Performance of Cluster Frontline Demonstrations on Oilseeds in North India

ICAR-Agricultural Technology Application Research Institute, Zone-I
PAU Campus, Ludhiana - 141 004

Performance of Cluster Frontline Demonstrations on Oilseeds in North India

Sponsored by

Department of Agriculture, Cooperation & Farmers' Welfare (DAC&FW) under National Mission on Oilseeds and Oil Palm

ICAR- Agricultural Technology Application Research Institute, Zone-1, PAU Campus, Ludhiana - 141004, Punjab

Citation:
Mamgai P, Sardana V, Murai A S & Bala A (2019) Performance of Frontline Demonstrations on Oilseeds in North India. ICAR-ATARI, Zone-I, Ludhiana, Punjab. Pp:60

Published by:
Dr. Rajbir Singh, Director
ICAR-Agricultural Technology Application Research Institute,
Zone-I, PAU Campus, Ludhiana, Punjab-141001

Number of copies: 100

Phone:
0161-2401018, 2401092
Email: zcu1ldh@gmail.com
Website: www.atari1icar.res.in

Compiled & edited by:
Preeti Mamgai
Virender Sardana
Ashish Santosh Murai
Akku Bala

Year of Publication: 2019

Printed at:
Printing Service Co.
3801/1, Model Town, Ludhiana
0161-2410896, 0988821624 (Cell)

Dr. Rajbir Singh
Director

भा.कृ.अनु.प.–कृषि प्रौद्योगिकी अनुसंधान संस्थान

क्षेत्र -1, पं.कृ.वि., परिसर, लुधियाना - 141004

ICAR-Agricultural Technology Application Research Institute

ICAR-Agricultural Technology Application Research Institute

PREFACE

India is the fourth largest producer of oilseeds in the world but domestic production of edible oils has not kept pace with its rising demand in the country. This has lead to a substantial increase in the imports of edible oils. Oilseed crops are the second most important determinant of agricultural economy, next only to cereals within the segment of field crops. The production of oilseeds has increased from 26.68 million tonnes in 2015-16 to 29.82 million tonnes in 2017-18.

Department of Agriculture, Cooperation & Farmers' Welfare (DAC&FW) under National Mission on Oilseeds and Oil Palm (NMOOP) is striving to increase the area and production of oilseeds in India. In this endeavour, the DAC&FW sanctioned the project "**Cluster Frontline Demonstrations on Oilseeds"** for the year 2017-18 to provide seeds of improved varieties and dissemination of the improved technologies which have been generated by State Agricultural Universities and ICAR Institutes to the farmers. The NMOOP sanctioned 55.18 lakh for the project to ICAR-ATARI, Zone-I, Ludhiana during May, 2017 for conducting CFLDs by 36 *Krishi Vigyan Kendras* in the states of Punjab, Himachal Pradesh and Jammu & Kashmir.

I am highly thankful to DAC&FW and NMOOP for providing funds for the project. I also thank Dr. A.K. Singh, Deputy Director General (Agricultural Extension) and Dr. V.P Chahal, Assistant Director General (Agricultural Extension) for their valuable guidance in the project.

I extend my gratitude to Directors of Extension Education of various State Agricultural Universities and Programme Coordinators of KVKs for successful implementation of the project and to the farmers whose joint efforts have helped in achieving the goals. I whole-heartedly congratulate all who were associated with the project.

(RAJBIR SINGH)

Ludhiana

Date: April 2019

Executive Summary

In India cultivation of oilseed is considered important next to cereals. To boost the indigenous production of oilseed, **"Cluster Frontline Demonstrations on Oilseeds"** project was initiated by the Department of Ministry of Agriculture Cooperation and Farmers' Welfare (DAC&FW) with cooperation of Division of Extension Education, ICAR, New Delhi during 2015-16 and it continued in 2017-18. The main objective for conducting Cluster Frontline Demonstrations is to show the production potential of notified oilseed varieties and package of practices and technologies generated in oilseed for higher production, better productivity and profitability to the farmers. The project was implemented by ICAR-ATARIs through *Krishi Vigyan Kendras* (KVKs) during 2015 to 2018 with the aim to enhance the oilseed production in the country.

In ICAR-ATARI, Zone-I, the project was implemented through 36 KVKs in the states of Punjab, Himachal Pradesh and Jammu & Kashmir. A budget for each crop *i.e* groundnut ₹ 8500/ha, rapeseed-mustard ₹ 6000/ha and sesame ₹ 5000/ha was provided to the respective KVKs for providing critical inputs like seed, biofertilizers *etc.* to the farmers for conducting cluster demonstrations in the farmers' field. During *kharif* season, seven KVKs laid 205 CFLDs on an area of 82.40 ha on groundnut and sesame crops. In Punjab, average yield of 18.55 q/ha and 5.20 q/ha was recorded from demonstrated plots of groundnut and sesame respectively. In sesame, 5.65 q/ha yield was reported in Himachal Pradesh and 5.80 q/ha in Jammu & Kashmir.

In *Rabi* season, total 36 KVKs of three states conducted 1469 CFLDs on rapeseed-mustard on an area of 587.5 ha. In rapeseed-mustard CFLDs, 23.7 per cent, 33.5 per cent and 42.6 per cent higher yield was recorded as compared to local check in Punjab, Himachal Pradesh and Jammu & Kashmir respectively. Throughout different seasons, few KVKs were unable to achieve the targets. While executing cluster frontline demonstrations, the technologies like improved variety, seed treatment, line sowing of crop, different intercropping systems, integrated pest management etc. were demonstrated at the farmers' field.

Extension activities played an important role to disseminate the technologies and other related issues in CFLDs. During the year 2017-18, 93 extension activities for farmers were conducted by KVKs across the states of Zone-1 in which as many as 6742 farmers actively participated. The extension activities comprised farmers-scientists interaction,

method demonstrations on scientific practices, field days, trainings awareness camps, kisan *goshthies*, message by Whatsapp, etc.

The training programme on Cluster Frontline Demonstrations on Oilseeds was organized by ICAR-ATARI, Ludhiana at PAU, Ludhiana on December 07-08, 2017 for subject matter specialist implementing this project in the respective districts. In this training programme, scientists from ICAR-ATARI, Zone-I, along with forty programme coordinators (PCs) and subject matter specialists (SMS) of 20 KVKs of Punjab participated. The experts from Oilseeds Section, Department of Plant Breeding and Genetics, PAU Ludhiana delivered various lectures in this training programme. The trainees from KVKs requested that such training for SMS should be conducted regularly to update their knowledge and to discuss the problems faced by scientists in conducting the CFLDs at the farmers' fields.

कार्यकारी सारांश

भारत में अनाज की खेती के बाद तिलहन की खेती को महत्वपूर्ण स्थान माना गया है। इस लिए भारत में तिलहन के उत्पादन को बढ़ावा देने के लिए वर्ष 2015 में कृषि और किसान कल्याण मंत्रालय (DAC & FW) विभाग द्वारा ''तिलहन पर समूह अग्रिम पंक्ति प्रसार प्रदर्शन'' शुरू किये गये। जिसे 2017-18 में भी जारी रखा गया। इस परियोजना का मुख्य उद्देश्य अधिसूचित तिलहनों की किस्मों की उप्पादन क्षमता, बेहतर उप्पादकता और किसानों के लाभकारी मुनाफे के लिए तिलहनों के उप्पादन के सर्वोत्तम अभ्यासों और तकनीकों का प्रदर्शन करता है। देश में तिलहन के उत्पादन को बढ़ाने के उद्देश्य से यह परियोजना आई.सी.ए.आर-अटारी के माध्यम से कृषि विज्ञान केंद्रों (के.वी.के) द्वारा कार्यान्वित की गई।

अटारी क्षेत्र-1 में इस परियोजना को पंजाब, हिमाचल प्रदेश और जम्मू तथा कश्मीर राज्यों में 36 के.वी.के. के द्वारा लागू किया गया। तिलहन पर प्रदर्शन करने के लिये मूंगफली पर रू. 8500 प्रति हेक्टेयर, सरसों पर 6000 रूपये प्रति हेक्टेयर, तल के लिए 5000 रूपये प्रति हेक्टेयर का अनुदान बीज, जैव उर्वरक आदि मूलभूत आदानों को प्रदान करने के लिए के.वी.के. के माध्यम से दिये गए। खरीफ ऋतु के दौरान कुल 82.40 हेक्टेयर क्षेत्र में मूंगफली तथा तिल की 205 प्रर्दशनियां 5 कृषि विज्ञान केन्दों द्वारा लगाई गई। पंजाब में मूँगफली तथा तिल की समूह पंक्ति प्रदर्शन में 18.55 क्विंटल प्रति हेक्टेयर तथा 5.20 क्विंटल प्रति हेक्टेयर उपज दर्ज की गई। तिल की अग्रिम पंक्ति प्रदर्शन में हिमाचल प्रदेश 5065 प्रति हेक्टेयर तथा जम्मू कश्मीर में 5.80 प्रति हेक्टेयर पैदावार दर्ज की गई।

