2	27	32	1	26
	Solan	High Value off season vegetable production under open and protected conditions	2	28	22	7	0
		Commercial Floriculture	3	61	16	5	0
		Nursery production of fruit crops	2	46	5	2	0
		Mushroom Production	1	23	2	5	3
	Uttarakhand	Haridwar	Mushroom Cultivation	2	39	22	10
Beekeeping			1	10	0	2	0
Poultry Farming			1	23	0	4	0
Nainital		Honey Production	2	22	22	7	3
		Mushroom Production	2	25	16	10	0
		Candle Making	2	0	43	0	10
		Backyard Poultry Rearing	2	13	27	3	1
		Jammu & Kashmir	Kathua	Mushroom Production	5	79	49
Poultry Farming	1			22	0	1	0
Commercial Floriculture	2			69	22	12	0
Value addition & processing	3			1	68	0	2
Baramulla	Beekeeping		2	34	0	3	0
	Quality Seed Production		1	9	0	3	0
	Animal/Sheep Husbandry		3	22	2	2	0
	Low cost poly house nursery		3	18	5	2	1
Kulgam	Vermicompost Unit		5	24	5	15	0
	Poultry Farming		6	25	4	8	2
	Plant nursery		7	26	4	9	0
Reasi	Aonla candy production(valve addition)		8	1	127	0	10
	Backyard Poultry		3	16	33	20	5
	Organic Okra Production(Organic farming)		6	31	98	14	10
	Marigold Production and marketing (Commercial floriculture)		3	3	17	13	1
Total			101	935	1076	238	130

did well on the front of training youth and getting enterprises established among the old ARYA KVKs. Reasi, Barnala, Kulgam and Solan performed well among the new ARYA KVKs of Zone-1 (Table 8.40).

Jammu & Kashmir followed by Himachal Pradesh, Punjab, and Uttarakhand performed very well on various fronts of progress under the ARYA project

during the period of this report (Table 8.41).

Value addition/ processing followed by Mushroom cultivation, Poultry farming, Commercial floriculture and Bee keeping were very popular enterprises among the young entrepreneurs of the Zone-1 (Table 8.42)

Table 8.41: State/ UT wise progress report of ARYA project during January to December 2022

State	No. of training programs organized	No. of Youth Trained			No. of Units established in villages		
		Male	Female	Total	Male	Female	Total
Punjab	13	228	165	393	61	25	86
Himachal Pradesh	18	195	347	542	33	53	86
Uttarakhand	12	132	130	262	36	16	52
Jammu and Kashmir	58	380	434	814	108	36	144
Total	101	935	1076	2011	238	130	368

Table 8.42: Enterprise wise progress report of ARYA project during January to December 2022

Name of enterprise established	No. of training programs organized	No. of Youth Trained		No. of Units established in villages	
		Male	Female	Male	Female
Poultry Farming	17	212	72	62	8
Beekeeping	7	117	40	36	4
Commercial Floriculture	8	133	55	30	1
Mushroom Cultivation	14	234	150	44	38
Candle Making	2	0	43	0	10
Quality Seed Production	1	9	0	3	0
Animal/Sheep Husbandry	3	22	2	2	0
Vermicompost Unit	5	24	5	15	0
Organic Okra Production (Organic farming)	6	31	98	14	10
Protected Cultivation & Nursery Raising	7	73	59	10	27
Value addition & processing	22	8	543	11	32
Nursery production of Horticultural crops.	9	72	9	11	0
Total	101	935	1076	238	130



ARYA Poultry Farming



ARYA-Demo Unit



ARYA-Training on Protected Cultivation under ARYA project in Hamirpur



ARYA Value Addition under ARYA project by KVK Kathua

8.13 Tribal Sub Plan (TSP)

Tribal Sub-Plan (TSP) is a strategy for the rapid socio-economic development of tribal people. It forms a part of Annual Plan of a State/UT. The TSP is applicable in 23 States and 2 UTs which are: Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Goa, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Odisha, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura, Uttar Pradesh, Uttarakhand, West Bengal, Andaman & Nicobar Island and Daman & Diu.

Tribal Sub-Plan (TSP) strategy of tribal development is a concept intended to address the issues of backwardness in tribal areas and tribal population in an integrated way. The aim is to minimize the gap between the livelihood of tribal people and general communities. The creation of productive assets in

favor of Scheduled Tribes (ST) is to sustain the growth through development efforts. Eleven KVKs of two states of ICAR-ATARI, Ludhiana were selected for this scheme during the year 2021. KVK Kinnaur, Lahaul & Spiti 1 and Lahaul & Spiti 2 from Himachal Pradesh, KVK Poonch, Reasi, and Rajouri from Jammu & Kashmir and KVK Leh 1, Leh 2, Kargil 1 and Kargil 2 from Ladakh are under the project of TSP.

During the 2022 year, eleven KVKs under the TSP scheme conducted 38 OFT and 2739 FLDs in farmers' fields. A total of 618 training courses were organized in which 19492 farmers and extension personnel attended the programmes during the reported period. A total of 54805 stakeholders attended the extension activities organized by the KVKs under TSP. With the help of ICT a total of 7896 messages were sent to 43891 farmers during the reported period (Table 8.43).



Field day on summer pruning of fruit trees at GP Nigulsari of KVK Kinnaur



Method demonstration on Mudhive Technology at KVK Kinnaur

Table 8.43: Details of mandated activities organized by KVKs under TSP during the reported period.

Name of KVKs/State	OFT	No. of Farmers	FLD	No. of Trainings	No. of Farmers	No. of Extension Activities	No. of Farmers	No. of SMS	No. of Farmers Received SMS
HP	14	52	474	167	3372	1825	16108	7330	11887
Ladakh	14	57	427	283	1238	1150	17484	40	25435
J & K	10	39	1828	168	3736	1937	21213	526	6569
Total	38	148	2739	618	19492	4912	54805	7896	43891

During the reported period 11 KVKs under TSP produced 58.58 quintals seed and 3.30 lakhs of good quality planting material for distribution among farmers of 8 districts (Table 8.44).

During the year a total of 245 soil, water and plant samples from 11 KVKs working among TSP were tested by the KVKs of the farmers from the selected villages. Only 16 soil health cards were issued to the farmers of 8 districts (Table 8.45).

Table 8.44: Details of seed and planting material produced by KVKs under TSP

Name of KVKs/State	Seed Production (Quintal)	Planting Material (No.)
HP	9.63	103224
Ladakh	22.15	216782
J & K	18.8	9600
Total	50.58	329606

Table 8.45: Details of soil, water and plant samples tested by KVKs under TSP

Name of KVKs/State	Soil Sample		Water Sample		Plant Sample		No. of Soil Health Cards Issued
	No. of Samples	No. of Farmers	No. of Samples	No. of Farmers	No. of Samples	No. of Farmers	
HP	106	100	0	0	0	0	16
Ladakh	0	0	0	0	0	0	0
J & K	75	60	0	0	64	64	0
Total	181	160	0	0	64	64	16

*Kisan Mela at KVK Rajouri**Workshop on medicinal plants at KVK Leh*

8.14 Fodder and livestock based farming system based approach for livelihood improvement of Schedule caste (SC)

The project “Fodder and Livestock Based Farming System Based Approach for Livelihood Improvement of SC” under the Schedule caste sub-plan (SCSP) funded by IGFRI, Jhansi was continued by ICAR-ATARI, Ludhiana with a total financial out lay of Rs.11.50 lakhs and revalidated amount of Rs. 2410461/- during 2022-23.

As agriculture and livestock play a significant role in socio-cultural, nutritional and livelihood security of the small and marginal farmers of the North Zone. Under the project various on farm technologies demonstrations (OFTs) and capacity development on different aspects of agriculture with special emphasis on fodder and livestock technologies through the selected Krishi Vigyan Kendras (KVKs) of Punjab and Himachal Pradesh were carried out. From five districts of Punjab and two districts of Himachal Pradesh villages having significant SC population (>35%) were purposefully selected in cluster mode.

On the basis of preliminary survey in order to provide them a sustainable source of income for their livelihood, module-wise interventions were carried out in the form of establishment of subsidiary income

sources like goatry or backyard poultry unit, nutri-garden, fodder cultivation, vermicomposting pits, animal feed supplementation through mineral mixture/UMMB blocks etc. During the year under livestock module 279 SC farm families were benefited under this project. The fodder crop was demonstrated in 30.64 ha by the SC farmers in their land. Under waste management module vermicomposting pits were prepared in 50 SC farmers land and UUMB blocks were distributed among 515 SC farmers. The details of the achievements under the project during 2022-23 are given below in the Table 8.46.

A total 23 capacity building programmes were also conducted by these KVKs for the more than 664 SC beneficiaries. During the year the SC farmers were made aware about the various technologies demonstrated under the project and about 1362 SC farmers participated in these extension programmes. The details of the activities under the project during 2022-23 are given below in the Table 8.47.

The Annual Review cum Action Plan Workshop under the project was also conducted the implementing KVKs of North Zone in collaboration with IGFRI, Jhansi during October 19-20, 2022 for reviewing the module wise interventions taken up by the KVKs in their respective districts.



Awareness programme conducted by KVK Kullu for SC farmers



Demonstration of Backyard Poultry by KVK Nawashahar

Table 8.46: Module wise Demonstrations conducted during 2022-23

Name of the KVK	Livestock Module		Fodder Crop Module		Waste management/ Vermicomposting unit/ Drudgery Reduction		Agriculture Module		Other/Demo/(Mineral Mixture/UMMB)	
	Demo	No. of Farmers	Area (ha)	No. of Farmers	Demo	No. of Farmers	Area (ha)	No. of Farmers	Demo	No. of Farmers
Amritsar	30	30	5	20	0	0	0	0	106	106
Faridkot	15	15	1.64	15	0	0	0.67	15	30	15
Jalandhar	30	30	12	50	0	0	0	0	60	60
Muktsar	50	50	4	40	0	0	0	0	40	40
Nawanshar	50	50	0.6	60	0	0	0	0	60	60
Kullu	3	74	2.4	74	0	0	2	74	2	174
Sirmaur	30	30	5	40	50	50	1	50	60	60
Total	208	279	30.64	299	50	50	3.67	139	358	515

Table 8.47: Details of programmes conducted by KVKs under the project during 2022-23

Name of the KVK	Trainings		Publication		Extension Activities	
	Demo	No. of Farmers	No. of Publications	No. of Farmers	No. of Extension Activities	No. of Farmers
Amritsar	1	30	0	0	1	100
Faridkot	3	70	0	0	5	312
Jalandhar	4	90	2	20	2	185
Muktsar	4	90	0	0	4	275
Nawanshar	2	60	0	0	1	35
Kullu	6	239	0	0	4	165
Sirmaur	3	85	0	0	5	290
Total	23	664	2	20	22	1362

*Off campus training programme on value addition by KVK Faridkot**Training Programme conducted by KVK Kullu for SC farmers*

8.15 Formation and Promotion of FPOs by KVKs and ICAR Institutes

Under the project Formation and Promotion of 10,000 FPOs by KVKs and ICAR Institutes as Cluster Based Business Organization (CBBOs) KVKs were funded by National Cooperative Development Corporation (NCDC), seven KVKs namely Bathinda & Moga in Punjab, Mandi & Solan in Himachal Pradesh, Dehradun & US Nagar in Uttarakhand and Budgam in Jammu & Kashmir were entrusted with the responsibility of development of 15 FPOs but only 13 FPOs have been formed during the year. The detail information of the FPOs is given in Table 8.48.

During the year 13 FPOs formed by seven KVKs of this Zone registered 3110 famers and conducted 49 training programmes, 94 meetings for the farmers & 137 awareness programmes were conducted for the FPO farmers. Besides this few KVKs have registered FPOs under ENAM and Udyog Aadhar for the benefit of farmers. Farmers registered on ENAM and have also applied for different sale purchase licenses to do work smoothly. Market linkage has also been developed with different Mandis with the help of KVKs. Farmers are looking forward for starting their enterprises to receive remunerative income from their agricultural produce.



Awareness programme on formation of FPO at KVK Mandi



Training on processing value addition of mango at KVK Mandi



Board Meeting at KVK Dehradun



Felicitation of FPOs by Govt. of J&K KVK Budgam

**Table 8.48: Detail of FPOs Activities conducted by KVKs during the year**

S. No.	Name of FPO	Total No. of Farmer Registered	No. of Trainings Conducted for FPO Members	No. of Meeting conducted for FPO Members	No. of Awareness Programmes conducted for FPO Members
1.	The Sangat Block Farmer Producer Cooperative Society Ltd, Bathinda, Punjab	303	3	7	28
2.	The Nathana Block Farmer Producer Cooperative Society Ltd, Bathinda, Punjab	303	3	7	25
3.	The Hariawal Farmer Producer Cooperative Society Ltd, Khosa Pando, Moga, Punjab	310	4	7	11
4.	The RauFarmer Producer Cooperative Society Ltd, Rauke Kalan, Nihal Singh wala, Moga, Punjab	310	4	7	11
5.	The Balh Valley Adarsh Kisan Sabji Utpadak Sahkari Samitisimit Balh Sthit Sayouli, Mandi, Himachal Pradesh	155	2	5	15
6.	The SuketValley Kisan Phel evam Sabji utpadak Sahkari Samitisimit Sundernagar, Mandi, Himachal Pradesh	53	1	3	11
7.	The Karol Vegitable and Fruit Producer's Proceesing and Marketing Coaperative Ltd., kandaghat, Solan, Himachal Pradesh	203	3	2	3
8.	Ummed Ki Kiran, B K Pora, Budgam, Jammu & Kashmir	148	3	8	3
9.	Sheikh UI Alam, Budgam, Jammu & Kashmir	100	3	5	4
10.	Raipur Krishi Utpadak Evam Vipadan Swayatt Sahkari Samiti Ltd., Dehradun, Uttarakhand	300	6	5	4
11.	Vikasnagar Kisan Utpadak Evam Prasanskaran Swayatt Sahkari Samiti., Dehradun, Uttarakhand	315	6	8	15
12.	Pragatisheel Krashak utpadak Sangathan Sahkari Samiti Ltd., US Nagar, Uttarakhand	301	5	19	4
13.	Smaridhi Krashak utpadak Sangathan Sahkari Samiti Ltd., Gadarpur, US Nagar, Uttarakhand	309	6	11	3
Grand Total		3110	49	94	137

8.16 MERA GAON MERA GAURAV (MGMG)

The MGMG scheme in Zone-I is being implemented by 10 ICAR Institutes and 06 SAUs. All the ICAR Institutes and SAUs of the Zone have nominated Nodal Officer for the “Mera Gaon Mera Gaurav” activities at institute/university level. Table (8.49) clearly depicts that 141 teams of scientists were

formed comprising 530 scientists from ICAR Institutes and SAUs who have adopted 457 villages under this scheme

Teams of scientists of various ICAR Institutes and SAUs working in Zone-I have visited respective adopted villages and contacted farmers to promote scientific agricultural practices and get feedback directly from the field. The teams organized various



Awareness program by ICAR-DMR, Solan



Mushroom spawn distribution by ICAR-DMR, Solan

Table 8.49: Detail of activities conducted under MGMG

State	No. of institutes/universities involved	Total No. of Groups/team formed	No. of Scientists Involved	No. of villages covered	No. of field activities conducted	No. of messages/advisory sent	Farmers benefited (No.)
Punjab	6	61	179	135	685	1101	17118
Himachal Pradesh	4	20	86	33	96	5047	4713
Jammu & Kashmir	2	5	25	18	180	55	377
Uttarakhand	4	55	240	271	598	451	18281
Total	16	141	530	457	1529	6654	40489



Sensitization program on mushroom production by ICAR-DMR, Solan



Sensitizing farm women by ICAR-DMR, Solan

extension activities like interface meetings, goshies, demonstrations etc. to motivate farmers to adopt new agricultural technology/ good practices and to show the superiority, applicability, economic advantages of new technologies. Scientists of this zone also provided agro-advisory services to the adopted villages with respect to weather phenomenon and crop specific solutions.

8.17 New Extension Methodologies and Approaches (NEMA)

Doubling Farmers Income (DFI) was one of the most ambitious goals of the Government of India (GOI) right from the year 2016-17. During the period under report two mega activities related to DFI were carried out under the NEMA project i.e.; 1. to generate, refine, digitize, analyse and document data related to 75000 successful cases where farmers income actually doubled and information, 2. to carry out systematic research project on assessment of impact of various interventions carried out the KVKs under the DFI initiative of the GOI.

ICAR-ATARI Ludhiana played a critical role in the analysis and documentation of experiences of 75000 successful cases where net income of the farmers of

India was actually doubled. Three publications were brought out from this particular exercise (Table 8.50).

Zone-1 Experiences

The household net income of the respondent farmers of the Zone-1 increased on an average by 2.63 times during 2016-17 and 2020-21. The highest growth in average net income was observed in case of farm and non-farm enterprises (5.64 time) followed by fishery



Ensuring better health of sheep for enhancing farmers income

Table 8.50: Publications carried out from the exercise on 75000 success stories of DFI farmers

S. No.	Title of the publication	Details
1.	ICAR (2022) Doubling Farmers Income-ICAR Salutes the Farmers-75 Thousand Success Stories. ICAR, DARE, Ministry of Agriculture and Farmers Welfare	Published by DKMA, New Delhi-110012 https://icar.org.in/success-story/index.pdf
2.	Mohapatra T., Singh A.K., Birthal P S, Chandre Gowda M.J., Rana Rajesh K, (2022) Doubling farmers Income: State-wise Synthesis. ICAR, DARE, Ministry of Agriculture and Farmers Welfare: XVIII+96p	Published by DKMA, New Delhi-110012
3.	Rana, R.K., Singh, R., Singh, A.K., Chahal, V.P., Singh, R., Monga, S., Singh, M. (2022). Policy Implications on Doubling Farmers Income - Evidences from the actual successful cases in Zone-1 (2016-17 to 2020-21). Policy Document, ICARATARI, Ludhiana: vi+50p.	Published by ICAR-ATARI Ludhiana



*Line sowing of off season pea
in Lahual and Spiti*

(4.59 times), livestock (4.30 times), horticulture (3.19 time) and field crops (1.64 times). The share in the contribution of field crops decreased from 53% to 33% in the period under consideration while the share of all other components of farming increased during this period. However, horticulture was the most important farming component to add in farmers' net income of the year 2016-17 during 2020-21 by 39% followed by livestock (24%), field crops (21%), enterprises (15%) and fishery (1%). Further, the proportionate enhancement in net average household income of the respondent farmers which gradually decreased as their size kept on increasing. The net household average income increased in the range of 3.37 times in case of landless farmers and 2.37 time for the large farmers having land holding size of more than 4 ha. These results of this analysis present quite satisfying outcome of the DFI initiative as its spirit was to especially focus on the income enhancement of resource deprived farmers.



