

Beyond Trials: Strengthening India's Edible Oil Future

CFLDs on OILSEEDS
(2018-19 to 2021-22)



ICAR-Agricultural Technology Application Research Institute (ATARI)
Zone -1, Ludhiana, Punjab -141 004

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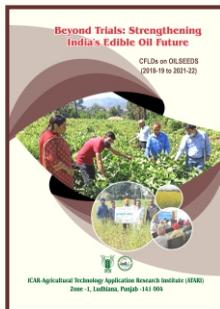
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Acronyms

ICAR	Indian Council of Agricultural Research
ATARI	Agricultural Technology Application Research Institute
DA&FW	Department of Agriculture and Farmer's Welfare
NFSM	National Food Security Mission
CFLDs	Cluster Frontline Demonstrations
KVKs	Krishi Vigyan Kendra
PAU	Punjab Agricultural University
GADVASU	Guru Angad Dev Veterinary and Animal Science University
INM	Integrated Nutrient Management
IPM	Integrated Pest Management
PC	Programme Coordinator
SAU	State Agricultural University
SMS	Subject Matter Specialist
SKUAST	Sher-e-Kashmir University of Agricultural Sciences and Technology
ST	Seed Treatment
SRF	Senior Research Fellow
WHO	World Health Organisation
FAW	Fall Armyworm
YSPUH&F	Dr. Yashwant Singh Parmar University of Horticulture and Forestry
CSKHPKV	Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya

Preface

The cultivation of oilseeds remains a vital pillar of India's agricultural economy, serving as a primary source of livelihood for millions of farmers. It significantly contributes to rural employment and income generation across the country. Recognizing its importance, the Government of India, in collaboration with various agricultural agencies, has launched multiple policies and initiatives aimed at increasing oilseed production by expanding the area under cultivation and improving crop yields.

At the forefront of this effort is the Department of Agriculture and Farmers Welfare (DA&FW), which has consistently worked to enhance the area and output of oilseed crops. Under the umbrella of the National Food Security Mission (NFSM), now known as the 'Krishionnati Yojna', the project titled "Cluster Frontline Demonstrations (CFLDs) on Oilseeds" was sanctioned for the years 2018-19 to 2020-21. This initiative was designed to provide farmers with high-quality seeds of improved varieties and to promote advanced cultivation techniques developed by State Agricultural Universities (SAUs) and ICAR Institutes.

During 2018–19, ICAR-ATARI Zone-I, Ludhiana received ₹5,941,000 to conduct 2,150 CFLDs on oilseeds across 860 ha through 44 KVKs. In 2019–20, a budget of ₹4,782,200 was allocated for 1,600 CFLDs over 640 ha through 42 KVKs, along with an additional ₹14,301,522 for Sustainable Agriculture Practices (SAP) demonstrations commemorating the 150th birth anniversary of Mahatma Gandhi during Rabi 2019–20.

In 2020–21, ICAR-ATARI Zone-I, Ludhiana received ₹4,846,200 to conduct 1,579 CFLDs on oilseeds across 621 ha through 43 KVKs, while in 2021–22, ₹5,021,200 was allocated for 1,685 CFLDs covering 674 ha through 53 KVKs.

I extend my sincere gratitude to the Department of Agriculture and Farmers Welfare for its generous support in funding this initiative. I am also deeply thankful to Dr. U.S. Gautam, Deputy Director General (Agricultural Extension), and Dr. R.K. Singh, Assistant Director General (Agricultural Extension), for their invaluable guidance and unwavering support in the successful implementation of the project.

My heartfelt appreciation goes to the Directors of Extension Education (DEEs) at SAUs, the Directors of ICAR Institutes, and the Programme Coordinators of KVKs for their pivotal roles in ensuring the smooth and effective execution of the project.

Above all, I express my deepest gratitude to the farmers, whose enthusiastic participation in the Cluster Frontline Demonstrations was instrumental in realizing the objectives of the initiative.

Congratulations to all stakeholders for their exemplary contributions to the success of this vital programme.

Parvender Sheoran

Executive Summary

Oilseeds are a vital source of cooking oil, a staple in Indian households, and improving oilseed cultivation is key to ensuring a stable domestic supply of edible oils, thus enhancing food security across the country. Additionally, oilseed farming plays a significant role in generating income for farmers and supporting rural economies. To boost the area, production, and yield of oilseeds in India, the Department of Agriculture & Farmers' Welfare (DA&FW), in collaboration with the Division of Extension Education, ICAR, New Delhi, launched the Cluster Frontline Demonstrations on Oilseeds project in 2015-16 under the National Food Security Mission (Currently Krishionnati Yojna). This initiative continued with the goal of demonstrating new crop production and protection technologies, along with best management practices, on farmers' fields across various agro-climatic regions and farming conditions. The project is being implemented by 11 ICAR-ATARIs through Krishi Vigyan Kendras (KVKs) in different zones.

For the year 2018-19, ICAR-ATARI Zone-I, Ludhiana, was allocated a budget of ₹5,941,000, from which ₹3,841,619 (64.66%) was utilized to conduct 2,150 CFLDs on oilseeds across 860 ha. The project involved 44 KVKs, including 22 from Punjab, 7 from Himachal Pradesh, 5 from Uttarakhand, and 10 from Jammu & Kashmir. The budget allocation per ha was ₹7,500 for soybean and ₹5,000 for sesame during the *Kharif* season, and ₹6,000 for Rapeseed and mustard and ₹5,000 for linseed during the *Rabi* season. Additionally, provisions were made to hire a Senior Research Fellow (₹31,000/month) and a Data Entry Operator (₹25,000/month) for the smooth implementation of the project.

During the *Kharif* season, 62 CFLDs were conducted over 26 ha for groundnut, 324 CFLDs were conducted over 324 ha for sesame, and 428 demonstrations were carried out on 21.71 ha for soybean. In the *Rabi* season, 2458 CFLDs were conducted on 641.27 ha for Rapeseed and mustard. In total, 3272 CFLDs were successfully conducted across 786.18 ha in 2018-19, covering various oilseed crops throughout Zone-I states. During the *Rabi* and *Kharif* season of 2018-19, a total of 334 various extension activities were conducted by the KVKs of Punjab, Himachal Pradesh, Uttarakhand, and Jammu & Kashmir under the project. A total of 10053 farmers participated in various extension programs, viz., field days, awareness camps, kisan goshties, field visits, and training programs.

For the year 2019-20, ICAR-ATARI Zone-I, Ludhiana, was allocated a budget of ₹4,782,200, from which ₹2,025,644 (42.36%) was utilized to conduct 1600 CFLDs on oilseeds across 640 ha. The project involved 42 KVKs, including 15 from Punjab, 8 from Himachal Pradesh, 9 from Uttarakhand, and 10 from Jammu & Kashmir. The budget allocation per ha was ₹7,500 for soybean and ₹5,000 for sesame during the *Kharif* season, and ₹6,000 for Rapeseed and mustard and ₹5,000 for linseed during the *Rabi* season. Additionally, provisions were made to hire a Senior Research Fellow (₹31,000/month) and a Data Entry Operator (₹25,000/month) for the smooth implementation of the project. An additional budget of ₹14,301,522 was released, and ₹4,511,734 (31.55%) was utilized towards Sustainable Agriculture Practices (SAP) as lead Institutions to commemorate the 150th birth

anniversary of Mahatma Gandhi during the *Rabi* season 2019-20. These demonstrations were executed through 42 KVKs, including 15 from Punjab, 8 from Himachal Pradesh, 9 from Uttarakhand, and 10 from Jammu & Kashmir.

During the *Kharif* season, 25 CFLDs were conducted over 10 ha for groundnut, 338 CFLDs were conducted over 90.70 ha for sesame, and 93 demonstrations were carried out on 11 ha for soybean. In the *Rabi* season, 1989 CFLDs were conducted on 390.33 ha for Rapeseed and mustard. In total, 2445 CFLDs were successfully conducted across 502.03 ha in 2019-20, covering various oilseed crops throughout Zone-I states. During the *Rabi* and *Kharif* season of 2019-20, a total of 435 various extension activities were conducted by the KVKs of Punjab, Himachal Pradesh, Uttarakhand, and Jammu & Kashmir under the project. A total of 15765 farmers participated in various extension programs.

For the year 2020-21, ICAR-ATARI Zone-I, Ludhiana, was allocated a budget of ₹4,846,200, from which ₹2,605,608 (53.77%) was utilized to conduct 1579 CFLDs on oilseeds across 621 ha. The project involved 43 KVKs, including 15 from Punjab, 8 from Himachal Pradesh, 10 from Uttarakhand, and 10 from Jammu & Kashmir. The budget allocation per ha was ₹7,500 for soybean and ₹5,000 for sesame during the *Kharif* season, and ₹6,000 for Rapeseed and mustard and ₹5,000 for linseed during the *Rabi* season. Additionally, provisions were made to hire a Senior Research Fellow (₹31,000/month) and a Data Entry Operator (₹25,000/month) for the smooth implementation of the project.

During the *Kharif* season, 220 CFLDs were conducted over 55.50 ha for sesame, and 156 demonstrations were carried out on 21 ha for soybean. In the *Rabi* season, 2686 CFLDs were conducted on 534.50 ha for Rapeseed and mustard. In total, 3062 CFLDs were successfully conducted across 611 ha in 2020-21, covering various oilseed crops throughout Zone-I states. During the *Rabi* and *Kharif* season of 2020-21, a total of 315 various extension activities were conducted by the KVKs of Punjab, Himachal Pradesh, Uttarakhand, and Jammu & Kashmir under the project. A total of 6724 farmers participated in various extension programs.

For the year 2021-22, ICAR-ATARI Zone-I, Ludhiana, was allocated a budget of ₹5,021,200, from which ₹3,362,887 (66.97%) was utilized to conduct 1685 CFLDs on oilseeds across 674 ha. The project involved 53 KVKs, including 21 from Punjab, 9 from Himachal Pradesh, 10 from Uttarakhand, and 13 from Jammu & Kashmir. The budget allocation per ha was ₹7,500 for soybean and ₹5,000 for sesame during the *Kharif* season, and ₹6,000 for Rapeseed and mustard and ₹5,000 for linseed during the *Rabi* season. Additionally, provisions were made to hire a Senior Research Fellow (₹31,000/month) and a Data Entry Operator (₹25,000/month) for the smooth implementation of the project.

During the *Kharif* season, 25 CFLDs were conducted over 10 ha for groundnut, 150 CFLDs were conducted over 55 ha for sesame, and 185 demonstrations were carried out on 32 ha for soybean. In the *Rabi* season, 2654 CFLDs were conducted on 553.48 ha for Rapeseed and mustard. In total, 3014 CFLDs were successfully conducted across 650.48 ha in 2021-22, covering various oilseed crops throughout Zone-I states. During the *Rabi* and *Kharif* season of 2021-22, a total of 325 various extension activities were conducted by the KVKs of Punjab, Himachal Pradesh, Uttarakhand, and Jammu & Kashmir under the project. A total of 8172 farmers participated in various extension programs.

कार्यकारी सारांश

तिलहन रसोई तेल का एक महत्वपूर्ण स्रोत हैं, जो भारतीय घरों में एक मुख्य आवश्यकता है। तिलहन की खेती में सुधार करना खाद्य तेलों की स्थिर घरेलू आपूर्ति सुनिश्चित करने और देशभर में खाद्य सुरक्षा को मजबूत करने के लिए अत्यंत आवश्यक है। इसके अलावा, तिलहन की खेती किसानों की आय बढ़ाने और ग्रामीण अर्थव्यवस्था को सहारा देने में महत्वपूर्ण भूमिका निभाती है। भारत में तिलहन के क्षेत्रफल, उत्पादन और उत्पादकता को बढ़ाने के उद्देश्य से कृषि एवं किसान कल्याण विभाग (DA&FW) ने, आईसीएआर, नई दिल्ली के विस्तार शिक्षा प्रभाग के सहयोग से, 2015-16 में राष्ट्रीय खाद्य सुरक्षा मिशन (वर्तमान में कृषिओन्नति योजना) के अंतर्गत "क्लस्टर फ्रंटलाइन डेमोंस्ट्रेशन ऑन ऑयलसीड्स" परियोजना शुरू की। इस पहल का उद्देश्य किसानों के खेतों पर विभिन्न कृषि-जलवायु क्षेत्रों और खेती की परिस्थितियों में नई फसल उत्पादन व संरक्षण तकनीकों तथा बेहतर प्रबंधन प्रथाओं का प्रदर्शन करना था। इस परियोजना को 11 आईसीएआर-एटीएआरआई (ICAR-ATARIs) द्वारा विभिन्न क्षेत्रों के कृषि विज्ञान केंद्रों (KVKs) के माध्यम से लागू किया जा रहा है।

वर्ष 2018-19 में आईसीएआर-एटीएआरआई, जोन-1, लुधियाना को ₹59,41,000 का बजट मिला, जिसमें से ₹38,41,619 (64.66 प्रतिशत) का उपयोग 860 हेक्टेयर क्षेत्र में 2,150 CFLDs (क्लस्टर फ्रंटलाइन डेमोंस्ट्रेशन) आयोजित करने में हुआ। इस परियोजना में कुल 44 KVKs शामिल थे, जिनमें 22 पंजाब से, 7 हिमाचल प्रदेश से, 5 उत्तराखंड से और 10 जम्मू एवं कश्मीर से थे। खरीफ सीजन में सोयाबीन के लिए प्रति हेक्टेयर ₹7,500 और तिल के लिए ₹5,000, वहीं रबी सीजन में सरसों के लिए प्रति हेक्टेयर ₹6,000 और अलसी के लिए ₹5,000 का प्रावधान किया गया। इसके अतिरिक्त, परियोजना के सुचारू संचालन के लिए एक सीनियर रिसर्च फेलो (₹31,000/माह) और एक डाटा एंट्री ऑपरेटर (₹25,000/माह) रखने की व्यवस्था की गई। खरीफ मौसम में 26 हेक्टेयर में मूंगफली पर 62 CFLDs, 324 हेक्टेयर में तिल पर 324 CFLDs और 21.71 हेक्टेयर में सोयाबीन पर 428 प्रदर्शन किए गए। रबी मौसम में 641.27 हेक्टेयर में सरसों पर 2458 CFLDs किए गए। इस प्रकार वर्ष 2018-19 में कुल 786.18 हेक्टेयर में 3272 CFLDs आयोजित हुए। इसी दौरान पंजाब, हिमाचल प्रदेश, उत्तराखंड और जम्मू एवं कश्मीर के KVKs द्वारा कुल 334 विभिन्न विस्तार गतिविधियाँ की गईं, जिनमें 10,053 किसानों ने भाग लिया।

वर्ष 2019-20 में आईसीएआर-एटीएआरआई, जोन-1, लुधियाना को ₹47,82,200 का बजट आवंटित हुआ, जिसमें से ₹20,25,644 (42.36 प्रतिशत) का उपयोग 640 हेक्टेयर क्षेत्र में 1600 CFLDs आयोजित करने में किया गया। इस परियोजना में 42 KVKs शामिल थे, जिनमें 15 पंजाब से, 8 हिमाचल प्रदेश से, 9 उत्तराखंड से और 10 जम्मू एवं कश्मीर से थे। खरीफ सीजन में सोयाबीन के लिए प्रति हेक्टेयर ₹7,500 और तिल के लिए ₹5,000, जबकि रबी सीजन में सरसों के लिए प्रति हेक्टेयर ₹6,000 और अलसी के लिए ₹5,000 का प्रावधान किया गया। इसके अलावा, महात्मा गांधी की 150वीं जयंती पर टिकाऊ कृषि पद्धतियों (SAP) को बढ़ावा देने के लिए ₹1,43,01,522 का अतिरिक्त बजट जारी हुआ, जिसमें से ₹45,11,734 (31.55 प्रतिशत) खर्च किए गए। खरीफ मौसम में 10 हेक्टेयर में मूंगफली पर 25 CFLDs, 90.70 हेक्टेयर में तिल पर 338 CFLDs और 11 हेक्टेयर में सोयाबीन पर 93 प्रदर्शन किए गए। रबी मौसम में 390.33 हेक्टेयर में

सरसों पर 1989 CFLDs किए गए। इस प्रकार कुल 502.03 हेक्टेयर में 2445 CFLDs आयोजित हुए। इस दौरान कुल 435 विस्तार गतिविधियाँ हुईं, जिनमें 15,765 किसानों ने भाग लिया।

वर्ष 2020-21 में आईसीएआर-एटीएआरआई, जोन-1, लुधियाना को ₹4,846,200 का बजट मिला, जिसमें से ₹2,605,608 (53.77 प्रतिशत) का उपयोग 621 हेक्टेयर क्षेत्र में 1579 CFLDs आयोजित करने में हुआ। परियोजना में 43 KVKs शामिल थे, जिनमें 15 पंजाब से, 8 हिमाचल प्रदेश से, 10 उत्तराखंड से और 10 जम्मू एवं कश्मीर से थे। खरीफ मौसम में 55.50 हेक्टेयर में तिल पर 220 CFLDs और 21 हेक्टेयर में सोयाबीन पर 156 प्रदर्शन हुए। रबी मौसम में 534.50 हेक्टेयर में सरसों पर 2686 CFLDs किए गए। इस प्रकार वर्ष 2020-21 में कुल 611 हेक्टेयर में 3062 CFLDs आयोजित हुए। इसी दौरान 315 विस्तार गतिविधियाँ आयोजित हुईं, जिनमें 6724 किसानों ने भाग लिया।

वर्ष 2021-22 में आईसीएआर-एटीएआरआई, जोन-1, लुधियाना को ₹5,021,200 का बजट मिला, जिसमें से ₹3,362,887 (66.97 प्रतिशत) का उपयोग 674 हेक्टेयर क्षेत्र में 1685 CFLDs आयोजित करने में किया गया। परियोजना में 53 KVKs शामिल थे, जिनमें 21 पंजाब से, 9 हिमाचल प्रदेश से, 10 उत्तराखंड से और 13 जम्मू एवं कश्मीर से थे। खरीफ मौसम में 10 हेक्टेयर में मूंगफली पर 25 CFLDs, 55 हेक्टेयर में तिल पर 150 CFLDs और 32 हेक्टेयर में सोयाबीन पर 185 प्रदर्शन किए गए। रबी मौसम में 553.48 हेक्टेयर में सरसों पर 2654 CFLDs किए गए। इस प्रकार वर्ष 2021-22 में कुल 650.48 हेक्टेयर में 3014 CFLDs आयोजित हुए। इस दौरान कुल 325 विस्तार गतिविधियाँ आयोजित हुईं, जिनमें 8172 किसानों ने भाग लिया।

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Introduction

Oilseeds play a pivotal role in global agriculture, serving as a critical link between the agricultural and industrial sectors. They are a primary source of edible oils for human consumption, a key ingredient in livestock feed due to their high protein content, and increasingly used in industrial products such as biofuels. Their diverse applications make oilseeds essential to global food systems, economic growth, and sustainable development. From culinary uses to technological innovations, their impact spans everyday life and the wider economy, both locally and globally.

In India, oilseeds are a cornerstone of the agricultural landscape, closely tied to national food security, economic development, and rural income generation. The country is among the top producers and consumers of oilseeds worldwide, a position supported by its varied agro-climatic zones and strong agricultural traditions. India accounts for approximately 20.80 percent of the global area under oilseed cultivation and contributes around 10 percent to global production, ranking as the world's fourth-largest producer.

The Indian oilseed sector comprises of nine key crops, including seven edible oilseeds (groundnut, rapeseed and mustard, soybean, sunflower, sesame, safflower, and niger) and two non-edible ones (castor and linseed). These crops meet a significant share of the domestic demand for edible oils, which are central to Indian diets, while also providing protein-rich feed for livestock, especially in dairy and poultry farming.

Despite its prominence, the Indian oilseed sector faces several persistent challenges, such as low and inconsistent yields, productivity shortfalls, post-harvest losses, and market instability, which continue to hinder its growth. About 72 percent of oilseed cultivation is rain-fed and largely carried out by smallholding farmers, many of whom face limited access to irrigation, quality inputs, and modern farming tools. The lack of widespread adoption of high-yielding, climate-resilient varieties further constrains productivity, contributing to the country's continued reliance on imported edible oils.

In recent years, collaborative efforts between government agencies and the private sector have led to noticeable improvements in oilseed production. The continued investment in research, improved seed technologies, crop diversification, and market infrastructure is expected to drive further progress. Thus, empowering smallholding farmers with better access to irrigation, advanced inputs, and climate-resilient varieties will be key to unlocking the sector's full potential. The strengthening of domestic oilseed production will not only enhance food security but also reduce dependence on imports, contributing to long-term economic and agricultural sustainability. The detailed information about the area, production, and productivity of major oilseeds crops from 2017-18 to 2021-22 is given in Table 1.