रबी में सरसों पर कुल 587.5 क्षेत्रफल पर 1469 अग्रिम पंक्ति प्रर्दशनियां 36 कृषि विज्ञान केन्द्रों क्षरा लगाई गई। पंजाब, हिमाचल प्रदेश तथा जम्मू-कश्मीर में सरसों की फल पर स्थानीय उपज की तुलना में क्रमश: 23.70 प्रतिशत, 33.50 प्रतिशत तथा 42.60 प्रतिशत अधिक उपज दर्ज की गई। कुछ कृषि विज्ञान केन्द्र खरीफ तथा रबी ऋतुओं में अपने लक्ष्य को हासिल करने में असमर्थ रहे। अग्रिम पंक्ति प्रदर्शन द्वारा उन्नत किस्में, बीज उपचार, फसलों की बुवाई, कीट प्रबंधन आदि तकनीकों को किसानों के खेत पर प्रदर्शति किया गया।

अग्रिम पंक्ति प्रदर्शन में प्रौद्योगिकियों और अन्य संबंधित मुद्दों का प्रसार करने के लिए विस्तार गतिविधियों की एक महत्वपूर्ण भूमिका होती है। वर्ष 2017-18 के दौरान, क्षेत्र-1 के अन्तर्गत राज्यों में कुल 93 विस्तार गतिविधियों का आयोजन किया गया, जिसमें 6742 किसानों ने सक्रिय रूप से भाग लिया। विस्तार गतिविधियों में किसानों-वैज्ञनिकों के बीच संवाद, वैज्ञानिक पद्वतियों, क्षेत्र दिवसों, जागरूकता शिविर, किसान गोष्ठी, वॉट्स एप द्वारा संदेश आदि शामिल थे।

आई.सी.ए.आर-अटारी, लुधियाना द्वारा 07-08 दिसंबर 2017 को तिलहन पर अग्रिम पंक्ति प्रदर्शन 2017-18 प्रशिक्षण कार्यक्रम पी.ए.यू लुधियाना में आयोजित किया गया। इस प्रशिक्षण कार्यक्रम में आई.सी.ए.आर.-अटारी, लुधियाना के वैज्ञानिक, पंजाब के 20 कृषि विज्ञान केन्द्रों के कार्यक्रम समन्वयक और वैज्ञनिकों ने भाग लिया।

इस प्रशिक्षण कार्यक्रम में तिलहन अनुभाग, पादप प्रजनन और अनुवांशिकी विभाग, पंजाब कृषि विश्वविद्यालय लुधियाना के विशेषज्ञों द्वारा विभिन्न विषयों पर व्याख्यान दीये गये। कृषि विज्ञान केन्द्रों के प्रशिक्षुओं ने अनुरोध किया कि इस तरह के प्रशिक्षण कार्यक्रम नियमित रूप से आयोजित किय जाने चाहिए तांकि ज्ञान में और भी वृद्धि हो।

Contents

Acronyms

ATARI	Agricultural Technology Application Research Institute
CSKHPKV	Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya
DAC&FW	Department of Agriculture, Cooperation & Farmers' Welfare
DWD	Directorate of Wheat Development
FAO	Food and Agriculture Organization
FYM	Farm Yard Manure
CFLDs	Cluster Frontline Demonstrations
GADVASU	Guru Angad Dev Veterinary and Animal Sciences University
ICAR	Indian Council of Agricultural Research
INM	Integrated Nutrient Management
IPM	Integrated Pest Management
IV	Improved Variety
KVK	Krishi Vigyan Kendra
NMOOP	National Mission on Oilseeds and Oil Palm
PAU	Punjab Agricultural University
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 Organization
WM	Weed Management
YSPUH&F	Dr. Yashwant Singh Parmar University of Horticulture and Forestry

Introduction

India is endowed with a wide variety of agro-climates and soils that enable cultivation of variety of oilseed crops. In the agricultural economy of India, oilseeds are next only to food grains in terms of acreage, production and value. Oilseed production assumes great importance in India because of the huge gap in demand and supply which has resulted in import of vegetables oil worth millions of rupees every year. The Planning Commission of India has projected demand of 46.0 million tonnes of oilseeds for the year 2020-21 against the projected supply of 34.0 million tonnes at the current growth rate. Nine oilseed crops are grown in the country which include seven edible oilseeds viz; soybean, groundnut, rapeseed-mustard, sunflower, sesame, safflower and niger and two non-edible oilseeds namely castor and linseed. India ranks first in the production of most of the minor oilseeds (niger, safflower, sesame and castor). In India, different oilseeds are grown on nearly 27 million hectares area across the length and breadth of the country during *kharif* (June-July to October-November), *rabi* (October-November to March-April) and *summer/spring* season (January-March to April-May). The area, production and productivity of important oilseed crops in India are presented in Table 1.

Table 1: Crop wise area, production and productivity of important oilseed crops in India.

Crop	Area (million ha)		Production (million tonnes)		Yield (qtl/ha)	
	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17
Groundnut *Arachis Hypogaea*	4.60	5.34	6.73	7.46	14.65	13.98
Sesame *Sesamum Indicum*	1.95	1.67	0.85	0.75	4.36	4.48
Sunflower *Helianthus*	0.49	0.38	0.42	0.25	6.08	6.60
Rapeseed -Mustard *Brassica napus*	5.75	6.07	6.80	7.92	11.83	13.04
Total	**12.79**	**13.46**	**14.80**	**16.38**	**36.92**	**38.10**

Source: Indiastat.com

The total area under oilseed crops (groundnut, sesame, sunflower and rapeseed mustard) was 12.79 million hectares during 2015-16 which increased 13.46 million hectares during 2016-17 (Table.1). The total production showed increase in year 2015-16 *i.e* 14.80 million tonnes to 16.38 million tonnes during period from 36.92 qtl/ha to 38.10 qtl/ha in 2016-17. In India,

rapeseed–mustard occupies the highest area among oilseeds. It is grown in diverse agro-climatic conditions ranging from northeastern/northern-western hills to down south under irrigated/ rainfed, timely/late sown, inter cropping and mixed cropping systems. The rapeseed mustard is produced in India mainly for domestic consumption and mostly consumed in the northern, central and eastern parts of the country.

To increase the production and productivity of oilseed crops in the country, Ministry of Agriculture and Farmers' Welfare, Government of India sanctioned a project on "Cluster Frontline Demonstrations of Oilseeds in 2017-18" under National Mission on Oilseeds and Oil Palm (NMOOP) implemented through eleven ICAR-Agricultural Technology Application Research Institutes (ATARI) all over India. The NMOOP was launched in April, 2014 keeping in view the achievements of the previous schemes namely, Integrated Scheme on Oilseeds, Oil Palm and Maize (ISOPOM), Tree Borne Oilseeds (TBOs) and Oil Palm Area Expansion (OPAE) programme implemented during 11th five-year plan (from 2007 to 2012).

The objective for conducting CFLDs was to show the production potential of notified oilseed varieties and technologies generated by ICAR and State Agricultural Universities (SAUs) in oilseeds for higher production, better productivity and profitability for the farmers. The project was implemented through ICAR-ATARI by Krishi *Vigyan Kendras* (KVKs).

Under this project, National Mission on Oilseeds and Oil Palm (NMOOP) released 55.18 lakh to ICAR-ATARI, Zone-I, Ludhiana during May 2017 for conducting CFLDs in the states of Punjab, Himachal Pradesh and Jammu & Kashmir. These CFLDs were conducted by 36 *Krishi Vigyan Kendras* (KVKs) of ICAR-ATARI, Zone-I. Funds were provided @ ₹ 8500 per ha for groundnut, ₹ 5000 per ha for sesame and ₹ 6000 per ha for rapeseed-mustard for conducting demonstrations. However, some of the KVKs were not able to meet the targets for conducting CFLDs on groundnut and sesame due to shortage or unavailability of quality seed of the recommended varieties. As per guidelines of the NMOOP, contractual staff including one Senior Research Fellow and one Data Entry Operator was hired for implementing this project at ATARI level. Separate funds were also provided for organizing four training programmes to Subject Matter Specialists (SMS) of KVKs who had to demonstrate the technologies in the farmers' fields under CFLDs on Oilseeds, one zonal oilseed fellow award at ATARI level and miscellaneous budget was also provided for printing of CFLD reports. The basic instructions given by funding agency for

implementing the project stated that the demonstrations of each oilseed crop were to be organized in cluster approach covering at least 10 ha area in each cluster with area of CFLD for an individual farmer not exceeding 2 acres. Seed was considered as one critical input that was to be provided to the farmers for conducting the demonstrations. Consequently seeds of improved varieties of the crops included in the demonstrations were provided to the farmers. Besides this, bio-fertilizers, soil ameliorants, micro-nutrients etc. were also provided to the farmers to improve the production. A total of 1950 CFLDs were allotted (*Kharif and Rabi*) for an area of 780.0 ha in the Punjab, Uttrakhand, Himachal Pradesh and Jammu & Kashmir. **(Annexure-I**).

Table 2: Details state-wise and crop wise allotted, implemented and deficit CFLDs during 2017-18.