*S. Daljit Singh at his dragon
fruit farm with KVK expert*



*Ladakh-Capacity building of farmer for
adopting supplementary enterprise*

National Experiences: Farmers from all land classes benefitted from the technical interventions. In particular, income of the landless families increased 3.88 times, the highest for all classes, because of lower benchmark income levels. The income for marginal landholding households was increased by 2.9 times and small holdings could increase farm household income by 2.5 times.

DFI survey study

This study was conducted with the help of a pre-structured interview schedule covering the thirteen sub-agro climatic zones in the ICAR-Zone-1. A total of 640 adopter respondents (from the KVK adopted villages) and an equal number of non-adopter respondents was selected for this study. Out of the 1280 respondents (both adopter and non-adopter) there were 574 marginal respondents, 253 small, 242 medium, and 211 semi-medium plus large farmers in this study. The study revealed that the percentage of



*Progressive farming of Summer Squash
for DFI in Uttarkhashi*



adopted marginal farmers was lower than the percentage of non-adopted marginal respondents in this study that means marginal farmers were not availing extension services provided by the KVKs to the desired extent as compared to the larger categories. However, in all the cases the income enhancement (both gross and net) adopted farmers was more than the non-adopted ones. Notably the net income of adopted respondents increased by 2.08 times at 20% CAGR over the period of the study, this enhancement was just 1.7 times at 14.2% CAGR in non-adopters. In spite of higher income enhancement of adopted respondents, the B-C ratio of non-adopters was higher both before and after periods of the study indicating that adopter farmers were following capital-intensive agriculture.

8.18 Schedule Caste Sub Plan (SCSP)

The objective of SCSP is overall development of Scheduled Castes for bringing them above the poverty line and into the mainstream of national life with equal social & economic status with other sections of the population under which the flow of outlays and benefits from the general sectors in the plan of states for the development of SCs at least in proportion to their population both in physical and financial terms.

According to guidelines of the Planning Commission only those schemes should be included under SCSP that ensure direct benefits to individuals or families belonging to SCs and priority should be given for

providing basic minimum services like primary education, health, drinking water, nutrition, rural housing, rural electrification and rural link roads. Schemes to develop agriculture and allied activities like animal husbandry, dairy etc. that provide a source of livelihood to the SC population should be included. The villages with 40% and above SC population may be saturated first and provided with all the development activities.

State Governments have been given flexibility in choice of schemes to be implemented out of Special Central Assistance, within the overall framework of the scheme. At present 27 districts among four States/UTs having sizeable SC population are implementing Scheduled Caste Sub-Plan in Zone-I (Table 8.51).

During the year KVKs under SCSP conducted 1529 OFTs, 15213 FLDs in the farmer's fields of 28 districts, organized 2361 training programmes in which 50189 farmers and farm women participated in these programmes and 26358 extension activities and 575936 farmers and extension officials participated in outreach programmes. With the help of ICT a total of 19830 messages were sent to 679376 farmers during the reported period (Table 8.52).

During the year 28 KVKs under SCSP Plan distributed 9925.54 quintals of quality seed material and 684046 numbers of planting material to the farmers to improve their production in the fields (Table 8.53).

Table 8.51: List of KVKs under SCSP during the year

S. No.	State	Name of KVKs	No. of KVKs
1.	Punjab	Amritsar, Barnala, Bathinda, Ferozepur, Fatehgarh Sahib, Faridkot, Gurdaspur, Hoshiarpur, Jalandhar, Kapurthala, Ludhiana, Mansa, Moga, Muktsar, Nawanshahr, Patiala Ropar, Sangrur and Tarn Taran	19
2.	Himachal Pradesh	Bilaspur, Kullu, Mandi, Sirmaur, Shimla and Solan	6
3.	Jammu	Jammu and Samba	2
4.	Uttarakhand	Bageshwar	1
Total			28



*Exposure visit of farmers food craft mela
by KVK Fatehgarh Sahib*



*Exposure visit of farmers from Maharashtra
to KVK Solan*

Table 8.52: Details of activities conducted by KVKs under SCSP during the year

Name of KVKs/ State	OFT	No. of trials	FLD	Trainings	No. of Farmer	Extension Activities	No. of Farmer	KMAS No. of Farmers	KMAS No. of Messages
Punjab	216	897	9972	1617	30577	19494	485466	8685	178979
H. P.	91	329	2646	536	14430	2514	42048	2994	492979
U. K.	11	85	687	36	737	1296	7578	7313	338
J & K	28	218	1908	172	4445	3054	40844	838	7080
G.Total	346	1529	15213	2361	50189	26358	575936	19830	679376

Table 8.53: Details of Seed and Planting Material

Name of KVKs/State	Seed Production (Qtls.)	Planting Material (No.)
Punjab	7710.23	344241
Himachal Pradesh	1849.92	199805
Uttarakhand	34.99	140000
Jammu & Kashmir	330.40	0
Grand Total	9925.54	684046

KVKs under Scheduled Castes Sub Plan (SCSP) tested 6912 soil, water and plant samples. Further

KVKs also issued soil health cards to 4780 farmers of 28 districts in this zone (Table 8.54).



*Monitoring of cotton field by scientists
of KVK, Sangrur*



*Seedling and planting material production
at KVK Bilaspur H.P.*



*Reddish packaging for sale, FFP centre
CSKHPKV Palampur*



*Taking produce to the market, FFP centre
CSKHPKV Palampur*

Table 8.54: Details of Soil, Water, Plant Samples & Soil Health Cards of KVKs under SCSP

Name of KVKs/ State	Soil Sample		Water Sample		Plant Sample		No. of Soil Health Card Issued
	No. of Sample	No. of Farmers	No. of Sample	No. of Farmers	No. of Sample	No. of Farmers	
Punjab	4741	2960	49	49	871	827	4151
Himachal Pradesh	976	722	0	0	203	203	599
Uttarakhand	10	30	0	0	0	0	30
Jammu & Kashmir	100	100	0	0	0	0	0
Grand Total	5827	3812	49	49	1074	1030	4780



Kisan Mela at KVK Hoshiarpur



IMPORTANT ACTIVITIES AND EVENTS

9.1 Swachata Bharat Abhiyan

ICAR-ATARI, Ludhiana along with Krishi Vigyan Kendras (KVKs) of Zone-I has organized various activities under Special Swachhta Campaign 2.0 during 02nd-31st October 2022. At the start of the campaign, all the officials and staff of ICAR-ATARI, Ludhiana and KVKs celebrated Gandhi Jayanti on 02nd October, 2022 by discussing Gandhian ideology through various talks and webinars and also took Swachhta Pledge. On the similar line various Webinars along with experts talks on “Crop Residue Management for Combating Climate Change” and related themes were also organized by KVKs of Punjab in association with ATARI Ludhiana in order to sensitize the farming community toward clean and green environment by proper utilization of crop residues. Along with this cleanliness and hygiene based activities were also undertaken with the active participation of officials, staff, farmers, farm women and village youth at Institute and KVK level. The key highlights include activities like lectures and creating

awareness on Crop Residue Management, protection and conservation of natural resources, clean and green environment, general cleanliness at home and at farm etc. through various workshops, interfaces, melas, awareness programmes etc. at various locations across the zone. A special campaign was organized by all the KVKs on 17.10.2022 in association with PM Kisan Samman Sammelan in which thousands of participants including official staff, farmers, civil society members, school children actively participated made aware about the objective and activities under Swacha Bharat Abhiyan. Various competitions such as painting, slogan writing, debate, poster making and elocution were also organized with the different themes for school children .

Along with this ICAR ATARI and KVK also organized Swachata Pakhwada during 16-31 Dec 2021. The banners in front of Institute's main building and various slogans at prominent places near the campus were also displayed along with posting of tweets for public awareness as the highlights of the



SAP at school premises in Gurdaspur



Swachhata Abhiyan by KVK Faridkot

Pakhwada. Awareness was created regarding sanitation & waste disposal into degradable & non-degradable form by ATARI and KVKs in various public places, villages under “Mera Gaon Mera Gaurav” and other adopted villages under different projects. Awareness rallies were arranged in local communities and prominent places for creating sensitizing among the general public. On farm-demonstrations about bio-waste management through vermi-composting and proper utilization of sewage water for kitchen gardening purpose were shown to the farmers by the KVKs in their adopted villages. The beautification by plantation drive and weeding in

the lawns, kitchen garden and demonstration farms were also carried out. Campaigns on no pending matters, grievances settlement, weeding out of files and disposal of scrapped material were also carried out at different stations Table 9.1.

9.2 Microbial Waste Management through Vermicomposting

Under the project a village named Balsihna in Bilaspur District was selected for development of Model Village under Swachhta Action Plan (SAP). In this village about 100 beneficiaries were selected to demonstrate and distribute vermibeds along with

Table 9.1: Activities conducted during Special Swachhta Campaign from 2nd-31st October 2022

S. No.	Activities	No. of Activities	Staff members	Dignitaries	Farmers	Member of Civil Society	School Children	Total
1.	Adoption of villages for Microbial based Agricultural Waste Management using Vermicompost.	197	142	13	3130	38	0	3325
2.	Awareness programme about Swachhta.	778	704	71	2671	25	1227	4836
3.	Crop Residue Management	244	46	82	8534	76	1346	10211
4.	Demonstration of technologies on waste and wealth.	310	283	27	2087	25	0	2425
5.	Cleaning of villages programme with farmers.	264	478	0	2719	76	116	3392
6.	Orientation of school children on various topics like hygiene, sanitation, cleanliness.	101	89	12	0	38	1220	1364
7.	Cleaning of offices and campus and disposal of scraps, space freed, etc.	202	834	0	0	23	0	873
8.	Timely disposal of references	47	34	0	0	0	0	34
Total		2143	2610	205	19141	301	3909	26460



Awareness camp on SAP



Demonstration on Dhoop making



Exposure visit at cow by-product unit



Gaushala at Balsinha village

shovels, spades, crowbars, iron baskets, dung fork, buckets, bamboo baskets, trowel, and dustbins for waste management in their respective premises. Along with this two training programmes on cow waste management were also organized for 25 farmers each for pivot level making of Diyas, Dhoop and Agarbati by the use of livestock and farm for developing entrepreneurship among the women and men. Awareness programmes, cleanliness drive and plantation of ornamental plants on road sides in the village were also organized. Apart from this the other KVK of Zone-1 are also working for promotion of

judicious use of animal waste products through vermicomposting which were demonstrated through various awareness and training programmes in more than 500 other villages of the districts covered under Swach Bharat Abhiyan.

9.3 Hindi Pakhwada

Hindi Pakhwada was organized during 14-28 September 2022 at ICAR-Agricultural Technology Application Research Institute, Ludhiana. Under which Hindi and its importance were discussed in detail on the occasion of Hindi Diwas. Along with



Ashu Bhashan pratiogita



Award distribution

this, strategies to promote Hindi in departmental works were also discussed. Since the institute is committed to the promotion of the official language Hindi, various competitions such as Hindi typing, essay, poetry recitation, Hindi vocabulary and debate competitions were also organized during the fortnight. All the officers and employees of the institute participated enthusiastically in all these competitions and cash prizes of Rs. 2000 for the first, Rs. 1500 for the second, Rs. 1100 for the third and Rs 500 as consolation prize. The entire program was coordinated by Dr. Pragya Bhadauria, Scientist and Officer-in-Charge, Official Language and her team under the patronage of Dr. Rajbir Singh, Director, ICAR-Agricultural Technology Application Research Institute, Ludhiana.

9.4 Vigilance Awareness Week

Vigilance Awareness Week was celebrated by ICAR-ATARI, Zone-I, Ludhiana from 30th October to 6th November 2022. Integrity pledge was administered to



Vigilance awareness week at ICAR-ATARI, Ludhiana



World Soil Day, KVK Ferozepur

the 25 staff members as well as project Staff on 1st November 2022; whereas, 10 staff members took e-Pledge using virtual platforms.

9.5 World Soil Day

World Soil Day was celebrated by 70 KVKs of Zone-I on December 05, 2022 in which 4181 participants including farmer, scientists and students participated. Apart from this, 67 VIPs also attended the programme. On this occasion, KVKs organized awareness programs on soil testing, interpreting soil health cards, soil testing-based fertilizer application, ill effects of excessive application of chemical fertilizers, balanced fertilizer application, Integrated Nutrient Management (INM) in different fields and horticultural crops, etc. Moreover, many KVKs organized exhibitions for the farmers on soil health, soil sampling, soil testing techniques, good agricultural practices and soil and environment friendly technologies. Likewise, appropriate methods of soil sample collection were also demonstrated to the farmers.

9.6 Special Events

9.6.1 Kisan Bhagidari Prathamikta Hamari

All 72 Krishi Vigyan Kendras (KVKs) under Zone-I organized Farmers' Fair on 26th April, 2022 under Kisan Bhagidari Prathamikta Hamari Campaign. In this Kisan Mela, various activities were organised by the KVKs including 103 Farmer-Scientist Interactions, 276 Technical Discussions, 478 Exhibitions and 105 other activities. A total of 23,632



World Soil Day, KVK- Tehri Garhwal



Kisan Bhagidari Prathmikta Hamari, KVK Kullu

farmers and 571 public representatives participated on this occasion at different KVKs of Punjab, Himachal Pradesh, Jammu & Kashmir, Ladakh and Uttarakhand.

9.6.2 Kisan Utsav

Krishi Vigyan Kendra, Sirmour and Krishi Vigyan Kendra, Bilaspur under CSKHPKV, Palampur Organized KISAN UTSAV on “Capacity Building Programme for Farmers & other Stakeholders to Strengthen Export Oriented Agri Supply Chain under Natural Farming” on 23th May and 8th June 2022 respectively funded by Agricultural and Processed Food Products Export Development Authority (APEDA), New Delhi. Around 240 farmers participated in these training programmes and got benefited with expert's lectures from various departments. Sh. R.K. Gautam, Deputy Commissioner (IAS), Sirmour was the Chief Guest. Additional Deputy Commissioner, Sirmour-Sh. Manesh Yadav, IAS and Mrs. Rekha Mehta, AGM, APEDA were present as Special Guest and Guest of



Kisan Bhagidari Prathmikta Hamari, KVK Sangrur

honour, during the event. Madam Shailja Sharma (Member Zila Parishad) presided over the function at KVK Bilaspur and appealed farmers to practice natural farming and rear deshi cow for the peace and prosperity.

Dr. Suman Kumar PC KVK Bilaspur elaborated about various projects running by the KVK and motivated the farmers to actively involve in the natural farming and to increase their farm income. Mr. Arshpreet Sharma Consultant APEDA discussed about the procedure for exporting agricultural products. Dr Sahab Singh (Project Director ATMA, Nahan) shared his views on the merits of natural farming to reduce the cost of production and increase the productivity of crops being grown under natural farming conditions. He also explained various methods of making Jeevamrit, Bijamrit etc. Farmers -Scientist interactions were held on various aspects related to natural farming and future perspectives of products. An exhibition on various activities of KVK Sirmour and products of natural farming was also organized by



Capacity building programme on Natural Farming



the FPOs, Self Help Groups for awareness of visiting farmers and other dignitaries/officials. Seeds of improved varieties of Paddy (Variety: HPR-2720 & 2612) and Bhindi (Variety: Palam Komal) were also provided to the participating farmers.

9.6.3 Garib Kalyan Sammelan

All 22 Krishi Vigyan Kendras (KVKs) of Punjab organized district level Garib Kalyan Sammelan at their premises on 31st May 2022. Hon'ble Prime Minister, Shri Narendra Modi inaugurated the programme in virtual mode marking completion of eight years of the government led by him. In this Sammelan, the elected public representatives interacted with the beneficiaries to get feedback about the various welfare programmes being run by the Government. A total of 31,515 people participated in this Sammelan organised by 22 KVKs of Punjab and out of these 27,350 were beneficiaries including farmers of different schemes. Further, 4,165 other farmers took part in this programme. Sh. Som

Parkash, Union Minister of State, Commerce and Industry, Government of India graced the occasion as Chief Guest in this programme organised by KVK Hoshiarpur and interacted with beneficiaries of different schemes. All the KVKs of Punjab also put-up exhibition stalls as part of this programme and showcased latest agricultural technology for creating awareness amongst participants of the programme.

9.6.4 National KVK Conference-2022

XII National Krishi Vigyan Kendra (KVK) Conference-2022 was organized during June 1-2, 2022 at Dr. L. S. Negi Auditorium, Dr. YSPUH&F, Solan, Himachal Pradesh. The focal theme of the Conference was Sustainable Agriculture Production Systems. In all, four technical sessions viz. Precision Agriculture, Diversification & Intensification; Natural Farming for Sustainable Agriculture; Successful Interventions and Experiences of KVKs & young Entrepreneurs and Facilitating KVKs in Management, Administrative & Financial Matters



MoS Sh Som Parkash at KVK Hoshiarpur



Garib Kalyan Sammelan, KVK Hoshiarpur



National KVK conference - 2022



were held during the conference beside Inaugural & Valedictory Sessions and field visit to Natural Farming Sites as well as deliberations on general issues for strengthening the KVK system. The conference was attended by around 1000 participants across India including Senior Scientists & Heads of KVKs; Vice Chancellors and Directors of Extension Education of Agricultural Universities; Directors of ICAR Institutes; Senior Officers from the ICAR Headquarters; Directors and Scientists of ICAR-ATARIs; and young enterprising farmers. The Senior Scientists & Heads of KVKs also got an opportunity to visit the demonstrations on natural farming practices in the adjoining areas and interacted with the farmers practicing natural farming.