To boost domestic oilseed production in India, the CFLDs on Oilseeds initiative was launched in 2015-16 by the Department of Agriculture and Farmers Welfare (DA&FW), in collaboration with the Division of Agricultural Extension, ICAR, New Delhi. Initially implemented under the National Food Security

Table 1: Area, production, and productivity of major oilseed crops from 2017-18 to 2021-22

Crop	Particulars	2017-18	2018-19	2019-20	2020-21	2021-22
Sesame	Area (m ha)	1.58	1.42	1.62	1.72	1.63
	Production (m ton)	0.75	0.69	0.66	0.82	0.79
	Productivity (q/ha)	4.78	4.85	4.05	4.74	4.85
Soybean	Area (m ha)	10.33	11.13	12.19	12.92	12.15
	Production (m ton)	10.93	13.27	11.23	12.61	12.99
	Productivity (q/ha)	10.58	11.92	9.21	9.76	10.69
Groundnut	Area (m ha)	4.14	4.13	4.16	5.17	4.91
	Production (m ton)	7.60	5.39	8.39	8.52	8.43
	Productivity (q/ha)	18.33	13.03	20.16	16.49	17.17
Linseed	Area (m ha)	0.33	0.17	0.18	0.17	0.19
	Production (m ton)	0.17	0.10	0.12	0.11	0.12
	Productivity (q/ha)	5.33	5.74	6.71	6.37	6.42
Rapeseed and mustard	Area (m ha)	5.98	6.12	6.85	6.70	7.99
	Production (m ton)	8.43	9.26	9.12	10.21	11.96
	Productivity (q/ha)	14.10	15.11	13.31	15.24	14.97

Source: *Indiastat.com*

Mission, the project now operates under the broader Krishionnati Yojana, following the merger of NFSM into this comprehensive scheme. The responsibility for implementation rests with the ICAR-Agricultural Technology Application Research Institutes (ATARIs), which coordinate efforts through the network of KVKs across the country.

The CFLDs on Oilseeds program was designed with three primary objectives: (i) to promote improved, high-yielding oilseed varieties by demonstrating them on farmers' fields; (ii) to expand the area under oilseeds, improve yield, and overall production to meet the country's edible oil demand while encouraging crop diversification; and (iii) to introduce farmers to newly developed crop production and protection technologies. These include best practices such as Integrated pest management (IPM), Integrated nutrient management (INM), and other sustainable agricultural methods suited to different agro-climatic regions. The initiative also provides a platform for assessing the performance of new oilseed varieties developed by ICAR and State Agricultural Universities (SAUs), to enhance both productivity and profitability for Indian farmers.

Achievements of CFLDs on Oilseeds in 2018-19

For the year 2018-19, ICAR-ATARI Zone-I, Ludhiana, was allocated a budget of ₹5,941,000 to conduct 2,150 CFLDs on oilseeds on an area of 860 ha. In ICAR-ATARI, Zone-I, the project was implemented through 44 KVKs of the states of Punjab, Himachal Pradesh, Uttarakhand, and Jammu and Kashmir during this year. The budget for each crop, *i.e.*, groundnut ₹12,000/ha, rapeseed and mustard ₹6,000/ha, soybean ₹7,500/ha, and sesame ₹5,000/ha, was provided to the respective KVKs for providing critical inputs like seed, biofertilizers, etc. to the farmers for conducting CFLDs. According to the guidelines of the NMOOP (National Mission on Oilseeds and Oil Palm), contractual staff, including one Senior Research Fellow and one Data Entry operator, were hired for implementing this project at the ATARI level. Separate funds were also provided for organizing four training programs to Subject Matter Specialists (SMS) of KVKs who had to demonstrate the technologies in the farmer's field under CFLDs on Oilseeds, one Zonal Oilseed Fellow Award at ATARI level, and a miscellaneous budget was also provided for printing of CFLD reports (FORM GFR 12A, No.1-3/2018/Oilseeds/CA).

The basic instructions given by the funding agency for implementation of the project stated that the demonstrations of each oilseed crop were to be organized in a cluster approach covering at least an area of CFLDs for an individual farmer, not exceeding 2 acres. Seed was considered a critical input for conducting the demonstrations. Accordingly, seeds of improved crop varieties included in the demonstrations were provided to the farmers. CFLDs were demonstrated on an area of 144.91 ha and 641.27 ha during *Kharif* and *Rabi* seasons, respectively, whereas 83.82 ha remained deficient (Table 2).

KHARIFOILSEEDS 2018-19

During the *Kharif* season of 2018-19, KVKs of ICAR-ATARI, Zone-I, conducted CFLDs on groundnut, sesame, and soybean crops across the states, *viz.*, Punjab, Himachal Pradesh, Uttarakhand, and Jammu & Kashmir. A total of 15 KVKs have conducted the CFLDs on an area of 144.90 ha on 814 farmers' fields during the *Kharif* season, and the details are given in Table 3.

In Punjab, on groundnut, a total of 62 CFLDs were conducted on 26 ha area by two KVKs, *viz.* Bathinda and Hoshiarpur, whereas on sesame, a total of 113 CFLDs were conducted on 50 ha area by five KVKs, *viz.* Amritsar, Hoshiarpur, Nawanshahr, Pathankot, and Ropar. Similarly, in Himachal Pradesh, three KVKs, Hamirpur, Kangra, and Sirmour conducted 150 CFLDs on sesame on an area of 27.20 ha; moreover, KVK Shimla has conducted 143 CFLDs on soybean on an area of 10 ha. In Uttarakhand, KVK Haridwar conducted 40 CFLDs on sesame on an area of 10 ha, and KVKs Almora and Champawat performed 285 CFLDs on soybean on an area of 11.70 ha. In Jammu & Kashmir, KVK Kathua organized 21 demonstrations on sesame on an area of 10 ha. A total of 814 demonstrations were conducted on an area of 144.90 ha in clusters during the *Kharif* season of 2018-19.

Table 2: Details of CFLDs allocated and conducted on oilseed crops during 2018-19

State	Crop	No. of KVKs (44)	Targets		Achievements	
			Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Kharif season						
Punjab	Groundnut	2	30	75	26	62
	Sesame	6	60	150	50	113
Sub-Total		8	90	225	76	175
Himachal Pradesh	Sesame	3	30	75	27.20	150
	Soybean	1	10	25	10	143
Sub-Total		4	40	100	37.20	293
Uttarakhand	Sesame	1	10	25	10	40
	Soybean	2	20	50	11.71	285
Sub-Total		3	30	75	21.71	325
Jammu & Kashmir	Sesame	1	10	25	10	21
	Sub-Total	1	10	25	10	21
	Total (Groundnut)	2	30	75	26	62
	Total (Sesame)	11	110	275	97.20	324
	Total (Soybean)	3	30	75	21.71	428
	Total Kharif	15	170	425	144.91	814
Rabi season						
Punjab	Linseed	1	10	25	0	0
	R&M	22	440	1100	440	1121
Sub-Total		23	450	1125	440	1121
Himachal Pradesh	R&M	7	80	200	70	367
Sub-Total		7	80	200	70	367
Uttarakhand	R&M	5	60	150	59.46	606
Sub-Total		5	60	150	59.46	606
Jammu & Kashmir	R&M	10	100	250	71.81	364
	Sub-Total	10	100	250	71.81	364
	Total (Linseed)	1	10	25	0	0
	Total (R&M)	44	690	1725	641.27	2458
	Total Rabi	44	700	1750	641.27	2458
	Grand Total	44	870	2175	786.18	3272

GROUNDNUT

The following technologies from the package and practices of PAU, Ludhiana were demonstrated by the KVK scientists to overcome the constraints impacting the yield of groundnut and obtain higher yields (Table 4).

PUNJAB

In Punjab, groundnut production technologies were demonstrated by two KVKs, *i.e.*, Bathinda and Hoshiarpur. The variety used for demonstration was SG 99. A total of 26 ha area, on 62 farmer's fields was demonstrated. The major abiotic constraints of growing the groundnut crop include drought, lack of quality seeds, poor irrigation facilities, price variability, storage losses due to rodent attack, and shortage of labour. In addition to this, incidences of diseases like Cercospora leaf spot and insect-pest

Table 3: State-wise and KVK-wise details of allocated and conducted CFLDs on oilseed crops during the Kharif season, 2018-19

State	University	KVKs (15)	Crop	Targets		Achievements		
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	
Punjab	PAU Ludhiana	Bathinda	Groundnut	20	50	16	37	
			Hoshiarpur	Groundnut	10	25	10	25
			Sub-Total	30	75	26	62	
Punjab	PAU Ludhiana	Amritsar	Sesame	10	25	10	23	
			Hoshiarpur	Sesame	10	25	10	25
			Nawanshahr	Sesame	10	25	10	17
			Pathankot	Sesame	10	25	10	23
			Ropar	Sesame	10	25	10	25
			GADVASU, Ludhiana	Tarn Taran	Sesame	10	25	0
		Sub-Total	60	150	50	113		
Himachal Pradesh	CSKHPKV, Palampur	Hamirpur	Sesame	10	25	7.20	55	
		Kangra	Sesame	10	25	10	55	
		Sirmour	Sesame	10	25	10	40	
		Sub-Total	30	75	27.20	150		
Uttarakhand	GBPUA&T, Pant Nagar	Haridwar	Sesame	10	25	10	40	
			Sub-Total	10	25	10	40	
Jammu & Kashmir	SKUAST-J, Jammu	Kathua	Sesame	10	25	10	21	
			Sub-Total	10	25	10	21	
Himachal Pradesh	Dr. YSPUH&F, Solan	Shimla	Soybean	10	25	10	143	
			Sub-Total	10	25	10	143	
Uttarakhand	GBPUA&T, Pant Nagar	Almora	Soybean	10	25	3.70	37	
			Champawat	Soybean	10	25	8	248
			Sub-Total	20	50	11.70	285	
		Total (Groundnut)	30	75	26	62		
		Total (Soybean)	30	75	21.70	428		
		Total (Sesame)	110	275	97.20	324		
Total Kharif				170	425	144.90	814	

attack were the major biotic problems. In view of this, the major technologies demonstrated are timely irrigation, integrated nutrient management, varietal demonstration of SG 99, along with management of Cercospora leaf-spot disease & defoliators.

The yield recorded for the check plots was 12.80 q/ha, while the demonstrations yielded 14.96 q/ha, indicating an increase in yield. The net returns for the check plots stood at ₹13,813, compared to ₹23,973 for the demonstration plots, reflecting the economic benefits of the demonstrated variety. Additionally, the benefit-cost (B: C) ratio for the check plots was 1.00 and increased to 1.64 for the demonstration plots (Table 5).

Table 4: Technologies demonstrated on the groundnut crop during 2018-19

Technology	Characteristics
Varietal demonstration of SG 99 (2004)	<ul style="list-style-type: none"> Bud necrosis tolerant, maturity in 123 days, average pod yield is 25 q/ha
Management of Cercopora leaf spot	<ul style="list-style-type: none"> Seed treatment with 1.5 g Seedex 2 DS or 5 g of thiram; Spray the crop with 500 to 1875 g/ha Sultaf 50 WP (wetttable sulphur) in 500 to 750 L of water. Give 3 or 4 sprays at fortnightly intervals, starting from the first week of August.
Integrated Nutrient Management	Gypsum 125 kg/ha was applied at sowing to meet the sulphur need of the crop, in addition to 15:20:25 of NPK

Table 5: Details of CFLDs on groundnut conducted in Punjab during 2018-19

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Bathinda	SG 99	16	37	12.70	16.60	30.71
Hoshiarpur	SG 99	10	25	12.90	13.33	3.29
Total (Groundnut)		26	62	12.80	14.96	17.00

KVK (2)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Bathinda	11230	20860	1.34	1.53	
Hoshiarpur	16395	27085	0.66	1.75	
Total (Groundnut)		13813	23973	1.00	1.64

Production potential of SG 99 is 25 q/ha

Heavy rainfall in Hoshiarpur district during the crop growing period has led to an increase in weed proliferation and vegetative growth of the groundnut crop, leading to a decline in yield.



Field view of groundnut crop, KVK Bathinda

SESAME

The following technologies from the package and practices from PAU, Ludhiana were demonstrated by the KVK scientists to overcome the constraints impacting the yield of sesame and obtain higher yields (Table 6).

Table 6: Technologies demonstrated on the sesame crop during 2018-19

Technology	Characteristics
Varietal demonstration of Punjab Til No. 2 (2015)	<ul style="list-style-type: none"> ● Tolerant to Phyllody and Cercospora leaf blight. ● It matures in 90 days & yields 7 q/ha. ● Seeds have 49% oil content.
Varietal demonstration of Brijeshwari	<ul style="list-style-type: none"> ● White bold seed with higher oil content, good for export purposes, and a higher market price.
Integrated Crop Management	<ul style="list-style-type: none"> ● Remove Phyllody-infected plants from time to time and bury them to check further spread of the disease. ● To avoid shattering of seeds, harvest the crop immediately when plants turn yellow and capsules have just opened.

PUNJAB

The improved production technology of sesame was demonstrated by five KVKs, viz., Amritsar, Hoshiarpur, Nawanshahr, Pathankot, and Ropar. An area of 50 ha was demonstrated on 113 farmer's fields with the PB Til No. 2 variety. The average yield from these CFLDs was 4.26 q/ha with an increase of 25.78 percent, net returns of ₹24,935/ha, and a B: C ratio of 2.51, which was higher than the farmer's practice (Check varieties used by farmers were RT 346 & local) (Table 7).

Table 7: Details of CFLDs on sesame conducted in Punjab during 2018-19

KVK (5)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Amritsar	PB Til No. 2	10	23	3.40	3.64	6.99
Hoshiarpur	PB Til No. 2	10	25	2.15	3.16	47.09
Nawanshahr	PB Til No. 2	10	17	3.75	4.78	27.33
Pathankot	PB Til No. 2	10	23	3.75	5.03	34.17
Ropar	PB Til No. 2	10	25	4.13	4.68	13.33
Total (Sesame)		50	113	3.44	4.26	25.78

KVK (5)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Amritsar	21713	25024	2.11	2.16	
Hoshiarpur	22142	26576	2.05	2.21	
Nawanshahr	18500	26440	2.61	3.03	
Pathankot	17000	25313	2.31	3.03	
Ropar	17063	21321	1.95	2.14	
Total (Sesame)		19283	24935	2.21	2.51

Production potential of PB Til No.2: 7 q/ha

HIMACHAL PRADESH

In the state of Himachal Pradesh, KVKs of Hamirpur, Kangra, and Sirmour demonstrated technologies for improved cultivation of sesame. The demonstrations were conducted on an area of 27.20 ha on 150

Table 8: Details of CFLDs on sesame conducted in Himachal Pradesh during 2018-19

KVK (3)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hamirpur	Brijeshwari	7.20	55	5.50	6.90	25.45
Kangra	Brijeshwari	10	55	4.17	5.42	30.00
Sirmour	Brijeshwari	10	40	5.80	6.35	9.48
Total (Sesame)		27.20	150	5.16	6.22	21.65

KVK (3)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Hamirpur	22100	41000	2.11	2.86
Kangra	21167	31400	2.03	2.39
Sirmour	23400	36900	2.09	2.57
Total (Sesame)	22222	36433	2.08	2.61

Production potential of Brijeshwari: 6-8 q/ha

farmers' fields. The variety demonstrated includes Brijeshwari (LTK 4), whereas farmers used local and PB Til No. 1. The average yield from the demonstrated crop was 6.22 q/ha with net returns of ₹36,433 and a B: C ratio of 2.61. KVK Kangra showed a 30.00 percent increase in yield (5.42 q/ha), whereas Hamirpur and Sirmour depicted 25.45 and 9.48 percent increases, respectively. The net returns of demonstrated variety were ₹36,433, significantly higher than the farmers' practice (Table 8). Some of the constraints for low productivity of sesame were the use of low-yielding varieties (local), poor soil fertility, lack of shattering resistance, and imbalanced nutrition. Hence, technologies like improved varietal demonstration, package of practices, and integrated crop management were demonstrated.

UTTARAKHAND

In Uttarakhand, KVK Haridwar demonstrated technologies for improved cultivation of sesame. The demonstrations were conducted on an area of 10 ha on 40 farmers' fields. The variety used for demonstration was PB Til No. 2, whereas farmers used local varieties. The average yield from the demonstrated crop was 5.65 q/ha with net returns of ₹35,256 and a B: C ratio of 2.79 (Table 9).

JAMMU AND KASHMIR

In the state of Jammu & Kashmir, KVK Kathua demonstrated technologies for improved cultivation of sesame. The demonstrations were conducted on an area of 10 ha on 21 farmers' fields. The variety

Table 9: Details of CFLDs on sesame conducted in Uttarakhand during 2018-19

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Haridwar	PB Til No. 2	10	40	4.79	5.65	17.95
Total (Sesame)		10	40	4.79	5.65	17.95

KVK (1)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Haridwar	25752	35256	2.46	2.79
Total (Sesame)	25752	35256	2.46	2.79

Production potential of PB Til No. 2: 7 q/ha

Table 10: Details of CFLDs on sesame conducted in Jammu & Kashmir during 2018-19

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Kathua	PB Til No. 2	10	21	3.87	5.00	29.31
Total (Sesame)		10	21	3.87	5.00	29.31

KVK (1)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Kathua	23167	34967	2.49	3.09
Total (Sesame)		23167	2.49	3.09

Production potential of PB Til No. 2: 7 q/ha



Distribution of PB Til No. 2 sesame seeds to farmers by KVK Mohali



Scientists of KVK SBS Nagar, monitoring a farmer's field

adopted was PB Til No. 2, whereas farmers used RT 206. The average yield from the demonstrated crop was 5.00 q/ha with net returns of ₹34,967 and a B: C ratio of 3.09 (Table 10).

SOYBEAN

The following technologies were demonstrated by the KVK scientists to overcome the constraints impacting the yield of soybean and obtain higher yields (Table 11).

Table 11: Technologies demonstrated on the soybean crop during 2018-19

Technology	Characteristics
Varietal demonstration of VLS 65	<ul style="list-style-type: none"> Moderate resistance against frog eye leaf spot, pod blight, and leaf blight.
Varietal demonstration of VLS 47	<ul style="list-style-type: none"> Tolerant to Cercospora leaf spot, bacterial leaf blight, frog eye leaf spot, and anthracnose, along with tolerance to insect pests viz., grey semi loopers, aphids, and green semi loopers.
Varietal demonstration of VLS 63	<ul style="list-style-type: none"> Resistance against pod blight, target leaf spot, and moderate resistance to frog eye leaf spot.

HIMACHAL PRADESH

In Himachal Pradesh, the CFLDs on soybean were conducted in Shimla on an area of 10 ha on 143 farmers' fields. About a 20.83 percent increase in yield was observed in comparison to the check. The net returns from the demonstration were ₹12,490/ha, whereas the net returns from the check were ₹10,200/ha (Table 12). Some of the constraints in attaining the potential yield of the soybean crop are the unavailability of quality seed, insect-pest attacks, etc.

Table 12: Details of CFLDs on soybean conducted in Himachal Pradesh during 2018-19

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Shimla	SL 958	10	143	12.00	14.50	20.83
Total (Soybean)		10	143	12.00	14.50	20.83

KVK (1)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Shimla	10200	12490	1.54	1.59	
Total (Soybean)		10200	12490	1.54	1.59

Production potential of SL 958: 18.25 q/ha

UTTARAKHAND

Soybean was demonstrated in two KVKs of Uttarakhand (Almora and Champawat) in an area of 11.71 ha by 285 farmers. The increase in yield from the check was around 31.08 percent. The net returns from the demonstration were ₹32,366 with a B: C ratio of 2.54 (Table 13).

RABI/OILSEEDS 2018-19

During the *Rabi* season, a total of 2458 demonstrations were conducted on an area of 641.27 ha. Out of 2458 demonstrations, 1121 demonstrations were laid out on an area of 440 ha in Punjab.