State/Crop	Allotted		Implemented		Deficit	
	Demo. (No.)	Area (ha)	Demo. (No.)	Area (ha)	Demo. (No.)	Area (ha)
Punjab						
Groundnut	100	40.0	80	32.4	13	7.6
Sesame	75	30.0	50	20.0	25	10.0
Rapeseed - Mustard	1150	460.0	1130	452.0	20	8.0
Total	**1325**	**530**	**1260**	**504.4**	**58**	**25.6**
Uttrakhand						
Rapeseed - Mustard	100	40.0	-	-	100	40.0
Total	**100**	**40.0**	**-**	**-**	**100**	**40.0**
Himachal Pradesh						
Sesame	50	20.0	50	20.0	-	-
Rapeseed - Mustard	150	60.0	138	55.2	12	4.72
Total	**200**	**80.0**	**188**	**75.2**	**12**	**4.72**
Jammu & Kashmir						
Sesame	25	10.0	25	10.0	-	-
Rapeseed - Mustard	300	120.0	201	80.3	99	39.7
Total	**325**	**130.0**	**226**	**90.3**	**99**	**39.7**
Grand total	**1950**	**780**	**1674**	**669.9**	**269**	**110.0**

Of the total allocated area of 780.0 ha for CFLDs on oilseeds, 669.9 ha area (82.40 area in *Kharif* and 587.5 ha in *Rabi* season) was demonstrated by the 36 KVKs and 110.02 ha area could not be demonstrated during 2017-18. The details are presented in table 2. Out of total demonstrations the maximum number of demonstrations (1260) in an area of 504.4 ha were conducted by KVKs of Punjab during *Kharif* and *Rabi* season in farmers' fields.

Table 2a: Details of CFLDs on different crops allocated to the different states in oilseeds.

SI.No	State	No of KVKs	Crop	Allotted		Implemented	
				Demo (No.)	Area (ha)	Demo (No.)	Area (ha)
Kharif Season							
1	Punjab	2	Groundnut	100	40.0	80	32.4
2	Punjab	2	Sesame	75	30.0	50	20.0
3	Himachal Pradesh	2	Sesame	50	20.0	50	20.0
4	Jammu &Kashmir	1	Sesame	25	10.0	25	10.0
Total (Kharif)				**250**	**100.0**	**205**	**82.4**
Rabi Season							
1	Punjab	22	Rapeseed -Mustard	1150	460.0	1130	452.0
2	Himachal Pradesh	6	Rapeseed -Mustard	150	60.0	138	55.2
3	Jammu &Kashmir	2	Rapeseed -Mustard	300	120.0	201	80.3
4	Uttrakhand	1	Rapeseed -Mustard	100	40.0	0	0
Total (Rabi)				**1700**	**680.0**	**1469**	**587.5**
Total (Kharif+Rabi)				**1950**	**780.0**	**1674**	**669.9**

Fig 1: Sesame, groundnut and rapeseed-mustard demonstrations under the project CFLDs Oilseeds 2017-18 of Zone-I

Kharif 2017-18

During *Kharif* season 2017-18, total 205 CFLDs were conducted on groundnut and sesame on an area of 82.40 ha in three states by five KVKs (Table 3). Out of these, 80 CFLDs were conducted on groundnut in 32.4 ha area and 50 demonstrations on sesame in 20.0 ha area in Punjab. In Himachal Pradesh, 50 demonstrations were conducted on sesame in 20.0 ha area whereas in Jammu & Kashmir 25 demonstrations were conducted on sesame crop on 10.0 ha area of these states were involved in conducting CFLDs during *Kharif* season.

Table 3: CFLDs on oilseed conducted during *Kharif* 2017-18

SI. No	State	KVKs	Crop	Allotted		Demonstrated	
				Demo (No.)	Area (ha)	Demo (No.)	Area (ha)
1	Punjab	Bathinda	Groundnut	50	20.00	30	12.40
		Hoshiarpur	Groundnut	50	20.00	50	20.00
		Total		**100**	**40.00**	**80**	**32.40**
2	Punjab	Bathinda	Sesame	50	20.00	25	10.00
		Hoshiarpur	Sesame	25	10.00	25	10.00
		Total		**75**	**30.00**	**50**	**20.00**
3	Himachal Pradesh	Kangra	Sesame	25	10.00	25	10.00
		Sirmaur	Sesame	25	10.00	25	10.00
		Total		**50**	**20.00**	**50**	**20.00**
4	Jammu &Kashmir	Reasi	Sesame	25	10.00	25	10.00
		Total		**25**	**10.00**	**25**	**10.00**
		Grand Total		**250**	**100.0**	**205**	**82.40**

Groundnut

Groundnut is an important oilseed-legume and supplementary food crop of the world. It is fourth most important source of edible oil and third most important source of vegetable protein. It is very important crop in many of the developing countries, including in India.

Punjab

In Punjab, groundnut production technologies were demonstrated by two KVKs *i.e.* Bathinda and Hoshiarpur. The variety used for demonstrations was TG-37A. A total of 80 demonstrations were conducted in 32.40 ha area and technologies demonstrated were *i.e.* seed treatment, management of Cercospora leaf-spot disease and defoliators. The average yield of the groundnut obtained was 18.5 q/ha with the net returns of ₹36806/ha and B: C ratio of 2.08, which was 8.5 per cent, ₹7279 and 0.24 respectively higher than the farmers' practices (Table 4).

Table 4: Performance of CFLDs on groundnut crop in Punjab during *Kharif* 2017-18.

SI. No	KVK	Demons-trated variety	Area (ha)	No. of Far-mers	Yield (q/ha)		(%) Increa-se	Net Return (₹ /ha.)		B: C Ratio	
					Check	Demo		Check	Demo	Check	Demo
1	Bathinda	TG 37-A	12.4	30	22.2	23.8	7.20	55600	62800	2.72	2.94
2	Hoshiarpur	TG 37-A	20.0	50	12.1	13.3	9.90	3454	10812	0.97	1.23
	Total		**32.40**	**80**	**17.15**	**18.5**	**8.20**	**29527**	**36806**	**1.84**	**2.08**

Fig 2: Sowing of groundnut at farmer's field in district Bathinda

Fig 3: Sowing of groundnut in progress at farmers' field in Bathinda

Components of demonstrated technologies of groundnut in Punjab during Kharif season

- Management of Cercospora leaf-spot disease and defoliators
- Improved seed of groundnut variety TG-37A.
- Seed treatment with Indofil M-45
- Integrated pest management (IPM)
- Integrated nutrient management (INM)

Fig 4: Field view of groundnut crop at farmer's field in district Bathinda

Fig 5: Demonstrations of groundnut crop at KVK Hoshiarpur

Sesame

Sesame is considered as one of the earliest domesticated plants. It is a short duration crop which can be grown throughout the year in different parts of the country. Due to the presence of potent antioxidant, sesame seeds are known as "*the seed of immortality*". Of two types of sesame viz; white and the black seeded, white seeded sesame in mainly grown in India.

Punjab

The improved production technology of sesame was demonstrated by two KVKs (Bathinda and Hoshiarpur) of Punjab. Thirty two demonstrations were conducted in 20.0 ha area in the farmers' fields with variety Punjab Til No. 2 (Table 5). The average yield from these CFLDs was 5.2 q/ha with the net returns of ₹17775/ha and B: C ratio of 1.48 which was higher than farmers' practice (local check varieties used were RT-346 and PB Til No-1). The complete package of practices of Punjab Agricultural University (PAU), Ludhiana were followed for conducting the CFLDs on sesame during *Kharif* season by these KVKs.

Table 5: Performance of sesame demonstration conducted during Kharif 2017-18 in Punjab.

SI. No	KVK	Demons-trated variety	Area (ha)	No. of Far-mers	Yield (q/ha)		(%) Increa-se	Net Return (₹ /ha.)		B: C Ratio	
					Check	Demo		Check	Demo	Check	Demo
1	Bathinda	Pb. Til No. 2	10.0	10	5.7	6.2	8.8	15000	18000	1.78	1.94
2	Hoshiarpur	Pb. Til No. 2	10.0	22	4.0	4.2	5.0	16000	17550	0.57	1.02
	Total		**20.0**	**32**	**4.85**	**5.2**	**6.90**	**15500**	**17775**	**1.17**	**1.48**

Fig 6: Demonstrations of sesame crop at KVK Hoshiarpur and KVK Bathinda

Himachal Pradesh

In Himachal Pradesh, 50 frontline demonstrations were conducted in Kangra and Sirmour by two KVKs during *Kharif* season in 20.0 ha area with Punjab Til No-1 variety. In these demonstrations, integrated nutrient management (INM) and integrated pest management (IPM) technologies were demonstrated on farmers' field in these two districts. The average yield obtained was 5.65 q/ha with net returns of ₹16808/ha and B: C ratio of 2.59 (Table 6). The highest average increase in yield as compared to local check was recorded in district Kangra (29.8 per cent).

Table 6: Performance CFLDs on sesame crop in Himachal Pradesh during *Kharif* 2017-18.