The conference was inaugurated by the Chief Guest Sh. Jai Ram Thakur ji, the hon'ble Chief minister Himachal Pradesh. Shri Narendra Singh Tomar, Hon'ble Minister of Agriculture & Farmers' Welfare GOI joined virtually during the inaugural session. His Excellency Governor of Gujarat, Acharya Devvrat ji and Minister of state, Agriculture and Farmers Welfare GOI Sh. Kailash Chaudhary ji were the Guests of Honour in the Inaugural Session. State Minister of Agriculture, Animal Husbandry & Rural development, GoHP Sh. Virender Kanwar ji also graced the occasion. The valedictory session was graced by His Excellency, the Governor of Himachal Pradesh, Shri Rajendra Vishwanath Arlekar ji as Chief Guest, and the Union Minister of State for Agriculture and Farmers' Welfare, GOI, Sh. Kailash

Chaudhary ji was the Guest of Honour. Shri Parshottam Rupala ji, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying, Government of India graced the occasion virtually.

9.6.5 International Yoga Day

ICAR-Agricultural Technology Application Research Institute, Zone-1, Ludhiana celebrated International Yoga Day on 21st June 2022. During the sessions various Aasanas viz. Trikonaasana, Bhadrasana, Bhujangasana, Pawana Muktaasana, Surya Namaskar etc were performed by the staff members with great enthusiasm. Participants have also learnt and practiced the various techniques of pranayamas and meditation with the synchronized chanting of Om. During the event, participants were encouraged to practice regular yoga in their lifestyle while sparing a few minutes during working hours for stress free living.

9.6.6 Delegation from Nepal visited ICAR-Agricultural Technology Application Research Institute, Zone-1, Ludhiana

On 21st June, 2022, a nine-member delegation led by Hon'ble Provincial Minister Mr. Bijay Kumar Yadav, Ministry of Land Management, Agriculture and Cooperatives (MOLMAC), Government of Nepal visited ICAR-Agricultural Technology Application Research Institute, Zone-1, Ludhiana, Punjab. At the outset, Director, ICAR-ATARI, Ludhiana Dr. Rajbir, welcomed the delegation and apprised them about the national scenario of agricultural extension system



International Yoga day celebration at ICAR-ATARI, Ludhiana



Visit of delegation from Nepal to ICAR-ATARI, Ludhiana & KVK Ludhiana



particularly in reference to KVK system. He has also given a brief of various activities carried about by ATARI and KVK in the north zone for the welfare of the farming community.

During the interaction officials from Punjab Agricultural University, Ludhiana, representatives from Krishi Vigyan Kendra, Samrala and Moga and their progressive farmers along with staff members of the ATARI were also present. Progressive farmers and trainees of KVK also had a fruitful interaction with the delegates. A round of exposure visits to other sister Institutes was also conducted to apprise the delegates of the various activities conducted by them.

A field visit to bee equipment manufacturing and processing unit run by a progressive beekeeper, Sh Jatinder Jeet Pal in Doraha along with KVK Ludhiana organized on 22th June, 2022 to give them a practical overview of the KVK system. The honey production enterprise was well appreciated by the visitors and offered them to explore possible intervention in his country also. The delegation showed keen interest in various demonstration units, technology Park, rainwater harvesting structures and micro sprinkler system, machinery unit, biogas production and soil testing lab at the KVK. The delegation actively interacted with the progressive farmers associated with the KVK during the exhibition organized by them. They also discussed about the various issues of mutual interest and benefit with regard to new agricultural reforms to be replicated in their country especially w.r.t Self Help Group model for women

empowerment as well as promotion of bee keeping at a larger scale. The delegation expressed gratitude to the ICAR-ATARI, Ludhiana for all the arrangements and making their visit fruitful.

The team members comprised of namely Mr Mekh Bahadur Mongrati, Province Secretary, Office of the Chief Minister and Council of Ministers; Dr Namrata Singh, Province Secretary, MOLMAC; Mr Jageshwor Pd Yadav, Senior Fisheries Officer; Dr Ratna Kumar Jha, Senior Crop Protection Officer; Mr Bijay Kumar Mahto, Chief Survey Officer; Mr Shankar Prasad Sah, Senior Agro-Economist; Mr Surendra Kumar Deepak, Personal Secretary; Mr Vijay Kumar Chaudhary, Accounts Officer.

9.6.7 Consultation Meet on Emerging Challenges in Plant Protection of Major Kharif Crops

One day Consultation Meet on Emerging Challenges in Plant Protection of Major Kharif Crops was organized by the ICAR-Agricultural Technology Application Research Institute, Ludhiana at Chandigarh on 13.08.2022 with objectives to take stock of current Kharif season crops in northern states and to know real time status of pest and diseases in kharif crops and develop strategies for their effective management.

During this meet, experts from diverse backgrounds viz. ICAR Institutes, agricultural Universities, KVKs and Industries including officials of state department of agriculture shared their experiences on emerging



Consultation meet at Chandigarh

challenges in current Kharif season crops in north India. They discussed plant protection measures of current Kharif season crops viz. paddy, cotton, maize and sugarcane of Punjab, Himachal Pradesh, Uttarakhand, Haryana, Rajasthan and Delhi. The major challenges in Kharif season crops are whitefly and Pink BollWorm (PBW) in cotton, stunting growth and yellowing of leaves in rice, top-borer and Pokkah Boeng in sugarcane and Fall Armyworm (FAW) in maize were deliberated in details by the experts.

In this meet, scientists from ICAR-IIMR, Ludhiana; ICAR-NCPM, New Delhi; ICAR-CICR, Sirsa; ICAR-IISR, Lucknow; PAU, Ludhiana; officials from state department of Agriculture, Punjab & Haryana, Directorate of Plant Protection, Quarantine and storage; Faridabad including more than 65 scientists of 33 Krishi Vigyan Kendas (KVKs) of Punjab, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Haryana, Rajasthan and Delhi participated physically and more than 200 scientists from other parts of country joined virtually.



9.6.8 Workshop-cum-Scientist-Farmer Interaction on Present Status, Challenges and Prospects of Small Ruminants Pastoralist

ICAR-Agricultural Technology Application Research Institute, Zone-I, Ludhiana in collaboration with ICAR-Central Sheep and Wool Research Institute, Avikanagar organized a Workshop-cum-Scientist-Farmer Interaction on “Present Status, Challenges and Prospects of Small Ruminants Pastoralist” at the Northern Temperate Research Station of ICAR-CSWRI in Garsa, Kullu on 9th October 2022. Dr. Inderjeet Singh, Vice Chancellor, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana was the Chief Guest and Shri Suresh Chandel, former MP and Member ICAR Governing Body was the Guest of Honour.

Dr. Rajbir Singh, Director, ICAR-ATARI, Ludhiana emphasized on collaborative work to chalk out successful models for sheep development. He highlighted the scope of pashmina wool in Changthang valley, which needs special attention



Workshop on status, challenges & prospects of small Ruminants Pastoralist



with respect to marketing of the produce. He finally expressed concerns with respect to climate change especially in hills, which demands suitable technological interventions for profitable livestock production. Dr. Arun Kumar Tomar, Director, ICAR-CSWRI, Avikanagar acquainted the gathering of technologies developed by the Institute. He urged the Krishi Vigyan Kendras (KVKs) to create awareness among the farmers for adoption of improved sheep farming technologies. Dr. Inderjeet Singh, Vice Chancellor, GADVASU, Ludhiana in his address motivated the KVK Scientists to work whole heartily for the welfare of the farmer community. He urged the farmers to keep themselves updated with the latest technologies developed by the research institutes.

Shri Suresh Chandel suggested skill-oriented curriculum in agriculture and allied sciences that can provide suitable ecosystem for self-employment of the agri-graduates. While congratulating both the ICAR Institutes for this initiative, he expressed eagerness to conduct such kind of events for the benefit of farming community. Dr. Parveen Kumar Malik, former Animal Husbandry Commissioner, GoI urged the research institutes and farmers to extend the scope of livestock farming through various entrepreneurial initiatives. He advised farmers to work in groups to harness the benefits of government schemes.

Dr. Dil Mohammad Makhdoomi, Director of Extension Education, SKUAST-Kashmir highlighted the various issues related to nomadic pastoralist. He

urged the Institute to provide technical backstopping to overcome the health problems like Foot Rot and Contagious Caprine Pleuropneumonia (CCPP), which is more common in migratory sheep population. Along with this, Dr. Mandeep Sharma, Dean, Dr. G C Negi College of Veterinary and Animal Sciences, Palampur briefed about the importance of livestock in Indian culture and preservation of the traditional livestock practices for environmental sustainability. Dr. Omhari Chaturvedi, Incharge NTRS, Garsa welcomed the gathering and overviewed the history and mandate of the center for Sheep development in hilly areas of North India. The participants deliberated on major issues of livestock farming in detail during the technical sessions. Progressive farmers from Rajasthan and Himachal Pradesh shared their views and live exhibitions of latest technologies were the highlight of the program. More than 350 farmers along with KVK and ICAR Scientists actively participated in the workshop.

9.6.9 Har Ghar Tiranga

ICAR-Agricultural Technology Application Research Institute, Zone-1, Ludhiana celebrated Har Ghar Tiranga on the Independence Day 15th August 2022, in which all the staff members were given the National Flag to be hoisted at their respective homes. The staff members were made aware about the National flag code of India and were advised to encourage others to celebrate Har Ghar Tiranga while following the code.



Independence Day celebration at ICAR-ATARI, Ludhiana



Har Ghar Tiranga

9.6.10 PM Kisan Samman Sammelan

Prime Minister Kisan Samman Sammelan was organized by all KVKs, ICAR Institutes and Agricultural Universities on 17th October, 2022. This programme was inaugurated by Hon'ble PM at Mela Ground of ICAR - IARI, Pusa New Delhi. All the KVKs, ICAR Institutes and Agricultural Universities mobilized 400 to 500 farmers at their campus so that farmers benefited from the inspirational address of Hon'ble PM. All KVKs, Agricultural Universities and ICAR Institutes invited Central Ministers, MPs,

MLAs and other public representatives etc. during the programme in their respective institutes. Honorable Prime Minister released the 12th installment of PM Kisan Nidhi to about 12 crores farmers of the country during the programme.

The programme was attended by farmers online and offline in both the modes. In the Zone-I 71 KVKs invited farmers in their premises and 6805 farmers' participated in the programme. This programme was also attended by one MP of Jammu & Kashmir and about 4 MLAs and MLCs also participated in this



PMKS Bathinda



PMKS Lahul & Spiti II

programme. Six State Agricultural Universities of Zone-I also invited farmers to attend this programme on 17th October 2022. One Central Minister, 2 members of Parliament and 99 dignitaries attended this programme. Besides these, 1921 farmers attended the online programme of PM Kisan Samman Sammelan. Similarly, eight ICAR institutes of this Zone-I invited farmers to their Institutes to attend this programme on 17th October 2022. Two members of legislative Assembly and 15 dignitaries attended this programme. Besides these 1568 farmers attended the online programme of PM Kisan Samman Sammelan

9.6.11 Kisan Samman Diwas

Kisan Samman Diwas was organized by all the 72

Krishi Vigyan Kendras (KVKs) under Zone-I on 23 December, 2022. It was organized to celebrate National Farmers Day in honour of Choudhary Charan Singh, 5th Prime Minister of India in which 6567 farmers, 6 State Ministers/MLAs and 808 other public representatives participated in this programme. On this occasion, KVKs organized various awareness programs on good agricultural practices including camps on Natural Farming demonstrating the preparation of Jeevamrit, Beejamrit, preparation of Fungicidal spray and tree trunk paste and highlighted the importance of farmers in nation building and ensuring food and nutritional security of the country.



Celebration of Kisan Samman Diwas, KVK Faridkot



Celebration of Kisan Samman Diwas, KVK Solan



RESEARCH PROJECTS, PUBLICATIONS AND AWARDS

10.1 Network research projects

As per the recommendation of the RAC Committee, it was decided that the lead ATARI will take up one research project of national importance and other ATARIs will join as Co-PI depending upon the importance of themes in a particular zone and coverage of already ongoing programmes under a particular thematic area. Accordingly, ICAR-ATARI,

Ludhiana has been entrusted to formulate a research project on crop residue management. Details of network project during 2022 are being handled by ATARI as lead ATARI and as Co-PI given in Table 10.1.

10.2 Institute research projects

Details of the institute research projects along with PI and Co-PI during 2022 are given in Table 10.2.

Table 10.1: Network research project at ICAR-ATARI, Ludhiana

S. No.	Title of the network project	Project Code	Lead Institute	Name of PI/ Co-PI from ATARI, Ludhiana
1.	Impact assessment of crop residue management technologies on productivity and profitability of rice-wheat system (RWS) in northern plains of India	AGEXATA RI1CIL202 100100001	ICAR-ATARI, Ludhiana	Rajbir Singh (PI), Arvind Kumar (Co-PI), Ashish Santosh Murai (Co-PI)
2.	Impact of ARYA on promotion of agri-preneurship and alternative livelihoods	AGEXATA RIXIC2020 00100005	ICAR-ATARI, Bengaluru	Rajesh K Rana (Co-PI)
3.	Impact of technological interventions of KVKs on socio-economic empowerment and sustainable livelihood security of tribal farmers		ICAR-ATARI, Guwahati	Preeti Mamgai (Co-PI)
4.	Assessing dietary diversity, consumption pattern and nutritional security in Nutri-SMART villages- A step towards vocal for local		ICAR-ATARI, Jabalpur	Preeti Mamgai (Co-PI)
5.	Analysis of agricultural programmes conducted in aspirational districts in India		ICAR-ATARI, Kolkata	Pragya Bhadauria (Co-PI)
6.	Impact of climate resilient technology interventions implemented through National Innovations in Climate Resilient Agriculture (NICRA) across different agro-ecological regions of India	AGEXSIL2 020001000 01	ICAR-ATARI, Hyderabad	Ashish Santosh Murai (Co-PI)
7.	Income enhancement KVKs' interventions under doubling farmers' income programme		ICAR-ATARI, Jodhpur	Rajesh K Rana (Co-PI)

Table 10.2: Institute research project at ICAR-ATARI, Ludhiana

S. No.	Title of project	Project Code	Name of PI/Co-PI
1.	Documentation and validation of indigenous technical knowledge for sustainable dairy development in north India	AGEXATARI1S IL202100200002	Pragya Bhadauria (PI), Preeti Mamgai (Co-PI), Ashish Santosh Murai (Co-PI)
2.	Adoption of export quality basmati rice cultivation by the farmers of northern India	AGEXATARI1S IL202100300003	Ashish Santosh Murai (PI), Rajbir Singh (Co-PI), Arvind Kumar (Co-PI), Preeti Mamgai (Co-PI), Pragya Bhadauria (Co-PI)

10.3 Inter-institutional research projects

Details of the Inter-institutional research projects and Co-PI of ICAR-ATARI, Ludhiana during 2022 are given in Table 10.3.

10.4 On-going projects/ special programmes

There are various on-going projects/ special programmes implemented by ICAR-ATARI, Ludhiana through KVKs of Zone-I during 2022 are given in Table 10.4.

10.5 Publications, presentations and lectures delivered by ICAR-ATARI, Ludhiana

Research Articles (National/International):

- Chhabra K., Kumar M. and Mamgai, P (2022). Weather Forewarning Based Contingency Plan: Efficient in Crop Planning for Farmers of Baramulla. Journal of Community Mobilization and Sustainable Development. 3(26-28): 840-846. (NAAS 2022: 5.67)
- Mamgai P., Bhadauria P., Singh R and Chhabra K

(2022). Improving the Effectiveness of Agromet Services in Supporting Farmers to Adapt Climate Risks. Journal of Community Mobilization and Sustainable Development. 2 (26-28): 660-664. (NAAS 2022: 5.67)

- Monga Sarang, Rana Rajesh K and Pandit Arun (2022) Impact of Government Initiatives on Total Factor Productivity of Pigeon Pea Cultivation in India. Indian Journal of Agricultural Research. 56(4): 489-495. DOI: 10.18805/IJARE.A-5749 (NAAS 2022: 5.2)
- Murai, A S., Kumar, A and Singh, R (2022). Extension Strategies for Promoting Direct Seeded Rice in Punjab during COVID-19 Pandemic. Journal of Community Mobilization and Sustainable Development. 2: 649-654. (NAAS 2022: 5.67)
- Rana Rajesh K, Singh R and Singh AK (2022) Circumventing the Intermediaries for Economic Empowerment of Small Farmers in Punjab-Key Suggestions for Horticultural Sector. Current Science. 122(11): 1243-1246. (NAAS 2022: 7.10)

Table 10.3: Inter-institutional project at ICAR-ATARI, Ludhiana

S. No.	Title of Inter-institutional Project	Project implementing organization	Name of Co-PI of ATARI, Ludhiana
1.	An Integrated Approach for Livestock Development: Farmer's context	GADVASU, Ludhiana	Dr. Arvind Kumar Dr. Pragya Bhadauria
2.	Designing Extension Strategies for Wider Adoption of Post-harvest Technologies based on Adoption Behaviour of End Users	ICAR-CIPHET, Ludhiana	Dr. Arvind Kumar