Table 13: Details of CFLDs on soybean conducted in Uttarakhand during 2018-19

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Almora	VLS 77, VLB 201, VLB 65, VLS 63, VLS 47	3.70	37	10.04	13.38	33.22
Champawat	PS 1225	8.01	248	12.50	16.12	28.93
Total (Soybean)		11.71	285	11.27	14.75	31.08

KVK (2)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Almora	20225	31421	2.49	3.00	
Champawat	22167	33312	1.86	2.09	
Total (Soybean)		21196	32366	2.17	2.54

Production potentials of VLS 77: 16-19 q/ha, VLB 201: 16-20 q/ha, VLB 65: 16.42 q/ha, VLS 63: 25-28 q/ha, VLS 47: 23 q/ha, PS 1225: 20-25 q/ha



Monitoring of soybean field at KVK Shimla by the Joint Director (Communication)



Field day at Village Moolbhaji (KVK Shimla) on soybean crop

Table 14: State-wise and KVK-wise details of allocated and conducted CFLDs on oilseed crops during the Rabi season, 2018-19

State	University	KVKs (15)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Punjab	PAU Ludhiana	Pathankot	Linseed	10	25	0	0
			Sub-Total	10	25	0	0
Punjab	PAU Ludhiana	Amritsar	R & M	20	50	20	36
		Bathinda	R & M	20	50	20	50
		Faridkot	R & M	20	50	20	77
		Fatehgarh Sahib	R & M	20	50	20	50
		Ferozepur	R & M	20	50	20	50
		Gurdaspur	R & M	20	50	20	50
		Hoshiarpur	R & M	20	50	20	53
		Jalandhar	R & M	20	50	20	50
		Kapurthala	R & M	20	50	20	45
		Ludhiana	R & M	20	50	20	31
		Mansa	R & M	20	50	20	50
		Moga	R & M	20	50	20	88
		Muksar	R & M	20	50	20	50
		Nawanshahr	R & M	20	50	20	38
		Pathankot	R & M	20	50	20	43
		Patiala	R & M	20	50	20	50
		Ropar	R & M	20	50	20	50
		Sangrur	R & M	20	50	20	58
	GADVASU, Ludhiana	Barnala	R & M	20	50	20	64
		Mohali	R & M	20	50	20	60
		Tarn Taran	R & M	20	50	20	53
	ICAR-CIPHET, Ludhiana	Fazilka	R & M	20	50	20	25
			Sub-Total	440	1100	440	1121
Himachal Pradesh	CSKHPKV, Palampur	Bilaspur	R & M	20	50	20	50
		Kangra	R & M	10	25	10	74
		Mandi	R & M	10	25	10	49
		Sirmour	R & M	10	25	10	69
		Una	R & M	10	25	10	22
		Hamirpur	R & M	10	25	0	0
	Dr. YSPUH&F, Solan	Shimla	R & M	10	25	10	103
			Sub-Total	80	200	70	367
Uttarakhand	GBPUA&T, Pant Nagar	Champawat	R & M	10	25	9.56	191
		Haridwar	R & M	20	50	20	50
		Udham Singh Nagar	R & M	10	25	9.9	30

State	University	KVKs (15)	Crop	Targets		Achievements		
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	
Jammu & Kashmir	VCGSGUHH&F, Bharsar	Tehri	R & M	10	25	10	110	
		Garhwal						
	VPKAS, Almora	Bageshwar	R & M	10	25	10	225	
		Sub-Total		60	150	59.46	606	
	SKUAST-J, Jammu	Doda	R & M	10	25	10	50	
		Kathua	R & M	10	25	10	37	
		Poonch	R & M	10	25	0	0	
		Rajouri	R & M	10	25	10	100	
		Samba	R & M	10	25	10	61	
		SKUAST-K, Srinagar	Bandipora	R & M	10	25	10	38
			Kupwara	R & M	10	25	0	0
			Leh-II	R & M	10	25	1.81	25
	ICAR-CITH, Srinagar	Pulwama	R & M	10	25	10	28	
		Baramulla	R & M	10	25	10	25	
			Sub-Total	100	250	71.81	364	
		Total (Rapeseed and Mustard)	680	1700	641.27	2458		
		Total (Linseed)	10	25	0	0		
		Total Rabi	690	1725	641.27	2458		

In Himachal Pradesh, 367 demonstrations were carried out on an area of 70 ha, whereas in Uttarakhand, 606 demonstrations were carried out on a 59.46 ha area. In Jammu & Kashmir, 364 demonstrations were laid on an area of 71.81 ha on *Rabi* oilseeds (Table 14).

RAPESEED AND MUSTARD

The following technologies were demonstrated by the KVK scientists to overcome the constraints impacting the yield of rapeseed and mustard and obtain higher yields (Table 15).

Table 15: Technologies demonstrated on rapeseed and mustard during 2018-19

Technology	Characteristics
Varietal demonstration of GSC 7	Recommended for timely sown irrigated conditions; Seed yield is 2.23 t/ha with 40.5% oil content; matures in 154 days
Pest Management	Mustard Aphid- Sow the crop at the recommended time, preferably up to the 3rd week of October; When plant infestation by aphids reaches 40-50% (observe 100 plants/acre), spray Actara 25 WG (Thiamethoxam) @ 100 g or Rogor 30 EC (Dimethoate) @ 1000 ml in 200-315 L of water/ha Painted bug- Ekalux 25 EC @ 625 ml/ha Mustard saw fly- Rogar 30 EC @ 1000 ml/ha
Management of Alternaria Blight	Spray of Blitox @ 625g/ha Destroy diseased debris from the previous crop.

PUNJAB

In the state of Punjab, a total of 440 ha area was under the demonstration of rapeseed and mustard, integrating 1121 farmers of 22 KVKs. On an average, a 23.41 percent increase in yield was observed in comparison to the check. The net returns and B: C ratio of the demonstrated plots were ₹50,349 and 2.81, respectively, whereas for the farmer's practice, they were ₹39,010 and 2.63, respectively. The improved variety of canola gobhi sarson (GSC 7) and raya sarson (PBR 357, Giriraj, and RH 749) were demonstrated at farmers' fields. These demonstrations aimed to evaluate the yield, economic returns, and benefit-cost ratios of the demonstrated varieties compared to the checks.

The maximum increase in yield (37.31%) was recorded by KVK Pathankot, followed by KVK Amritsar (35.90%) and Jalandhar (35.07%). Along with the higher yields, the higher net returns and B: C ratio were recorded in demonstration plots as compared to the checks. On the other hand, the minimum yield increase was recorded by KVK Moga (0.65%), followed by Fatehgarh Sahib (4.56%) and Bathinda (6.31%) (Table 16). The variations in yield across districts reflect the differing agro-climatic conditions, farming practices, and resource availability in each region, influencing the success of the demonstrated varieties.

Table 16: Details of CFLDs on rapeseed and mustard conducted in Punjab during 2018-19

KVK (22)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Amritsar	GSC 7	20	36	15.60	21.20	35.90
Bathinda	PBR 357	20	50	19.80	21.05	6.31
Faridkot	GSC 7	20	77	15.06	19.68	30.68
Fatehgarh Sahib	GSC 7	20	50	19.47	20.36	4.56
Ferozepur	GSC 7	20	50	17.83	22.50	26.17
Gurdaspur	GSC 7	20	50	18.05	21.00	16.34
Hoshiarpur	GSC 7	20	53	14.16	15.62	10.31
Jalandhar	GSC 7	20	50	15.20	20.53	35.07
Kapurthala	GSC 7	20	45	16.61	21.42	28.93
Ludhiana	GSC 7	20	31	16.56	21.55	30.13
Mansa	GSC 7	20	50	13.63	14.52	6.56
Moga	GSC 7	20	88	20.53	20.67	0.65
Muktsar	GSC 7	20	50	17.58	20.13	14.45
Nawanshahr	GSC 7	20	38	14.50	18.88	30.17
Pathankot	GSC 7	20	43	13.70	18.81	37.31
Patiala	GSC 7	20	50	18.50	22.65	22.43
Ropar	GSC 7	20	50	15.00	18.82	25.44
Sangrur	GSC 7	20	58	15.60	20.66	32.44
Barnala	GSC 7	20	64	14.53	19.00	30.76
Mohali	GSC 7	20	60	14.98	18.63	24.33
Tarn Taran	Giriraj, GSC 7	20	53	13.98	18.37	31.41
Fazilka	RH 749	20	25	15.67	21.11	34.73
Total (Rapeseed & Mustard)		440	1121	16.21	19.87	23.41

KVK (22)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Amritsar	39758	55250	2.58	3.01
Bathinda	53900	54300	3.31	3.06
Faridkot	34788	48701	2.42	2.69
Fatehgarh Sahib	53795	53991	3.60	2.99
Ferozepur	47003	62226	3.08	3.54
Gurdaspur	47285	54713	2.98	3.12
Hoshiarpur	31520	28775	2.27	2.04
Jalandhar	35660	51723	2.52	2.75
Kapurthala	38000	53702	2.59	2.81
Ludhiana	39382	55561	2.73	2.87
Mansa	30252	29450	2.38	2.07
Moga	55182	51099	3.07	2.66
Muktsar	44367	52328	2.81	2.86
Nawanshahr	34100	47485	2.52	2.59
Pathankot	30650	47496	2.27	2.76
Patiala	45000	61100	2.73	3.00
Ropar	33967	49946	2.33	2.85
Sangrur	33640	53439	2.35	2.88
Barnala	30548	49862	2.24	2.88
Mohali	31067	48754	2.20	2.79
Tarn Taran	32316	40670	2.29	2.50
Fazilka	36043	57103	2.52	3.09
Total (R & M)	39010	50349	2.63	2.81

Production potentials of GSC 7: 22 q/ha, PBR 357: 21 q/ha, Giriraj: 19.25 q/ha, RH 749: 22 q/ha

HIMACHAL PRADESH

In the state of Himachal Pradesh, a demonstration on advanced practices of rapeseed and mustard was conducted in the districts of Bilaspur, Mandi, Sirmour, Kangra, Shimla, and Una. The rapeseed and mustard varieties demonstrated include Neelam, ONK 1, GSC 7, Bhawani, RH 406, and RH 749. An area of 69.99 ha was demonstrated in 367 farmers' fields. About a 26.93 percent increase in yield was obtained in the demonstrated plots as compared to the local farmer's practices. The maximum increase in yield (36.51%) was recorded by KVK Shimla, followed by KVK Kangra (32.94%) and Sirmour (30%). The net returns from the check and demonstrated plots were ₹12,468/ha and ₹24,339/ha, whereas the B: C ratios were 2.32 and 2.10, respectively (Table 17).

UTTARAKHAND

For the state of Uttarakhand, an area of 59.46 ha was demonstrated with rapeseed and mustard varieties, i.e., Pant Pili Sarsoo 1 (PPS 1), Pusa Vijay, PR 20, and PR 21, in which 606 farmers were benefited. The average yield of the farmers was 8.44 q/ha, whereas in the demonstration, 10.26 q/ha, which was 23.27 percent higher than the farmers' practice. The maximum increase in yield (38.66%) was recorded by KVK Haridwar, followed by KVK Bageshwar (34.69%) and Tehri Garhwal (24.03%). The net returns from the check were ₹23,326/ha with a B:C ratio of 2.32, whereas for the demonstration plot, it was ₹33,930/ha with a B: C ratio of 2.73 (Table 18).

Table 17: Details of CFLDs on rapeseed & mustard conducted in Himachal Pradesh during 2018-19

KVK (6)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Bilaspur	Neelam, ONK 1	20	50	6.59	8.02	21.70
Kangra	GSC 7	10	74	8.50	11.30	32.94
Mandi	GSC 7, ONK 1	10	49	5.50	6.95	26.33
Sirmour	Bhawani	10	69	5.50	7.15	30.00
Una	GSC 7	10	22	7.25	8.27	14.12
Shimla	RH 406, RH 749	9.99	103	4.20	5.73	36.51
Total (Rapeseed & Mustard)		69.99	367	6.26	7.90	26.93

KVK (6)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Bilaspur	16517	27019	1.87	2.26	
Kangra	19800	30400	2.03	2.48	
Mandi	6600	22295	1.32	1.95	
Sirmour	6890	22000	1.34	2.00	
Una	17656	25370	1.82	2.10	
Shimla	7345	18950	1.38	1.83	
Total (R & M)		12468	24339	2.32	2.10

Production potentials of Neelam: 15-16 q/ha, ONK 1: 14-15 q/ha, GSC 7: 14-15 q/ha, Bhawani: 7-8 q/ha, RH 406: 19.7 q/ha, RH 749: 22 q/ha

Table 18: Details of CFLDs on rapeseed & mustard conducted in Uttarakhand during 2018-19

KVK (5)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Champawat	PR 21, PR 20	20	50	10.86	9.81	3.59
Haridwar	Pusa Vijay	9.90	30	8.20	11.25	38.66
U.S. Nagar	PPS 1	10	110	8.95	11.37	15.36
Tehri Garhwal	PPS 1	10	225	6.90	10.33	24.03
Bageshwar	PPS 1	9.56	191	7.28	8.56	34.69
Total (Rapeseed & Mustard)		59.46	606	8.44	10.26	23.27

KVK (5)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Champawat	31503	42719	2.78	3.17	
Haridwar	21000	38653	2.14	2.93	
U.S. Nagar	25300	38100	2.53	3.06	
Tehri Garhwal	17440	22878	1.92	2.16	
Bageshwar	21388	27299	2.23	2.34	
Total (R & M)		23326	33930	2.32	2.73

Production potentials of PPS 1: 15-19 q/ha, PR 21: 24-30 q/ha, PR 20: 25-30 q/ha, Pusa Vijay: 20-22 q/ha

JAMMU & KASHMIR

In the state of Jammu & Kashmir, seven KVKs conducted a demonstration on an area of 70 ha using varieties of rapeseed and mustard for enhancing the yield. The demonstrations were conducted in the districts, Doda, Kathua, Rajouri, Samba, Bandipora, Pulwama, and Baramulla on varieties KS 101

(Gulchin), DGS 1, RSPR 01, RSPR 69, SS 1, and KBS 49. With the use of recommended practices, about 27.70 percent improvement in yield was obtained. The maximum increase in yield (36.00%) was recorded by KVK Samba, followed by KVK Bandipora (33.33%) and Kathua (31.91%). The net returns from the farmer's plot and demo plot were ₹19,615/ha and ₹31,344/ha, whereas the B: C ratio was 2.02 and 2.51, respectively (Table 19).

Table 19: Details of CFLDs on rapeseed & mustard conducted in Jammu & Kashmir during 2018-19

KVK (7)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Doda	KS 101	10	50	5.57	7.05	26.57
Kathua	DGS 1	10	37	7.83	10.33	31.91
Rajouri	RSPR 01	10	100	5.00	6.35	27.00
Samba	RSPR 69	10	61	7.50	10.20	36.00
Bandipora	KS 101	10	38	9.00	12.00	33.33
Pulwama	KS 101	10	28	10.80	12.00	11.11
Baramulla	SS 1, KBS 49	10	25	10.63	13.60	27.98
Total (Rapeseed & Mustard)		70	339	8.05	10.22	27.70

KVK (7)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Doda	14388	19718	1.82	2.05	
Kathua	22550	34050	2.33	2.82	
Rajouri	11000	19903	1.65	2.07	
Samba	16460	31326	1.96	2.65	
Bandipora	21000	36545	2.00	2.58	
Pulwama	24660	39660	2.16	2.78	
Baramulla	27250	38205	2.24	2.63	
Total (R & M)		19615	31344	2.02	2.51

Production potentials of KS 101: 14-15 q/ha, DGS 1: 25-30 q/ha, RSPR1: 18-20 q/ha, RSPR 69: 19.90 q/ha, SS 01: 16 q/ha, KBS 49 (SS 2): 17 q/ha

LEH

In Leh, a demonstration of rapeseed and mustard was conducted on an area of 1.18 ha on 25 farmers' fields to enhance the yield. The demonstrations were conducted in the district of Leh-II (Nyoma) on

Table 20: Details of CFLDs on rapeseed & mustard conducted in Leh during 2018-19

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Leh-II (Nyoma)	RLM 514, CES 1	1.18	25	5.96	7.00	17.45
Total (Rapeseed & Mustard)		1.18	25	5.96	7.00	17.45

KVK (1)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Leh-II (Nyoma)	11706	16076	1.67	1.86	
Total (R & M)		11706	16076	1.67	1.86

Production potentials of RLM 514: 27 q/ha, CES 1: 19-26 q/ha



A scientist of KVK Moga is inspecting a Farmer's field



Supply of input sources to farmers at KVK Barnala

varieties RLM 514 and CES 1. With the use of recommended practices, a 17.45 percent increase in yield was obtained. The net returns from the farmer's plot and demo plot were ₹11,706/ha and ₹16,076/ha, whereas the B: C ratio was 1.67 and 1.86, respectively (Table 20).

EXTENSION ACTIVITIES 2018-19

The extension activities were conducted under the project to demonstrate the improved technologies on oilseed cultivation. These activities included farmers-scientists interaction, awareness camps, kisan goshties, field days, field visits, and monitoring visits on CFLDs. A total of 334 extension activities were conducted by KVKs of Punjab, Himachal Pradesh, Uttarakhand, and Jammu & Kashmir, and benefited 10053 farmers (Table 21).

Table 21: Details of extension activities under CFLDs on oilseed crops conducted during 2018-19

Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Training	33	60	1813
Group meeting	4	8	212
Field day	44	76	3406
Others	48	190	4622
Total	-	334	10053

In the *Kharif* season, about 1698 farmers participated in 71 extension activities, which exclusively focused on crops like groundnut, sesame, and soybean. Similarly, in the Rabi season, 8355 farmers participated in 263 extension activities, which were conducted under the crop of rapeseed and mustard (Table 22).

Table 22: State-wise extension activities undertaken by different KVKs on oilseed crops during 2018-19

Extension Activities	Kharif season			Rabi season		
	KVK	Total activities	No. of farmers	KVK	Total activities	No. of farmers
Punjab						
Training	4	7	148	16	22	606
Group meeting	0	0	0	2	3	121
Field day	3	4	191	22	41	2255
Others	6	13	184	22	97	2594
Total (Punjab)	-	24	523	-	163	5576

Extension Activities	Kharif season			Rabi season		
	KVK	Total activities	No. of farmers	KVK	Total activities	No. of farmers
Uttarakhand						
Training	1	3	229	3	7	191
Group meeting	1	2	32	1	2	46
Field day	2	4	85	3	4	80
Others	3	17	370	3	4	119
Total (UK)	-	26	716	-	17	436
Himachal Pradesh						
Training	2	4	133	3	10	295
Group meeting	0	0	0	0	0	0
Field day	4	8	208	5	9	367
Others	2	6	71	4	26	531
Total (HP)	-	18	412	-	45	1193
Jammu & Kashmir						
Training	1	1	16	3	6	195
Group meeting	0	1	13	0	0	0
Field day	0	0	0	5	6	220
Others	1	1	18	7	26	735
Total (J&K)	-	3	47	-	38	1150
Grand Total	-	71	1698	-	263	8355

Some glimpses of extension activities conducted under CFLDs on oilseeds



Training organized by scientists at KVK Barnala



Training on the sesame crop was organized by KVK Jalandhar



Training programme on INM and brown sarson organized by the scientists, KVK Bandipora



Field day on gobhi sarson organized at KVK Amritsar

Monitoring of CFLDs on Oilseeds at KVKs during 2018-19

Various monitoring visits on CFLDs on Oilseeds were organized to diffuse the technologies at the mass level during 2018-19. These activities were organized by KVKs of Punjab, Himachal Pradesh, Jammu & Kashmir, and Uttarakhand during the implementation of the project in both *Kharif* and *Rabi* season for the benefit of farmers. For the adoption of good agricultural practices, during these programmes, technical literature about an improved package of practices generated by State Agricultural Universities (SAUs) was also distributed among the farmers. A total of 11 Directorate of Extension Education (DEE) visits, 22 scientists' visits, and 170 visits were done by other members of Department of Agriculture and Farmer's Welfare (DA&FW), Indian Council of Agriculture Research (ICAR), etc. State-wise monitoring visits done under CFLDs are given in Table 23.