SI. No	KVK	Demons-trated variety	Area (ha)	No. of Far-mers	Yield (q/ha)		(%) Increa-se	Net Return (₹ /ha.)		B: C Ratio	
					Check	Demo		Check	Demo	Check	Demo
1	Kangra	Pb Til No-1	10.0	25	4.16	5.40	29.8	29166	39400	3.20	3.70
2	Sirmour	Pb Til No-1	10.0	25	4.70	5.90	25.5	4450	11950	1.21	1.49
	Total		**20.0**	**50**	**4.43**	**5.65**	**27.5**	**16808**	**25675**	**2.26**	**2.59**

Fig 7: Demonstrations of sesame conducted by KVK Sirmour

Jammu & Kashmir

The sesame production technologies were demonstrated by KVK Reasi of Jammu. The variety used for conducting demonstration was Punjab Til No-1. A total of 25 CFLDs were conducted in 10.0 ha area in which seed treatment with Bavistin @ 2.5 g per kg of seed,

weed management, integrated pest management (IPM) etc. were demonstrated in the farmers' field. The technologies demonstrated were full package and practices developed by SKUAST, Jammu. An average increase in yield obtained was 65.7 percent higher than the farmers' practice (3.5q/ha) with the net returns of ₹15800/ha and B: C ratio of 3.53 during *Kharif* season (Table 7).

Table 7: Performance of CFLDs on sesame crop in Jammu& Kashmir during Kharif 2017-18

SI. No	KVK	Variety	Area (ha)	No. of Far-mers	Yield obtained (q/ha)		(%) Increa -se	Net Return (₹. /ha.)		B: C Ratio	
					Check	Demo		Check	Demo	Check	Demo
1	Reasi	Pb Til No-1	10.0	25	3.50	5.80	65.7	6400	15800	2.23	3.53
	Total		**10.0**	**25**	**3.50**	**5.80**	**65.7**	**6400**	**15800**	**2.23**	**3.53**

Components of demonstrated technologies of sesame in Punjab, Himachal Pradesh and Jammu & Kashmir during *Kharif* season

- Improved variety Pb. Til No. 2 in Punjab and Pb. Til No. 1 in Himachal Pradesh and Jammu & Kashmir.
- Seed treatment with Bavistin @ 2.5 g/kg of seed
- Management of weed, phyllody disease & defoliators
- Integrated pest management (IPM)
- Integrated nutrient management (INM)

Fig 8: Seed treatment of sesame at Bathinda & Hoshiarpur

Rabi 2017-18

During *Rabi* season 2017-18, total 1469 CFLDs were conducted on rapeseed-mustard on an area of 587.58 ha (Tables 8 -11). Out of these, 1130 CFLDs were conducted in Punjab on 452.0 ha area, 138 demonstrations in Himachal Pradesh on 55.28 ha area and 201 demonstrations in Jammu & Kashmir on 80.3 ha area by 36 KVKs of respective states. Four KVKs of Uttrakhand did not conduct the demonstrations due to non availability of quality seed of rapeseed - mustard in *rabi* season.

Table 8: CFLDs on Oilseed demonstrated during *Rabi* 2017-18

SI.No	State	Allotted		Demonstrated	
		Demo (No.)	Area (ha)	Demo (No.)	Area (ha)
1	Punjab	1150	460.0	1130	452.0
2	Himachal Pradesh	150	60.0	138	55.2
3	Jammu &Kashmir	300	120.0	201	80.3
4	Uttrakhand	100	40.0	0	0.00
	Total	**1700**	**680.0**	**1469**	**587.5**

Fig 9: Demonstrations on rapeseed mustard crop at KVK Gurdaspur & KVK Jalandhar

Punjab

In Punjab 20 KVKs demonstrated the production technologies of rapeseed-mustard crop with canola quality gobhi sarson variety GSC-7 and raya variety RH-0749 through 1130 CFLDs conducted on an area of 452.0 ha in 20 out of 22 districts of Punjab (Table 9). The major production technologies like improved variety, weed management practices and IPM were demonstrated in the farmers' field. The average yield of these demonstrations was 23.7 percent higher over the farmers' practice. The highest average increase in yield was recorded in district Barnala (60.1%) while the lowest average increase in yield was obtained from demonstration plot in district Ludhiana (4.20 %).

Table 9: Performance of CFLDs on rapeseed-mustard in Punjab during *Rabi* 2017-18.

Sl. No.	KVK	Variety	No. of Demo	Area (ha)	Yield (q/ha)		Increase (%)	Net Return (₹ /ha.)		B: C Ratio	
					Check	Demo		Check	Demo	Check	Demo
1.	Amritsar	GSC 7	50	20.0	14.35	22.02	53.4	24007	50250	1.38	2.83
2	Bathinda	GSC 7	75	30.0	21.02	22.05	4.9	50175	55115	2.65	2.81
3	Ferozepur	GSC 7	50	20.0	16.08	20.03	24.6	24007	50250	1.38	2.83
4	Faridkot	GSC 7	50	20.0	16.82	20.30	20.7	37455	48932	2.89	3.36
5	Fatehgarh Sahib	GSC 7	50	20.0	18.50	19.75	6.8	23795	48412	2.20	3.11
6	Gurdaspur	GSC 7	50	20.0	17.34	20.07	15.7	34835	47483	2.34	3.08
7	Hoshiarpur	GSC 7	50	20.0	14.45	17.00	17.6	13550	25375	1.45	1.83
8	Jalandhar	GSC 7	50	20.0	15.23	21.24	39.5	49250	60884	2.15	2.75
9	Kapurthala	GSC 7	50	20.0	17.58	23.01	30.9	39166	52500	3.08	3.68
10	Ludhiana	GSC 7	50	20.0	19.50	20.31	4.2	25750	43374	2.12	3.04
11	Moga	GSC 7	50	20.0	19.46	21.61	11.0	42335	47931	2.58	3.15
12	Muktsar	GSC 7	50	20.0	17.50	19.22	9.8	37125	48229	2.34	2.71
13	Nawashahar	GSC 7	50	20.0	14.50	19.02	31.2	27195	44974	2.02	2.77
14	Patiala	GSC 7	30	12.0	16.50	21.12	28.0	31325	46127	2.08	2.43
15	Ropar	GSC 7	75	30.0	15.33	19.69	28.4	22556	39946	1.85	2.48
16	Sangrur	GSC 7	25	10.0	18.60	22.70	22.0	25820	55098	2.30	2.31
17	Barnala	GSC 7	100	40.0	12.02	19.24	60.1	38657	55398	3.84	4.84
18	Mohali	GSC 7	75	30.0	15.49	20.86	34.7	50060	61987	6.72	7.92
19	Tarn Taran	GSC 7	50	20.0	13.01	19.30	48.3	12841	37520	1.38	2.11
20	Fazilka	RH-0749	100	40.0	16.83	19.80	17.6	46421	61021	4.00	5.21
Total			**1130**	**452.0**	**16.50**	**20.40**	**23.7**	**32816**	**49040**	**2.50**	**3.26**

Himachal Pradesh

The recommended technologies *i.e.* improved variety, seed treatment with fungicide, integrated pest management and integrated nutrient management were demonstrated through 138 CFLDs on rapeseed-mustard conducted on an area of 55.28 ha in six districts of Himachal Pradesh (Table 10). The rapeseed-mustard varieties used for demonstrations were Bhawani of raya (*Brassica juncea)*, GSC 7, KBS-3, HPN-3 and Neelam of gobhi sarson (*Brassica napus)*. The improved cultivation practices resulted in yield increase of 33.5 per cent over the farmers' practice. The maximum increase in yield was recorded in Bilaspur district (61.5 percent), while the lowest increase in yield of 11.5% percent was recorded in Mandi district. The complete package practices of CSKHPKV, Palampur were followed for conducting CFLDs on rapeseed-mustard by the KVKs in the farmers' fields.

Table 10: Performance of CFLDs on rapeseed-mustard in Himachal Pradesh during *Rabi* 2017-18.

Sl. No.	KVK	Variety	No. of Demo	Area (ha)	Yield (q/ha)		Increase (%)	Net Return (₹/ha)		B: C Ratio	
					Check	Demo		Check	Demo	Demo	Check
1	Bilaspur	Neelam	25	10.0	6.50	10.50	61.5	16702	37923	2.91	2.05
2	Chamba	HPN-3	25	10.0	3.93	5.80	47.6	7600	10911	1.49	1.44
3	Hamirpur	KBS-3	13	5.3	4.50	5.30	17.8	4400	7500	1.77	1.51
4	Kangra	GSC 7, KBS-3	25	10.0	7.83	10.83	38.3	16700	24866	2.34	2.14
5	Mandi	ONK-1	25	10.0	5.50	6.13	11.5	9700	13151	1.56	1.54
6	Sirmour	Bhawani	25	10.0	7.00	8.50	21.4	4890	7750	1.32	1.21
	Total		**138**	**55.3**	**5.90**	**7.80**	**33.50**	**9998**	**17017**	**1.87**	**1.60**


Fig 10: Demonstrations on rapeseed-mustard crop at KVK Bilaspur & Hamirpur

Jammu & Kashmir

During *Rabi* 2017-18, 201 demonstrations were conducted on an area of 80.3 ha in 10 districts with various improved varieties namely, RSPR 01, DGS-1, Shalimar-BS1 and KS-101 (Table 11) and complete package of practices recommended by SKUAST, Jammu and SKUAST, Srinagar were followed. Four KVKs of SKUAST, Jammu and six KVKs of SKUAST, Srinagar conducted the demonstrations on the farmers' fields to demonstrate the production potential of improved varieties of rapeseed-mustard. The maximum increase (90.3 percent) in yield with improved practices over farmers' practices was recorded in Pulwama, while the least increase in yield (13.3 percent) was recorded on demonstrated plot in Kulgam district of Kashmir. The average yield obtained was 10.8 q/ha with net returns of ₹31192/ha and B: C ratio of 2.71.