**Table 10.4: Ongoing projects/special programmes at ICAR-ATARI, Ludhiana during 2022**

S. No.	Title of project/special programmes	Nodal officer
1.	Attracting and Retaining Youth in Agriculture (ARYA)	Dr. Rajesh Kumar Rana
2.	New Extension Methodologies and Approaches (NEMA)	Dr. Rajesh Kumar Rana
3.	Out-scaling Natural Farming through KrishiVigyan Kendras	Dr. Rajesh Kumar Rana
4.	Farmer FIRST Programme (FFP)	Dr. Arvind Kumar
5.	Promotion of Agricultural Mechanization for In-situ Management of Crop Residue in Punjab, Haryana, Uttar Pradesh and NCT of Delhi	Dr. Arvind Kumar
6.	Cluster Frontline Demonstrations on Oilseeds (CFLD-Oilseeds)	Dr. Arvind Kumar
7.	Agri-drone project (ADP)	Dr. Arvind Kumar
8.	IRM project on Dissemination of Pink Bollworm Management Strategies	Dr. Arvind Kumar
9.	Validation, Refinement and Promotion of IPM in DSR in Bathinda	Dr. Arvind Kumar
10.	Training on Scientific Beekeeping under National Beekeeping and Honey Mission (NBHM)	Dr. Arvind Kumar
11.	Collaborative project of Cereal Systems Initiative for South Asia (CSISA) of CIMMYT	Dr. Arvind Kumar
12.	Collaborative project of Demonstrations on nano urea of IFFCO	Dr. Arvind Kumar
13.	Convergence in sericulture extension training of Central Silk Board (CSB)	Dr. Arvind Kumar
14.	Skill development in Agriculture	Dr. Arvind Kumar
15.	District Agri-Metrological Units (DAMU)	Dr. Preeti Mamgai
16.	Schedule Caste Sub Plan (SCSP)	Dr. Preeti Mamgai
17.	Tribal Sub Plan (TSP)	Dr. Preeti Mamgai
18.	Nutrition-sensitive Agricultural Resources and Innovations (NARI)	Dr. Preeti Mamgai
19.	Jal Shakti Abhiyan	Dr. Preeti Mamgai
20.	Mera Gaon Mera Gaurav (MGMG)	Dr. Pragya Bhadauria
21.	Fodder and livestock-based farming system-based approach for livelihood improvement of SC	Dr. Pragya Bhadauria
22.	Microbial based agricultural waste management using vermicomposting	Dr. Pragya Bhadauria
23.	National Innovations in Climate Resilient Agriculture (NICRA)	Dr. Ashish Santosh Murai
24.	Cluster Frontline Demonstration on Pulses (CFLD-Pulses)	Dr. Ashish Santosh Murai
25.	Creation of Seed Hubs for Increasing Indigenous Production of Pulses in India	Dr. Ashish Santosh Murai
26.	Kisan SARATHI	Dr. Ashish Santosh Murai
27.	KVK Portal	Dr. Ashish Santosh Murai

- Singh Manjinder, Tiwari Devinder and Rana Rajesh K. (2022) Role of Organizational Structure and Behaviour for Ensuring Sustainability of Farmer Producer Organisations in Punjab. Journal of Krishi Vigyan. 10(2): 283-289. (NAAS 2022: 4.55)
- Singh Manjinder, Tiwari Devinder, Monga Sarang and Rana Rajesh K. (2022) Behavioural Determinants of Functionality of Farmer Producer Organisations in Punjab. Indian Journal of Extension Education. 58(1): 130-135. (NAAS 2022: 5.95)

Technical/ Popular Articles:

- Chhabra K., Kumar M. and Mamgai, P (2022). Krishi Mein Jokhim Prabandhan Hetu Mausam Adharit Krishi Salahkar Pranali ka Yogdan (Hindi). Madhya Bharati Krishak Bharati. Pp 61
- Kaur, G and Murai, A S (2022) Integrated Pest Management for Major Pests of Pulses in India. Agriculture and Food: e-Newsletter. 4(12): 436-438.
- Kaur, G and Murai, A S (2022) Pulses as Sustainable Crops. Vigyan Varta. 3(12):59-61.
- Kumar Munish, Aluakh S Gurjant and Bhadauria P. 2022. Care and Management of Dairy Animals during Winter Season. Progressive Farming. 58(12): 17.
- Mamgai P, Chhabra K and Kumar, M (2022). Gramin Krishi Mausam Seva: Kisano Ke liye Nayi Pahal (Hindi). Prasnaskaran Pragati. 6 (1) 95-101.
- Murai, A S; Kumar, A; Singh, R; Bons, M S and Kumar S (2022) Gramin Kshetra mein Kaushal Vikas se Arthik Sashaktikaran (Hindi). Prasanskan Pragati. 6(2): 74-79.
- Murai, A S; Singh, R and Kumar, A (2022) Extension Interventions to Prevent Crop Residue Burning for Green Agriculture and Clean Air. Harit Dhara. 5(1): 23-26.
- Murai, Ashish Santosh (2022) Moong Ka Halwa (Hindi). Faslotar Kavyamala. ICAR-CIPHET, Ludhiana. PP 72. (ISBN: 978-81-956957-3-7)
- Gopika Talwar, Rekha Chawala, Pragya Bhadauria, Y.S Jadoun and P.S Brar. (2022) Value Addition of Milk. Bulletin/DEE/FFP/2022/01. Directorate of Extension Education, GADVASU, Ludhiana.
- Mohapatra, T., Singh, A. K., Birthal, P. S., Chandra Gowda, M. J., and Rana, Rajesh K. (2022) Doubling Farmers Income: State-wise Synthesis. ICAR, New Delhi. XVIII+96 p.
- Murai, A S; Bhadauria, P; Mann G S; Singh, V and Jassi, H S (2022) Technological Interventions for Future Ready Agriculture. Technology Demonstration Component: National Innovations in Climate Resilient Agriculture (NICRA). ICAR-ATARI, Ludhiana. 128 p.
- Murai, A S; Mamgai, P; Singh, A and Jassi, H S (2022) Exhibiting Yield Potential of Pulses with Cluster Frontline Demonstrations. ICAR-ATARI, Ludhiana. 60 p.
- Pragya Bhadauria, Arvind Kumar, Amandeep, Y.S Jadoun and P.S Brar. Backyard Murgipalan. Farmer FIRST Bulletin/DEE/FFP/2022/05. Directorate of Extension Education, GADVASU, Ludhiana.
- Rana Rajesh K., Singh Rajbir and Singh A. K. (2022) Policy Paper on Linking Farmers to the Market and Direct Marketing of Fruits and Vegetables in Punjab. ICAR-ATARI, Ludhiana, Punjab. 44 p.
- Rana, R.K., Singh, R., Singh, A.K., Chahal, V.P., Singh, R., Monga, S., Singh, M. (2022). Policy Implications on Doubling Farmers Income - Evidence from the actual successful cases in Zone-1 (2016-17 to 2020-21). Policy Document, ICAR-ATARI, Ludhiana: vi+50 p.
- Rekha Chawala, Gopika Talwar, Pragya Bhadauria, Y.S Jadoun, P.S Brar. Composite Dairy

Technical bulletins/ Books:

- Amandeep Singh, Y.S. Jadoun, Pragya Bhadauria, R.K. Sharma, P.S. Brar (2022) Vatavarn Anukul Pashudhan Rahad-khudh Prabhadhan Vidiya (Punjabi). Directorate of Extension Education, GADVASU, Ludhiana.



Products (In Punjabi) Bulletin/DEE/FFP/2022/10. Directorate of Extension Education, GADVASU, Ludhiana.

- Singh, R; Simerjeet Kaur; Murai, A S; Brar, N S; Brar, P S; Kumar, A and Singh A K (2022) Heat Wave in Northern India: Farmers' Perspective. ICAR-ATARI, Ludhiana. Division of Agricultural Extension, ICAR. 76 p.

Book Chapters

- Y.S Jadoun, Amandeep and Pragya Bhadauria. 2022. Role of ICT in Animal Farming & Disease Control in Animals Training on Artificial Intelligence for Training on Artificial Intelligence for Students: E-Compendium. Training on Artificial Intelligence for Institutional Development Plan (IDP). Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab.

Presentations in conferences/ Symposia/ Seminars/ Workshops/other fora:

- Bhadauria P, Arvind Kumar, Narinder Singh and Rajbir Singh. 2022. "Impact of Frontline Demonstrations of Mineral Mixture Technology on Productivity of Dairy Animals in Farmer's Field" during 19th Biennial International Conference, ANSICON 2022 organized by Animal Nutrition Society of India and Department of Animal Nutrition, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab-141004
- Bhadauria P, Ashish Santosh Murai, Aparna and Rajbir Singh. 2022. "Impact of Nutritional Intervention on Environmentally Sustainable Animal Production" during 19th Biennial International Conference, ANSICON 2022 organized by Animal Nutrition Society of India and Department of Animal Nutrition, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab-141004
- Bhadauria P, Mamgai P and Singh R. 2022. 2022. "Farmer Producer Organization: An Innovative Market-Driven Approach for Sustainable Development" during International Conference on "Advances in Agricultural, Veterinary and Allied Sciences for Improving Livelihood and Environmental Security (AAVASILES-2022)" held at Gandhi Bhawan, Baramulla, University of Kashmir (India) from September 28 to 30, 2022.
- Bhadauria P, Mamgai P, Murai A and Singh R. 2022. "Mapping of Promising Animal Science Technologies Disseminated by KVKs of North Zone for Sustainable Livestock Production" during National Conference of SVAHE on "Pluralistic Approaches for Livestock Development- An Extension Call" during 06-08, May 2022 at CSKHPKV, Palampur.
- Murai, A. S., Singh, R. and Kumar, A. 2022. "Extension strategies for promoting Direct Seeded Rice (DSR) in Punjab during COVID-19 pandemic" in the Technical Session-IV of National Seminar on "Agriculture and More: Beyond 4.0" at SKUAST, Srinagar organized by Society for Community Mobilization for Sustainable Development (MOBILIZATION) during 26-27 May 2022.
- Murai, A. S., Singh, R. and Kumar, A. 2022. "Heat Wave Management in Wheat with Happy Seeder Technology" under the conference theme "Biodiversity conservation and sustainable utilization of natural resource for meeting the challenges of specialty agriculture" in Regional Conference on "Specialty Agriculture in the Context of Farm Economy of Himalayan Region" at SKUAST, Jammu organized by Division of Agricultural Economics and Agribusiness Management, SKUAST-Jammu during 21-22 Sep 2022.
- Murai, A. S., Singh, R. and Kumar, A. 2022.

“Strategies in Shunning Crop Residue Burning: A Step towards Clean and Green Environment” in National Conference on “Air, Water and Soil” (ECO-2022) at J. C. Bose University of Science and Technology, YMCA, Faridabad organized by Bharat Seva Prathishthan during 23-24 Sep 2022.

Lectures delivered:

- Dr. Arvind Kumar delivered an expert lecture in ICAR sponsored short course on Communication and Management Skills for Transfer of Agro-technology organized by Punjab Agricultural University, Ludhiana during 9-18.03.2022.
- Dr. Arvind Kumar delivered an expert lecture in the Training programme on poster preparation and write research paper writing organized by the Society of Krishi Vigyan during 13-14.11.2022.
- Dr. Ashish S Murai delivered lecture on “Critical analysis of extension systems of SAARC, BRICS and other selected countries (USA, UK, Japan, Philippines, and Israel etc.” and “International cooperation in agriculture - SAIC, Commonwealth, FAO, USAID, DFID and CGIAR system” during Online Tutorial Classes on ICAR NET/ARS Examination (Agricultural Extension) organized by MPKV, Rahuri on 28 February 2022.
- Dr. Ashish S Murai delivered lecture on “Implications of AOA, TRIPS and IPR agreements on agriculture; Agreement on SPS and TBT” during e-Training Course on ICAR NET/ARS Examination Preparation organized by MPKV, Rahuri on 4 March 2022.
- Dr. Pragya Bhadauria delivered lecture on “Role of Indigenous Traditional Knowledge for Sustainable Livestock Production” on 02-07-2022 during 21 Days Summer School on “Recent Trends in Sustainable Livestock and Crop Production Technologies vis-à-vis Climate Change” during June 18 to July 8, 2022 jointly organized by ICAR-Indian Grassland and Fodder Research Institute, RRS, Srinagar, Bihar Animal Sciences University, Patna, Bihar and National Agriculture Development Cooperative Ltd (NADCL) Baramulla, UT of J&K.
- Dr. Pragya Bhadauria delivered lecture on Government Schemes and Policies for Promotion of Agripreneurship in India' in Training Programme on Processing and Value Addition of Cereals, Millets and Pulses' during 29th to 31st Sept 2022. I “on 31.8.2022 at ICAR-CIPHET, Ludhiana
- Dr. Pragya Bhadauria presented lead paper on “Extension Approaches for Promoting Livestock Entrepreneurship among Rural Community” during National Conference of SVAHE on Pluralistic Approaches for Livestock Development –An Extension Call during 06-08, May 2022 CSKHPKV, Palampur.
- Dr. Preeti Mamgai presented lead paper on “Empowering farmers from Schedule Caste community through small agri-based enterprises in Punjab during three days International jointly organized by ICAR-Indian Grassland and Fodder Research Institute, RRS, Srinagar, J & K, ICAR-National Agricultural Higher Education Project, Birsā Agricultural University, Ranchi, Jharkhand & National Agriculture Development Cooperative Ltd. (NADCL) Baramulla, J & K, held at Gandhi Bhawan, University of Kashmir (India) from September 28 to 30, 2022.
- Dr. R.K Rana delivered lecture on “Customizing Natural Farming for Location Specific Solutions through Local Possibilities and Potentials” during Orientation cum Training Programs of SMSs of KVKs and Nodal Scientists of ATARIs on Natural Farming during 12 and 13 December 2022 at Gurukul, Kurukshetra.
- Dr. R.K Rana delivered lecture on “Role and



Challenges for KVKs in Implementation of Out-Scaling of Natural Farming” during Orientation training on Understanding Natural Farming for its Flawless Strategies to Out-Scale through KVKs (Zone-I) during 10-12 October 2022 at Dr. YS Parmar UHF, Nauni, Solan, HP during 10 October 2022.

- Dr. R.K Rana delivered lecture on How to Assess Impact of Frontline Extension Programs. MDP for KVK Officers-2022 at ICAR-ATARI Ludhiana, Punjab during 14 July 2022.

10.6 Publications and presentation by KVKs

Table 10.5 Details of Publications and Presentations by KVKs

S. No.	State/UT	No. of Research Papers (NAAS Rating 2022)				No. of Popular/ Technical Articles	No. of Technical Books/ Bulletin	No. of Book Chapters	No. of Presentations in conferences/ Symposia/ Seminars/ Other
		<6	6 - 9	>9	Total				
1.	Punjab	52	16	3	71	267	38	19	102
2.	Himachal Pradesh	17	12	6	35	80	10	7	33
3.	Jammu & Kashmir	58	7	6	71	135	53	46	72
4.	Ladakh	9	1	2	12	5	2	2	4
5.	Uttarakhand	16	1	2	19	21	10	23	26
Total		152	37	19	208	508	113	97	237

10.7 Awards & Recognitions:

- Dr. Ashish S Murai awarded with Best Oral presentation for the paper entitled “Heat Wave Management in Wheat with Happy Seeder Technology” during Regional Conference on “Specialty Agriculture in the Context of Farm Economy of Himalayan Region” at SKUAST, Jammu organized by Division of Agricultural Economics and Agribusiness Management, SKUAST-Jammu during 21-22 Sep 2022.
- Dr. Pragya Bhadauria awarded with Young Scientist Award for outstanding contribution in the field of Animal Science Extension during International Conference on “Advances in Agricultural, Veterinary and Allied Sciences for Improving Livelihood and Environmental Security” jointly organized by ICAR-Indian Grassland and Fodder Research Institute, RRS, Srinagar, J & K, ICAR-National Agricultural Higher Education Project, Birsa Agricultural University, Ranchi, Jharkhand & National Agriculture Development Cooperative Ltd. (NADCL) Baramulla, J & K, held at Gandhi Bhawan, University of Kashmir (India) during September 28 to 30, 2022.
- Dr. Pragya Bhadauria awarded with IPSA Ayurved best paper Award -2019” for the paper entitled Productivity, reproduction and welfare status of White Leghorn hens under cage and floor housing systems. Indian Journal of Poultry Science, 54(1): 89-95 authored by Pragya Bhadauria, S K Bhanja, G Kolluri, S Saran, Divya and S Majumdar (2019) during XXXVII Annual Conference of Indian Poultry Science Association (IPSACON-2022) on November 4-6 November 2022 at ICAR-DUVASU, Mathura, U.P.

Table 10.6: Details of Awards received by KVKs and farmers associated with KVKs

S. No.	State/UT	Number of Awards received by KVK Staff	Number of Awards received by farmers associated with KVK
1.	Punjab	37	58
2.	Himachal Pradesh	19	28
3.	Jammu & Kashmir	59	142
4.	Ladakh	12	19
5.	Uttarakhand	10	24
Total		137	271



HUMAN RESOURCE DEVELOPMENT, CONFERENCES, MEETINGS, SEMINARS AND WORKSHOPS

11.1 Human Resource Development

The institute HRD cell is effectively implementing various Human Resource Development (HRD) programmes to make Institute as well as KVK staff abreast with the latest technological development, acquiring specific technical knowledge and skill and update in their subject matter so as to make them efficient to carry out their assignments in the organization as well as for their career development. Human Resource Development activity in the Institute is carried out by encouraging the scientists as well as other staff members to undertake higher

training, participate in seminars, conferences, symposia, training etc. The KVK scientists are also encouraged to undertake subject specific training according to their area of work. Scientists are also motivated to act as resource persons/instructors for providing training to the extension personnel from state development agencies and SAUs/ICAR Institutes. In this direction, this Institute has taken up several human resource development programmes during this year also. The details are presented in Tables 11.1, 11.2 and 11.3.

Table 11.1: Details of trainings/workshops/meetings organized by ICAR-ATARI during 2022

S. No.	Name of the programme organised	Training Coordinator	Date of organisation	No. of participants	Venue
1.	Annual Zonal Review-cum-Action Plan Workshop of NICRA	Dr. Ashish Santosh Murai	18.07. 2022	50	Kullu, Himachal Pradesh
2.	Stakeholders' Dialogue on Climate Smart Agriculture	Dr. Ashish Santosh Murai	18 .08. 2022	120	ICAR-ATARI, Ludhiana
3.	Training programme on improved cultivation practices of selected oilseed crops	Dr. Arvind Kumar	28.03.2022	57 (38 KVKs)	ICAR-ATARI, Ludhiana Online mode
4.	Review meeting of Scientific Beekeeping project	Dr. Arvind Kumar	17.02.2022	23 (15 organizations)	ICAR-ATARI, Ludhiana Online mode
5.	KISAN UTSAV on "Capacity Building Programme for Farmers & other Stakeholders to Strengthen Export Oriented Agri Supply Chain under Natural Farming"	Dr. Pragya Bhadauria	23.05.2022	240	Krishi Bhawan, Nahan, District-Sirmour

Contd.....