Table 23: State-wise Monitoring activities undertaken by DEEs, scientists, and officials of ICAR during 2018-19

S.No.	State	Visit by DEE	Visits by Scientists	Visits by other members, such as representatives of DAC&FW, ICAR, etc.
Kharif season				
1	Punjab	0	1	47
2	Uttarakhand	1	1	0
3	Jammu & Kashmir	0	0	19
Sub Total		1	2	66
Rabi season				
1	Punjab	7	10	148
2	Uttarakhand	2	4	22
3	Jammu & Kashmir	2	8	0
Sub Total		11	22	170



Field day on sesame by KVK Hamirpur



Field day by KVK Hoshiarpur

Achievements of CFLDs on Oilseeds in 2019-20

During 2019-20, a total of ₹4,782,200 was sanctioned to KVKs through ICAR-ATARI, Zone-I, Ludhiana, to conduct the demonstrations in Punjab, Himachal Pradesh, Uttarakhand, Jammu & Kashmir, and Ladakh in the regular scheme, i.e., NFSM. For conducting demonstrations, the funds were provided ₹12,000/ha for groundnut, ₹7,500/ha for Soybean, ₹5,000/ha for sesame, and

Table 24: Details of CFLDs allocated and conducted on oilseed crops during 2019-20

State	Crop	No. of KVKs (42)	Targets		Achievements	
			Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Kharif season						
Punjab	Groundnut	1	10	25	10	25
	Sesame	5	50	125	38	84
Sub-Total		6	60	150	48	109
Himachal Pradesh	Sesame	3	30	75	27.20	173
	Soybean	2	20	50	11	93
Sub-Total		5	50	125	38.20	266
Uttarakhand	Sesame	1	10	25	5.50	22
	Soybean	5	50	125	0	0
Sub-Total		6	60	150	5.50	22
Jammu & Kashmir	Sesame	2	20	50	20	59
	Soybean	1	20	50	0	0
	Sub-Total	3	40	100	20	59
	Total (Groundnut)	1	10	25	10	25
	Total (Sesame)	11	110	275	90.70	338
	Total (Soybean)	8	90	225	11	93
	Total Kharif	19	210	525	111.70	456
Rabi season						
Punjab	Linseed	1	10	25	0	0
	R&M	15	150	375	150	385
Sub-Total		15	160	400	150	385
Himachal Pradesh	R&M	8	80	200	80	425
Sub-Total		8	80	200	80	425
Uttarakhand	R&M	9	90	225	85	679
Sub-Total		9	90	225	85	679
Jammu & Kashmir	R&M	9	90	225	73.30	470
Sub-Total		9	90	225	73.30	470
Ladakh	R&M	1	10	25	2.03	30
	Sub-Total	1	10	25	2.03	30
	Total (Linseed)	1	10	25	0	0
	Total (R&M)	42	420	1050	390.33	1989
	Total Rabi	42	430	1075	390.33	1989
	Grand Total	42	640	1600	502.03	2445

₹6,000/ha for rapeseed and mustard. The guidelines were provided by the funding agency to lay out the demonstrations. Apart from the seed of improved crop varieties, the critical inputs such as micro nutrients and biofertilizers were added for conducting the demonstrations at farmers' fields. During the 2019-20 year, under the regular scheme, 640 ha area was allotted to 42 KVKs for the *Kharif* and *Rabi* seasons, and 502.03 ha area was demonstrated. An area of 111.70 ha and 390.33 ha was demonstrated during the *Kharif* and *Rabi* seasons of 2019-20 (Table 24).

During 2019-20, additional ₹3,37,20,000 was released under "Additional Cluster Frontline Demonstrations (ACFLDs) on oilseeds under Promotion of Sustainable Agriculture Practices" as lead institutions to commemorate the 150th birth anniversary of Mahatma Gandhi during the *Rabi* season 2019-20. For conducting demonstrations, the funds were provided ₹12,000/ha for groundnut, ₹7,500/ha for Soybean, ₹5,000/ha for sesame and ₹6,000/ha for rapeseed and mustard.

KHARIFOILSEEDS 2019-20

A total of 456 demonstrations were conducted on an area of 111.70 ha during the *Kharif* season of 2019-20. Out of the total demonstrations, 25 were performed on groundnut, 338 on sesame, and 93 on soybean crop. The details of CFLDs on oilseeds during the *Kharif* season 2019-20 are given in Table 25.

Table 25: State-wise and KVK-wise details of allocated and conducted CFLDs on oilseed crops during the *Kharif* season 2019-20

State	University	KVKs (19)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Punjab	PAU Ludhiana	Hoshiarpur	Groundnut	10	25	10	25
			Sub-Total	10	25	10	25
Punjab	PAU Ludhiana	Amritsar	Sesame	10	25	0	0
		Hoshiarpur	Sesame	10	25	10	25
		Nawanshahr	Sesame	10	25	10	18
		Pathankot	Sesame	10	25	10	25
		Ropar	Sesame	10	25	8	16
				Sub-Total	50	125	38
Himachal Pradesh	CSKHPKV, Palampur	Hamirpur	Sesame	10	25	7.20	67
		Kangra	Sesame	10	25	10	21
		Sirmour	Sesame	10	25	10	85
		Sub-Total	30	75	27.20	173	
Uttarakhand	GBPUA&T, Pant Nagar	Haridwar	Sesame	10	25	5.50	22
		Sub-Total	10	25	5.50	22	
Jammu & Kashmir	SUKAST-J, Jammu	Kathua	Sesame	10	25	10	29
		Reasi	Sesame	10	25	10	30
		Sub-Total	20	50	20	59	
Himachal Pradesh	CSKHPKV, Palampur	Mandi	Soybean	10	25	10	47
		Dr. YSPUH&F, Solan	Soybean	10	25	1	46
		Sub-Total	20	50	11	93	

State	University	KVKs (15)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Uttarakhand	GBPUA&T, Pant Nagar	Almora	Soybean	10	25	0	0
		Champawat	Soybean	10	25	0	0
		Dehradun	Soybean	10	25	0	0
	VCGSGUHH&F, Bharsar	Pauri Garhwal	Soybean	10	25	0	0
		Tehri Garhwal	Soybean	10	25	0	0
Sub-Total			50	125	0	0	
Jammu & Kashmir	SUKAST-J, Srinagar	Budgam	Soybean	20	50	0	0
		Sub-Total			20	50	0
Total (Groundnut)				10	25	10	25
Total (Sesame)				110	275	90.70	338
Total (Soybean)				90	225	11	93
Total Kharif				210	525	111.70	456

GROUNDNUT

PUNJAB

In Punjab, the SG 99 variety of groundnut was demonstrated by KVK Hoshiarpur. About 10 ha of area was demonstrated, wherein 25 beneficiaries were covered. The major technologies demonstrated were improved variety (SG 99), management of weeds, and integrated nutrient management. The management of Cercospora leaf-spot disease & defoliators was also included, as this is the major disease in the groundnut crop. An average increase in yield was 33.84 percent, with the net returns of ₹26,010 and a B: C ratio of 1.63 over the check (Table 26).

Table 26: Details of CFLDs on groundnut conducted in Punjab during 2019-20

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hoshiarpur	SG 99	10	25	9.90	13.25	33.84
Total (Groundnut)		10	25	9.90	13.25	33.84

KVK (1)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Hoshiarpur	12375	26010	0.75	1.63	
Total (Groundnut)		12375	26010	0.75	1.63

Potential yield of SG 99: 25 q/ha

SESAME

PUNJAB

The improved production technologies of sesame were demonstrated by four KVKs, viz., Hoshiarpur, Nawanshahr, Pathankot, and Ropar. A total of 38 ha area was demonstrated on 84 farmers' fields with the PB Til No. 2 variety of sesame. The average yield recorded from CFLDs was 4.90 q/ha with net returns of ₹25,484/ha and a B: C ratio of 2.36, which was higher than the farmer's practice (Table 27).



Demonstrations on groundnut at KVK Hoshiarpur

Table 27: Details of CFLDs on sesame conducted in Punjab during 2019-20

KVK (4)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hoshiarpur	PB Til No. 2	10	25	2.80	4.00	41.07
Nawanshahr	PB Til No. 2	10	18	3.61	4.70	29.22
Pathankot	PB Til No. 2	10	25	3.75	5.10	36.44
Ropar	PB Til No. 2	8	16	4.25	5.90	38.24
Total (Sesame)		38	84	3.60	4.90	36.24

KVK (4)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Hoshiarpur	14444	31182	1.77	2.58	
Nawanshahr	13150	12030	1.84	1.74	
Pathankot	18550	18550	2.22	2.06	
Ropar	31400	40175	2.73	3.06	
Total (Sesame)		19386	25484	2.14	2.36

Potential yield of PB Til No. 2: 7 q/ha

The maximum increase in yield was recorded in Hoshiarpur (41.07%), followed by Ropar (38.24%) and Pathankot (36.44%).

HIMACHAL PRADESH

KVKs of Himachal Pradesh, viz., Hamirpur, Kangra, and Sirmour, demonstrated technologies for improved cultivation of sesame on a total area of 27.20 ha on 173 farmers' fields. The variety demonstrated includes Brijeshwari and PB Til No. 2. The average yield was recorded from demonstration fields, i.e., 5.99 q/ha with net returns of ₹33,947/ha and B : C of 2.43 (Table 28). The

Table 28: Details of CFLDs on sesame conducted in Punjab during 2019-20

KVK (3)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hamirpur	Brijeshwari	7.20	67	5.50	6.60	19.09
Kangra	Brijeshwari	10	21	4.17	5.40	30.00
Sirmour	PB Til No. 2	10	85	5.60	6.00	7.14
Total (Sesame)		27.20	173	5.09	5.99	18.74

KVK (3)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Hamirpur	22340	39040	2.02	2.66
Kangra	19167	29400	1.85	2.20
Sirmour	14400	33400	1.67	2.45
Total (Sesame)	18636	33947	1.85	2.43

Production potential of Brijeshwari: 6-8 q/ha, PB Til No. 2: 7 q/ha

maximum increase in yield was recorded in Kangra (30%). Technologies like improved varietal demonstration and recommended package of practices of CSKHPKV Palampur were demonstrated in the farmers' fields.

UTTARAKHAND

A total of 5.50 ha area on 22 farmers' fields was demonstrated on sesame by KVK Haridwar. The RT 351 variety of sesame was used for demonstration. The recorded yield was 6.75 q/ha with the net returns of ₹43,262 from the demonstration plot. As a result, the B: C ratio under demonstrations was 3.14, which was higher than prevailing technologies under farmers' fields (2.82) (Table 29). The increase of 30.81 percent was reported by KVK Haridwar. The farmers appreciated the improved variety for its good yield and resistance to insect pest attack.

Table 29: Details of CFLDs on sesame conducted in Uttarakhand during 2019-20

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Haridwar	RT 351	5.50	22	5.16	6.75	30.81
Total (Sesame)		5.50	22	5.16	6.75	30.81

KVK (1)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Haridwar	33182	43262	2.82	3.14
Total (Sesame)	33182	43262	2.82	3.14

Production potential of RT 351: 7-8 q/ha

JAMMU AND KASHMIR

In Jammu & Kashmir, KVKs Kathua and Reasi demonstrated PB Til No. 2 and RT 351 varieties of sesame at 59 farmers' fields on 20 ha area. As a result, the average yield of the demonstration was 4.08 q/ha and net returns of ₹23,225/ha, which was higher than the check. As compared to the check (1.62), a higher B: C ratio of 2.35 was recorded under demonstrations. The technologies, i.e., varietal evaluation along with IPM, were followed of SKUAST, Srinagar for the demonstrations (Table 30). The farmers showed keen interest in adopting the latest technologies.

Table 30: Details of CFLDs on sesame conducted in Jammu & Kashmir during 2019-20

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Kathua	PB Til No. 2	10	29	3.20	4.20	29.69
Reasi	RT 351	10	30	3.50	4.00	14.29
Total (Sesame)		20	59	3.35	4.08	21.99

KVK (2)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Kathua	13000	28000	1.76	2.56
Reasi	7300	18450	1.47	2.15
Total (Sesame)	10150	23225	1.62	2.35

Production potential of PB Til No. 2: 7 q/ha, RT 351: 7-8 q/ha



Demonstration on sesame in KVK Hoshiarpur



Demonstration on sesame at KVK Reasi



Field visit to sesame, KVK Pathankot



Demonstrations of sesame by KVK Ropar



Field visit to sesame, KVK Ropar



View of the sesame crop

SOYBEAN

HIMACHAL PRADESH

In Himachal Pradesh, two KVKs, namely Mandi and Shimla, conducted a demonstration on an improved variety of Soybean. A total of 93 beneficiaries benefited from the demonstration of Palam Soya/Harit Soya and Palam Hara Soya 1 varieties of soybean on 11 ha area. The average yield of the demonstration was

14.22 q/ha, which was 21.34 percent higher than the check with the net average returns of ₹11,424/ha. Over the control (1.37), a better B: C ratio was obtained from demonstrations (1.48) (Table 31).

Table 31: Details of CFLDs on soybean conducted in Himachal Pradesh during 2019-20

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Mandi	Palam Hara Soya 1	10	47	12.00	12.90	7.89
Shimla	Palam Soya/Harit Soya	1	46	11.50	15.50	34.78
Total (Soybean)		11	93	11.75	14.22	21.34

KVK (2)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Mandi	4532	11502	1.19	1.43	
Shimla	10000	11345	1.54	1.54	
Total (Soybean)		7266	11424	1.37	1.48

Potential yield of Palam soya: 15-20 q/ha, Palam Hara soya: 18 q/ha



Field visit to the soybean by the team of KVK Shimla



Demonstration of line sowing in soybean, KVK Mandi



Field visit to the soybean field by team of KVK Mandi



Harvested crop of soybean by CFLD oilseeds beneficiary (KVK Mandi)

RABI OILSEEDS 2019-20

During the Rabi season, demonstrations were conducted on the rapeseed and mustard crop under CFLDs on oilseeds. Out of a total 430 ha area, 1989 demonstrations were laid under the regular scheme on an area of 390.33 ha for rapeseed and mustard (Table 32). In Punjab, 150 ha area was allocated for 375 demonstrations, 80 ha area for 200 demonstrations in Himachal Pradesh, an area of 90 ha for 225 demonstrations, and 100 ha area for 250 demonstrations in Jammu & Kashmir.

Table 32: State-wise and crop-wise details of allocated and conducted CFLDs on oilseed crops during the Rabi season during 2019-20

State	University	KVKs (42)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Punjab	PAU Ludhiana	Pathankot	Linseed	10	25	0	0
			Sub-Total	10	25	0	0
Punjab	PAU Ludhiana	Amritsar	R & M	10	25	10	20
		Ferozepur	R & M	10	25	10	25
		Gurdaspur	R & M	10	25	10	25
		Hoshiarpur	R & M	10	25	10	25
		Jalandhar	R & M	10	25	10	25
		Kapurthala	R & M	10	25	10	13
		Ludhiana	R & M	10	25	10	11
		Moga	R & M	10	25	10	36
		Muktsar	R & M	10	25	10	25
		Nawanshahr	R & M	10	25	10	12
		Pathankot	R & M	10	25	10	25
		Ropar	R & M	10	25	10	26
		Sangrur	R & M	10	25	10	33
	GADVASU, Ludhiana	Barnala	R & M	10	25	10	50
		Mohali	R & M	10	25	10	34
			Sub-Total	150	375	150	385
Himachal Pradesh	CSKHPKV, Palampur	Bilaspur	R & M	10	25	10	25
		Hamirpur	R & M	10	25	10	30
		Kangra	R & M	10	25	10	48
		Mandi	R & M	10	25	10	52
		Sirmour	R & M	10	25	10	75
		Una	R & M	10	25	10	46
	Dr. YSPUH&F, Solan	Shimla	R & M	10	25	10	50
		Solan	R & M	10	25	10	99
			Sub Total	80	200	80	425
Uttarakhand	GBPUA&T, Pant Nagar	Chamoli	R & M	10	25	10	100
		Champawat	R & M	10	25	10	126
		Dehradun	R & M	10	25	10	20
		Haridwar	R & M	10	25	10	25
		Nainital	R & M	10	25	10	25
		US Nagar	R & M	10	25	10	29
	VCGSGUHH&F, Bharsar	Pauri Garhwal	R & M	10	25	10	94
		Tehri Garhwal	R & M	10	25	5	55
	VPKAS, Almora	Bageshwar	R & M	10	25	10	205
			Sub-Total	90	225	85	679
Jammu & Kashmir	SUKAST-J, Jammu	Doda	R & M	10	25	10	50
		Kathua	R & M	10	25	10	57

State	University	KVKs (42)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
		Rajouri	R & M	10	25	10	100
		Reasi	R & M	10	25	10	65
		Samba	R & M	10	25	10	50
	SUKAST-J, Srinagar	Bandipora	R & M	10	25	3.30	13
		Budgam	R & M	10	25	10	95
		Ganderbal	R & M	10	25	10	40
		Pulwama	R & M	10	25	0	0
		Leh-II (Nyoma)	R & M	10	25	2.03	30
		Sub Total		100	250	75.33	500
		Total (Linseed)		10	25	0	0
		Total (Rapeseed and Mustard)		420	1050	390.33	1989
		Total Rabi		430	1075	390.33	1989

RAPESEED AND MUSTARD

PUNJAB

In the state of Punjab, a total of 150 ha area was brought under demonstration on 385 farmers' fields. Rapeseed and mustard variety GSC 7 was demonstrated by popularizing technology, and the package of practices of PAU, Ludhiana was followed while conducting demonstrations. A total of 15 KVKs were involved in the demonstration of rapeseed and mustard. On an average, about a 19.73 percent increase in yield was observed in comparison to the check yield. The net returns and B: C ratio of the demonstrated plots were ₹51,628 and 2.86, respectively. The maximum increase in yield was recorded in Sangrur (35.90%), followed by Barnala (35.31%) and Pathankot (30.00%) (Table 33).

Table 33: Details of CFLDs on rapeseed & mustard conducted in Punjab during 2019-20

KVK (15)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Amritsar	GSC 7	10	20	17.50	21.25	21.43
Ferozepur	GSC 7	10	25	16.15	19.99	23.75
Gurdaspur	GSC 7	10	25	18.00	19.63	9.03
Hoshiarpur	GSC 7	10	25	13.90	16.65	19.78
Jalandhar	GSC 7	10	25	18.30	22.25	21.58
Kapurthala	GSC 7	10	13	17.22	20.50	19.05
Ludhiana	GSC 7	10	11	18.60	20.05	7.80
Moga	GSC 7	10	36	16.87	20.90	23.90
Muktsar	GSC 7	10	25	18.79	19.80	5.38
Nawanshahr	GSC 7	10	12	17.50	19.25	10.00
Pathankot	GSC 7	10	25	13.75	17.88	30.00
Ropar	GSC 7	10	26	15.80	16.55	4.75
Sangrur	GSC 7	10	33	17.20	23.38	35.90
Barnala	GSC 7	10	50	13.92	18.84	35.31
Mohali	GSC 7	10	34	14.80	19.00	28.38
Total (Rapeseed & Mustard)		150	385	16.55	19.73	19.73

KVK (15)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Amritsar	39520	53925	2.45	2.83
Ferozepur	39190	52116	2.75	2.92
Gurdaspur	48024	54915	2.97	2.93
Hoshiarpur	26290	38350	1.95	2.25
Jalandhar	46808	61085	3.01	3.18
Kapurthala	45300	53939	3.14	3.14
Ludhiana	47008	56100	2.84	2.95
Moga	40729	48470	2.53	2.58
Muktsar	50793	43465	2.94	2.48
Nawanshahr	46500	51509	3.07	3.07
Pathankot	31670	45920	2.40	2.70
Ropar	39808	52969	2.83	3.27
Sangrur	39320	67889	2.42	3.36
Barnala	31925	50765	2.36	2.82
Mohali	34415	43007	2.29	2.43
Total (R & M)	40487	51628	2.66	2.86

Potential yield of GSC 7: 22 q/ha

HIMACHAL PRADESH

The demonstrations on advanced varieties, i.e., Neelam, GSC 7, ONK 1, Bhawani, PBR 357, RH 406, and Tapeshwari, were conducted by eight KVKs of Himachal Pradesh. A total of 425 beneficiaries were benefited on of 80 ha area. An average yield of CFLDs was 13.81 q/ha, which was 36.60 percent higher than the check's yield (6.75 q/ha). The net returns and B: C ratio of demonstrations were ₹23,995 and 2.05, respectively (Table 34). The technologies, like improved variety, weed management, line sowing, etc., were adopted for the demonstrations.

UTTARAKHAND

In Uttarakhand, cluster demonstrations were conducted by nine KVKs on an area of 85 ha on 679 farmers' fields. Improved varieties such as Uttara, PT 508, PHT 1, Pusa Vijay, PPS 1 or PYS 1, and PM 30 were used in demonstrations. The average yield of the farmers was 9.01 q/ha, whereas

Table 34: Details of CFLDs on rapeseed & mustard conducted in Himachal Pradesh during 2019-20

KVK (8)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Bilaspur	Neelam	10	25	5.11	7.75	51.66
Hamirpur	GSC 7	10	30	8.00	10.75	34.38
Kangra	GSC 7	10	48	8.50	11.15	31.18
Mandi	GSC 7, ONK 1	10	52	5.00	6.47	29.38
Sirmour	Bhawani	10	75	6.50	7.25	11.54
Una	PBR 357	10	46	10.50	14.46	37.71
Shimla	RH 406	10	50	5.50	6.50	18.18
Solan	Neelam, Tapeshwari	10	99	4.85	8.28	70.75
Total (Rapeseed & Mustard)		80	425	6.75	13.81	36.60

KVK (8)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Bilaspur	10862	23424	1.55	2.02
Hamirpur	16990	29640	1.74	2.19
Kangra	18800	28400	1.98	2.38
Mandi	12550	13675	1.54	1.54
Sirmour	9750	17750	1.51	1.84
Una	20604	41980	2.00	2.82
Shimla	11680	13420	1.57	1.59
Solan	9340	23668	1.49	2.02
Total (R & M)	13822	23995	1.67	2.05

Potential yield of GSC 7: 22 q/ha, Neelam: 15-16 q/ha, ONK 1: 14-15 q/ha, Bhawani: 7-8 q/ha, RH 406: 19.7 q/ha, PBR 357: 21 q/ha, Tapeshwari: 13.5-14 q/ha

11.20 q/ha was recorded in demonstrations, which was 24.40 percent higher in comparison to the farmers' practice. The maximum yield was recorded in Bageshwar (56.25%), followed by Haridwar (52.05%). The net returns from demonstrations were ₹29,744/ha with a B: C ratio of 2.42, respectively (Table 35).