Table 11: Performance of CFLDs on rapeseed-mustard in Jammu & Kashmir during *Rabi* 2017-18

SI. No.	KVK	Variety	No. of Demo	Area (ha)	Yield (q/ha)		Increase (%)	Net Return (₹ /ha.)		B: C Ratio	
					Check	Demo		Check	Demo	Check	Demo
1	Anantnag	KS-101	25	10.0	7.60	8.80	15.80	6400	15200	1.27	1.63
2	Bandipora	KS-101	25	10.0	9.00	12.25	36.10	23000	37332	2.00	2.62
3	Kupwara	KS-101	14	5.3	6.66	9.70	45.60	4166	16693	1.19	1.72
4	Kulgam	Shalimar - BS 1	12	5.0	8.90	10.08	13.30	31332	43852	3.10	3.60
5	Pulwama	KS-101	25	10.0	6.70	12.75	90.30	35000	54000	2.40	2.80
6	Shopian	KS-101	10	4.0	7.20	12.10	68.10	25110	38220	2.77	3.28
7	Jammu	DGS-1	25	10.0	7.96	10.52	32.20	14060	24348	1.82	2.38
8	Kathua	DGS-1	25	10.0	7.33	11.20	52.80	13800	37400	2.10	3.88
9	Poonch	RSPR01, DGS-1	15	6.0	8.80	11.50	30.70	19700	19700	2.09	2.33
10	Reasi	DGS-1	25	10.00	5.70	9.25	15.80	11450	25182	1.96	2.85
Total			**201**	**80.3**	**7.60**	**10.80**	**42.60**	**18401**	**31192**	**2.10**	**2.71**

Fig 11: Demonstrations on rapeseed-mustard crop at KVK Poonch and Reasi

Fig 12: Demonstrations on rapeseed-mustard crop at KVK Kathua and Reasi

Components of demonstrated technologies of rapeseed-mustard in Punjab, Himachal Pradesh and Jammu & Kashmir during *Rabi* season

- Improved variety
- Seed treatment with PSB culture @ 10 g /kg of seed and carbendazim @ 3 g/ kg seed
- Use of single super phosphate as source of phosphorus
- Integrated Pest Management
- Foliar application of Sulphur

Fig 13: Demonstration on soil testing at KVK Ludhiana

Fig 14: Demonstration on soil testing at KVK Ludhiana

Fig 15: Field preparation of rapeseed-mustard field of CFLDs conducted by KVK Gurdaspur and Moga

Fig 16: Manually operated single row seed drill for rapeseed-mustard developed by PAU Ludhiana and used in CFLDs

Extension Activities

Different extension activities under CFLDs included farmers' trainings, field days, group discussions, *kisan goshthies*, group meetings etc. These activities were organized by 36 KVKs of Punjab, Himachal Pradesh and Jammu & Kashmir during the implementation of the project in *Kharif* and *Rabi* seasons for the benefit of farmers. During these programmes technical literature pertaining to improved package of practices generated by State Agricultural Universities (SAUs) was also distributed among the farmers for adoption of good agricultural practices. A total 92 extension activities were organized by the KVKs of these states for 6742 farmers' during the year (Table 12).

Table 12: State wise extension activities undertaken by different KVKs on CFLDs oilseeds

Activities	*Kharif*		*Rabi*	
	Number of KVKs	No. of farmers attended	Number of KVKs	No. of farmers attended
Punjab				
Farmers' Training	2	142	18	193
Field Day	2	425	15	916
Group meeting	0	0	4	56
Others	2	473	13	1762
Himachal Pradesh				
Farmers' Training	2	107	3	91
Field Day	2	615	2	166
Group meeting	2	334	2	113
Others	2	176	4	403
Jammu &Kashmir				
Farmers' Training	0	0	3	254
Field Day	1	40	4	135
Group meeting	1	25	5	52
Others	0	0	3	264
Total	**16**	**2337**	**76**	**4405**

Fig 17. Farmers' Training at KVK Moga and KVK Hoshiarpur, Punjab

Fig 18. Farmers' Training at KVK Sirmour, Himachal Pradesh

Fig 19. Farmers' Training at KVK Kathua and Reasi, Jammu

Fig 20. Farmers-Scientists interaction at demonstrations of canola gobhi sarson conducted by KVK Gurdaspur and KVK Mohali, Punjab

Field day

Krishi Vigyan Kendra, Barnala organized Canola Day/ Field day on canola gobhi sarson (GSC-7) on 20.02.2018 at village Rureke Kalan in which 98 farmers participated. Dr. Prahalad Singh Tanwar, Programme Coordinator of KVK Barnala welcomed farmers for the programme and highlighted the role of KVKs in farming community development and mentioned several avenues for self employment in agri-enterprises. Dr. Surinder Sandhu, Incharge, Oilseeds Section , PAU, Ludhiana provided latest information regarding gobhi sarson cultivation, importance of canola oil in diet and advised the farmers to grow gobhi sarson (GSC-7) on least 2 kanal area of land for their house hold consumption. The farmers gave positive feedback on the Gobhi sarson cultivation and praised KVK, Barnala for providing latest information on better agricultural practices. Dr. Preeti Mamgai, motivated the farmers to adopt diversification in agriculture through oilseed cultivation which could lead the farmers' for doubling their income and laid stress on acquiring soil health cards for their fields. Dr. Kamaldeep Singh Matharu, SMS (Plant Protection) provided latest knowledge on INM technologies in rapeseed-mustard cultivation. Dr. Harjot Singh Sohi, SMS (Horticulture) shared his knowledge on off-season vegetable cultivation and discussed various problems faced by the farmers in cultivation of different fruit crops. In end, field visit was organised on farmer's field and Dr. S.K Sandhu and Dr. Prahalad Singh Tanwar assured farmers to give all technical support for processing of their canola crop.

Fig 21. Field day on canola gobhi sarson conducted by KVK, Barnala, Punjab

Fig 22. Interaction of PAU scientists with groundnut growers in block Bhunga, district Hoshiarpur, Punjab

Fig 23. Distribution of inputs at KVK Tarn Taran and KVK Barnala Punjab

Fig 24. Distribution of inputs at KVK Barnala and KVK Tarn Taran, Punjab

Training Programme

Under the project CFLD on oilseeds one training programme of two days was organized by ICAR-ATARI, Zone-I, on December 7-8, 2017 at PAU Ludhiana in collaboration with oilseeds section, Dept. of Oilseed Plant Breeding and Genetics, PAU Ludhiana. In this training programme, scientists from ICAR-ATARI, Zone-I along with forty Programme Coordinators (PCs) and Subject Matter Specialists (SMSs) from KVKs of Punjab participated. The experts from Oilseeds section, Department of Plant Breeding and Genetics, PAU Ludhiana delivered lectures on improved practices to be adopted for improving oilseeds production in the state. On second day of training programmme field visit was also organized on PAU Oilseeds Research Farm for the trainees. The schedule of lectures delivered during the training programme is given in Annexure III.

Fig 25. Glimpses of training programme on CFLDs on oilseeds

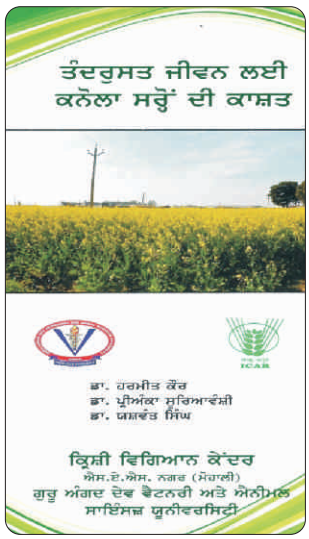
The SMS of KVKs of Punjab gave a positive feedback about this training programme and urged that such programmes should be conducted regularly for KVK Scientists.