S. No.	Name of the programme organised	Training Coordinator	Date of organisation	No. of participants	Venue
6.	KISAN UTSAV on "Capacity Building Programme for Farmers & other Stakeholders to Strengthen Export Oriented Agri Supply Chain under Natural Farming"	Dr. Pragya Bhadauria	08.06. 2022	200	KVK Bilaspur
7.	Workshop-cum-Scientist-Farmer Interaction on Present Status, Challenges and Prospects of Small Ruminants Pastoralist	Dr. Pragya Bhadauria	09.10.2022	350	NTRS Garsa, Kullu, HP
8.	Online hands-on training on data analysis of 75000 DFI stories	Dr. R.K. Rana	23.06.2022	65	Online
9.	Orientation training on understanding natural farming for its flawless strategies to out scale through KVKs (Zone-I)	Dr. R.K. Rana	10-12.10. 2022	74	Dr. YS Parmar UHF Nauni-Solan, HP
10.	Meaningful options for ensuring socio-economic prosperity of small and marginal farmers in Punjab	Dr. R.K. Rana	23 .02 2022		ICAR-ATARI Ludhiana, Punjab.
11.	Workshop on Out Scaling Natural Farming through KVKs in the Zone-1" Organised by ICAR-ATARI, Ludhiana	Dr. R.K. Rana	01 .09. 2022		Online

Table 11.2: Details of trainings attended by ICAR-ATARI, Zone-I Staff during 2022

S. No.	Name of employee	Name & Date of training	Venue
1.	Dr. Ashish Santosh Murai	Capacity Building Programme on "Technology demonstrations for enhancing resilience" during 22-23 Aug 2022	ICAR-CRIDA, Hyderabad
2.	Dr. Arvind Kumar	National Dialogue on Innovations in Agricultural Extension: A Way Forward jointly organized by the Trust for Advancement in Agricultural Sciences (TAAS) New Delhi, Indian Council of Agricultural Research (ICAR), Ministry of Agriculture & Farmers' Welfare (MoA & FW), New Delhi and Michigan State University (MSU), Michigan, USA and the National Institute of Agricultural Extension Management (MANAGE) during 8-9 April, 2022.	NASC Complex, Pusa, New Delhi
3.	Dr. Preeti Mamgai	Use of AI and ICT in agriculture Information Access and Dissemination"	CDAC-Noida 14 th March 2022
4.	Dr. R.K. Rana	Use of Drones in Agriculture during 2-5 March 2022	ICAR-ATARI, Ludhiana

Contd.....

S. No.	Name of employee	Name & Date of training	Venue
5.	Dr. R.K. Rana	Organic Farming: A Focus on Eco Health during 23-24 March 2022	Agricultural College, Bapatla, ANGRAU, Guntur, AP through Online Mode
6.	Dr. R.K. Rana	National Workshop on Innovative Agriculture during 25 April, 2022	Vigyan Bhawan, NITI Aayog, GOI, New Delhi
7.	Dr. R.K. Rana	Orientation cum Training Programs of SMSs of KVKs and Nodal Scientists of ATARIs on Natural Farming during 12-13 December 2022 & 15-16 December 2022	Gurukul, Kurukshetra, Haryana
8.	Dr. R.K. Rana	National Workshop on Natural Farming during 03 December 2022	RVSKVV, Gwalior, MP

Table 11.3: Details of Capacity Building programs attended by KVK staff

S. No.	State/UT	No. of capacity building trainings attended by the KVK staff	No. of workshops/ meetings/ Interface attended by the staff	No. of conferences/ seminars/ symposia attended by the staff	Any other
1.	Punjab	138	645	167	17
2.	Himachal Pradesh	162	156	74	6
3.	Jammu & Kashmir	182	233	92	21
4.	Ladakh	17	13	11	0
5.	Uttarakhand	67	73	36	33
Total		566	1120	380	77





FARMERS' PROSPERITY THROUGH TECHNOLOGICAL INTERVENTIONS

12.1 Emerging Pig farmer of Bathinda: Sh. Balwinder Singh

Introduction

Sh. Balwinder Singh of village dikh, district Bathinda hails from a marginal agricultural family. Being resource poor farmer he was aware about scarcity of labour and costly inputs in agriculture. Sh. Balwinder Singh had a bachelor degree in Arts. It was not feasible for him to obtain decent returns as his land holding was very small.

Situation analysis/Problem statement

After graduation he tried to get job at several places but could not succeed. All these constraints led him to adopt subsidiary occupation to enhance his income. He came in contact with PAU scientists during farmer

fair at KVK Bathinda who encouraged him to adopt subsidiary occupation apart from agriculture. After detailed discussion, and assessing the opportunity of piggery during the year 2020, he decided to switch to commercial pig farming. To ensure his success in the pig rearing profession, he got training from KVK Bathinda. During the training program he acquired in-depth knowledge about shed construction, breed selection, concentrated feed formulation, disease management and market linkage in the field of pig farming. After training, he started rearing of pigs on small scale basis. Balwinder Singh had full support from his family members who encouraged in starting piggery unit.

Plan implement and support

During year 2020, he started his business with 8 pigs



Pig farm of Sh. Balwinder Singh

(7 females and 1 male). He gradually expanded his business and constructed a 65 feet long and 28 feet wide shed with an expenditure of about Rs.5.6 lakh. Due to good management and high quality feed, the number of pigs increased rapidly at his pig farm. Based on knowledge gained during trainings programmes organized by KVK he reared 'Large White Yorkshire' breed which is the most popular breed in the world and is fast growing breed and weighs about 350 kg and the adult female weighs upto 300 kg. If the pigs are reared for meat, then within 7-8 months the weight of an adult pig is more than one quintal and these are sold as live weight for Rs. 120-130/kg. There is no difficulty in marketing the pigs as the traders themselves visit the farm to buy pigs. Nowadays, many farmers approach him for practical knowledge and technical guidance regarding pig rearing. This encouraged him to produce quality piglets for upcoming piggery farmers in the piggery enterprise. At present he has total 75 pigs which include 11 female, 1 male and about 63 small piglets.

Output

When piglets start eating well by itself, is ready for sale. He prefers to sell more than two month old piglets @ Rs. 2500-3000/piglets to the farmers. In 2022 he sold more than 20 pigs & 130 piglets worth a total value of about Rs. 6.16 lakh, out of which he

earned net income of Rs. 2.31 lakh. The total cost of production during the year 2022 was about 3.85 lakh Table 12.1.

Outcome

Balwinder Singh believes that as compared to work in firms and agencies, people can earn more by establishing their own enterprise. He encourages the village youth to take up agriculture and allied activities such as poultry, piggery, goat and sheep rearing, apiculture, horticulture, fishery and value addition in agriculture for returns at the farm gate produce instead of waiting for jobs or subsidies, insurance and crop loans.

Impact

Young people are coming forward in adopting agro-based business. KVK Bathinda scientists and piggery trainees regularly visit his pig breeding farm at village dikh and he also remains in touch with KVK for experience sharing in the pig farming trainings organized by KVK Bathinda. Motivated from the success of pig farmer Balwinder, 20 unemployed youth have adopted piggery in the neighboring villages as an enterprise and improving their livelihoods. Balwinder Singh with his hard work will make further progress in the future and will create new milestones of success.

Table 12.1: Year wise economics of pig farm

Year	No. of Pigs sold	No. of piglets sold	Input cost (Rs.)	Total Income (Rs.)	Net profit (Rs.)
2020	8	25	1,85,000	2,40,000	55,000
2021	25	85	4,91,000	5,75,000	84,000
2022	20	180	3,85,000	6,16,000	2,31,000

12.2 Mushroom cultivation- a potential agri-enterprise for small farmers for augmenting income

Introduction

Sh. Karnail Singh Grewal is a small scale farmer who owns 1.5 acres of land in village Bhaini Tehsil Nangal of district Ropar, Punjab. After 17 years of service at the age of 36 years, he retired from the Army and returned to his roots. Being a small scale farmer he started looking for alternatives to boost his farm income. After his various visits to State Agriculture Departments, Krishi Vigyan Kendra's and State Agricultural Universities he started thinking of secondary income through mushroom farming as a subsidiary occupation.

Training

Formal training is a crucial first step to establish a profitable venture; hence he decided to receive training in mushroom cultivation. For this he visited Krishi Vigyan Kendra (KVK), Ropar and got his formal training during the year 2017. After training he started mushroom cultivation at his farm, which grew in leaps and bounds. On his pursuit to make his farm a continuously growing enterprise, by the guidance of scientists of KVK, Ropar, he also went to Directorate of Mushroom Research, Solan during the year 2018 to receive 10 days training in mushroom farming. This helped him to supplement his experience and gain more practical knowledge in mushroom farming. Initially he was helped and guided by KVK, Ropar

and he started his enterprise with 2000 mushroom bags stacked in a room at his farm.

Later on, as his business grew, he constructed various sheds and eventually completed two of these mushroom units artificially air conditioned. This enabled S. Karnail Singh to grow mushrooms almost round the year thus maintaining a steady flow of income at the farm. His perseverance and dedication to uplift his farm economy through mushroom enterprise is exemplary.

Output

At present, Sh. Karnail Singh has two air conditioned units along with four other normal air ventilated units/temporary sheds for mushroom production, spanning on approximately on half acre area of his land. On the remaining land he grows wheat, paddy and maize. The straw of wheat and rice is completely used at his own farm. The wheat straw is used for preparing substrate or growing media, while the paddy straw is used as mulch on roofs of sheds. Apart from this upon harvest of mushrooms, he uses the spent compost from the bags in his own fields. On his mushroom farming unit, he grows button mushroom during both seasons' viz. summer and winter. For the summer season crop, he initiates the culture in the month of July under the controlled conditions with the help of air condition, and continues to harvest till the months of September-October. Then in the month of September he starts winter crop, which he continues to harvest till March-April.



S. Karnail Singh at his mushroom farm



Packed Button mushroom for sale



Visiting card of S. Karnail Singh



Mushroom production at Karnail Singh farm

Outcome

The average production of mushroom at his farm is 1-1.5 quintals per day with total production during winters to the tune of 18 tonnes per season and during summer total production is about 7 tonnes. His mushroom sells anywhere between Rs. 80-150 per kg, which varies according to season, averaging to Rs 100 per kg during winter and to Rs. 150 per kg during summer. The average cost of production for mushroom ranges from Rs. 70-75 per kg during winter and Rs. 80-90 per kg during summer which includes the expenses on seed, labour, raw material, etc. For instance during off season production in summers, the cost of production rises due to air conditioning. The rising cost of wheat straw has increased his production cost to Rs. 80-85 per kg even during normal growing season. Upon its sale he usually gets a margin of Rs. 30 per kg during winter, and Rs.20 per kg during summer generating total profit of about Rs.5,40,000/- and Rs. 1,40,000/-, respectively during both the seasons Table 12.2.

Takeaway

S. Karnail Singh is generating additional income along with the traditional farming on this farm. Earlier people in surrounding villages were not aware about mushrooms and its benefits. But after seeing S. Karnail Singh's farm they have become his regular customers. He sells a daily average of 20 kg mushroom in his village itself, while rest of the produce is supplied to the larger markets in the cities of Kiratpur Sahib and Ropar and sometimes to Chandigarh and Ludhiana also, depending upon the quantity. He does this himself in his own vehicle, starting his day as early as 2 am.

Impact

- He has become a torchbearer for the hard working small farmers who wish to enhance their returns from agriculture income, but are indecisive on the means to do so.
- He has paved a way for lucrative enterprise where need of capital is not too high and profits can be gained with careful planning and hard work.

Table 12.2: Year wise production of mushroom at Sh. Karnail Singh's farm

S. No.	Year	No. of bags (10 kg each)	Production (tonne)
1.	2017-18	2000	3
2.	2018-19	4000	6
3.	2019-20	6000	9
4.	2020-21	10000	14
5.	2021-22	12000	18
6.	2022-23	16000	25

12.3 Diversification through high-value exotic vegetable cultivation in the valley of Lahaul & spiti

Background and Situation Analysis

Sh. Lal Singh S/o Lt. Sh. Angroop Dorje aged 51 years is resident of village Thorang, Post Office Gondhla, in Lahaul and Spiti district of Himachal Pradesh. He is a farmer by profession and is owner of approximately 3.2 ha of irrigated land. Sh. Lal Singh was a conventional farmer, used to cultivate 3.2 ha of land with an aged old traditional farming system to meet out his family expenses. He used to grow garden pea, potato, apple and chinese sarson. Due to lack of awareness and poor knowledge of latest agricultural technologies he was not able to obtain decent returns in spite of his hard work in harsh and tough climatic conditions of Lahaul and Spiti.

Problem

Scientists of Krishi Vigyan Kendra (KVK) Lahaul and Spiti-1 situated at Kukumseri interacted with Sh. Lal Singh during 2016-17. In the initial interaction with KVK scientists some of the major problems faced by the farmer were the losses due to insect pests in pea and potato crop, fodder scarcity, insufficient knowledge of fertilizers and pesticides use, low productivity and single cropping season were mainly responsible for his low farm output. Scientists from KVK identified that crops of Garden Pea and Potato were heavy infested with insect pests and diseases such as pod borer, powdery mildew, root rot and wilt

complex in pea and cut worm and late blight in potato, due to non-application of plant protection measures, non-cultivation of other cash crops, very low production of milk, non-availability of fodder during winters, lack of technical knowledge such as use of nitrogenous fertilizers only (urea), were major constraints which are badly affecting the farm output.

Plan implement and Support

The major interventions undertaken by the KVK Lahaul & Spiti on his farm included large scale adoption of suitable cash crops cultivation and diversification in his farming system. Scientists suggested him to grow off- season exotic vegetables and other high value cash crops in the valley like Cauliflower, Apple, Strawberry, Seed Potato, Garden Pea, and Lilium in equal proportion instead of Pea and Potato in entire land. To sort out the unavailability of fodder during winter months, farmer was advised to grow red clover in combination with tall fescue grass in the grass land and fodder oats as second crop after harvest of pea. He attended various training programmes organized by KVK. Besides, soil test based integrated nutrient management, critical inputs such as seeds of newly released and recommended varieties, planting material, mineral mixture, vermiculture etc. for demonstration purposes and technical support including newly published literature, vermicomposting technology, training and pruning in apple orchards and regular farm advisories were provided to farmer.



Lilium Flower Field



Post Harvest handling of lilium



Apple and lettuce plantation of Sh. Lal Singh under drip irrigation system



Exotic Vegetable Leek (harvested)



Exotic Vegetable Lettuce in the field

Output

After seeing the beneficial effects of front line demonstrations conducted on various crops, by KVK Lahual & Spiti-I, Sh. Lal Singh adopted innovative practices which resulted into enhanced farm productivity and net returns. Nowadays he is growing vegetable nursery, exotics and other high values vegetables in 1.88 ha whereas, fruits and flowers in 1.32 ha. To manage insect pest and diseases now he is using integrated insect pest and disease management as per package of practices of CSKHPKV Palampur from time to time. Due to efforts of KVK on multiple aspects, now he keeps a good knowledge of use of fertilizer, and now he is training and pruning his orchard himself. To increase the farm output he also maintains a small dairy unit of 3 cows. To sort out the problem of fodder during winter months he grows red clover and tall fescue as fodder crop for dairy animals. After harvesting of pea, fodder oats is taken as second crop thereby increasing cropping intensity of the

farm. The dung along with farm residues and kitchen based waste material is utilized by him for preparing vermicompost. Sh. Lal Singh also runs a small trout fish farm which is an additional source of income for his family.

Outcome

Encouraged by the positive financial impact of diversified cropping system, other farmers of his village and surrounding villages too have adopted the same cropping system adopted by Sh. Lal Singh. The total gross income of Rs 4.64 in 2016-17 to Rs.18.85 in 2022 by the farmer has encouraged his fellow farmers in the district. Farmers of surrounding areas nowadays shifted to cultivation of high –value exotic vegetables, cauliflower as off season crop and flower crops on larger scale to boost their economy. At present more than 175 farmers are practicing the same system and technologies adopted by him. The technology of vermicomposting and practice of training and pruning provided ample opportunity of



Strawberry plant under drip irrigation



Vegetable's nursery of Sh. Lal Singh



employment for rural farm women and unemployed youth. Farmers of the village have also received training for grading, packing and marketing of the liliun flowers. Now they are successfully marketing their produce in Aazadpur market of New Delhi and fetching remunerative prices Table 12.3.

Impact

Sh. Lal Singh has become a source of inspiration for many fellow farmers in his village and nearby areas. He has set an example for other small and marginal farmers on efficient and effective use of modern technologies and limited resources through crop

diversification and integrated farming system approach to earn remunerative return. Farmers of the area are showing keen interest in integrated farming system by adopting this technologies they are receiving high returns in comparison to the traditional farming system. The impact of training and demonstrations was such that the movement which was started by about 12-15 farmers has now increased in number to about 175 at present. This has changed the economic status of the farmers of this village which is evident from the change reflected in their living standards.

Table 12.3: Crop-wise economics of the farmer from 2018-2022

Year	Farm component	Area (in ha)	Technology	Gross Income (lakh)
2016-2017	Potato	0.80	Kufri Jyoti, Imbalance use of fertilizers and no use of plant protection measures	1.03
	Pea	1.50	Azad pea-1, without production and protection inputs	2.25
	Apple	0.60	Royal Delicious, Red Chief and Golden Delicious, No use of fertilizers and plant protection chemicals & Non practicing training and pruning operations	0.86
	Chinese Sarson	0.30	-	0.50
Total				4.64
2018-2022	Potato	0.32	Kufri Jyoti variety with all recommended inputs	1.58
	Pea -fodder oats	0.32	Azad Pea-1, PB -89 with all recommended inputs	1.14
	Cauliflower	0.48	Public and private sector hybrids with recommended package of practices	2.51
	Apple	0.48	Royal Delicious, Red Chief and Golden Delicious with good orchard management practices	1.29
	Strawberry	0.28	Chandler with all recommended inputs	2.30
	Lilium	0.56	Asiatic Lily under polyhouses	5.00
	Exotic vegetables	0.75	Lettuce, Broccoli, Red Cabbage, Leek	4.38
	Vermicompost beds	2 no.	-	-
	Fodder crop	1 grassland	Red Clover, tall fescue	-
	Vegetable Nursery	0.01	Exotic vegetables and cole crops	0.40
	Dairy unit	3 cows	HF	0.25
Total				18.85

12.4 Silage technology: A key for higher economic returns in dairy farming

Situation analysis/Problem statement

Livestock rearing, though practiced by almost every house hold in Una district, is not a profitable enterprise at present. It is primarily due to poor nutritional management of milch animals. Green fodder is available to the livestock for 6-8 months only. Fodder is either not available at all or is available in very negligible quantity especially, in during summer and winter months.