Table 35: Details of CFLDs on rapeseed & mustard conducted in Uttarakhand during 2019-20

KVK (9)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Chamoli	Uttara	10	100	6.10	7.20	18.03
Champawat	PPS 1 & Uttara	10	126	9.25	11.30	22.11
Dehradun	PT 508, PHT 1	10	20	6.40	8.00	25.00
Haridwar	Pusa Vijay	10	25	12.66	19.25	52.05
Nainital	PYS 1	10	25	9.00	11.00	22.22
U S Nagar	PPS1	10	29	10.50	12.50	19.05
Pauri Garhwal	Uttara	10	94	9.90	10.25	3.54
Tehri Garhwal	PM 30, PPS 1	5	55	10.50	10.64	1.37
Bageshwar	Uttara	10	205	6.80	10.63	56.25
Total (Rapeseed & Mustard)		85	679	9.01	11.20	24.40

KVK (9)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Chamoli	14500	21168	1.78	2.05
Champawat	18581	27348	2.00	2.27
Dehradun	10820	20685	1.62	2.11
Haridwar	22243	43829	2.10	2.94
Nainital	19125	27537	1.97	2.30
U S Nagar	20800	36364	2.03	2.64
Pauri Garhwal	22667	34000	2.31	2.85
Tehri Garhwal	22580	29833	2.10	2.33
Bageshwar	12590	26932	1.72	2.27
Total (R & M)	18212	29744	1.96	2.42

Production potential of Uttara: 15-18 q/ha, PYS 1: 15-19 q/ha, PM 30: 15-22 q/ha

JAMMU & KASHMIR

In the state of Jammu & Kashmir, eight KVKs conducted 470 demonstrations on varieties SS 1, 2, and 3, KS 101, RSPN 25, RSPT 6, RSPR 69, NRCHB 101, KS 101, and DGS 1 on 73.30 ha area. About 28.09 percent improvement in yield was recorded over the check. The maximum increase in yield was observed in Kathua (45.42%), followed by Samba (35.63%). The net returns from demonstrations were ₹25,127, and the B:C ratio was 2.20 (Table 36). The beneficiaries were satisfied with the performance of the variety and reserved the seed for sowing in the next season.

Table 36: Details of CFLDs on rapeseed & mustard conducted in Jammu & Kashmir during 2019-20

KVK (8)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Doda	KS 101	10	50	5.25	6.70	27.62
Kathua	RSPT 6, RSPN 25	10	57	6.55	9.53	45.42
Rajouri	RSPR 69, NRCHB 101, RSPN 25	10	100	5.17	5.47	5.74
Reasi	DGS 1	10	65	7.50	9.30	24.00
Samba	DGS 1	10	50	8.00	10.85	35.63
Bandipora	SS 2	3.30	13	9.00	11.50	27.78
Budgam	KS 101, SS 2 & 3	10	95	7.95	10.50	32.08
Ganderbal	SS 1	10	40	7.75	9.80	26.45
Total (Rapeseed & Mustard)		73.30	470	7.15	9.21	28.09

KVK (8)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Doda	8258	14422	1.42	1.66
Kathua	13825	26375	1.67	2.22
Rajouri	9718	11518	1.54	1.57
Reasi	15050	29300	1.81	2.44
Samba	19098	25260	2.09	2.28
Bandipora	21900	33500	2.01	2.46
Budgam	13780	30960	1.73	2.49
Ganderbal	14675	29678	1.82	2.50
Total (R & M)	14538	25127	1.76	2.20

Production potential of KS 101: 14-15 q/ha, DGS 1: 25-30 q/ha, KBS 49 (SS 2): 17 q/ha, SS3: 17 q/ha, RSPN 25: 15-16 q/ha

LEH

In the state of Leh, Nyoma conducted the demonstrations on the oilseed crops in the *Rabi* season. A total of 30 demonstrations were conducted on an area of 2.03 ha, and varieties adopted were RLM 514, PM 25, and CES 1 varieties in the field. The recorded yield of demonstrations was 8.40 q/ha, which was 16.67 percent higher than local practices (7.20 q/ha). The recommended package of practices and other production technologies were followed in different blocks while conducting demonstrations. The net returns from demonstrations were ₹23,116, and the B: C ratio was 2.01 (Table 37), higher than the control.

Table 37: Details of CFLDs on rapeseed & mustard conducted in Leh during 2019-20

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Leh-II (Nyoma)	RLM 514, PM 25, CES 1	2.03	30	7.20	8.40	16.67
Total (Sesame)		2.03	30	7.20	8.40	16.67

KVK (1)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Leh-II (Nyoma)	19015	23116	1.91	2.01	
Total (R & M)		19015	23116	1.91	2.01

Production potential of RLM 514: 27 q/ha, CES 1: 19-26 q/ha, PM 25: 11.60 q/ha



Demonstrations on rapeseed and mustard in Leh

Harvested the crop of rapeseed and mustard in Leh

SUSTAINABLE AGRICULTURAL PRACTICES (SAP) SCHEME (RABI SEASON) 2019-20

During 2019-20, to commemorate the 150th birthday anniversary of Mahatma Gandhi, additional CFLDs on oilseeds under promotion of SAP were allocated for the *Rabi* season. Under this scheme, a total of 5620 ha area for conducting 14050 demonstrations was allocated, whereas a total of 5580 demonstrations were conducted on 2313.48 ha area (Tables 38 and 39).

Table 38: State-wise and KVK-wise details of CFLDs allocated and conducted on oilseed crops under the SAP scheme, during *Rabi* season, 2019-20

State	Crop	No. of KVKs (42)	Targets		Achievements	
			Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Punjab	Rapeseed & Mustard	15	2100	5250	1354.80	2747
	Sub-Total	15	2100	5250	1354.80	2747
Himachal Pradesh	Rapeseed & Mustard	8	1090	2725	725.98	2131
	Sub-Total	8	1090	2725	725.98	2131
Uttarakhand	Rapeseed & Mustard	9	1250	3125	106.00	195
	Sub-Total	9	1250	3125	106.00	195
Jammu & Kashmir	Rapeseed & Mustard	10	1180	2950	126.70	507
	Sub-Total	10	1180	2950	126.70	507
Total SAP (Rapeseed & Mustard)		42	5620	14050	2313.48	5580

Under the SAP scheme, in Punjab, 2100 ha area was allocated under 5250 demonstrations, 1090 ha area under 2725 demonstrations in Himachal Pradesh, an area of 1250 ha under 3125 demonstrations in Uttarakhand, and 1180 ha area for 2950 demonstrations in Jammu & Kashmir, respectively (Table 39).

Table 39: State-wise and KVK-wise details of allocated and conducted CFLDs on oilseed crops during the Rabi season under the SAP scheme during 2019-20

State	University	KVKs (42)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Punjab	PAU Ludhiana	Amritsar	R & M	130	325	85	131
		Bathinda	R & M	200	500	200	296
		Ferozepur	R & M	140	350	140	350
		Gurdaspur	R & M	140	350	98	245
		Hoshiarpur	R & M	120	300	80	200
		Jalandhar	R & M	140	350	69	170
		Kapurthala	R & M	140	350	40	54
		Ludhiana	R & M	140	350	80.20	160
		Moga	R & M	140	350	140	283
		Muktsar	R & M	140	350	140	350
		Nawanshahr	R & M	130	325	80	120
		Pathankot	R & M	130	325	60	150
		Ropar	R & M	130	325	75	75
		Sangrur	R & M	140	350	11	45
	GADVASU, Ludhiana	Barnala	R & M	140	350	56.60	118.0
Sub-Total				2100	5250	1355	2747
Himachal Pradesh	CSKHPKV, Palampur	Bilaspur	R & M	140	350	91.60	229
		Hamirpur	R & M	130	325	130	495
	Dr. YSPUH&F, Solan	Kangra	R & M	130	325	130	262
		Mandi	R & M	140	350	94.66	286
		Sirmour	R & M	130	325	60	225
	Una	R & M	140	350	56	170	
		Shimla	R & M	140	350	23	114
Solan	R & M	140	350	140.72	350		
Sub Total				1090	2725	725.98	2131
Uttarakhand	GBPUA&T, Pantnagar	Chamoli	R & M	140	350	6	60
		Haridwar	R & M	130	325	5	10
		US Nagar	R & M	140	350	95	125
		Dehradun	R & M	140	350	0	0
		Champawat	R & M	140	350	0	0
		Nainital	R & M	140	350	0	0
	VCGSGUHH&F, Bharsar	Pauri Grehwal	R & M	140	350	0	0
	VPKAS, Almora	Tehri Grehwal	R & M	140	350	0	0
	Bhageshwar	R & M	140	350	0	0	
Sub-Total				1250	3125	106	195

State	University	KVKs (42)	Crop	Targets		Achievements		
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	
Jammu & Kashmir	SUKAST-J, Jammu	Doda	R & M	140	350	6	30	
		Kathua	R & M	130	325	28	121	
		Samba	R & M	140	350	35	198	
		Rajouri	R & M	140	350	0	0	
		Reasi	R & M	130	325	6	33	
	SUKAST-J, Srinagar	Bandipora	R & M	100	250	0	0	
		Budgam	R & M	100	250	45.60	114	
		Ganderbal	R & M	100	250	0	0	
		Leh II	R & M	100	250	0	0	
		Pulwama	R & M	100	250	6.10	11	
	Sub-Total				1180	2950	126.70	507
	Total (Rapeseed & Mustard)				5620	14050	2313.48	5580
	Total Rabi (SAP)				5620	14050	2313.48	5580

PUNJAB

In Punjab, 2747 demonstrations were conducted on an area of 1354.80 ha by 15 KVKs by following the production technologies of rapeseed and mustard crop of canola quality gobhi sarson GSC 7 & 6 and raya variety PBR 357 (Table 40). The major production technologies, like improved variety, weed management practices, and IPM, were demonstrated in the farmers' fields. The average yield in demonstrations was 19.53 q/ha, which was 19.40 percent higher than the farmer's practice (16.44 q/ha). The net returns from the demonstration plot and farmers' field were ₹47,533 and ₹20,039/ha, respectively, whereas the B:C ratio was 2.66 and 1.80, respectively.

Table 40: Details of CFLDs on rapeseed & mustard conducted in Punjab during 2019-20

KVK (15)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Amritsar	GSC 7	85	131	16.80	20.50	22.02
Bathinda	GSC 7, PBR 357	200	296	20.15	21.13	4.84
Ferozepur	GSC 7	140	350	16.40	20.21	23.20
Gurdaspur	GSC 7	98	245	17.00	19.38	13.97
Hoshiarpur	GSC 7	80	200	13.90	16.55	19.06
Jalandhar	GSC 7	69	170	17.60	20.25	15.06
Kapurthala	GSC 7	40	54	16.58	19.72	18.94
Ludhiana	GSC 7	80.20	160	16.93	18.80	11.08
Moga	GSC 7	140	283	15.90	20.44	28.54
Muktsar	GSC 7	140	350	17.28	19.07	10.36
Nawanshahr	GSC 7	80	120	17.50	19.25	10.00
Pathankot	GSC 7	60	150	13.75	17.88	30.00
Ropar	GSC 7	75	75	15.80	16.65	5.38
Sangrur	GSC 7	11	45	17.20	23.00	33.72
Barnala	GSC 6 & 7	56.60	118	13.87	20.09	44.81
Total (Rapeseed & Mustard)		1354.80	2747	16.44	19.53	19.40

KVK (15)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Amritsar	19503	51692	1.73	2.78
Bathinda	27230	52530	2.03	2.67
Ferozepur	20675	52964	1.88	2.95
Gurdaspur	20092	49537	1.76	2.74
Hoshiarpur	15290	41350	1.57	2.34
Jalandhar	19355	50197	1.79	2.67
Kapurthala	20333	48802	1.89	2.77
Ludhiana	22487	45650	1.88	2.65
Moga	22241	46306	1.83	2.53
Muktsar	20465	43844	1.78	2.49
Nawanshahr	19500	42109	1.87	2.51
Pathankot	16950	40000	1.76	2.43
Ropar	18808	41315	1.73	2.51
Sangrur	20320	53894	1.76	2.90
Barnala	17332	52804	1.76	2.89
Total (R & M)	20039	47533	1.80	2.66

Production potential of PBR 357: 21 q/ha, GSC 7: 22 q/ha, GSC 6: 15.25 q/ha

HIMACHAL PRADESH

To conduct 2131 demonstrations on 725.98 ha area for rapeseed and mustard, the recommended technologies, i.e., complete package practices of CSKHPKV, Palampur, were followed for conducting CFLDs on rapeseed and mustard by eight KVKs of Himachal Pradesh in the farmers' fields (Table 41). The rapeseed and mustard varieties used for demonstrations were GSC 7, KBS 3, Neelam, PBR 357, RH 406, and Pusa Tarak. About 36.48 percent improvement in yield was obtained in the demonstrated plot (9.56 q/ha) as compared to the farmers' fields (7.07 q/ha). The net returns from the demonstration were ₹27,237, and the B: C ratio was 2.10.

UTTARAKHAND

In Uttarakhand, three KVKs, namely Chamoli, Haridwar, and US Nagar, conducted the demonstrations using improved varieties, viz., Uttara, Hybrid 5444, and PPS 1, on 106 ha on 195 farmers' fields. The

Table 41: Details of CFLDs on rapeseed & mustard conducted in Himachal Pradesh during 2019-20

KVK (8)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Bilaspur	GSC 7	91.6	229	5.06	9.16	81.08
Hamirpur	GSC 7	130	495	8.00	9.95	24.38
Kangra	GSC 7, KBS 3	130	262	8.00	10.30	28.75
Mandi	GSC 7	94.66	286	5.00	6.26	25.18
Sirmour	Neelam	60	225	8.30	11.50	38.55
Una	GSC 7, PBR 357	56	170	11.00	14.70	33.64
Shimla	RH 406	23	114	5.50	6.50	18.18
Solan	Pusa Tarak	140.72	350	5.70	8.10	42.11
Total (Rapeseed & Mustard)		725.98	2131	7.07	9.56	36.48

KVK (8)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Bilaspur	12562	27584	1.63	2.18
Hamirpur	19999	28143	1.91	2.13
Kangra	19500	30400	2.05	2.49
Mandi	13050	19627	1.58	1.69
Sirmour	18800	34390	1.93	1.69
Una	21656	38156	1.98	2.57
Shimla	11600	17500	1.63	2.04
Solan	12480	22100	1.69	2.04
Total (R & M)	16206	27237	1.80	2.10

Production potential of KBS 3: 10-11 q/ha, Neelam: 15-16 q/ha, GSC 7: 14-15 q/ha, PBR 357: 21 q/ha, RH 406: 19.7 q/ha, Pusa Tarak: 20 q/ha

average yield of the demonstrations was 10.21 q/ha, which was 23.65 percent higher than the check, with the net returns of ₹24,474/ha. The B: C ratio of the demonstrated plot was 2.02, whereas 1.82 was recorded for farmers' fields (Table 42).

Table 42: Details of CFLDs on rapeseed & mustard conducted in Uttarakhand during 2019-20

KVK (3)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Chamoli	Uttara	6	60	6.10	7.34	20.33
Haridwar	Hybrid 5444	5	10	6.20	7.90	27.42
US Nagar	PPS 1	95	125	12.50	15.40	23.20
Total (Rapeseed & Mustard)		106	195	8.27	10.21	23.65

KVK (3)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Chamoli	14000	19395	1.67	1.85
Haridwar	15075	18444	1.70	1.80
US Nagar	25395	35584	2.10	2.42
Total (R & M)	18157	24474	1.82	2.02

Production potential of Uttara: 15-18 q/ha, PPS 1:15-19 q/ha

JAMMU & KASHMIR

The improved varieties of rapeseed and mustard were demonstrated by six KVKs of Jammu and Kashmir, viz. Doda, Kathua, Samba, Reasi, Budgam, and Pulwama. A total of 126.70 ha area was demonstrated on 507 farmers' fields. The average yield from these demonstrations was 10.70 q/ha with net returns of ₹24,902/ha and a B:C ratio of 2.27, which was higher than the local practices (Table 43). The maximum increase in yield of rapeseed and mustard was observed in Samba (39.06%), followed by Reasi (32.64%) and Budgam (32.08%). The varieties adopted to conduct the CFLDs include KS 101, RH 749, DGS 1, RB 50, RH 406, RH 749, SS 2, and 3. Introduction of brown sarson in nontraditional areas created self-sufficiency regarding oil production, which will ultimately help in doubling farmers' income. The complete package of practices was followed of SKUAST, Jammu, and of SKUAST, Srinagar for conducting the demonstrations.

Table 43: Details of CFLDs on rapeseed & mustard conducted in Jammu & Kashmir during 2019-20

KVK (6)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Doda	KS 101	6	30	7.90	8.55	8.23
Kathua	RH 749	28	121	7.80	8.30	6.41
Samba	DGS 1, RB 50, RH 406, RH 749	35	198	8.03	11.17	39.06
Reasi	DGS 1	6	33	7.20	9.55	32.64
Budgam	KS 101, SS 2 & 3	45.6	114	7.95	10.50	32.08
Pulwama	SS 2	6.1	11	12.80	16.15	26.17
Total (Rapeseed & Mustard)		126.70	507	8.61	10.70	24.10

KVK (6)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Doda	18197	19781	2.04	1.99
Kathua	17890	19350	2.04	2.08
Samba	15523	23617	1.84	2.14
Reasi	13020	22190	1.70	2.14
Budgam	17862	23076	2.01	2.23
Pulwama	22470	41400	2.32	3.02
Total (R & M)	17494	24902	1.99	2.27

Production potential of KS 101: 14-15 q/ha, DGS 1: 25-30 q/ha, KBS 49 (SS 2): 17 q/ha, SS3: 17 q/ha, RH 749: 22 q/ha, RH 406: 19.7 q/ha, RB 50: 22 q/ha

EXTENSION ACTIVITIES 2019-20

During 2019-20, various extension activities like farmers' trainings, field days, group discussions, kisan goshies, group meetings, etc, were included to diffuse the technologies at the mass level. These activities were organized by KVKs of Punjab, Himachal Pradesh, Jammu & Kashmir, and Uttarakhand during the implementation of the project in *Kharif* and *Rabi* seasons for the benefit of farmers. For the adoption of good agricultural practices, during these programmes, technical literature about an improved package of practices generated by State Agricultural Universities (SAUs) was also distributed among the farmers. A total of 435 activities were conducted during the *Kharif* and *Rabi* seasons under regular CFLD and SAP scheme, in which 15,765 farmers were benefited (Table 44).

Table 44: Details of extension activities conducted on oilseed crops under CFLDs on Oilseeds and SAP scheme during 2019-20

Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Training	43	130	3519
Group meeting	39	163	4080
Field day	47	49	3407
Others	44	93	4759
Total	-	435	15765

During the *Kharif* and *Rabi* seasons, 37 and 398 extension activities were organized by the KVKs, wherein 789 and 14976 farmers, respectively, participated (Table 45). These activities included trainings, group meetings, field days, and other activities.



Kisan Gosthy conducted by KVK Jalandhar



Field day by KVK Amritsar



Table 45: Extension activities conducted on oilseed crops during *Kharif* and *Rabi* seasons under CFLDs on Oilseeds and SAP scheme, during 2019-20

Extension Activities	<i>Kharif</i> season			<i>Rabi</i> season		
	KVK	Total activities	No. of farmers	KVK	Total activities	No. of farmers
Training	5	9	245	38	121	3274
Group meeting	4	5	107	35	158	3973
Field day	7	9	299	40	40	3108
Others	8	14	138	36	79	4621
Total	-	37	789	-	398	14976

Table 46: State-wise monitoring visits done on oilseed crops under *Kharif* and *Rabi* seasons under CFLDs on Oilseeds and SAP scheme, during 2019-20

S. No.	Season	State	Visited by Director ATARI	Visited by the Scientists of ATARI	Visit by DES/DES Scientist	Visited by other members, such as representatives of DAC & FW, ICAR, etc.
1	<i>Kharif</i>	Jammu & Kashmir	0	0	3	0
2	<i>Rabi</i>	Punjab	0	0	4	3
3	<i>Rabi</i>	Himachal Pradesh	0	1	0	1
4	<i>Rabi</i>	Uttarakhand	0	1	2	1
5	<i>Rabi</i>	Jammu & Kashmir	0	2	16	6



Visit by Dr. Arvind Kumar, ICAR-ATARI, Ludhiana



KVK Reasi, Scientists demonstrating the DGS variety of mustard at a farmer's field



Demonstrations of rapeseed & mustard organized by KVK Una

Achievements of CFLDs on Oilseeds in 2020-21

For the year 2020-21, a budget of ₹4,846,200 was allocated to ICAR-ATARI Zone-I, Ludhiana, to conduct 1579 CFLDs on oilseeds on an area of 621 ha. The project involved 43 KVKs, including 15 KVKs from Punjab, 8 from Himachal Pradesh, 10 from Uttarakhand, and 10 from Jammu & Kashmir. For conducting CFLDs during the *Kharif* season, an allocation of ₹7,500/ha was made for soybean, and ₹5,000/ha for sesame. Similarly, during the *Rabi* season, ₹6,000/ha was allocated for conducting CFLDs on rapeseed and mustard. Additionally, provisions for hiring a Senior Research Fellow at ₹35,000+HRA (16%)/month and a Data Entry Operator (DEO) at ₹25,000/month for twelve months were included to ensure the smooth execution of the project.