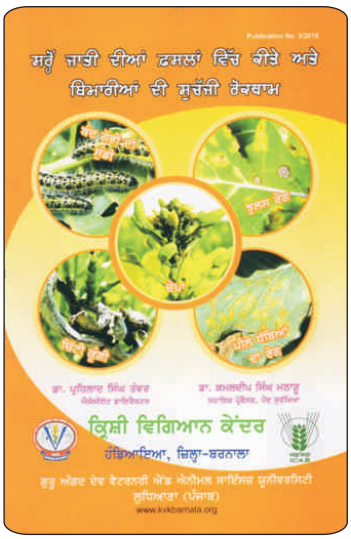
Fig 26. Field visit to research farm of Oilseeds Section PAU, Ludhiana during the training programme

Literature developed under CFLD on oilseeds 2017-18

Table 13: Details of the literature developed by KVKs under the project CFLD on Oilseeds 2017-18

SI.No	KVK	Name of the Literature
1	Barnala	• Saron jaati diyan fasla vich kidiyan ate bimariya di suchaji roktham
2	Gurdaspur	• Canola sarson dian kisman: Ik vardan • Saron diya bimariya di kiven roktham kariye? • Saron de hanikarak kidiyan di kiven roktham kariye? • Telbeej fasla da machinikarn
3	Hoshiarpur	• Canola tel beejan adheen khet pardarshniyan • Mungphali di safal kashat de tang
4	Mohali	• Tandrust jiwan layi canola saron di varto • Canola saron de sehat sambandhi fayde • Tandrust jiwan layi canola saron di kashat
5	Kapurthala	• Gobhi saron di kisam GSC 7 di kashat layi takneki jankari
6	Sangrur	• Canola saron di safal kashat
7	Tarn Taran	• Canola gobhi di kashat
8	Mandi	• Saron di vigyani kheti
Publications of ICAR-ATARI, Zone-I, Ludhiana		
1	Cluster Frontline Demonstrations on Rabi Oilseeds 2015-16	
2	Improving Oilseed Production through Cluster Frontline Demonstrations in North India	





Monitoring

ICAR-ATARI, Ludhiana was delegated the overall responsibility to coordinate and implement the cluster frontline demonstrations and compilation of detailed information regarding CFLDs conducted by KVKs under the project. The CFLD programme was formulated, implemented, monitored and evaluated by the Director ATARI and its core team of scientists in each zone. Further, the demonstration programme was provided technical backstopping by ICAR institute(s) working on oilseeds, AICRP centers of different oilseed crops and directorates of extension education of agricultural universities. Further, the progress of the programmes was reviewed from time to time in scientific advisory committee meetings; monthly and periodical meetings and annual zonal and state level action plan meetings and review workshops. A brief account of such monitoring during the year is depicted in Table 14.

Table 14: State wise monitoring visits conducted in CFLDs on Oilseed.

Sl. No.	State	Visit by Director ATARI	Visit by Scientists of ATARI	Visit by Director of Extension Education, PAU	Visit by Scientists of DEE	Visit by other members such as representative of DAC&FW, ICAR, etc
Kharif						
1	Punjab	0	0	0	1	0
2	Himachal Pradesh	0	0	0	0	0
3	Jammu & Kashmir	0	0	0	0	0
Sub Total (Kharif)		**0**	**0**	**0**	**1**	**0**
Rabi						
1	Punjab	3	6	6	14	5
2	Himachal Pradesh	0	0	0	1	0
3	Jammu & Kashmir	0	0	1	11	4
Sub Total (Rabi)		**3**	**6**	**7**	**26**	**9**
Grand Total		**3**	**6**	**7**	**27**	**9**

Fig 27: Farmers-scientists interaction at groundnut FLD conducted by KVK Bathinda

Fig 28: Director of Extension Education PAU, Ludhiana interacting with farmers of gobhi sarson (GSC 7) at KVK Moga

Fig 29: Intercropping of rapeseed-mustard at KVK Ludhiana

Fig 30: Farmers scientists interaction on canola gobhi sarson variety GSC-7 at KVK Moga

Fig 31: Monitoring visiting on canola gobhi sarson (GSC-7) field at KVK Moga

Fig 32: Senior Agronomist (Oilseeds) PAU, Ludhiana, interacting with groundnut farmer in Bathinda

Fig 33: Monitoring visit on canola gobhi sarson (GSC-7) FLD conducted by KVK Barnala

Monitoring of CFLDs on Oilseeds at KVK Moga and Ludhiana on 07-02-2018 & 08-02-2018

KVK Moga

On 7th February 2018, the monitoring team comprising of Dr. S.P.S Saini, Senior Ext. Specialist, PAU, Dr. Gurpreet Kaur, Assistant Breeder in Oilseeds Section of PAU, Dr. Preeti Mamgai, Senior Scientist from ICAR-ATARI, Ludhiana and Dr. Aman Brar, Programme Coordinator of KVK Moga monitored the plots of rapeseed- mustard. The team visited the demonstration plots at Charik, Gholia Khurd, Jai Singh wala and Sandhuanwala villages (Moga 1 and Bagha Purana blocks). The team visited a cluster of farms in village Charik and discussed in details about various issues related to oilseed production with the farmers namely S. Pirthi Singh and S. Lal Singh. Farmers had demonstrated canola gobhi sarson variety GSC-7 and followed the complete package of practices as recommended by PAU, Ludhiana for cultivation. The team interacted with farmers and discussed the issues being faced while conducting the CFLDs on this variety. In village Gholia Khurd crop condition at the field of S. Amarjet Singh and S. Harpreet Singh was good but weed management was not proper. Dr. Gurpreet Kaur suggested to the farmers to remove the weeds and thinning of the crop in proper time so that yield of the crop can be enhanced. Then the team went to village Jai Singh wala and visited the farms of S.Tarlochan Singh and S. Ranjit Singh, Dr. Preeti Mamgai advised to the farmers that canola oil is very good for cooking and they should use it in their kitchen on regular basis. She also encouraged the farmers for self-marketing of canola oil instead of raw produce.

KVK Ludhiana

The monitoring team consisting of Dr. Preeti Mamgai, Senior Scientist, ICAR-ATARI, Zone-I, Ludhiana, Dr. R.S. Uppal, Senior Extension Specialist, PAU, Dr. S.K. Sandhu, Incharge of Oilseeds Section, PAU, Ludhiana, Dr. S.C. Sharma, Programme Coordinator of KVK Ludhiana and Dr. Devinder Tiwari, SMS (Ext. Edu.), KVK Ludhiana visited the farmers fields at Machhiwara block of Bhaini Sahib, Bhaman Kalan and Harian villages on 8th February 2018. The team visited a cluster of farmers at the farm of Sh. Rajveer Singh in village Bhaini Sahib and discussed various issues related to oilseed production with the farmers. This farmer had demonstrated the canola gobhi sarson rapeseed-mustard variety GSC 7. In village Bhaman Kalan, the team visited the fields of Sh. Dharminder Singh and S. Jasvir Singh. They had sown GSC-7 by line sowing. In village Harian, the team visited the fields of Sh. Rajinder Singh Sahota and S. Sukhdev Singh who had sown two acres each of canola gobhi sarson variety GSC-7 and in intercropping with sugarcane. Dr. Sandhu suggested to the farmers to remove the weeds and thinning of crop at proper time. Sh. Rajinder Singh Sahota had intercroped rapeseed-mustard in poplar. The team lauded the efforts of farmers for adopting crop diversification for improving their income by having two crops from the same field at same time.

Success Story - 1

Diversification in the Monocropping system

S. Nirmal Singh, VPO: Rureke Kalan , District Barnala

Crop & Variety	Gobhi sarson, GSC 7 (canola quality)
Name of KVK	Barnala, Punjab
Background information	Monocropping of rice and wheat is largely practiced in district Barnala. Farmers are facing problems of yield stagnation, weeds, insect-pest and diseases. With the objective to diversify the prevalent cropping system, field demonstrations on canola quality gobhi sarson were laid out by KVK Barnala on the farmers' fields by providing of critical inputs (improved seed, biofertilizers, gypsum and insecticides) to farmers under the project.
Details of technology Demonstrated	Introduction of gobhi sarson variety GSC 7, application of gypsum (123.5 kg /ha) as soil ameliorant, maintaining optimum plant population through proper thinning.
Institutional Involvement	Organization of training before conducting CFLD by KVK scientists, regular field visits, guidance and timely supply of critical inputs.
Success Point	Cultivation of gobhi sarson crop with recommended agronomic practices. Two irrigations at 29 days after sowing and at flowering stage.
	Spray of Actara 25 WG (Thiamethoxam) @ 100g/ha in 250 litres of water at siliqua formation stage for the control of mustard aphid.
Farmer Feedback	Satisfied with high production potential and good quality oil obtained from GSC 7.
Demonstration yield	21.59 q/ha
District average (2016-17)	13.58 q/ha
State average (2015-16)	13.48 q/ha

Fig 34: Demonstration of canola gobhi sarson variety GSC-7 conducted by KVK Barnala