During these lean periods, the dairy animals are mostly fed roughages like maize stover, wheat straw, paddy straw which have inherently low crude protein content and high lignin content which hardly fulfil the nutritional requirements of dairy animals. The animals are fed concentrate feed only during lactation and in later half of gestation. The situation is further aggravated due to substandard quality of feed in the market. Consequently, even livestock with good genetic traits are not able to perform to its full potential.

Prolonged preservation of fodder in the form of silage is the key to overcome the constraint of green fodder availability. Besides this, adoption of other good management practices like scientific rearing of calves, provision of sufficient ventilation and cleanliness in animal sheds, prophylaxis against diseases and parasites etc. can go a long way in realizing the production potential of animals.

Plan implement and support

In order to overcome the scarcity of green fodder during lean period, this Krishi Vigyan Kendra (KVK) implemented a NABARD funded project “Popularization of silage making technology for better nutritional management of dairy animals” during 2020-22 in 20 clusters of the district. Each cluster comprised of 8–10 dairy farmers. At the very outset, awareness programmes were organized at village level in these selected clusters to educate farmers about nutritional management of dairy animals through silage feeding. Subsequently, eight vocational trainings each of 3 days duration on scientific dairy farming were conducted at KVK Una for further capacity building of the 200 dairy farmers across clusters. In every cluster, seed of improved varieties of fodder maize and oats were provided and method demonstrations on silage making in bags were conducted. At least one silage unit with capacity to store 20 q was established in each chosen cluster. All necessary inputs like molasses, salt and mineral mixture along with silage bags were provided by the KVK to the farmers. Besides this, other proven technologies for better upkeep of livestock viz. preparation of balanced concentrate ration at home, feeding of mineral mixture, supplementation of animals with UMMB, control of parasites, clean milk production etc. were also demonstrated to farmers in these three years for holistic management of dairy animals. Further, farmer – farmer interactions regarding the results of these technologies



Awareness programme on silage technology



Demonstration on fodder maize



Demonstration on fodder oats



Demonstration on preparation of balanced concentrate feed

demonstrated were also conducted in the regular meetings of these groups.

Output

Introduction of the concept of silage preparation in bags, which is comparatively less labour intensive as compared to filling and digging of silage from pits or trenches, found favour among the beneficiary farmers. The small holder dairy farmers, who require 40–50 kg of silage per day, found the technology most suitable. This was simply because of lesser wastage due to spoilage on account of exposure to air as they used the whole bag within 5 – 10 days of opening it. The farmers, who initially exhibited reluctance for silage making, were able to assess the economic benefits of the demonstrated technology. Efforts of the KVK for capacity building of dairy farmers in the chosen clusters had a catalytic influence on the adoption of other easy to adopt practices like feeding of balanced concentrate ration, supplementation with minerals and vitamins, de-worming and ecto-parasite

control. Thus, the farmers also adopted these technologies leading to improved health, better reproductive performance and higher milk production of their animals. Data on performance of Murrah buffaloes of 40 beneficiary farmers in different clusters were collected before and after implementation of the project. The results of the study are summarized below (Table 12.4).

Outcome

In Kharif 2021, beneficiary farmers in the ten selected clusters prepared silage in bags of 500 kg capacity provided as input under the project and supplemented the diet of their animals in the months of November – February 2022 (Table 12.5).

After feeding silage for 120 days, these animals registered an overall average increase of 21.13 percent (14.40 – 25.3%) in milk yield over the initial level. The average fat percentage of milk of these animals also increased from 5.64 to 6.10 as was SNF from 9.16 to 9.23 (Table 12.6).

Table 12.4: Performance of Murrah buffaloes in adopted clusters

Parameter (s)*	Before intervention (2020)	After intervention (2022)
Birth weight of calf (kg)	27	31
Calf mortality (%)	15 - 20	5 - 7
Average age at first service (Years)	3.06	2.72
Services per conception (No.)	2.60	1.75
Milk yield in one lactation (L)	1450 - 2000	2200 - 3000
Calving interval (Years)	1.58	1.35
Incidence of disease and parasites	High	Low



Method demonstration on silage making in bags



Method demonstration on silage making in bags

Table 12.5: Details of silage prepared in adopted clusters

Village cluster	No. of silage bags (500 kg capacity)	Fodder stored as silage (kg)	No. of animals fed on silage	Silage fed/animal/day (kg)	Average milk yield (L)		Increase in milk production (%)
					Before	After	
Malookpur	22	11000	6	15.2	8.6	10.7	21.4
Chandpur	17	8500	5	14.1	9.3	11.6	25.3
Ghungrala	12	6000	4	12.5	8.0	9.3	20.3
Nehrian	14	7000	4	14.6	10.9	12.9	18.5
Ambota	9	4500	3	12.5	7.6	9.2	21.7
Badoh	6	3000	2	12.5	8.5	10.2	20.9
Takka	16	8000	5	13.3	11.8	13.5	23.7
Kharota	13	6500	4	13.5	7.8	9.4	20.5
Bharmaut	17	8500	5	14.2	11.2	13.9	14.4
Nangal Salangri	18	9000	5	15.0	8.0	10.0	24.7
Total	144	72000	44	13.73	9.15	11.03	21.13

Table 12.6: Impact of silage feeding on quality and quantity of milk produced

Parameters	Average of 30 days before silage feeding	Average of 120 days during silage feeding
Fat (%)	5.64	6.10
SNF (%)	9.16	9.23
Increase in milk yield (%)	—	21.13



Three days training programme on dairy farming



Urea treatment of wheat straws

Impact

The data regarding the adoption of different management practices by the beneficiary farmers in the clusters was collected by questionnaires before

and after interventions. The outcome of this study conducted amongst 200 farmers is summarized below (Table 12.7).

Table 12.7: Adoption of improved dairy practices by dairy farmers (N=200)

Technology	Before intervention		After intervention	
	No.	%	No.	%
Preparation of balanced feed at house hold level	65	32.5	158	79
Feeding of mineral mixture and supplementation of cows with UMMB	56	28	149	74.5
Year around green fodder cultivation	48	24	78	39
De-worming and management of ecto-parasites	70	35	166	83
Clean milk production	15	7.5	52	26
Silage making and urea treatment of straws	8	4	64	32
Scientific calf rearing practices (colostrum feeding, weaning, de-worming etc.)	68	34	137	68.5
Good animal housing (ventilation, mangers, proper disposal of dung etc.)	76	38	125	62.5



Newspaper coverage of project activities



Three days training programme on dairy farming



Vocational training on dairy farming



ANNEXURES

SCIENTIFIC, TECHNICAL AND ADMINISTRATION STAFF OF ICAR-ATARI, ZONE-I, LUDHIANA

S. No.	Category	Cadre Strength	In-Position	Vacant
1.	Director	1	1	0
2.	Principal Scientist	1	1	0
3.	Senior Scientist	3	2	1
4.	Scientist	2	2	0
5.	Assistant Finance & Account Officer	1	0	1
6.	Assistant Administrative Officer	1	1	0
7.	Assistant	2	1	1
8.	Private Secretary	1	1	0
9.	Upper Division Clerk	1	1	0
10.	Lower Division Clerk	2	1	1
11.	Skilled Support Staff	2	0	2
12.	Technical (Driver T-4)	1	1	0
Total		18	12	6

Director	
Dr. Parvender Sheoran	
Scientific	Administration
Dr. Rajesh Kumar Rana Principal Scientist (Agricultural Economics)	Mrs. Manjit Kaur Assistant Administrative Officer
Dr. Arvind Kumar Principal Scientist (Agricultural Extension)	Sh. Harpal Singh Kaundal PS to Director
Dr. Preeti Mamgai Principal Scientist (Home Science)	Ms. Indu Bagal Assistant
Dr. Pragya Bhadauria, Scientist (Livestock and Production Management)	Sh. Raj Kumar Upper Division Clerk
Dr. Ashish Santosh Murai Scientist (Agricultural Extension)	Sh. Deepak Sharma Lower Division Clerk
Technical	Finance and Account Section
Sh. Harbhajan Singh, Driver (T-4)	Sh. Permod Sharma, I/C FAO

CONTACT DETAILS OF KVKs UNDER ICAR-ATARI, LUDHIANA

S. No.	Name of KVK	Name of Programme Coordinator/Incharge	Contact No.	E-mail Id
Punjab				
1.	Amritsar	Dr. Bikramjit Singh	9872354170	kvkasr@gmail.com kvkasr@pau.edu
2.	Bathinda	Dr. Gurdeep Singh	0164-2215619 8872200121	kvkbtd@pau.edu
3.	Faridkot	Dr. GS Makkar	01639-253142 8146400248	kvkfdk@yahoo.com kvk-faridkot@pau.edu
4.	Ferozepur	Dr. Gurjant Singh Aulakh	01632-246517 9501800488	kvkfzr@pau.edu
5.	Fatehgarh Sahib	Dr. Vipran Rampal	01763-221217 8146570699	kvkfgs@pau.edu
6.	Gurdaspur	Dr. Sarabjit Singh Aulakh	01874-220743 9464070131;7888753919	kvk-gurdaspur@pau.edu
7.	Hoshiarpur	Dr. Maninder Singh Bons	01884-243647 9815751900	kvk-hsp@pau.edu msbons-hsp@pau.edu
8.	Jalandhar	Dr. Sanjeev Kumar Katariya	01826-292053 99889-01590	kvk-jalandhar@pau.edu
9.	Kapurthala	Dr. Harinder Singh	01822-233056 9780090300	kvk-kapurthala@pau.edu kvkkapurthala@gmail.com
10.	Ludhiana	Dr. Satbir Singh	99882-27872	kvksamralla@gmail.com kvk-ludhiana@pau.edu
11.	Mansa	Dr. Gurdeep Singh	01652-280843 8872200121	kvkmansa@gmail.com kvk-mansa@pau.edu
12.	Moga	Dr. Amandeep Singh Brar	01636-207110 8146500942	kvk-moga@pau.edu
13.	Muktsar	Dr. Karamjit Sharma	01633-210046 9463022203	nirmaljitdhaliwal@yahoo.com kvkmuktsar@pau.edu
14.	Nawanshahr	Dr. Maninder Singh Bons	01823-250652 9815751900	kvknsr@pau.edu
15.	Pathankot	Dr. Narinder Deep Singh	9876295717	kvk-pathankot@pau.edu
16.	Patiala	Dr. Gurupadesh Kaur	0175-2225473 7696809999	kvkpatiala@gmail.com kvk-patiala@pau.edu
17.	Ropar	Dr. Satbir Singh	01881-220460 99882-27872	kvk-ropar@pau.edu
18.	Sangrur	Dr. Mandeep Singh	01672-245320 7009784182	kvksangrur@gmail.com mandeep@pau.edu
19.	Barnala	Dr. Prahalad Singh Tanwar	81960-80643 8847220484	kvkbarnala@gmail.com prahalad_tanwar@rediffmail.com
20.	Mohali	Dr. Balbir Singh Khadda	0160-2642827 9558277533; 8630779770	kvkmohali@gmail.com
21.	Tarntaran	Dr. Balwinder Kumar	9872974326	ddtkvk tarntaran@gmail.com
22.	Fazilka	Dr. Rupender Kaur	9988040349	kvk.ciphet@icar.gov.in rupinder.kaur@icar.gov.in

S. No.	Name of KVK	Name of Programme Coordinator/Incharge	Contact No.	E-mail Id
Himachal Pradesh				
23.	Bilaspur	Dr. Suman Kumar	01978266046 9418030491; 7018616875	pckvkbilaspur@hillagric.ac.in kvkbilaspurhp@gmail.com
24.	Hamirpur	Dr. Pradeep Kumar	01972238130 9418128122; 9418002560	kvkhmr@gmail.com kvkhmr1@gmail.com
25.	Kangra	Dr. Sanjay Sharma	01892264550 9418069252	kvkkangra@yahoo.in kvkkangra@gmail.com
26.	Kullu	Dr. K.C. Sharma	01905287318 9418118557; 7018269298	kvkkullu@gmail.com keycsharma@yahoo.com
27.	Lahaul & Spiti-I	Dr. Radhika Negi	01909262666 7018621201	pckvkl@gmail.com skthpkv@yahoo.com
28.	Mandi	Dr. Pankaj Sood	01907262547 9418222532; 8580590848	kvkmandihp@rediffmail.com pankajplp@rediffmail.com
29.	Sirmour	Dr. Pankaj Mittal	01704257462 7018448621; 9418457623	kvksirmour@gmail.com
30.	Una	Dr. Yogita Sharma	01975225003 9816029600	pckvkuna@hotmail.com, pckvkuna@gmail.com
31.	Chamba	Dr. Rajeev Raina	01899232144; 9418409504	kvkchamba@yspuniversity.ac.in
32.	Kinnaur	Dr. Ashok Kumar	01786222231; 9418117594	kvkkinnaur1995@gmail.com
33.	Lahaul & Spiti-II (Tabo)	Dr. Sudhir Verma	9418082177	kvktabo@yspuniversity.ac.in
34.	Shimla	Dr. N.S. Kaith	01781240365 82196 45337; 9418051577	kvkshimla@gmail.com, kvkrohru@yspuniversity.ac.in
35.	Solan	Dr. Jatinder Kumar Chauhan	01792256232; 9418471166	kvkkgghat@rediffmail.com
Jammu & Kashmir				
36.	Doda	Dr. Amit Singh Charak	9469225162; 7051185548	kvkdoda@gmail.com
37.	Jammu	Dr. Puneet Chaudhary	01923-250788; 9419142813; 7889710484	kvkjammu@gmail.com
38.	Kathua	Dr. Vishal Mahajan	01922-2234153; 9419215737; 9419150840	kathuakvk@gmail.com
39.	Kishtwar	Dr. Narinder Paul	9419325271	kvkkishtwar@gmail.com
40.	Poonch	Dr. Ajay Gupta	01965-221796; 7889834416; 9469170031	kvkpoonch@gmail.com mahajan.ajay@gmail.com
41.	Rajouri	Dr. Arvind Kumar Ishar	01962-264277; 9419172382	kvkrajouri@gmail.com
42.	Ramban	Dr. Raj Kumar Gupta	9419216567; 7889345006	kvkrambanskuastj@gmail.com
43.	Reasi	Dr. Banarasi Lal	01991287802; 7889875590	kvkreasi@gmail.com
44.	Samba	Dr. Sanjay Khajuria	7006881774	kvksamba@gmail.com kvksambal@gmail.com gupta.ng1@gmail.com
45.	Anantnag	Dr. Ishtiyah Ahmad Khan	8825075206	zargarkvkang@gmail.com anantnagkvk@gmail.com
46.	Bandipora-I	Dr. Tariq Sultan	7006984761	pckvkbandipora@gmail.com
47.	Bandipora-II (Gurez)	Dr. Bilal Ahmad Bhatt	9419277070; 7780914392	dr.bilal738@gmail.com

Annexure - II contd.