During the *Kharif* season of 2020-21, a total of 215 CFLDs were allocated across the states of Zone-I, covering an area of 76.50 ha for sesame and soybean. Of these, 162 demonstrations were allocated on an

Table 47: Details of CFLDs on oilseeds crops allocated and conducted during 2020-21

State	Crop	No. of KVKs (43)	Targets		Achievements	
			Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Kharif season						
Punjab	Sesame	1	10	25	10	18
Sub-Total		1	10	25	10	18
Himachal Pradesh	Sesame	3	26	75	26	141
	Soybean	2	20	50	20	126
Sub-Total		5	46	125	46	267
Uttarakhand	Sesame	1	5	25	5	10
	Soybean	1	1	3	1	30
Sub-Total		2	6	28	6	40
Jammu & Kashmir	Sesame	2	14.50	37	14.50	51
	Sub-Total	2	14.50	37	14.50	51
Total (Sesame)		7	55.50	162	55.50	220
Total (Soybean)		3	21	53	21	156
Total Kharif		10	76.50	215	76.50	376
Rabi season						
Punjab	R&M	15	200	500	200	566
Sub-Total		15	200	500	200	566
Himachal Pradesh	R&M	8	84	210	84	578
	Sub-Total	8	84	210	84	578
Uttarakhand	R&M	10	144	362	134	942
	Sub-Total	10	144	362	134	942
Jammu & Kashmir	R&M	10	116.50	292	116.50	600
	Sub-Total	10	116.50	292	116.50	600
Total (R&M)		43	544.50	1364	534.50	2686
Total Rabi		43	544.50	1364	534.50	2686
Grand Total		43	621	1579	611	3062

area of 55.50 ha for sesame, while 53 demonstrations were carried out on an area of 21 ha for soybean. In the *Rabi* season, 1,364 CFLDs were allocated on 544.50 ha area for rapeseed and mustard cultivation. Overall, during 2020-21, ICAR-ATARI, Zone-I (Ludhiana) was allocated a total of 1,579 demonstrations on an area of 621 ha for various oilseed crops. However, due to expanded efforts, a total of 3,062 CFLDs were successfully implemented on an area of 611 ha by the KVKs in the zone (Table 47).

KHARIF OILSEEDS 2020-21

During the *Kharif* season of 2020-21, KVKs under ICAR-ATARI, Zone-I, conducted CFLDs on sesame and soybean across the states of Punjab, Himachal Pradesh, Uttarakhand, and Jammu & Kashmir. In Punjab, 25 demonstrations on an area of 10 ha for sesame were allocated in KVK Nawanshahr. Similarly, in Himachal Pradesh, for KVKs Hamirpur, Kangra, and Sirmour, 75 demonstrations, on 26 ha area, for the same crop were allocated. Moreover, for soybean KVKs Mandi and Shimla, 25 demonstrations covering an area of 10 ha were allocated to each KVK. In Uttarakhand, 25 demonstrations on sesame covering an area of 5 ha to KVK Haridwar and 3 demonstrations on soybean on an area of 1 ha to KVK Pauri Garhwal were allocated. In Jammu and Kashmir, 37 demonstrations on sesame on an area of 14.50 ha were allocated to KVKs Kathua and Reasi. A total of 215 CFLDs were allocated on 76.50 ha area during the *Kharif* season (Table 48).

Table 48: State-wise and crop-wise details of allocated and conducted CFLDs on oilseed crops during the *Kharif* season, 2020-21

State	University	KVKs (10)	Crop	Targets		Achievements		
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	
Punjab	PAU, Ludhiana	Nawanshahr	Sesame	10	25	10	18	
			Sub-Total	10	25	10	18	
Himachal Pradesh	CSKHPKV, Palampur	Hamirpur	Sesame	10	25	10	94	
			Kangra	Sesame	10	25	10	25
				Sirmour	Sesame	6	25	6
			Sub-Total	26	75	26	141	
Uttarakhand	GBPUA&T, Pantnagar	Haridwar	Sesame	5	25	5	10	
			Sub-Total	5	25	5	10	
Jammu & Kashmir	SKUAST-J, Jammu	Kathua	Sesame	8	20	8	26	
			Reasi	Sesame	6.50	17	6.50	25
				Sub-Total	14.50	37	14.50	51
Himachal Pradesh	CSKHPKV, Palampur	Mandi	Soybean	10	25	10	60	
			Dr. YSPUH&F, Solan	Soybean	10	25	10	66
Sub-Total	20	50		20	126			
Uttarakhand	VCGSGUHH&F, Bharsar	Pauri Garhwal	Soybean	1	3	1	30	
			Sub-Total	1	3	1	30	
Total (Sesame)				55.50	162	55.50	220	
Total (Soybean)				21	53	21	156	
Total <i>Kharif</i>				76.50	215	76.50	376	

SESAME

PUNJAB

In Punjab, KVK Nawanshahr conducted CFLDs on sesame, showcasing the improved variety PB Til No. 2. A total of 18 demonstrations were carried out on an area of 10 ha. The demonstrated variety showed a marked improvement in productivity. The average yield from check plots was 3.47 q/ha, whereas the demonstration plots achieved a higher yield of 4.40 q/ha, indicating an increase in productivity. The net returns from check plots were ₹10,660/ha, while demonstration plots recorded ₹19,585/ha, clearly reflecting the profitability due to the adoption of improved variety. The B: C ratio further underscored this advantage, with an increase from 1.62 in check plots to 2.06 in demonstration plots. These results highlight the financial and agronomic viability of adopting PB Til No. 2 for sesame cultivation in the region (Table 49).

Table 49: Details of CFLDs on sesame conducted in Punjab during 2020-21

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Nawanshahr	PB Til No. 2	10	18	3.47	4.40	26.80
Total (Sesame)		10	18	3.47	4.40	26.80

KVK (1)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Nawanshahr	10660	19585	1.62	2.06
Total (Sesame)		10660	1.62	2.06

Production potential of PB Til No. 2: 7 q/ha

HIMACHAL PRADESH

In Himachal Pradesh, three KVKs, Hamirpur, Kangra, and Sirmour, demonstrated 141 CFLDs on sesame on 26 ha area, showcasing the varieties Brijeshwari and PB Til No. 2. The average yield from the check plot was 4.90 q/ha. In contrast, the demonstrated plot achieved a higher yield of 6.01 q/ha, indicating a significant increase in productivity. The net returns from check plots were ₹23,239/ha, while demonstration plots recorded ₹37,707/ha, clearly reflecting the profitability due to the improved variety. The B: C ratio further underscored this advantage, with an increase from 2.04 in check plots to 2.55 in demonstration plots (Table 50).

Table 50: Details of CFLDs on sesame conducted in Himachal Pradesh during 2020-21

KVK (3)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hamirpur	Brijeshwari	10	94	5.00	6.10	22.00
Kangra	Brijeshwari	10	25	4.20	5.42	28.97
Sirmour	PB Til No. 2	6	22	5.50	6.50	18.18
Total (Sesame)		26	141	4.90	6.01	23.05

KVK (3)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Hamirpur	25100	40022	2.15	2.73
Kangra	18167	33400	1.77	2.30
Sirmour	26450	39700	2.20	2.62
Total (Sesame)		23239	2.04	2.55

Production potential of Brijeshwari (LKT 4): 6-8 q/ha, PB Til No. 2: 7 q/ha

UTTARAKHAND

In Uttarakhand, KVK Haridwar conducted 10 CFLDs on sesame, covering a total area of 5 ha with the variety RT 351. The average yield from the control plots was 4.20 q/ha, while the demonstration plots achieved a higher yield of 4.95 q/ha. The net returns from the control plots were ₹30,603/ha, compared to ₹42,158/ha from the demonstration plots, clearly indicating greater profitability. Additionally, the B: C ratio improved from 2.65 in control plots to 3.02 in the demonstration plots, further emphasizing the economic advantage (Table 51).

Table 51: Details of CFLDs on sesame conducted in Uttarakhand during 2020-21

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Haridwar	RT 351	5	10	4.20	4.95	17.86
Total (Sesame)		5	10	4.20	4.95	17.86

KVK (1)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Haridwar	30603	42158	2.65	3.02	
Total (Sesame)		30603	42158	2.65	3.02

JAMMU AND KASHMIR

In Jammu and Kashmir, KVKs Kathua and Reasi jointly conducted 51 CFLDs on sesame on a total area of 14.50 ha, demonstrating the varieties PB Til No. 2 and RT 351. The average yield in check plots was 3.40 q/ha, whereas demonstration plots recorded a significantly higher yield of 4.58 q/ha, underscoring the superior productivity of the improved varieties. The net returns from check plots were ₹14,600/ha, while for the demonstration plots, it was ₹29,050/ha, clearly reflecting higher profitability. Furthermore, the B:C ratio increased from 1.89 in check plots to 2.68 in demonstration plots, highlighting the strong economic benefits (Table 52).



Demonstration of sesame, KVK Haridwar



Field day on sesame by KVK Sirmour

Table 52: Details of CFLDs on sesame conducted in Jammu & Kashmir during 2020-21

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Kathua	PB Til No. 2	8	26	3.30	4.5	36.36
Reasi	RT 351	6.50	25	3.50	4.65	32.86
Total (Sesame)		14.50	51	3.40	4.58	34.61

KVK (2)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Kathua	13000	27550	1.74	2.49
Reasi	16200	30550	2.04	2.87
Total (Sesame)	14600	29050	1.89	2.68

Production potential of PB TII No. 2: 7 q/ha, RT 351: 7-8 q/ha

SOYBEAN

HIMACHAL PRADESH

CFLDs on oilseeds during the *Kharif* season were conducted on soybean by two KVKs in Himachal Pradesh, viz. Mandi and Shimla. In Mandi, the demonstrated variety was Palam Hara Soya 1, and Palam Soya/Harit Soya with a total area of 10 ha and 60 demonstrations. The yield for check plots was 8.00 q/ha, while the demonstrations yielded 10.00 q/ha, reflecting a yield increase of 25 percent. In Shimla, a demonstration of Palam Soya/Harit Soya was conducted on an area of 10 ha on 66 farmers' fields. The yield for the check plot was 10.50 q/ha, whereas it was 11.00 q/ha for the demonstration plot, reflecting an increase of 4.76 percent. The average net returns from check plots at both the KVKs were ₹14,766/ha, whereas the demonstration plots recorded higher net returns of ₹19,671/ha. This resulted in a B: C ratio of 1.68 for check plots and 1.78 for demonstration plots (Table 53).

Table 53: Details of CFLDs on soybean conducted in Himachal Pradesh during 2020-21

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Mandi	Palam Hara Soya 1	10	60	8.00	10.00	25.00
Shimla	Palam Soya/Harit Soya	10	66	10.50	11.00	4.76
Total (Soybean)		20	126	9.25	10.50	14.88

KVK (2)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Mandi	9532	16342	1.41	1.61
Shimla	20000	23000	1.95	1.96
Total (Soybean)	14766	19671	1.68	1.78

Production potential of Palam soya: 15-20 q/ha, Palam Hara soya: 18 q/ha

UTTARAKHAND

CFLDs on soybean were carried by KVK Pauri Garhwal. The variety demonstrated was VL 65, covering a total area of 1 ha, comprising 30 demonstrations. The yield recorded from the check plots was 9.15 q/ha, whereas the demonstration plots achieved a yield of 10.15 q/ha, indicating a yield increase of 10.93 percent. The net returns from the check plots were ₹11,800/ha, while the demonstration plots generated ₹23,050/ha. The B: C ratio was 1.50 for check plots and 1.90 for the demonstration plots (Table 54).

Table 54: Details of CFLDs on soybean conducted in Uttarakhand during 2020-21

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Pauri Garhwal	VL 65	1	30	9.15	10.15	10.93
Total (Soybean)		1	30	9.15	10.15	10.93

KVK (1)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Pauri Garhwal	11800	23050	1.50	1.90
Total (Soybean)	11800	23050	1.50	1.90

Production potential of VL 65: 15.42 q/ha



Field demonstration on soybean by KVK Mandi



Field Day on soybean by KVK Mandi

RABI OILSEEDS 2020-21

During the *Rabi* season of 2020-21, CFLDs were organized on rapeseed and mustard. Overall, 1364 demonstrations on an area of 544.50 ha were allocated among four states, viz., Punjab, Himachal Pradesh, Uttarakhand, and Jammu and Kashmir, demonstrating improved varieties along with a package of practices for rapeseed and mustard. A total of 500 demonstrations on an area of 200 ha in Punjab, 210 demonstrations on an area of 84 ha in Himachal Pradesh, 362 demonstrations on an area of 144 ha in Uttarakhand, and 292 demonstrations on an area of 116.50 ha in Jammu & Kashmir were allocated (Table 55).

Table 55: State-wise and KVK-wise details of allocated and conducted CFLDs on oilseed crops during the *Rabi* season, 2020-21

State	University	KVKs (43)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Punjab	PAU, Ludhiana	Amritsar	R & M	20	50	20	35
		Ferozepur	R & M	10	25	10	25
		Gurdaspur	R & M	10	25	10	32
		Hoshiarpur	R & M	30	75	30	75
		Jalandhar	R & M	10	25	10	34
		Kapurthala	R & M	10	25	10	28
		Ludhiana	R & M	10	25	10	21
		Moga	R & M	10	25	10	43
		Muktsar	R & M	10	25	10	25
		Nawanshahr	R & M	10	25	10	29
		Pathankot	R & M	20	50	20	50
		Ropar	R & M	20	50	20	60
		Sangrur	R & M	10	25	10	26
		GADVASU, Ludhiana	Barnala	R & M	10	25	10
Mohali	R & M		10	25	10	38	
Sub-Total				200	500	200	566

State	University	KVKs (43)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Himachal Pradesh	CSKHPKV, Palampur	Bilaspur	R & M	10	25	10	25
		Hamirpur	R & M	10	25	10	94
		Kangra	R & M	10	25	10	32
		Mandi	R & M	10	25	10	79
		Sirmour	R & M	14	35	14	53
	Dr. YSPUH&F, Solan	Una	R & M	10	25	10	142
		Shimla	R & M	10	25	10	60
		Solan	R & M	10	25	10	93
		Sub Total		84	210	84	578
Uttarakhand	GBPUA&T, Pantnagar	Almora	R & M	10	25	10	40
		Chamoli	R & M	10	25	10	154
		Champawat	R & M	20	50	10	82
		Dehradun	R & M	20	50	20	41
		Haridwar	R & M	15	40	15	40
		Nainital	R & M	10	25	10	25
		US Nagar	R & M	10	25	10	15
	VCGSGUHH&F, Bharsar VPKAS, Almora	Pauri Garhwal	R & M	19	47	19	197
		Tehri Garhwal	R & M	20	50	20	113
		Bageshwar	R & M	10	25	10	235
Sub-Total		144	362	134	942		
Jammu & Kashmir	SKUAST-J, Jammu	Doda	R & M	10	25	10	50
		Kathua	R & M	12	30	12	55
		Rajouri	R & M	10	25	10	100
		Reasi	R & M	13.50	34	13.50	60
		Samba	R & M	10	25	10	86
	SKUAST-J, Srinagar	Bandipora	R & M	10	25	10	49
		Budgam	R & M	30	75	30	75
		Ganderbal	R & M	10	25	10	60
		Leh-II (Nyoma)	R & M	1	3	1	15
		Pulwama	R & M	10	25	10	50
Sub Total		116.50	292	116.50	600		
Total (Rapeseed and Mustard)		544.50	1364	534.50	2686		
Total Rabi		544.50	1364	534.50	2686		

RAPESEED AND MUSTARD

PUNJAB

A total of 566 CFLDs were conducted on 200 ha area by fifteen KVKs of Punjab. The improved variety of canola gobhi sarson GSC 7 and the variety of raya sarson PGSH 1707 were demonstrated at farmers' fields. The maximum increase in yield (30.30%) was recorded by KVK Barnala, followed by KVK Ferozpur (29.20%) and KVK Sangrur (27.90%). On the other hand, the least in yield was recorded by KVK Nawanshahr (11.43%). The average yield of the demonstrated variety was 20.25 q/ha, which showed an increase of 22.82 percent over the check yield. The net returns of demonstrated variety (₹51,810/ha) were significantly higher than the check (₹39,299/ha) (Table 56).

Table 56: Details of CFLDs conducted on rapeseed & mustard in Punjab during 2020-21

KVK (15)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Amritsar	GSC 7	20	35	17.50	20.69	18.21
Ferozepur	GSC 7	10	25	16.35	21.13	29.20
Gurdaspur	PGSH 1707	10	32	13.58	15.88	16.90
Hoshiarpur	GSC 7	30	75	13.70	17.10	24.82
Jalandhar	PGSH 1710	10	34	17.90	22.35	24.86
Kapurthala	PGSH 1707 & GSC 7	10	28	17.00	21.18	24.59
Ludhiana	GSC7	10	21	16.30	20.15	23.62
Moga	PGSH 1707	10	43	16.60	21.10	27.11
Muktsar	GSC 7	10	25	16.00	19.00	18.75
Nawanshahr	GSC 7	10	29	17.50	19.50	11.43
Pathankot	PGSH 1707 & GSC 7	20	50	15.75	19.13	21.43
Ropar	PGSH 1707	20	60	16.75	20.31	21.27
Sangrur	GSC 7	10	26	18.73	23.95	27.90
Barnala	GSC 7	10	45	17.08	22.26	30.30
Mohali	GSC 7	10	38	16.40	20.00	21.95
Total (Rapeseed & Mustard)		200	566	16.48	20.25	22.82

KVK (15)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Amritsar	42811	51315	2.58	2.73
Ferozepur	35600	53162	2.36	2.68
Gurdaspur	27012	34095	2.04	2.23
Hoshiarpur	27980	36159	2.06	2.15
Jalandhar	45388	61264	2.79	3.27
Kapurthala	42625	59412	2.92	3.41
Ludhiana	39200	52578	2.53	2.85
Moga	39453	55228	2.48	2.81
Muktsar	40000	45340	2.54	2.42
Nawanshahr	45500	49093	2.94	2.59
Pathankot	38425	51640	2.66	3.13
Ropar	39636	50528	2.49	2.75
Sangrur	43073	66047	2.64	3.31
Barnala	45590	61227	2.96	3.22
Mohali	37197	50056	2.38	2.52
Total (R & M)	39299	51810	2.56	2.80

Production potential of GSC 7: 22 q/ha, PGSH 1707: 22 q/ha

HIMACHAL PRADESH

A total of 578 CFLDs were carried out on an area of 84 ha by eight KVKs of Himachal Pradesh. The demonstrations featured improved varieties such as GSC 7, Neelam, ONK 1, Bhawani, RH 406, and Pusa Tarak. The maximum yield increase was recorded of KVK Solan with 31.97 percent, followed by KVK Una (30.64%) and KVK Mandi (30.59%). Conversely, KVK Bilaspur reported the lowest yield of 14.29 percent. The average yield under demonstration was 9.25 q/ha, reflecting a 23.72 percent

increase over the check yield. The demonstration plots also showed higher profitability, with net returns of ₹29,986/ha compared to ₹19,773/ha from the check plots (Table 57).