Success Story-II

S. Kulwant Singh, VPO: Joneke, District Tarn Taran

Crop & variety	:	Gobhi sarson, GSC 7 (canola quality)
Name of KVK	:	Tarn Taran
Background Information	:	Progressive farmer
Technology Demonstrated	:	Improved variety integrated nutrient management, weed management, insect pest management
Institutional Involvement	:	Provided seed of improved variety (GSC-7) to the farmers, guided farmers regarding improved agronomic practices i.e. seed rate, optimum time of sowing, maintenance of optimum plant population, seed treatment, integrated nutrient management, weed management and insect pest management and post harvest handling of produce under the project.
Success Point	:	Farmer was practicing cropping system of maize-paddy-wheat in which maize was being sown for silage making. However, the sowing of maize gets delayed after harvesting of wheat, which lead to decrease in the yield of maize. Adoption of maize-paddy-gobhi sarson cropping system enabled the farmer to get more remunerative gobhi sarson in comparison to wheat. After harvesting of gobhi sarson, he made the packing of 50 kg each of seed and sold to other households of village @ ₹ 4000/- per quintal and earned more returns than wheat. Further maize for silage making was sown in time resulting in higher yield of maize for silage preparation.
Outcome	:	Gobhi sarson fits well in the cropping system of farmer and gives more returns
Demonstration yield		23.50 q/ha
District average (2016-17)		16.96 q/ha
State average (2015-16)		13.48 q/ha
Gross income (Rs/ ha)		94,000 q/ha
Net returns (Rs/ha)		60,187 q/ha
B:C ratio		2.78

Fig 35: Demonstration of canola gobhi sarson variety GSC-7 conducted by KVK Taran Taran

Success Story-III

S. Kulwant Singh, VPO: Saide Ke Rohela,District: Ferozepur

Crop & variety	:	Gobhi sarson, GSC 7 (canola quality)
Name of KVK	:	KVK, Ferozepur
Background Information	:	S. Kulwant Singh adopted cultivation of gobhi sarson variety GSC-7 and thus shifted from traditional rice-wheat cropping system. In the past two *rabi* seasons he cultivated gobhi sarson (GSC7). He obtained the yield of 10.0 q/acre which was sold @ ₹4000/-per quintal and earned income of ₹40000/-. The total cost of cultivation including cost of seed, fertilizers, pesticide sprays and labour cost for harvesting was calculated as ₹5000/- per acre. Thus, he earned net profit of ₹35000/- per acre. The net returns from this crop were comparable to major rabi crop like wheat. He is also planning to increase area under gobhi sarson and processing of canola oil from the next year. The success story of Kulwant Singh has inspired other farmers of the neighbouring villages to grow canola gobhi sarson.
Technology Demonstrated	:	Integrated Crop Management
Institutional Involvement	:	KVK, Ferozepur provided critical inputs like seed and pesticides to the farmer under the project. KVK scientists provided technical guidance to the farmer for all operations, starting from crop sowing till harvesting. KVK, scientists conducted training camps for integrated insect pest and disease management of crop and visited the farmer's field during the cropping season.
Success Point	:	Promotion of crop diversification
Outcome	:	High profitability and superior quality of oil for human being and seed meal for animals.
Demonstration yield		25.00 q/ha
District average (2016-17)		11.54 q/ha
State average (2015-16)		13.48 q/ha
Gross income		100000 ₹/ha
Net income		87500 ₹/ha
B:C ratio		1:8

Fig 36: Demonstration of canola gobhi sarson variety GSC-7 conducted by KVK

Crop Wise Highest Yield in State

The Cluster Frontline Demonstrations on Oilseeds were conducted by KVKs of Punjab, Himachal Pradesh and Jammu & Kashmir. The important interventions that resulted in highest yield of different crops by the KVKs are listed in table 15.

Table 15: Crop wise highest yield obtained in CFLDs

State	Season	KVKs	Crop	Area (ha)	Demo (Nos)	Highest yield (q/ha)	Reason
Punjab	*Kharif*	Bathinda	Groundnut	12.40	30	26.8	Light textured soil and integrated nutrient management
Himachal Pradesh	*Kharif*	Sirmour	Sesame	10.00	50	10.00	Improved variety and IPM
Punjab	*Rabi*	Patiala	Rapeseed - Mustard	12.00	30	25.75	Timely sowing, optimum spacing and balanced use of fertilizers
Himachal Pradesh	*Rabi*	Kangra	Rapeseed - Mustard	10.00	25	12.16	Crop management with INM and IPM
Jammu &Kashmir	*Rabi*	Poonch	Rapeseed - Mustard	6.00	15	15.4	Seed inoculation with bio fertilizers and sulphur application

Fig 37. Demonstrations of canola gobhi sarson GSC-7 at Bathinda (Punjab) and Kangra (Himachal Pradesh)

Fig 38. Demonstrations of canola gobhi sarson GSC-7 at Moga and Ludhiana

Annexure-I

No.7-10/2017/Oilseeds/CA
Govt. of India
Ministry of Agriculture & Farmers' Welfare
Department of Agriculture, Cooperation & Farmers' Welfare
Oilseeds Division
****

Krishi Bhawan, New Delhi
Dated: 2nd May, 2017

To

Dr. A.K. Singh
Deputy Director General (Agricultural Extension)
Indian Council of Agricultural Research,
Krishi Anusandhan Bhavan-I, Pusa, New Delhi-110012

Sub: Administrative approval of ICAR Project entitled Cluster Frontline Demonstrations on oilseeds for 2017-18 (kharif/rabi/summer) under NMOOP to be implemented by KVKs, ATARIs-reg.

Sir,

I am directed to refer to your D.O. no.10-33/2017-AE-II dated 20.04.2017 and to convey the administrative approval for the project entitled **"Cluster Frontline Demonstrations on Oilseeds for 2017-18 (kharif/rabi/summer)"** under NMOOP is to be implemented by 11 Zones of ICAR-Agricultural Technology Application Research Institute (ATARIs) and 516 no. of KVKs with a total outlay of Rs. 21,00,00,000/- (Rupees Twenty One Crores only). Details enclosed in annexure- I to XI.

I. The component/ ATARI, Zone-wise approved budget is as under:

Implementing agency/ Zone	No. of KVKs	No. of FLD Demo-stration (in acre)	(Area in ha)	Budget for cluster demonst-ration (in Rs.)	#Contractual Staff (in Rs.)							Training Programme		Incentive for 11 Zonal @ Rs 50000/- and one National @ Rs.1.00 lakh oilseed fellow awards	Misc. exp.	Total (in Rs.) (Col. 5+7+9+ 11+13+ 14+ 15)
					SRF (for 12 months)		DEO (for 12 months)		228Technology Agent at KVKs @ 10000 per month							
									No.							
					No	Amt	No	Amount	6 month	12 month	Amount	No	Amount			
1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16
ATARI, Zone –I, **Ludhiana**	42	1950	780	4720000	1	360000	1	180000	0	0	0	4	160000	50000	48000	5518000
ATARI, Zone-II, **Jodhpur**	48	8725	3490	21195000	1	360000	1	180000	21	7	2100000	4	160000	50000	48000	24093000
ATARI, Zone –III, **Kanpur**	69	7950	3180	18465000	1	360000	1	180000	12	12	2160000	4	160000	50000	48000	21423000
ATARI, Zone- IV, **Patna**	60	9575	3830	22625000	1	360000	1	180000	27	9	2700000	4	160000	50000	48000	26123000
ATARI, Zone-V, **Kolkata**	45	7800	3120	21355000	1	390000	1	180000	21	7	2100000	4	160000	50000	48000	24283000
ATARI, Zone- VI, **Guwahati**	35	5450	2180	12775000	1	330000	1	180000	20	2	1440000	4	160000	50000	48000	14983000

P.T.O.

-2-

1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16
ATARI, Zone-VII, **Barapani**	23	3100	1240	7800000	1	330000	1	180000	8	0	480000	4	160000	50000	48000	904800
ATARI, Zone-VIII, **Pune**	63	10400	4160	27765000	1	390000	1	180000	32	7	2760000	4	160000	50000	48000	3135300
ATARI, Zone-IX, **Jabalpur**	64	9300	3720	21560000	2	750000	2	360000	15	4	1380000	4	160000	*150000	65000	2442500
ATARI, Zone-X, **Hyderabad**	48	6575	2630	18580000	1	390000	1	180000	14	1	960000	4	160000	50000	48000	2036800
ATARI, Zone-XI **Bangalore**	19	2450	980	6895000	1	390000	1	180000	7	2	660000	4	160000	50000	48000	838300
Total	**516**	**73275**	**29310**	**183735000**	**12**	**4410000**	**12**	**2160000**	**177**	**51**	**16740000**	**44**	**1760000**	**650000**	**545000**	**21000000**

\# Contractual staff one SRF and one Data Entry Operator for each ATARI and one SRF is allowed at ICAR headquarter.

* An amount of Rs. 1.0 lakh has been kept for incentive for National Oilseeds Fellow Awards as the Nodal ATARI, for oilseeds.

II. The funds will be utilized for implementing the project as per the guidelines of NMOOP. The approval of the project is subject to the following conditions.