S. No.	Name of KVK	Name of Programme Coordinator/Incharge	Contact No.	E-mail Id
48.	Budgam	Dr. Bilal Ahmad Lone	9419019493; 7889714175	pckvkbudgam@gmail.com
49.	Ganderbal	Dr. Ishfaq Abidi	9149506695	pckvk_gbal@skuastkashmir.ac.in kvkganderbal@gmail.com
50.	Kulgam	Dr. Manzoor Ahmad Ganai	01933-213492; 7006853560	kvkkulgam@gmail.com ganai95@gmail.com
51.	Kupwara	Dr. Kaiser Mohiudin	01954-262222; 9906491753	pc.kvk.kupwara@gmail.com
52.	Pulwama	Dr. Javed Mugloo	01933-286952; 9797771030; 7006913917	pcpulwama@gmail.com kvkpulwama@yahoo.co.in
53.	Shopian	Dr. Zaffar Afroz Badri	9697223249	pckvkshopian@gmail.com
54.	Srinagar	Dr. Sajad Mohiuddin	01951-212234; 7006202687	kvksrinagar786@gmail.com
55.	Baramulla	Dr. Manoj Kumar	01954-255060; 7891210511	kvkbaramulla@gmail.com
Ladakh				
56.	Leh-I	Dr. Feroz Din Sheikh	01982267389; 6005564775; 9419178528; 9906984861	kvkleh@yahoo.co.in kvkleh@gmail.com
57.	Leh-II (Nyoma)	Dr. Jigmet Yangchan	01981-222066 9682303708; 9419299822; 9906244904	kvknyoma@rediffmail.com kvknyoma@gmail.com jigmet_chan@yahoo.co.in
58.	Kargil-I	Dr. A. Mehdi	01985-233585 9906705661; 9419219404	kvkkargil@gmail.com kvkkargil1skuastk@gmail.com
59.	Kargil-II (Zanskar)	Dr. F.A. Shah Khan	9906984874	kvkkargil2zanaskar@gmail.com kvkkargil2@gmail.com
Uttarakhand				
60.	Almora	Dr. S.S. Singh	05962241248; 9761969696; 8475001596	kvkalmora@gmail.com
61.	Chamoli	Dr. Anil Panwar	01363274287; 8474924343; 9411188970	kvkchamoli@rediffmail.com
62.	Champawat	Dr. Amrish	05965234820; 9412088082	officerinchargekvklohaghat@gmail.com pc_kvkhaghat@rediffmail.com
63.	Dehradun	Dr. A.K. Sharma	01360224378; 8475002277	kvkdehradun@gmail.com
64.	Haridwar	Dr. Purushottam Kumar	01332215442; 8475002233	kvkharidwar@gmail.com Puru968@gmail.com
65.	Nainital	Dr. V.K. Doharey	05942224547; 9412966838	kvknainital@rediffmail.com vijaydoharey@gmail.com
66.	Pithoragarh	Dr. Nirmala Bhatt	05964252175; 9412044788; 9068725769	kvkpithoragarh@yahoo.com
67.	Rudraprayag	Dr. Sanjay Sachan	7351255604	kvkjakh@rediffmail.com
68.	US Nagar	Dr. Jitendra Kwatra	05947262771; 9760226518	kvkkashipur@gmail.com
69.	Pauri Garhwal	Dr. Rashmi Limbu	01348-226076; 9756388201	kvkpaurigarhwaluuhf@gmail.com rashmilimbu@gmail.com
70.	Tehri Garhwal	Dr. Alok Gulabrao Yewale	01376-252101; 7302230101; 8476004173	kvktehrigarhwal@gmail.com
71.	Bageshwar	Dr. Kamal Pandey	05963-255150; 9412950911; 7464987375	icarkvkbageshwar@gmail.com kvk.Bageshwar@icar.gov.in
72.	Uttarkashi	Dr. Chitrangad Singh Raghav	01371-237198; 9971290881	kvkchinyalisaur@gmail.com kvk.Uttarkashi@icar.gov.in

DETAILS OF STAFF POSITION IN KVKs AS ON 31.03.2023**F- Filled; V- Vacant**

S. No.	Name of the KVK	Name of the Host Organization	Sr. Scientist and Head		Subject Matter Specialist/T-6		Farm Manager /T-4		Program Assistant (computer)/T-4		Program Assistant (lab technician)/T-4		Assistant		Stenographer grade III		Driver /T-1		Skilled Support Staff		Total											
			(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)											
			S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V									
Punjab																																
1.	Amritsar	PAU, Ludhiana	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	16	15	1			
2.	Bathinda		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	16	15	1			
3.	Faridkot		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	1	1	2	1	1	16	12	4			
4.	Fatehgarh Sahib		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	16	15	1			
5.	Ferozepur		1	1	0	6	5	1	1	1	0	1	1	1	0	1	1	0	1	2	2	0	2	1	1	16	12	4				
6.	Gurdaspur		1	1	0	6	6	0	1	1	0	1	1	1	0	1	1	0	1	0	2	2	0	2	1	1	16	14	2			
7.	Hoshiarpur		1	1	0	6	4	2	1	1	0	1	1	0	1	1	0	1	1	0	2	1	1	2	1	1	16	11	5			
8.	Jalandhar		1	1	0	6	6	0	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	16	14	2				
9.	Kapurthala		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	0	2	2	0	2	1	1	16	15	1				
10.	Ludhiana		1	0	1	6	5	1	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	16	12	4			
11.	Mansa		1	0	1	6	5	1	1	1	0	1	1	0	1	1	0	1	0	2	1	1	2	1	1	16	10	6				
12.	Moga		1	1	0	6	5	1	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	16	14	2			
13.	Muktsar		1	0	1	6	5	1	1	0	1	1	0	1	1	0	1	0	1	2	2	0	2	1	1	16	11	5				
14.	Nawanshahar		1	0	1	6	6	0	1	1	0	1	1	0	1	1	0	1	0	2	2	0	2	1	1	16	14	2				
15.	Patiala		1	0	1	6	6	0	1	1	0	1	1	0	1	1	0	1	0	2	2	0	2	1	1	16	13	3				
16.	Ropar		1	1	0	6	4	2	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	16	13	3			
17.	Pathankot		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	0	1	2	1	1	2	0	2	16	10	6			
18.	Sangrur		1	1	0	6	4	2	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	0	2	16	9	7				
19.	Barnala	GADVA SU, Ludhiana	1	1	0	6	4	2	1	1	0	1	1	0	1	1	0	1	2	2	0	2	0	2	0	16	11	5				
20.	Mohali		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	1	1	2	1	1	16	13	3			
21.	Tarn Taran	ICAR-CIPHET	1	1	0	6	4	2	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	0	2	0	16	13	3			
22.	Fazilka		1	0	1	6	5	1	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	0	16	14	2				
Total			22	16	6	132	116	16	22	18	4	22	17	5	22	16	6	22	19	3	22	18	4	44	37	7	44	23	21	352	280	72

S. No.	Name of the KVK	Name of the Host Organization	Sr. Scientist and Head	Subject Matter Specialist/T-6		Farm Manager /T-4		Program Assistant (computer)/T-4		Program Assistant (lab technician)/T-4		Assistant		Stenographer grade III		Driver /T-1		Skilled Support Staff		Total													
				(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)	(Status of posts)														
																					S	F	V	S	F	V	S	F	V	S	F	V	S
Himachal Pradesh																																	
1.	Bilaspur	CSKHPK V, Palampur	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	15	1				
2.	Hamirpur		1	1	0	6	4	2	1	1	0	1	0	1	1	0	1	1	0	2	0	2	0	2	2	0	16	11	5				
3.	Kangra		1	1	0	6	6	0	1	1	0	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	15	1					
4.	Kullu	Lahaul & Spiti	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	16	0				
5.	Lahaul & Spiti		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	16	0				
6.	Mandi		1	1	0	6	6	0	1	1	0	1	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	14	2			
7.	Sirmaur	Una	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	15	1				
8.	Una		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	13	3				
9.	Chamba		1	1	0	6	4	2	1	1	0	1	1	0	1	1	0	1	1	0	2	1	1	2	2	0	16	12	4				
10.	Kinnaur	Dr.YSPU H&F, Solan	1	1	0	6	5	1	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	14	2				
11.	Shimla		1	1	0	6	5	1	1	1	0	1	1	0	1	1	0	1	1	0	2	0	2	2	1	1	16	10	6				
12.	Solan		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	16	0				
13.	Lahaul & Spiti II		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	16	0				
Total			13	13	0	78	72	6	13	12	1	13	8	5	13	10	3	13	13	0	13	9	3	26	21	5	26	25	1	208	183	25	
Jammu & Kashmir																																	
1.	Anantnag	SKUAST -Kashmir	1	1	0	6	2	4	1	1	0	1	0	1	1	1	0	1	1	0	2	1	1	2	2	0	16	9	7				
2.	Bandipora		1	1	0	6	5	1	1	0	1	1	0	1	1	0	1	1	0	1	2	0	2	2	0	2	16	7	9				
3.	Gandarbāl		1	1	0	6	5	1	1	0	1	1	1	0	1	1	0	1	1	0	2	1	1	2	1	1	16	12	4				
4.	Kulgam		1	1	0	6	3	3	1	0	1	1	1	0	1	1	1	0	1	1	2	1	1	2	2	0	16	10	6				
5.	Kupwara		1	1	0	6	5	1	1	1	0	1	1	0	1	1	0	1	1	0	2	1	1	2	1	1	16	11	5				
6.	Pulwama		1	1	0	6	4	2	1	1	0	1	1	0	1	1	1	0	1	1	2	2	0	2	2	0	16	12	4				
7.	Shopian		1	1	0	6	6	0	1	0	1	1	0	1	1	1	0	1	1	0	2	1	1	2	2	0	16	11	5				
8.	Srinagar		1	1	0	6	6	0	1	1	0	1	1	0	1	1	1	0	1	1	2	1	1	2	2	0	16	13	3				
9.	Doda		1	0	1	6	3	3	1	0	1	1	0	1	1	1	0	1	1	0	2	2	0	2	2	0	16	9	7				
10.	Jammu	SKUAST -Jammu	1	0	1	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	1	1	2	1	1	16	12	4				
11.	Kathua		1	0	1	6	5	1	1	1	0	1	1	0	1	1	1	0	1	1	2	2	0	2	2	0	16	12	4				

S. No.	Name of the KVK	Name of the Host Organization	Sr. Scientist and Head		Subject Matter Specialist/T-6		Farm Manager /T-4		Program Assistant (computer)/T-4		Program Assistant (lab technician)/T-4		Assistant		Stenographer grade III		Driver /T-1		Skilled Support Staff		Total											
			(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)													
			S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V		S	F	V								
Jammu & Kashmir																																
12.	Poonch	SKUAS T-Jammu	1	0	1	6	2	4	1	1	0	1	1	0	1	0	1	1	0	1	2	2	0	2	1	1	16	8	8			
13.	Rajouri	Jammu	1	0	1	6	3	3	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	0	2	1	1	16	8	8		
14.	Reasi		1	0	1	6	5	1	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	0	2	1	1	16	11	5	
15.	Budgam	Baramulla	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	1	1	1	16	15	1		
16.	Baramulla		1	1	0	6	1	5	1	0	1	1	0	1	1	0	1	1	0	1	2	2	0	2	2	0	1	16	6	10		
17.	Samba	Bandipora -II	1	0	1	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	0	2	1	1	16	13	3	
18.	Bandipora -II		1	1	0	6	2	4	1	1	0	1	1	0	1	1	0	1	1	0	2	1	1	2	1	2	2	0	16	10	6	
19.	Ramban	Kishtwar	1	0	1	6	0	6	1	0	1	1	0	1	1	0	1	1	0	1	2	0	2	2	0	2	1	16	0	16		
20.	Kishtwar		1	0	1	6	0	6	1	0	1	1	0	1	1	0	1	1	0	1	2	0	2	0	2	2	1	1	16	1	15	
Total			20	11	9	120	75	45	20	11	9	20	12	8	20	7	13	20	10	10	20	11	9	40	26	14	40	27	13	320	190	130
Ladakh																																
1.	Leh	SKUAS T-Kashmir	1	1	0	6	4	2	1	1	0	1	1	0	1	1	0	1	1	0	1	2	1	1	2	2	0	16	11	5		
2.	Leh-II (Nyoma)	Kargil	1	0	1	6	2	4	1	0	1	1	0	1	1	0	1	1	0	1	2	2	0	2	2	0	2	0	16	7	9	
3.	Kargil		1	1	0	6	4	2	1	1	0	1	1	0	1	1	0	1	1	1	0	1	2	1	1	2	2	0	16	12	4	
4.	Kargil-II	Total	1	1	0	6	2	4	1	0	1	1	1	0	1	1	0	1		1	0	1	2	0	2	2	2	0	16	7	9	
Total			4	3	1	24	12	12	4	2	2	4	3	1	4	3	1	4	2	2	4	0	4	8	4	4	8	0	64	37	27	
Uttarakhand																																
1.	Champur at	GBPUA T,	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	16	16	0	16	0	
2.	Almora	Pantnagar	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	2	0	16	16	0	
3.	Chamoli		1	0	1	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	2	0	16	15	1	
4.	Haridwar	Rudrapur	1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	2	0	16	16	0	
5.	Rudrapur		1	1	0	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	2	2	0	2	2	0	2	0	16	16	0	
6.	Nainital	Pithoragarh	1	1	0	6	5	1	1	0	1	1	0	1	1	1	0	1	1	0	2	1	1	2	2	0	16	12	4	16	4	
7.	Pithoragarh		1	0	1	6	6	0	1	1	0	1	1	0	1	1	0	1	1	0	1	2	0	2	2	0	2	0	16	9	7	
8.	Dehradun	Total	1	1	0	6	1	5	1	0	1	1	0	1	1	1	0	1	1	0	1	2	2	0	2	2	0	16	7	9		

Annexure - III contd.

S. No.	Name of the KVK	Name of the Host Organization	Sr. Scientist and Head		Subject Matter Specialist/T-6		Farm Manager /T-4		Program Assistant (computer)/T-4		Program Assistant (lab technician)/T-4		Assistant		Stenographer grade III		Driver /T-1		Skilled Support Staff		Total											
			(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)		(Status of posts)											
			S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V									
Uttarakhand																																
8.	Dehradun		1	1	0	6	1	5	1	0	1	1	0	1	0	1	1	0	1	2	2	0	2	0	16	7	9					
9.	US Nagar		1	1	0	6	5	1	1	0	1	1	0	1	1	0	1	0	1	2	0	2	0	2	16	9	7					
10.	Tehri Garhwal	VCSG UUHF,	1	0	1	6	4	2	1	0	1	1	0	1	1	0	1	1	0	1	2	2	0	2	0	16	8	8				
11.	Pauri Garhwal	Bharsar, Pauri Garhwal	1	0	1	6	5	1	1	0	1	1	0	1	1	0	1	1	0	1	2	2	0	2	0	16	7	9				
12.	Uttarakashi	ICAR-	1	1	0	6	2	4	1	1	0	1	1	0	1	0	1	1	0	1	2	0	2	2	1	1	16	7	9			
13.	Bageshwar	VPKAS Almora	1	0	1	6	3	3	1	0	1	1	0	1	1	0	1	1	0	1	2	2	0	2	0	2	16	6	10			
Total			13	8	5	78	61	17	13	7	6	13	8	5	13	10	3	13	8	5	13	6	7	26	19	7	26	17	9	208	144	64
Grand Total			72	51	21	432	336	96	72	50	22	72	48	24	72	46	26	72	52	20	72	44	28	144	107	37	144	100	44	1152	834	318

DETAILS OF INFRASTRUCTURE IN KVKs AS ON 24.4.2023.

Name of the KVK	Host Organisation (ICARs, State Govt, NGOs, Others)	Administrative Building (V/N)	Staff Quarters (V/N)	Farmers' Hostels (V/N)	Demonstration Unit (Number of the Demo Units)	Fencing	Soil and Water Testing Laboratory	Mini Soil Testing Kit	Rain Water Harvesting structure	"Integrated Farming System"	"Minimal processing unit"	Carp hatchery	Solar Panel	Technology Information Unit (Computer, Internet, etc.) (ERNE ID)	Micronutrient Facility	Threshing Floor	Farmer Godown	IFS System	Implement Shed	Tractor	Four Wheeler	Two Wheeler	Tubewell	Generator	Remarks, if any
Punjab																									
Amritsar	PAU, Ludhiana	1	0	1	9	1	1	0	1	1	1	0	1	1	0	0	0	0	1	2	1	1	2	1	
Bathinda		1	4	1	15	1	0	2	1	1	1	0	0	1	0	1	0	0	1	1	1	1	2	1	
Faridkot		1	1	1	10	0	1	0	1	0	1	0	1	1	0	0	0	0	1	2	1	2	1	1	
Fatehgarh Sahib		1	1	0	4	1	1	1	1	0	1	0	0	1	0	1	0	0	1	2	1	1	2	1	
Ferozepur		1	1	1	5	0	1	2	0	0	0	0	0	1	0	0	1	0	1	2	1	1	2	2	
Gurdaspur		1	1	1	6	1	1	1	1	0	0	0	0	1	0	1	1	0	0	2	1	0	2	1	
Hoshiarpur		1	1	1	14	1	1	3	1	1	0	0	1	1	0	1	0	1	1	1	1	2	2	2	
Jalandhar		1	1	1	24	1	1	1	1	1	1	0	1	1	1	1	1	1	1	3	1	1	3	2	
Kapurthala		1	1	1	8	1	1	2	1	1	1	0	1	1	0	1	0	0	1	1	1	0	2	1	
Ludhiana		1	1	1	3	1	1	0	1	1	1	0	1	1	0	1	0	1	1	1	1	1	2	1	
Mansa		1	0	0	3	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2	1	1	2	0	
Moga		1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	1	2	1	1	1	3	
Muktsar		1	1	0	6	1	0	2	0	0	0	0	0	0	0	1	0	0	1	2	1	1	4	0	
Nawanshahar		1	1	1	9	1	1	1	0	0	0	0	1	1	1	0	0	0	1	2	1	1	2	2	
Patiala		1	1	1	5	1	1	2	1	0	0	0	1	1	0	1	0	0	1	2	1	1	2	1	
Pathankot		1	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	
Roopnagar		1	1	0	12	1	1	2	0	0	0	0	0	1	0	1	0	0	1	2	1	1	2	1	
Sangrur		1	1	1	7	1	1	1	1	0	0	0	0	1	0	0	0	0	1	1	0	0	3	1	
Total		18	18	13	142	16	16	21	13	6	6	0	8	14	2	12	3	3	17	31	17	16	37	21	
Barnala	GADVA	1	0	0	15	0	1	1	0	0	0	0	1	1	0	0	0	1	1	2	1	0	2	1	
Mohali	SU, Ludhiana	0	0	0	5	0	0	2	0	0	0	0	0	0	0	0	0	0	1	2	1	1	0	0	
Tarn Taran		1	0	0	1	0	1	2	0	1	0	0	0	1	0	0	0	0	1	2	1	1	1	0	
Total		2	0	0	21	0	2	5	0	1	0	0	1	2	0	0	0	1	3	6	3	2	3	1	
Fazilka	ICAR-CIPHET	1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Total		1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	
Himachal Pradesh																									
Bilaspur	CSKHP	1	1	1	0	0	1	2	1	0	0	0	0	1	1	1	0	0	0	1	1	1	1	1	
Hamirpur	KV, Palampur	1	1	1	21	22	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	
Kangra		1	1	1	4	1	1	1	1	0	0	0	0	1	0	0	0	0	1	1	1	1	0	1	
Kullu		1	1	1	6	1	1	2	1	1	1	0	0	1	0	0	1	0	0	1	1	1	0	1	
Lahaul & Spiti		0	0	1	2	0	0	2	0	0	0	0	0	0	0	1	0	0	1	1	1	1	0	1	
Mandi		1	4	1	6	0	1	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	0	1	
Sirmaur		1	1	1	6	0	1	2	1	1	0	0	1	1	0	1	0	1	1	1	1	1	1	1	

Annexure - IV contd.