Table 57: Details of CFLDs conducted on rapeseed & mustard in Himachal Pradesh during 2020-21

KVK (8)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Bilaspur	Neelam	10	25	5.60	6.40	14.29
Hamirpur	GSC 7	10	94	8.00	9.55	19.38
Kangra	GSC 7	10	32	9.50	11.30	18.95
Mandi	GSC 7 & ONK 1	10	79	4.75	6.20	30.59
Sirmour	Bhawani & Neelam	14	53	7.75	9.75	25.81
Una	GSC 7	10	142	11.00	14.37	30.64
Shimla	RH 406	10	60	5.50	6.50	18.18
Solan	Neelam & Pusa Tarak	10	93	7.53	9.94	31.97
Total (Rapeseed & Mustard)		84	578	7.45	9.25	23.72

KVK (8)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Bilaspur	10227	18246	1.50	1.71
Hamirpur	21405	34455	1.96	2.36
Kangra	24800	45400	2.29	3.10
Mandi	10050	13802	1.45	1.52
Sirmour	22518	34140	2.15	2.59
Una	29741	46432	2.30	2.79
Shimla	15580	15649	1.76	1.67
Solan	23863	31765	2.26	2.46
Total (R & M)	19773	29986	1.96	2.28

Production potential of Neelam: 15-16 q/ha, ONK 1: 14-15 q/ha, Bhawani: 7-8 q/ha, GSC 7: 14-15 q/ha, RH 406: 19.7 q/ha, Pusa Tarak: 20 q/ha

UTTARAKHAND

In Uttarakhand, a total of 942 CFLDs were conducted on 134 ha area by ten KVKs. Improved rapeseed and mustard varieties such as RH 725, DRMR IJ 31, NRCHB 101, Uttara, PT 508, PHT 1, PPS 1, Pioneer Hybrid Mustard 45S46, PR 21, and PM 30, were demonstrated on farmers' fields. The highest yield increase was observed at KVK Dehradun (37.23%), followed by Tehri Garhwal (29.80%) and Udham Singh Nagar (27.23%). KVK Haridwar recorded the lowest yield gain of 7.95 percent. The average yield in demonstration plots was 10.06 q/ha, showing a 21.81 percent improvement over the check yield of 8.38 q/ha. The demonstration plots also resulted in higher net returns of ₹29,269/ha, compared to ₹25,159/ha from check plots (Table 58).

JAMMU & KASHMIR

A total of 585 CFLDs on rapeseed and mustard were conducted on an area of 115.50 ha by nine KVKs of Jammu and Kashmir. The demonstrations featured improved varieties such as SS 2 & 3, RSPN 25, RSPR 69, DGS 1, and NRCHB 101, on farmers' fields. Among the KVKs, Bandipora recorded the highest yield increase at 38.89 percent, followed by Rajouri (37.18%) and Reasi (36.11%). Pulwama

Table 58: Details of CFLDs on rapeseed & mustard conducted in Uttarakhand during 2020-21

KVK (10)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Almora	RH 725, DRMR IJ 31 & NRCHB 101	10	40	12.92	13.98	8.17
Chamoli	Uttara	10	154	4.50	5.55	23.33
Champawat	Uttara	10	82	6.15	7.40	20.33
Dehradun	PT 508, PHT 1, PPS 1	20	41	6.85	9.40	37.23
Haridwar	Pioneer Hybrid Mustard 45S46	15	40	13.20	14.25	7.95
Nainital	PT 508, Uttara, PPS 1, & PR 21	10	25	10.00	12.00	20.00
U. S. Nagar	PPS1	19	197	11.20	14.25	27.23
Pauri Garhwal	PHT 1	20	113	4.10	4.88	18.90
Tehri Garhwal	PHT 1, PM 30 & PPS 1	10	15	8.20	10.64	29.80
Bageshwar	PHT 1	10	235	6.63	8.30	25.19
Total (Rapeseed & Mustard)		134	942	8.38	10.06	21.81

KVK (10)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Almora	40516	47665	0.68	3.16	
Chamoli	11100	11490	1.58	1.53	
Champawat	19370	20677	1.96	1.95	
Dehradun	17703	19320	1.91	1.89	
Haridwar	50535	46146	3.67	3.20	
Nainital	30350	38600	2.58	2.82	
U. S. Nagar	30560	45375	2.61	3.16	
Pauri Garhwal	8990	7194	1.53	1.38	
Tehri Garhwal	20000	27583	2.03	2.28	
Bageshwar	22470	28636	2.22	2.43	
Total (R & M)		25159	29269	2.08	2.38

Production potential of Uttara: 15-18q/ha, PYS 1:15-19 q/ha, PM 30: 15-22 q/ha, RH 725: 25-30 q/ha, DRMR IJ 31: 22-25 q/ha, NRCHB 101: 15-20 q/ha, PT 508: 16-19 q/ha, Pioneer Hybrid Mustard 45S46: 24-26 q/ha, PR 21:24-30 q/ha, PHT 1: 9-12 q/ha

reported the lowest improvement in yield at 6.82 percent. On average, the demonstration plots yielded 9.92 q/ha, showing a 33.24 percent improvement over the check yield of 7.86 q/ha. Additionally, the net returns from demonstration plots averaged ₹34,173/ha, significantly higher than the ₹18,746/ha from the check plots (Table 59).

LEH

A total of 15 CFLDs were conducted on an area of 1 ha in Leh by KVK Leh-II (Nyoma). The demonstrations featured improved variety RLM 514, which was introduced on farmers' fields. The demonstration showed a yield increase of 6.16 percent, with 2.33 q/ha as compared to the check (2.19 q/ha). Additionally, the net returns from demonstration plots averaged ₹10,180/ha, significantly higher than the ₹6,174/ha from the check plots (Table 60).

Table 59: Details of CFLDs on rapeseed & mustard conducted in Jammu & Kashmir during 2020-21

KVK (9)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Doda	SS 2	10	50	5.20	6.69	28.65
Kathua	RSPN 25	12	55	8.50	11.00	29.41
Rajouri	RSPR 69, RSPN 25	10	100	3.90	5.35	37.18
Reasi	DGS 1	13.50	60	5.40	7.35	36.11
Samba	NRCHB 101	10	86	7.50	10.00	33.33
Bandipora	SS 3	10	49	9.00	12.50	38.89
Budgam	SS 2	30	75	10.20	13.50	32.35
Ganderbal	SS 2	10	60	10.00	13.00	30.00
Pulwama	SS 2	10	50	11.00	11.75	6.82
Total (Rapeseed & Mustard)		115.50	585	7.86	9.92	33.24

KVK (9)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Doda	4366	18404	1.22	1.84
Kathua	23500	40000	2.24	2.86
Rajouri	8451	16624	1.47	1.81
Reasi	12450	20400	1.68	2.05
Samba	20700	29480	2.16	2.64
Bandipora	25000	48730	2.19	3.12
Budgam	28000	53760	2.33	3.42
Ganderbal	27500	45984	2.22	2.90
Pulwama	35700	33500	2.58	2.37
Total (R & M)	18746	34173	1.94	2.58

Production potential of KBS 49 (SS 2): 17 q/ha, SS3: 17 q/ha, RSPN 25: 15-16 q/ha, DGS 1: NRCHB 101: 13.82-14.91 q/ha, RSPR 69: 19.90 q/ha

Table 60: Details of CFLDs on rapeseed & mustard conducted in Leh during 2020-21

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Leh-II (Nyoma)	RLM 514	1	15	2.19	2.33	6.16
Total (Rapeseed & Mustard)		1	15	2.19	2.33	6.16

KVK (1)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Leh-II (Nyoma)	6174	10180	1.29	1.43
Total (R & M)	6174	10180	1.29	1.43

Production potential of RLM 514: 20 q/ha

EXTENSION ACTIVITIES 2020-21

A range of extension activities, such as farmer trainings, field days, group discussions, kisan goshties, and group meetings, were organized under the CFLDs on Oilseeds program during 2020-21. These initiatives aimed to encourage the adoption of improved agricultural practices. During these programs, technical literature outlining advanced packages of practices developed by State Agricultural Universities (SAUs) was distributed to participating farmers.



Demonstration of rapeseed and mustard at KVK Solan



Demonstration on mustard, KVK Gurdaspur

Demonstration on mustard, KVK Una

In total, 315 extension activities were conducted during both the *Kharif* and *Rabi* seasons, across Punjab, Himachal Pradesh, Uttarakhand, Jammu & Kashmir, and Ladakh. Overall, 6,724 farmers from these states participated in the activities over the course of the year (Table 61).

Table 61: Details of extension activities conducted on oilseed crops under CFLDs on Oilseeds during 2020-21

Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Field day	36	65	2330
Awareness camp	7	12	232
Kisan goshti	6	9	278
Field visit	22	119	1111
Others	19	52	1270
Training	26	58	1503
Total	-	315	6724

Table 62: Details of extension activities conducted on sesame and soybean during the *Kharif* season, 2020-21

Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Field day	7	11	239
Awareness camp	2	2	37
Kisan goshti	0	0	0
Field visit	4	19	90
Others	2	4	28
Training	2	5	88
Total	-	41	482

Table 63: Details of extension activities conducted on rapeseed & mustard during the Rabi season 2020-21

Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Field day	29	54	2091
Awareness camp	5	10	195
Kisan gosthi	6	9	278
Field visit	18	100	1021
Others	17	48	1242
Training	24	53	1415
Total	99	274	6242



Training on gobhi sarson seed production technologies by KVKs Barnala and Solan



Field Day by KVKs Shimla and Hoshiarpur



Farmers-Scientists interaction on brown sarson CFLDs conducted by KVKs Reasi and Rajouri



Senior Agronomist (Oilseeds), PAU, Ludhiana, interacting with gobhi sarson farmers in KVKs Sangrur and Ludhiana

Achievements of CFLDs on Oilseeds in 2021-22

During the 2021-22 financial year, ICAR-ATARI, Zone-I (Ludhiana), was allocated ₹5,021,200 to implement 1,685 CFLDs on oilseeds across 674 ha. The demonstrations were carried out through 53 KVKs, including 21 in Punjab, 9 in Himachal Pradesh, 10 in Uttarakhand, and 13 in Jammu & Kashmir. Financial assistance for conducting the demonstrations was fixed at ₹12,000/ha for groundnut, ₹7,500/ha for soybean, and ₹5,000/ha for sesame during the *Kharif* season, and ₹6,000/ha for rapeseed and mustard during the *Rabi* season. Additionally, provision was made to hire a Senior Research Fellow at ₹35,000 plus HRA (16%) per month and a Data Entry Operator at ₹25,000 per month for a period of 12 months to ensure effective execution of the project.

A total of 260 CFLDs on oilseeds were allocated during the *Kharif* season across Zone-I, on an area of 104 ha, of which 25 demonstrations were allocated for groundnut on an area of 10 ha, 155

Table 64: Details of CFLDs on oilseed crops allocated and conducted during 2021-22

State	Crop	No. of KVKs (53)	Targets		Achievements	
			Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Kharif season						
Punjab	Groundnut	1	10	25	10	25
	Sesame	3	32	80	30	72
Sub-Total		3	42	105	40	97
Himachal Pradesh	Sesame	2	20	50	15	53
	Soybean	2	22	55	22	165
Sub-Total		4	42	105	37	218
Uttarakhand	Sesame	1	10	25	10	25
	Soybean	1	10	25	10	20
	Sub-Total	2	20	50	20	45
	Total (Groundnut)	1	10	25	10	25
	Total (Sesame)	6	62	155	55	150
	Total (Soybean)	3	32	80	32	185
	Total Kharif	9	104	260	97	360
Rabi season						
Punjab	R&M	21	220	550	220	624
Sub-Total		21	220	550	220	624
Himachal Pradesh	R&M	9	120	300	113.48	706
Sub-Total		9	120	300	113.48	706
Uttarakhand	R&M	10	100	250	100	743
Sub-Total		10	100	250	100	743
Jammu & Kashmir	R&M	13	130	325	120	581
Sub-Total		13	130	325	120	581
	Total (R&M)	53	570	1425	553.48	2654
	Total Rabi	53	570	1425	553.48	2654
	Grand Total	53	674	1685	650.48	3014

demonstrations on an area of 62 ha for sesame, and 80 demonstrations on an area of 32 ha for soybean. For the *Rabi* season, 1,425 demonstrations were allocated on an area of 570 ha for rapeseed and mustard. Although the total target for the year was 1685 demonstrations on an area of 674 ha, the efforts of participating KVKs led to the successful implementation on an area of 650.48 ha on 3014 demonstrations in the farmers' fields (Table 64).

KHARIF OILSEEDS 2021-22

During the *Kharif* season of 2021-22, KVKs under ICAR-ATARI, Zone-I, carried out CFLDs on groundnut, sesame, and soybean across Punjab, Himachal Pradesh, and Uttarakhand. In Punjab, 25 demonstrations were allocated on an area of 10 ha on groundnut, KVKs Hoshiarpur, Nawanshahr, and Ropar, targeting a total of 80 demonstrations on sesame on an area of 32 ha. In Himachal Pradesh, two KVKs, Hamirpur and Sirmour, had a target of 50 demonstrations on an area of 20 ha on sesame. Additionally, KVK Mandi and Shimla were allocated 55 demonstrations on an area of 22 ha. In Uttarakhand, 25 sesame demonstrations were allocated on an area of 10 ha for KVK Haridwar, and 25 soybean demonstrations on an area of 10 ha for KVK Pauri Garhwal. Altogether, 260 CFLDs were allocated on an area of 104 ha during the *Kharif* season of 2021-22 (Table 65).

Table 65: State-wise and KVK-wise details of allocated and conducted CFLDs on oilseed crops during the *Kharif* season, 2021-22

State	University	KVKs (9)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
Punjab	PAU, Ludhiana	Hoshiarpur	Groundnut	10	25	10	25
			Sub-Total	10	25	10	25
Punjab	PAU, Ludhiana	Hoshiarpur	Sesame	10	25	10	25
		Nawanshahr	Sesame	10	25	10	17
		Ropar	Sesame	12	30	10	30
			Sub-Total	32	80	30	72
Himachal Pradesh	CSKHPKV, Palampur	Hamirpur	Sesame	10	25	5	23
		Sirmour	Sesame	10	25	10	30
			Sub-Total	20	50	15	53
Uttarakhand	GBPUA&T, Pant Nagar	Haridwar	Sesame	10	25	10	25
			Sub-Total	10	25	10	25
Himachal Pradesh	CSKHPKV, Palampur	Mandi	Soybean	8	20	8	62
	Dr. YSPUH&F, Solan	Shimla	Soybean	14	35	14	103
			Sub-Total	22	55	22	165
Uttarakhand	VCGSGUHH&F, Bharsar	Pauri Garhwal	Soybean	10	25	10	20
			Sub-Total	10	25	10	20
			Total (Groundnut)	10	25	10	25
			Total (Sesame)	62	155	55	150
			Total (Soybean)	32	80	32	185
			Total	104	260	97	360

GROUNDNUT

PUNJAB

In Punjab, groundnut production technologies were demonstrated by KVK Hoshiarpur. The variety used for demonstration was J 87 in the selected farmers' fields. A total of 10 ha area was demonstrated on 25 farmers' fields. The yield recorded for the check plots was 11.80 q/ha, while the demonstrations yielded 14.90 q/ha, indicating an increase in yield by 26.27 percent. The net returns for the check plots were ₹22,553, compared to ₹38,193 for the demonstration plots, reflecting the economic benefits of the demonstrated variety. Additionally, the B: C ratio for the check plots was 1.47, while it increased to 1.76 for the demonstration plots, highlighting the financial viability of adopting the demonstrated variety J 87 for groundnut cultivation in the region (Table 66).

Table 66: Details of CFLDs on groundnut conducted in Punjab during 2021-22

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hoshiarpur	J 87	10	25	11.80	14.90	26.27
Total (Groundnut)		10	25	11.80	14.90	26.27

KVK (1)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Hoshiarpur	22553	38193	1.47	1.76	
Total (Groundnut)		22553	38193	1.47	1.76

Production potential of J 87: 32 q/ha

SESAME

PUNJAB

In Punjab, three KVKs, Hoshiarpur, Nawanshahr, and Ropar, conducted CFLDs on sesame, focusing on the demonstrations of improved variety PB Til No. 2. A total of 72 demonstrations were conducted on an area of 30 ha. The showcased variety demonstrated a notable increase in productivity, with the average yield from demonstration plots reaching 4.14 q/ha, compared to 3.16 q/ha in the check plots. The net returns from the demonstration plots were ₹31,424/ha, significantly higher than the ₹20,289/ha recorded from check plots. The B: C ratio also reflected this positive impact, increasing from 2.14 in check plots to 2.66 in the demonstration plots. These findings clearly



Monitoring of CFLD on groundnut at Shiekhan, KVK Hoshiarpur



Monitoring of CFLD on groundnut at Bachhohi, KVK Hoshiarpur

Table 67: Details of CFLDs on sesame conducted in Punjab during 2021-22

KVK (3)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hoshiarpur	PB Til No. 2	10	25	2.30	3.00	30.43
Nawanshahr	PB Til No. 2	10	17	3.67	4.78	30.11
Ropar	PB Til No. 2	10	30	3.50	4.65	32.95
Total (Sesame)		30	72	3.16	4.14	31.16

KVK (3)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Hoshiarpur	17455	28455	1.94	2.46
Nawanshahr	22500	33110	2.29	2.84
Ropar	20913	32707	2.19	2.67
Total (Sesame)	20289	31424	2.14	2.66

Production potential of PB Til No. 2: 7 q/ha

illustrate both the agronomic potential and the profitability of adopting PB Til No. 2 for sesame cultivation in the region (Table 67).

HIMACHAL PRADESH

In Himachal Pradesh, two KVKs, Hamirpur and Sirmour, conducted CFLDs on sesame, adopting the improved varieties RT 351 and PB Til No. 2. A total of 53 demonstrations were conducted on an area of 15 ha. The showcased variety demonstrated a notable increase in productivity, with the average yield from demonstration plots reaching 5.50 q/ha, compared to 4.40 q/ha in the check plots, with an increase of 26.06 percent. The net returns from the demonstration plots were ₹38,030, significantly higher than the ₹23,640 recorded from check plots. The B: C ratio also reflected this positive impact, rising from 2.02 in check plots to 2.51 in the demonstration plots (Table 68).

Table 68: Details of CFLDs on sesame conducted in Himachal Pradesh during 2021-22

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Hamirpur	RT 351	5	23	3.30	4.30	30.30
Sirmour	PB Til No. 2	10	30	5.50	6.70	21.82
Total (Sesame)		15	53	4.40	5.50	26.06

KVK (2)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Hamirpur	17780	27379	1.78	2.12
Sirmour	29500	48680	2.26	2.91
Total (Sesame)	23640	38030	2.02	2.51

Production potential of PB Til No. 2: 7 q/ha, RT 351: 7-8 q/ha

UTTARAKHAND

In Uttarakhand, KVK Haridwar conducted CFLDs on sesame, featuring the improved variety PB Til No. 2. A total of 25 demonstrations were conducted over an area of 10 ha. The improved variety showed a significant yield advantage, with demonstration plots averaging 4.20 q/ha, compared to 3.03 q/ha in



Visit by scientists to the sesame field in KVK Hamirpur



Crop view of CFLD on sesame at Bachhoi, KVK Hoshiarpur

the check plots, reflecting an increase of 38.61 percent in productivity. This improvement also translated into higher economic returns, as demonstration plots recorded net returns of ₹29,982, notably higher than the ₹17,616 from check plots. The B: C ratio increased from 1.91 in check plots to 2.40 in demonstration plots, highlighting the economic viability of the improved variety (Table 69).

Table 69: Details of CFLDs on sesame conducted in Uttarakhand during 2021-22

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Haridwar	PB Til No. 2	10	25	3.03	4.20	38.61
Total (Sesame)		10	25	3.03	4.20	38.61

KVK (1)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Haridwar	17616	29982	1.91	2.40
Total (Sesame)		17616	1.91	2.40

Production potential of PB Til No. 2: 7 q/ha

SOYBEAN

HIMACHAL PRADESH

CFLDs on oilseeds during the *Kharif* season were conducted on soybean by two KVKs in Himachal Pradesh, viz. Mandi and Shimla. In Mandi, the demonstrated variety was Palam Hara Soya 1, conducted on an area of 8 ha, with 62 demonstrations. The yield for check plots was 8.00 q/ha, while the demonstrations yielded 10.29 q/ha, reflecting an increase of 28.64 percent. Whereas, Shimla demonstrated the varieties of Palam Hara Soya 1, Palam Soya/Harit Soya, on an area of 14 ha on 103 farmers' fields. The yield for the check plot was 10.00 q/ha, whereas 13.85 q/ha for the demonstration plot, reflecting an increase of 38.50 percent. The average net returns from check plots of both the KVKs were ₹21,297, but the demonstration plots' returns were ₹25,726, resulting in a B: C ratio of 1.95 for check plots and 2.04 for demonstrations, respectively (Table 70).

UTTARAKHAND

CFLDs on soybean were conducted by KVK Pauri Garhwal in Uttarakhand; the demonstrated variety was PS 1347, with a total area of 10 ha and 20 demonstrations. The yield for check plots was 8.50 q/ha, while the demonstrations yielded 11.25 q/ha, reflecting an increase of 32.35 percent. The net returns

Table 70: Details of CFLDs on soybean conducted in Himachal Pradesh during 2021-22

KVK (2)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Mandi	Palam Hara Soya 1	8	62	8.00	10.29	28.64
Shimla	Palam Soya/Harit Soya	14	103	10.00	13.85	38.50
Total (Soybean)		22	165	9.00	12.07	33.57

KVK (2)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Mandi	10894	13952	1.43	1.50	
Shimla	31700	37500	2.47	2.58	
Total (Soybean)		21297	25726	1.95	2.04

Production potentials of Palam soya: 15-20 q/ha, Palam Hara soya: 18 q/ha

from check plots were ₹17,000, but in the demonstration plots' returns were ₹28,150, resulting in a B: C ratio of 1.66 for check plots and 2.01 for demonstrations, respectively (Table 71).

Table 71: Details of CFLDs conducted on soybean in Uttarakhand during 2021-22

KVK (1)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Pauri Garhwal	PS 1347	10	20	8.50	11.25	32.35
Total (Soybean)		10	20	8.50	11.25	32.35

KVK (1)	Net Returns (₹/ha)		B: C Ratio		
	Check	Demo	Check	Demo	
Pauri Garhwal	17000	28150	1.66	2.01	
Total (Soybean)		17000	28150	1.66	2.01

Production potential of PS 1347: 20-25 q/ha



Soybean field visit by experts of KVK Mandi



Monitoring of CFLDs on soybean by the experts of KVK Mandi

RABI/OILSEEDS 2021-22

During the Rabi season, 2021-22, CFLDs on rapeseed and mustard were organized in the selected farmers' fields. A total of 1425 demonstrations on an area of 570 ha were allocated among four states, viz., Punjab, Himachal Pradesh, Uttarakhand, and Jammu and Kashmir, demonstrating improved varieties and a package of practices for rapeseed and mustard. However, the conducted demonstrations were 2654 on 553.48 ha area. A total of 550 demonstrations were allocated on an area

of 220 ha in Punjab, 300 demonstrations on an area of 120 ha in Himachal Pradesh, 250 demonstrations on an area of 100 ha in Uttarakhand, and 325 demonstrations on an area of 130 ha in Jammu & Kashmir (Table 72).

Table 72: State-wise and KVK-wise details of allocated and conducted CFLDs on oilseed crops during the Rabi season, 2021-22

State	University	KVKs (53)	Crop	Targets		Achievements		
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)	
Punjab	PAU, Ludhiana	Amritsar	R & M	10	25	10	25	
		Bathinda	R & M	10	25	10	25	
		Faridkot	R & M	10	25	10	25	
		Fatehgarh Sahib	R & M	10	25	10	25	
		Ferozepur	R & M	10	25	10	25	
		Gurdaspur	R & M	10	25	10	25	
		Hoshiarpur	R & M	10	25	10	25	
		Jalandhar	R & M	10	25	10	25	
		Kapurthala	R & M	10	25	10	25	
		Ludhiana	R & M	10	25	10	25	
		Mansa	R & M	10	25	10	25	
		Moga	R & M	10	25	10	75	
		Muktsar	R & M	10	25	10	25	
		Nawanshahr	R & M	10	25	10	19	
		Pathankot	R & M	10	25	10	25	
		Patiala	R & M	10	25	10	25	
		Ropar	R & M	20	50	20	50	
		Sangrur	R & M	10	25	10	26	
		GADVASU, Ludhiana	Barnala	R & M	10	25	10	50
			Mohali	R & M	10	25	10	32
	Tarn Taran		R & M	10	25	10	22	
	Sub-Total				220	550	220	624
Himachal Pradesh	CSKHPKV, Palampur	Bilaspur	R & M	20	50	20	50	
		Hamirpur	R & M	10	25	7.14	31	
		Kangra	R & M	20	50	20	76	
		Mandi	R & M	10	25	10	79	
		Sirmour	R & M	10	25	7.34	132	
	Dr. YSPUH&F, Solan	Una	R & M	20	50	20	96	
		Chamba	R & M	10	25	10	80	
		Shimla	R & M	10	25	10	82	
		Solan	R & M	10	25	9	80	
Sub Total				120	300	113.48	706	
Uttarakhand	GBPUA&T, Pant Nagar	Almora	R & M	10	25	10	25	
		Chamoli	R & M	10	25	10	174	
		Champawat	R & M	10	25	10	65	
		Dehradun	R & M	10	25	10	25	
		Haridwar	R & M	10	25	10	25	

State	University	KVKs (53)	Crop	Targets		Achievements	
				Area (ha)	Demo (No.)	Area (ha)	Demo (No.)
		Nainital	R & M	10	25	10	25
		US Nagar	R & M	10	25	10	15
	VCGSGUHH&F,	Pauri Garhwal	R & M	10	25	10	158
	Bharsar	Tehri Garhwal	R & M	10	25	10	70
	VPKAS, Almora	Bageshwar	R & M	10	25	10	161
		Sub-Total		100	250	100	743
Jammu & Kashmir	SUKAST-J,	Doda	R & M	10	25	10	50
	Jammu	Jammu	R & M	10	25	10	74
		Kathua	R & M	10	25	10	41
		Rajouri	R & M	10	25	10	100
		Reasi	R & M	10	25	10	89
	SUKAST-K,	Anantnag	R & M	10	25	10	34
	Srinagar	Bandipora	R & M	10	25	10	43
		Budgam	R & M	10	25	10	25
		Ganderbal	R & M	10	25	10	31
		Leh-Nyoma	R & M	10	25	0	0
		Pulwama	R & M	10	25	10	34
		Srinagar	R & M	10	25	10	10
	ICAR-CITH, Srinagar	Baramulla	R & M	10	25	10	50
		Sub Total		130	325	120	581
		Total (Rapeseed and Mustard)		570	1425	553.48	2654
		Total Rabi		570	1425	553.48	2654

PUNJAB

During the *Rabi* season of 2021-22, a total of 624 CFLDs were carried out on an area of 220 ha by 21 KVKs in Punjab. The demonstrations of rapeseed and mustard featured improved varieties of canola gobhi sarson (GSC 7), which were showcased on farmers' fields. Among the participating KVKs, the highest increase was observed at KVK Mansa (33.88%), followed by Jalandhar (32.83%) and Pathankot (28.39%). In contrast, KVK Bathinda recorded the lowest yield increase (5.12%) in demonstration plots. On an average, the demonstrated varieties yielded 18.28 q/ha, marking a 19.24 percent increase over the check plots. Economically, the net returns from demonstration plots were ₹60,629, which was significantly higher than the ₹47,373 from the check plots (Table 73).

Table 73: Details of CFLDs on rapeseed & mustard conducted in Punjab during 2021-22

KVK (21)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Amritsar	GSC 7	10	25	15.93	19.05	19.59
Bathinda	GSC 7	10	25	20.50	21.55	5.12
Faridkot	GSC 7	10	25	15.10	16.08	6.46
Fatehgarh Sahib	GSC 7	10	25	19.22	20.57	7.02
Ferozepur	GSC 7	10	25	14.45	16.25	12.46

KVK (22)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Gurdaspur	GSC 7	10	25	15.04	17.21	14.41
Hoshiarpur	GSC 7	10	25	15.30	16.75	9.48
Jalandhar	GSC 7	10	25	12.87	17.10	32.83
Kapurthala	GSC 7	10	25	15.00	18.50	23.33
Ludhiana	GSC 7	10	25	13.50	16.70	23.70
Mansa	GSC 7	10	25	11.44	15.31	33.88
Moga	GSC 7	10	75	15.60	19.74	26.50
Muktsar	GSC 7	10	25	18.00	21.25	18.06
Nawanshahr	GSC 7	10	19	17.90	19.32	7.91
Pathankot	GSC 7	10	25	12.00	15.41	28.39
Patiala	GSC 7	10	25	17.34	20.53	18.37
Ropar	GSC 7	20	50	13.13	16.36	24.62
Sangrur	GSC 7	10	26	17.30	21.44	23.92
Barnala	GSC 7	10	50	15.81	20.24	28.02
Mohali	GSC 7	10	32	14.97	18.88	26.09
Tarn Taran	GSC 7	10	22	13.75	15.65	13.82
Total (Rapeseed & Mustard)		220	624	15.44	18.28	19.24

KVK (21)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Amritsar	50908	66275	2.89	3.29
Bathinda	71600	76840	3.71	3.71
Faridkot	47988	50155	2.70	2.66
Fatehgarh Sahib	65797	68077	3.29	3.19
Ferozepur	38550	54098	2.37	2.77
Gurdaspur	43693	55136	2.54	2.73
Hoshiarpur	42048	55088	2.46	2.85
Jalandhar	35254	57961	2.35	3.05
Kapurthala	48003	57003	2.68	2.75
Ludhiana	38632	52944	2.43	2.86
Mansa	27706	52883	1.96	2.73
Moga	43306	66360	2.51	3.17
Muktsar	61100	74021	3.14	3.51
Nawanshahr	61282	66458	3.36	3.39
Pathankot	33500	44998	2.22	2.59
Patiala	60511	70576	3.29	3.37
Ropar	36900	51148	2.29	2.74
Sangrur	58235	69498	2.96	3.31
Barnala	49917	74160	2.87	3.65
Mohali	43030	57009	2.48	2.78
Tarn Taran	36875	52521	2.22	2.67
Total (R & M)	47373	60629	2.70	3.04

Production potential of GSC 7: 22 q/ha

HIMACHAL PRADESH

A total of 706 CFLDs on rapeseed and mustard were carried out on an area of 113.48 ha by nine KVKs of Himachal Pradesh, including those in Bilaspur, Hamirpur, Kangra, Mandi, Sirmour, Una, Chamba, Shimla, and Solan. The demonstrations featured improved varieties such as GSC 7, Neelam, ONK 1, RH 749, Karan Raya, Surbhi, PBR 357, KBS 3, RLC 3, and Pusa Tarak on farmers' fields. The highest yield increase was recorded in KVK Bilaspur at 33.08 percent, followed in KVK Kangra (29.80%) and KVK Mandi (28.43%). Conversely, KVK Shimla reported the lowest increase at 4.89 percent. The average yield under demonstration was 8.62 q/ha, reflecting 18.18 percent increase over the check yield. The demonstration plots also showed higher profitability, with net returns of ₹35,825 compared to ₹23,999 from the check plots (Table 74).

Table 74: Details of CFLDs on rapeseed & mustard conducted in Himachal Pradesh during 2021-22

KVK (9)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Bilaspur	Neelam	20	50	6.50	8.65	33.08
Hamirpur	GSC 7	7.14	31	7.80	8.97	14.96
Kangra	GSC 7	20	76	8.50	11.03	29.80
Mandi	ONK 1 & GSC 7	10	79	4.01	5.15	28.43
Sirmour	Karan Raya, Surbhi	7.34	132	7.65	9.30	21.57
Una	GSC 7, RLC 3, PBR 357	20	96	9.67	11.32	17.09
Chamba	GSC 7, KBS 3	10	80	5.25	5.55	5.71
Shimla	RH 749	10	82	9.20	9.65	4.89
Solan	Pusa Tarak	9	80	7.40	8.00	8.11
Total (Rapeseed & Mustard)		113.48	706	7.33	8.62	18.18

KVK (9)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Bilaspur	20542	36901	1.87	2.41
Hamirpur	25455	38109	2.08	2.50
Kangra	29500	49000	2.51	3.23
Mandi	8630	9690	1.37	1.36
Sirmour	24911	39505	2.05	2.48
Una	38975	42662	2.69	2.61
Chamba	12750	24118	1.66	2.13
Shimla	31950	51023	2.59	3.18
Solan	23280	31420	2.22	2.49
Total (R & M)	23999	35825	2.12	2.49

Production potentials of GSC 7: 22 q/ha, Neelam: 15-16 q/ha, ONK 1: 14-15 q/ha, Pusa Tarak: 20 q/ha, Karan Raya: 24.12 q/ha, Surbhi: 18-20 q/ha, KBS3: 10-11 q/ha, RH 749: 20-23 q/ha

UTTARAKHAND

In Uttarakhand, ten KVKs viz., Almora, Chamoli, Champawat, Dehradun, Haridwar, Nainital, U. S. Nagar, Pauri Garhwal, Tehri Garhwal, and Bageshwar conducted a total of 743 CFLDs on an area of 100 ha. These demonstrations featured improved rapeseed and mustard varieties, including PM 30, PHT 1, Uttara, PT 508, Hybrid 45S46, PYS 1, and Pant Sweta, which were evaluated on farmers' fields. The highest yield increase

was recorded by KVK Pauri Garhwal (38.46%), followed by Almora (37.60%) and Haridwar (36.49%). In contrast, KVK Chamoli showed the lowest yield increase of 15.42 percent. On an average, the demonstration plots yielded 10.53 q/ha, representing a 29.65 percent increase over the check plots, which yielded 8.07 q/ha. These demonstrations also proved to be economically beneficial, with net returns from the improved varieties reaching ₹42,834, compared to ₹29,031 from the check plots (Table 75).

Table 75: Details of CFLDs on rapeseed & mustard conducted in Uttarakhand during 2021-22

KVK (10)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Almora	PM 30	10	25	10.00	13.76	37.60
Chamoli	PHT 1	10	174	5.70	6.58	15.42
Champawat	Uttara & PHT 1	10	65	7.27	9.06	24.68
Dehradun	PT 508	10	25	7.20	9.85	36.81
Haridwar	Hybrid 45S46	10	25	10.44	14.25	36.49
Nainital	PYS 1, Uttara, PT 508	10	25	7.54	8.76	16.18
U. S. Nagar	PPS 1	10	15	9.80	13.00	32.65
Pauri Garhwal	PT 508	10	158	6.50	9.00	38.46
Tehri Garhwal	PHT 1	10	70	7.75	9.53	22.90
Bageshwar	Pant Sweta	10	161	8.50	11.5	35.29
Total (Rapeseed & Mustard)		100	743	8.07	10.53	29.65

KVK (10)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Almora	38680	63100	2.84	3.80
Chamoli	17963	22626	1.96	2.10
Champawat	18045	33305	1.83	2.46
Dehradun	19510	34940	2.04	2.79
Haridwar	38452	59851	2.80	3.66
Nainital	24430	34212	2.34	2.58
U. S. Nagar	44700	60100	3.35	3.93
Pauri Garhwal	21000	31923	2.14	2.50
Tehri Garhwal	29700	41050	2.56	3.04
Bageshwar	37825	47236	3.09	3.42
Total (R & M)	29031	42834	2.49	3.03

Production potentials of PM 30: 15-22 q/ha, PHT 1: 9-12 q/ha, Uttara: 15-18 q/ha, PT 508: 16-19 q/ha, PYS 1: 15-19 q/ha, Hybrid 45S46: 25-28 q/ha, Pant Sweta: 16-20 q/ha

JAMMU & KASHMIR

A total of 581 CFLDs on rapeseed and mustard were carried out on an area of 120 ha in Jammu and Kashmir by twelve KVKs: Doda, Jammu, Kathua, Rajouri, Reasi, Anantnag, Bandipora, Budgam, Ganderbal, Pulwama, Srinagar, and Baramulla. These demonstrations introduced improved varieties, including SS 2 & 3, RSPN 25, Giriraj (DRMRIJ 31), and RH 725 on farmers' fields. Among the participating KVKs, Srinagar reported the highest yield increase at 36.73 percent, followed by Reasi (36.49%) and Budgam (36.36%). The lowest yield increase was observed in Anantnag at 14.20 percent. On an average, the demonstration plots yielded 12.94 q/ha, representing a 30.92 percent increase over the check yield of 9.89 q/ha. The net returns from the demonstration plots were ₹51,290, compared to ₹34,876 from the check plots (Table 76).

Table 76: Details of CFLDs conducted on rapeseed & mustard in Jammu & Kashmir during 2021-22

KVK (12)	Demonstrated Variety	Area (ha)	No. of farmers	Yield (q/ha)		% increase
				Check	Demo	
Doda	SS 2	10	50	10.20	13.70	34.31
Jammu	RSPN 25	10	74	16.00	20.00	25.00
Kathua	RSPN 25	10	41	9.50	12.60	32.63
Rajouri	Giriraj, RSPN 25, GSC 6	10	100	6.80	9.00	32.35
Reasi	RSPN 25	10	89	7.40	10.10	36.49
Anantnag	SS 3	10	34	6.83	7.80	14.20
Bandipura	SS 3	10	43	9.00	12.01	33.39
Budgam	SS 2	10	25	11.00	15.00	36.36
Ganderbal	SS 2	10	31	10.00	13.00	30.00
Pulwama	SS 2	10	34	11.50	15.09	31.22
Srinagar	SS 2	10	10	9.80	13.40	36.73
Baramulla	RH 725 and Giriraj	10	50	10.60	13.60	28.30
Total (Rapeseed & Mustard)		120	581	9.89	12.94	30.92

KVK (12)	Net Returns (₹/ha)		B: C Ratio	
	Check	Demo	Check	Demo
Doda	41258	59422	3.02	3.39
Jammu	71950	94000	4.26	4.62
Kathua	28500	49500	2.19	2.77
Rajouri	16700	30130	1.83	2.25
Reasi	22850	38400	2.09	2.57
Anantnag	13738	21200	1.55	1.77
Bandipura	26700	47675	2.22	2.99
Budgam	43700	60900	2.80	3.15
Ganderbal	34500	51984	2.41	2.98
Pulwama	46350	63040	3.00	3.29
Srinagar	35300	49900	2.44	2.74
Baramulla	36967	49333	2.49	2.71
Total (R & M)	34876	51290	2.53	2.93

Production potentials of SS 2: 17 q/ha, SS 3: 17 q/ha, RSPN 25: 15-16 q/ha, GSC 6: 15.25 q/ha, RH 725:27 q/ha, Giriraj (DRMRIJ 31): 22.25-27.50 q/ha



Field view of rapeseed & mustard in KVK Hamirpur



Monitoring of CFLDs on gobhi sarson by KVK experts in Mandi



Field visit by a scientist in the field of rapeseed and mustard at KVK Ludhiana



Field visit of rapeseed & mustard by the experts of KVK Bathinda

EXTENSION ACTIVITIES 2021-22

Various extension activities such as farmer trainings, field days, group discussions, kisan goshties, and group meetings were organized under the CFLDs on Oilseeds program during 2021-22. These events aimed to promote the adoption of improved agricultural practices. As part of the initiative, technical literature outlining advanced packages of practices developed by State Agricultural Universities (SAUs) was distributed to the participating farmers. During the year 2021-22, 325 extension activities were conducted during both the *Kharif* and *Rabi* seasons across different KVKs of Punjab, Himachal Pradesh, Uttarakhand, Jammu & Kashmir, and Ladakh. A total of 8,172 farmers from these states took part in the activities over the year (Table 77).

Table 77: Details of extension activities conducted on oilseed crops under CFLDs on Oilseeds during 2021-22

Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Field day	55	72	3390
Awareness camp	10	17	635
Kisan goshti	11	15	505
Field visit	23	87	709
Others	26	79	1516
Training	31	55	1417
Total	-	325	8172

In the *Kharif* season, 38 different extension activities, such as field days, awareness camps, kisan goshties, field visits, others, and trainings, were organized by different KVKs, and 582 farmers participated in these activities (Table 78). Similarly, a total of 287 extension activities were organized by KVKs during the *Rabi* season, and 7590 farmers benefited (Table 79).

Table 78: Details of extension activities conducted on groundnut, sesame, and soybean during the *Kharif* season 2021-22

Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Field day	6	10	260
Awareness camp	1	2	50
Kisan goshti	1	2	34
Field visit	5	15	94
Others	2	4	36
Training	2	5	108
Total	-	38	582

Table 79: Details of extension activities conducted on rapeseed & mustard during the Rabi season 2021-22

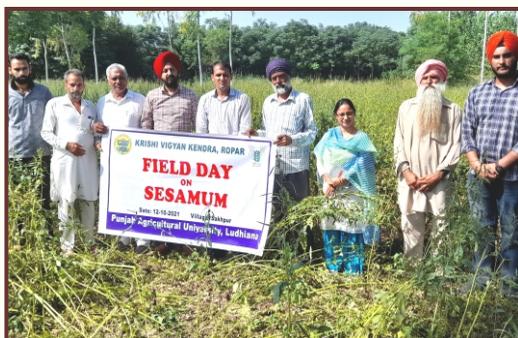
Extension Activities	No. of KVKs	No. of Activities	No. of Farmers
Field day	49	62	3130
Awareness camp	9	15	585
Kisan goshti	10	13	471
Field visit	18	72	615
Others	24	75	1480
Training	29	50	1309
Total	-	287	7590



Field day on groundnut at KVK Hoshiarpur



Kisan goshti on groundnut at KVK Hoshiarpur



Field day celebration on sesame at KVK Ropar



List of contributors in the CFLDs on Oilseeds from year 2018-19 to 2021-22

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		Dr. Shaiq Ahmad Ganai	Dr. Shaiq Ahmad Ganai	Dr. Shaiq Ahmad Ganai	
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