Name of the KVK	Host Organisation (ICAR/SAU or CUNGO/ Others)	Adminstrative Building (Y/N)	Staff Quarters (Y/N)	Farmers' Hostel (Y/N)	Demonstration Unit (Number of the Demo Units)	Fencing	"Soil and Water Testing Laboratory"	Mini Soil Testing Kit	Rain Water Harvesting Structure	"Integrated Farming System"	"Minimal processing facility"	Carp hatchery	Solar Panel	Technology Information Unit (Connectivity (ERNET))	Micro nutrient Facility	Threshing Floor	Farmers' Godown	IFS System	Implement Shed	Tractor	Four Wheeler	Two Wheeler	Tube well	Generators, if any	Remarks
Una		1	1	1	2	1	1	1	0	0	0	0	1	0	0	1	0	0	0	1	1	1	1	2	0
Total		7	10	8	47	25	6	11	5	3	1	0	2	6	1	4	1	2	5	7	8	4	7		
Chamba	Dr. YSPU H&F, Solan	1	1	1	8	0	1	2	1	1	0	0	0	1	0	1	1	0	1	2	1	0	0	1	
Kinnaur		1	1	1	3	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	1	1	0	1	
Shimla		1	1	1	1		1	2	1					1	0	0	0	0	0	0	1	1	0	1	
Solan		1	1	1	5	0	0	1	1	0	0	0	0	1	0	1	0	0	1	2	1	0	0	1	
Lahaul & Spiti II		0	0	0	3	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	1	0	0	2	
Total		4	4	4	20	0	3	6	3	2	1	0	1	4	0	2	1	0	4	4	5	2	0	6	
Jammu & Kashmir																									
Anantnag	SKUAST -Kashmir	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	
Bandipora-I		1	0	0	3	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	
Bandipora-II		0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	
Gandrabal		1	1	1	6	1	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	
Kulgam		1	0	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	
Kupwara		1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	2	
Pulwama		1	1	1	16	0	1	0	1	0	0	0	1	0	0	0	0	1	0	0	1	1	1	0	
Shopian		1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	1	1	0	2	
Srinagar		1	0	1	3	1	1	1	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	1	
Budgam		1	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	1	
Total		9	2	4	31	2	10	6	2	0	0	0	2	4	0	0	0	1	8	6	9	7	7	11	
Doda	SKUAST -Jammu	0	1	1	6	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
Jammu		1	1	1	5	1	1	2	0	1	0	0	0	1	0	0	0	0	0	1	1	1	3	1	
Kathua		0	0	0	2	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	1	0	0	1	
Poonch		1	1	1	1	0	2	2	1	0	0	0	0	1	0	1	0	0	1	1	1	1	1	3	
Rajouri		1	1	1	1	1	1	2	0	1	0	0	0	0	0	0	0	0	1	0	1	1	0	2	
Reasi		1	1	1	2	0	1	3	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	1	
Samba		1	0	0	9	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	1	0	
Ramban		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kishtwar		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total		5	5	5	26	2	6	11	1	3	0	0	0	3	0	2	0	1	4	5	6	5	7	8	
Baramulla	ICAR	1	0	0	2	0	0	1	1	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	
Total		1	0	0	2	0	0	1	1	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	
Ladakh																									
Kargil	SKUAST -Kashmir	1	0	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	
Kargil-II		1	0	0	1	1	0	1	1	0	0	0	1	1	0	0	0	0	1	2	1	0	2	2	

Name of the KVK	Host Organisation (ICAR/S AU or CU/NGO/ Others)	Administrative Building (Y/N)	Staff Quarters (Y/N)	Farm Owner's Hostel (Y/N)	Demonstration Unit (Number of the Demo Units)	Fencing	"Soil and Water Testing Laboratory"	Mini Soil Testing Kit	Rain Water Harvesting Structure	"Integrated Farming System"	"Mini-mal processing facility"	Carp hatchery	Solar Panel	Technology Information Unit [Connectivity (ERNET)]	Micro nutrient Facility	Threshing Floor	Farmers Godown	IFS System	Implement Shed	Tractor	Four Wheeler	Two Wheeler	Tube well	Generator, if any
Leh		1	0	0	2	0	1	1	0	0	0	1	1	0	0	0	0	0	1	1	1	1	0	1
Leh-II (Nyoma)		1	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0
Total		4	0	0	8	2	3	3	1	0	0	1	2	1	0	1	1	0	4	4	4	2	3	4
Uttarakhand																								
Champawat	GBPUAT, Pantnagar	1	0	1	10	1	1	1	1	1	1	1	0	1	0	1	1	0	1	0	1	1	0	0
Almora		1	1	1	5	0	1	2	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0
Chamoli		1	1	1	1	0	1	2	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	1
Haridwar		1	1	1	8	1	1	1	0	0	1	1	1	1	0	1	1	0	1	2	1	1	2	1
Rudrapur		1	1	1	8	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	0
Nainital		1	1	1	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	1	1	0	0
Pithoragarh		1	1	1	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0
Dehradun		1	1	1	5	1	1	0	0	0	0	0	0	1	0	1	0	0	0	1	1	1	1	1
Kashipur		1	1	1	2	0	0	2	0	0	1	0	0	1	0	1	0	0	1	1	1	1	3	1
Total		9	8	9	40	4	7	10	3	2	3	3	1	7	0	6	2	0	3	6	9	9	6	4
Tehri Garhwal	VCSG, UUHF, Bharsar, Pauri Garhwal	1	0	1	3	1	1	1	1	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0
Pauri Garhwal		1	1	1	3	1	1	2	0	0	1	0	1	1	0	0	0	0	0	0	1	1	0	0
Total		2	1	2	6	2	2	3	1	0	2	0	1	2	0	1	1	0	0	0	1	1	0	0
Uttarakshi	ICAR-VPKAS Almora	1	1	1	1	1	1	2	1	0	0	0	1	1	0	0	0	0	0	2	0	1	0	0
Bageshwar		1	1	1	12	1	1	1	1	1	0	0	1	1	0	1	0	0	0	2	1	1	0	0
Total		2	2	2	13	2	2	3	2	1	0	0	2	2	0	1	0	0	0	4	1	2	0	0
Grand Total		64	50	47	357	55	57	82	32	18	13	4	20	46	3	29	10	9	48	74	64	54	68	63

DETAILS OF SAC MEETING CONDUCTED BY KVKs DURING 2022

contd....

KVK	Date	Number of Participants
Punjab		
Amritsar	1.12.2022	50
Bathinda	20.01.2022	35
	05.12.2022	35
Faridkot	12.12.2022	41
Fatehgarh Sahib	03.02.2022	60
Ferozepur	16.12.2022	50
Gurdaspur	08.12.2022	50
Hoshiarpur	27.01.2022	35
	14.12.2022	35
Jalandhar	22.12.2022	33
Kapurthala	19.12.2022	35
Ludhiana	22.03.2022	50
Mansa	17.02.2022	40
Nawanshahar	25.2.2022	50
Patiala	21.12.2022	45
Ropar	15.03.2022	65
Sangrur	23.12.2022	42
Barnala	20.12.2022	73
Mohali	22.12.2022	45
Taran taran	19.12.2022	35
Fazilka	20.12.2022	35
Uttarakhand		
Chamoli	29.01.2022	18
Champawat	20.01.2022	25
Dehradun	07.01.2022	16
Haridwar	05.01.2022	37
Nainital	12.01.2022	36
Pithoragarh	22.01.2022	20
Rudraprayag	27.01.2022	18
Udham Singh Nagar	03.01.2022	33
Pauri Garhwal	30.09.2022	17
Tehri Garhwal	13.07.2022	21
Bageshwar	06.08.2022	42
Uttarkashi	28.04.2022	25
Himachal Pradesh		
Bilaspur	02.03.2022	500

KVK	Date	Number of Participants
Hamirpur	4.03.2022	321
Kangra	21.03.2022	57
Kullu	13.03.2022	383
Lahaul & Spiti-I	22.11.2022	80
Mandi	19.03.2022	44
Una	28.03.2022	55
Sirmaur	26.03.2022	28
Lahaul & Spiti-II (Tabo)	12.05.2022	40
Shimla	12.08.2022	51
Solan	27.04.2022	22
Jammu & Kashmir		
Jammu	23.08.2022	42
Reasi	21.11.2022	29
Samba	21.11.2023	30
Anantnag	27.08.2022	71
Bandipora-I	16.04.2022	68
Bandipora-II (Gurez)	05.06.2022	32
Budgam	22.08.2022	45
Ganderbal	25.08.2022	50
Kulgam	16.06.2022	60
Kupwara	25.03.2022	60
Pulwama	24.08.2022	45
Shopian	16.06.2022	75
Srinagar	26.04.2022	32
Ladakh		
Kargil-I	04.09.2022	75
Kargil-II (Zanskar)	09.04.2022	62
Leh-I	06.09.2022	133
Leh-II (Nyoma)	06.09.2022	105

DETAILS OF BUDGET OF ICAR-ATARI, ZONE-I, LUDHIANA

(Rupees in Lakh)

Name of Institute /Programme	Budget Head/ Component	Other than NEH, TSP and SCSP	TSP	SCSP	Total
ICAR-ATARI, Zone-I, Ludhiana	Grants-in Aid Capital	4.67	0.00	0.00	4.67
	Grants-in Aid Salary	238.45	0.00	0.00	238.45
	Grants-in Aid General	63.48	0.00	0.00	63.48
	Total	306.60	0.00	0.00	306.60
KVKs+DEEs	Grants-in Aid Capital	245.33	84.00	245.00	574.33
	Grants-in Aid Salary	10781.55	0.00	0.00	10781.55
	Grants-in Aid General	840.80	0.00	300.00	1140.80
	Total	11867.68	84.00	545.00	12496.68
Total KVK Scheme	Grants-in Aid Capital	250.00	84.00	245.00	579.00
	Grants-in Aid Salary	11020.00	0.00	0.00	11020.00
	Grants-in Aid General	904.28	0.00	300.00	1204.28
	Total	12174.28	84.00	545.00	12803.28
FFP	Grant in Aid-Capital	17.00	0.00	0.00	17.00
	Grant in Aid-Salary	0.00	0.00	0.00	0.00
	Grant in Aid-General	101.70	0.00	0.00	101.70
	Total	118.70	0.00	0.00	118.70
ARYA	Grant in Aid-Capital	56.88	0.00	0.00	56.88
	Grant in Aid-Salary	0.00	0.00	0.00	0.00
	Grant in Aid-General	55.00	0.00	0.00	55.00
	Total	111.88	0.00	0.00	111.88
NEMA	Grant in Aid-Capital	0.00	0.00	0.00	0.00
	Grant in Aid-Salary	0.00	0.00	0.00	0.00
	Grant in Aid-General	5.68	0.00	0.00	5.68
	Total	5.68	0.00	0.00	5.68
SAP	Grant in Aid-Capital	0.00	0.00	0.00	0.00
	Grant in Aid-Salary	0.00	0.00	0.00	0.00
	Grant in Aid-General	20.00	0.00	0.00	20.00
	Total	20.00	0.00	0.00	20.00
Grand Total	Grants-in Aid Capital	323.88	84.00	245.00	652.88
	Grants-in Aid General	11020.00	0.00	0.00	11020.00
	Grants-in Aid Salary	1086.66	0.00	300.00	1386.66
	Total	12430.54	84.00	545.00	13059.54
Additional Grant	1270 General	20.00	0.00	0.00	20.00
Agridrone Training	1270 General	43.23	0.00	0.00	43.23

Annexure - VII

DETAILS OF BUDGET OF REVOLVING FUNDS OF KVKs

(Amount in Rupees)

Name of KVK	Opening Balance of Revolving funds as on 1st Jan 2022	Revolving Funds generated during Jan-Dec 2022	Revolving Funds utilised during Jan-Dec 2022	Balance of Revolving Funds as on 31st Dec 2022
Amritsar	5822406	0	5487758	334648
Barnala	1248000	2772000	1084000	2936000
Bathinda	13662788	1749777	633607	14778958
Faridkot	2541000	2382680	1996923	2926757
Fatehgarh Sahib	6945006	2000000	761642	8183364
Fazilka	0	300000	54068	245932
Ferozepur	-733487	14650000	12644753	1271760
Gurdaspur	9273315	0	5416100	3857215
Hoshiarpur	10862203	1304182	1086163	11080222
Jalandhar	7600063	2103741	1289116	8414688
Kapurthala	13271150	2491050	1053159	14709041
Ludhiana	10483411	2252930	1467152	11269189
Mansa	2255298	2078758	1007363	3326693
Moga	12866702	2600000	1222041	14244661
Mohali	296357	430050	34960	691447
Muktsar	12257000	4560000	1944846	14872154
Nawanshahar	16851305	3103670	544508	19410467
Pathankot	18804000	516120	1050000	18270120
Patiala	20015044	2075620	1407361	20683303
Ropar	24077753	3266596	1319284	26025065
Sangrur	16553849	2190000	1450000	17293849
Tarn Taran	1957285	1050261	726089	2281457
Total (Punjab)	206910448	53877435	43680893	217106990
Bilaspur	472878	1173590	929423	717045
Chamba	607756	0	156534	451222
Hamirpur	3396816	2618585	2600820	3414581
Kangra	1942092	2461093	1835733	2567452
Kinnaur	685362	122120	0	807482
Kullu	5231090	30075356	3264148	32042298
Lahaul&Spiti I	1733872	217352	381419	1569805
Lahaul&Spiti-II	1504452	2035817	2010228	1530041
Mandi	5159497	2725237	6204456	1680278
Shimla	788614	213150	747115.00	254649.00
Sirmour (HP)	1871795	1546821	2323803	1094813
Solan	616958	2009184	2545889	80253
Una	1592000	785000	1468000	909000
Total (HP)	25603182	45983305	24467568	47118919
Anantnag	31995	303811	291200	44606

DETAILS OF BUDGET OF REVOLVING FUNDS OF KVKs**(Amount in Rupees)**

Name of KVK	Opening Balance of Revolving funds as on 1st Jan 2022	Revolving Funds generated during Jan-Dec 2022	Revolving Funds utilised during Jan-Dec 2022	Balance of Revolving Funds as on 31st Dec 2022
Amritsar	5822406	0	5487758	334648
Barnala	1248000	2772000	1084000	2936000
Bathinda	13662788	1749777	633607	14778958
Faridkot	2541000	2382680	1996923	2926757
Fatehgarh Sahib	6945006	2000000	761642	8183364
Fazilka	0	300000	54068	245932
Ferozepur	-733487	14650000	12644753	1271760
Gurdaspur	9273315	0	5416100	3857215
Hoshiarpur	10862203	1304182	1086163	11080222
Jalandhar	7600063	2103741	1289116	8414688
Kapurthala	13271150	2491050	1053159	14709041
Ludhiana	10483411	2252930	1467152	11269189
Mansa	2255298	2078758	1007363	3326693
Moga	12866702	2600000	1222041	14244661
Mohali	296357	430050	34960	691447
Muktsar	12257000	4560000	1944846	14872154
Nawanshahar	16851305	3103670	544508	19410467
Pathankot	18804000	516120	1050000	18270120
Patiala	20015044	2075620	1407361	20683303
Ropar	24077753	3266596	1319284	26025065
Sangrur	16553849	2190000	1450000	17293849
Tarn Taran	1957285	1050261	726089	2281457
Total (Punjab)	219898965	43877435	43680893	220095507
Bilaspur	472878	1173590	929423	717045
Chamba	607756	0	156534	451222
Hamirpur	3396816	2618585	2600820	3414581
Kangra	1942092	2461093	1835733	2567452
Kinnaur	685362	122120	0	807482
Kullu	5231090	30075356	3264148	32042298
Lahaul&Spiti I	1733872	217352	381419	1569805
Lahaul&Spiti-II	1504452	2035817	2010228	1530041
Mandi	5159497	2725237	6204456	1680278
Shimla	788614	213150	747115.00	254649.00
Sirmour (HP)	1871795	1546821	2323803	1094813
Solan	616958	2009184	2545889	80253
Una	1592000	785000	1468000	909000
Total (HP)	34212738	15983305	24467568	25728475
Anantnag	31995	303811	291200	44606

Annexure - VII contd.

Name of KVK	Opening Balance of Revolving funds as on 1st Jan 2022	Revolving Funds generated during Jan-Dec 2022	Revolving Funds utilised during Jan-Dec 2022	Balance of Revolving Funds as on 31st Dec 2022
Bandipora-I	38279	621746	637182	22843
Bandipora-II (Gurez)	0	300000	0	300000
Baramulla	86549	34255	0	120804
Budgam	3296	405310	311022	97584
Doda	904827	398154	42432	1260549
Ganderbal	662951	1124999	1255891	532059
Jammu	1075494	219653	334418	960729
Kathua	3214157	398043	511995	3100205
Kishtwar	0	300000	0	300000
Kulgam	632306	1485432	1321264	796474
Kupwara	80159	38340	70500	47999
Poonch	1625626	269140	131617	1763149
Pulwama	885624	686585	656979	915230
Rajouri	1832424	14873779	201882	16504321
Ramban	0	300000	0	300000
Reasi	948606	383135	26780	1304961
Samba	616701	288763	140227	765237
Shopian	588602	477650	652238	414014
Srinagar	319963	282534	0	602497
Total (J&K)	45046175	16191329	6585627	54651877
Kargil-I	523428	701836	293046	932218
Kargil-II (Zaskar)	2245097	201134	0	2446231
Leh-I	876085	593096	426329	1042852
Leh-II (Nyoma)	768255	124167	40000	852422
Total (Ladakh)	3896691	1620233	759375	4757549
Almora	320540	704140	795748	228932
Bageshwar	439981	491605	401237	530349
Chamoli	571785	110794	110077	572502
Champawat	370253	229182	358583	240852
Dehradun	2292870	1617956	1783814	2127012
Haridwar	1682421	4335958	1798547	4219832
Nainital	951702	667162	874497	744367
PauriGarhwal	144819	9523	0	154342
Pithoragarh	841000	175859	135614	881245
Rudraprayag	660684	276286	199987	736983
TehriGarhwal	715686	47000	700000	62686
US Nagar	994255	2049701	1360224	1683732
Uttarkashi	997956	3262470	163476	4096950
Total (UK)	9856627	13977636	8681804	15152459
Total (Zone-I)	312911196	91649938	84175267	320385867

*As received through mail and Annual Report

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ICAR-Agricultural Technology Application Research Institute

Zone-1, PAU Campus, Ludhiana-141 004, Punjab

zcu1ldh@gmail.com; <http://atariz1.icar.gov.in>