1. The demonstrations of each oilseed crop should be organized in cluster approach (at least 10 ha for each cluster).
2. The varieties of oilseed crops to be included in the demonstrations should not be older than 10 years.
3. More focus should be given to organize demonstration of oilseeds in rice fallow areas in Eastern India.
4. 10% of cluster demonstration fund earmarked for each crop (Groundnut Rs. 8500/-, Soybean Rs. 6000/-, Sunflower Rs. 6000/- and R&M Rs. 6000/-, Sesame, Niger, Safflower, Castor and Linseed Rs. 5000/-, is allowed to be utilized for monitoring, distribution of literature and organization of field day.
5. Cluster Frontline Demonstration will be conducted under the direct supervision of the scientists, they should promote INM and IPM, so as to reduce the cost of cultivation and help farmers realize better return. The KVK should advise the farmers on marketing of this produce. The scientists from KVK will conduct visit to the demonstrations site to resolve problem on spot.
6. Each KVK will furnish cafeteria of interventions for each crop to be undertaken at the demonstration site.
7. The demonstrations should be easily accessible to create awareness among the farmers.
8. Farmer should be trained for seed production, primary processing etc.
9. For individual farmer, cluster frontline demonstration, should not exceed more than 2 acres or (0.80 ha).
10. The qualification and salary of Senior Research Fellow and Data Entry Operator is admissible as per the approved norms of the ICAR/University.
11. One SRF is allowed at ICAR, headquarter, New Delhi.
12. Travelling Allowance and Daily Allowance is admissible as per norms of Govt. of India.
13. The training to be organized as per norms of NMOOP.
14. The list of beneficiary-farmers should be maintained at each ATARI level.
15. The contribution of individual intervention should also be documented.

P.T.O

16. Supply of chemical fertilizers, which are already subsidized, will not supported as input under cluster frontline demonstration however, payment of various operations/ services and inputs (seed, bio-fertilizers, soil ameliorants, micro-nutrients etc.) are allowed. Farmers have to apply recommended dose of chemical fertilizers to obtain potential yield.
17. Each ATARI designated for a particular zone will prepare a detailed report on the demonstrations of oilseeds and consolidated final report will be submitted by Department of Agricultural Extension-ICAR, New Delhi.

(Dr. Anupam Barik)
Addl. Commissioner (Oilseeds)

Encl: As above

Distribution:

1. Director General, ICAR, Krishi Bhawan, New Delhi
2. Dy. Director General (CS), ICAR, Krishi Bhawan, New Delhi
3. Asstt. Director General (Agriculture Extension) ICAR, Pusa, New Delhi-110012
4. Director, Agricultural Technology Application Research Institute (Formerly Zonal Project Directorate), Ludhiana (Zone-I)/ Jodhpur (Zone-II)/ Kanpur (Zone-III)/ Patna (Zone-IV)/ Kolkata (Zone-V)/ Guwahati (Zone-VI)/ Barapani (Zone-VII)/ Pune (Zone-VIII)/ Jabalpur (Zone-IX)/ Hyderabad (Zone-X) and Bangalore (Zone-XI) for information and necessary action.
5. The Secretary (Agriculture), Govt. of Punjab, Rajashtan, Uttar Pradesh, Bihar, West Bengal, Assam, Meghalaya, Maharashtra, Madhya Pradesh, Andhra Pradesh and Karnataka
6. Director of Agriculture, Govt. of Punjab, Rajashtan, Uttar Pradesh, Bihar, West Bengal, Assam, Meghalaya, Maharashtra, Madhya Pradesh, Andhra Pradesh and Karnataka, H.P.
7. Director, IIOR, Hyderabad-500030, Telangana for information and necessary action

Copy to:

1. PPS to Secretary (A & C), DAC&FW, Krishi Bhawan, New Delhi
2. PPS to Agriculture Commissioner, DAC&FW, Krishi Bhawan, New Delhi
3. PPS to Joint Secretary (Oilseeds), DAC&FW, Krishi Bhawan, New Delhi
4. Asstt. Director General (O&P), ICAR, Krishi Bhawan, New Delhi
5. Director (Oilseeds) DAC&FW, Shastri Bhawan, New Delhi
6. Additional Commissioner (NFSM), DAC&FW, Krishi Bhawan, New Delhi
7. National Consultants (Oilseeds), Shastri Bhawan, New Delhi
8. Director, Directorate of Oilseeds Development, Himayatnagar, Hyderabad
9. Dy. Secretary (Fin.) DAC&FW, Krishi Bhawan, New Delhi
10. Under Secretary (Oilseeds), DAC&FW Krishi Bhawan, New Delhi
11. Asstt. Director (Cordn.)/AD (OS) Oilseeds Division, Shastri Bhawan, New Delhi
12. Section Officer, CA-II, Krishi Bhawan, New Delhi
13. Programmer (Oilseeds) DAC&FW, Shastri Bhawan is requested to upload this matter on website of DAC

Administrative Approval

Approved budget for the project on Cluster Frontline Demonstrations on oilseeds during 2017-18 (Kharif and Rabi) under NMOOP to be implemented by KVKs, ICAR-Agricultural Technology Application Research Institute (ATARI), Ludhiana, Punjab.

(Oilseeds Cluster Frontline Demonstration by KVKs during Kharif & Rabi 2017-18: Zone-I)

S. No	Crops	State	KVKs involved in Cluster FLD implementation		No. of FLD in acre	Area in ha	Assistance for Cluster FLD per ha (in Rs.)	Budget (in Rs.)
			Unique KVKs	KVKs Repeated				
1	2	3	4	5	6	7	8	9
1.	**Kharif Season**							
1	Groundnut	Punjab	3	0	100	40	8500	340000
2	Sesame	Punjab	0	2	75	30	5000	150000
		Himachal Pradesh	2	0	50	20		100000
		Jammu & Kashmir	1	0	25	10		50000
Total Kharif Season			**6**		**250**	**100**		**640000**
2.	**Rabi Season**							
1	Rapeseed & Mustard	Punjab	17	3	1150	460	6000	2760000
		Himachal Pradesh	4	2	150	60		360000
		J&K	11	1	300	120		720000
		Uttarakhand	4	0	100	40		240000
Total Rabi Season			**36**		**1700**	**680**		**4080000**
Total (Kharif+Rabi)			**42**		**1950**	**780**		**4720000**
3.	Four Training programme of Scientists in-charge of cluster frontline demonstration in KVKs@40000/-							160000
4.	One Senior Research Fellow (SRF) @ Rs 25000 +HRA@20% for twelve months.							360000
5.	One Data Entry Operator (DEO) at ATARI @ Rs 15000(consolidated) per month for twelve months.							180000
6.	Miscellaneous expenditure on account of printing of reports etc @48000/for each ATARI.							48000
7.	Incentive for one Zonal Oilseed Fellow Award at ATARI level @Rs. 50,000/- to incentivise to scientists for promotion of oilseeds in their districts.							50000
Total (3 to 7)								**798000**
Grand Total								**55,18,000**

तेजपालसिंह / TEJPAL SINGH
सहायक आयुक्त (फसलें)/Assistant Commissioner (Crops)
भारत सरकार/Government of India
कृषि एवं किसान कल्याण मंत्रालय/M/o Agriculture & Farmers Welfare
कृषि, सहयोग एवं किसान कल्याण विभाग/Dlo Agri., Coopn. & Farmers Welfare
कृषि भवन, नई दिल्ली/Krishi Bhawan, New Delhi-110001

State, District and Crop-wise detail of Area, FLD & KVKs

ATARI-Zone - I, Ludhiana

State: Punjab

S. No.	Name of KVKS/ District	Kharif Oilseeds		Rabi Oilseeds	Total Area in ha	No. of FLD	No. of KVKs
		Groundnut	Sesame	Rapeseed & Mustard			
1	Faridkot	0	0	20	20	50	1
2	Gurudashpur	0	0	20	20	50	1
3	Firozpur	0	0	20	20	50	1
4	Bathinda	20	20	30	70	175	1
5	Hoshiarpur	20	10	20	50	125	1
6	Patiala	0	0	20	20	50	1
7	Kapurthala	0	0	20	20	50	1
8	Sangrur	0	0	10	10	25	1
9	Nawashahar	0	0	20	20	50	1
10	Roopnagar	0	0	30	30	75	1
11	Ludhiana	0	0	20	20	50	1
12	Amritsar	0	0	20	20	50	1
13	Muktshar	0	0	20	20	50	1
14	Fatehgarh Shahib	0	0	20	20	50	1
15	Moga	0	0	20	20	50	1
16	Jalandhar	0	0	20	20	50	1
17	Mohali	0	0	30	30	75	1
18	Taran Taran	0	0	20	20	50	1
19	Barnala	0	0	40	40	100	1
20	Fazilka	0	0	40	40	100	1
Total Punjab		**40**	**30**	**460**	**530**	**1325**	**20**

State: Himachal Pradesh

S. No.	Name of KVKs/ District	Kharif Oilseeds	Rabi Oilseeds	Total Area in ha	No. of FLD	No. of KVKs
		Sesame	Rapeseed & Mustard			
1	Mandi	0	10	10	25	1
2	Sirmaur	10	10	20	50	1
3	Hamirpur	0	10	10	25	1
4	Kangra	10	10	20	50	1
5	Bilaspur	0	10	10	25	1
6	Chamba	0	10	10	25	1
Total Himachal Pradesh		**20**	**60**	**80**	**200**	**6**

तेजपालसिंह/TEJPAL SINGH
सहायक आयुक्त (फसल)/Assistant Commissioner (Crops)
भारत सरकार/Government of India
कृषि एवं किसान कल्याण मंत्रालय/M/o Agriculture & Farmers Welfare
कृषि, सहयोग एवं किसान कल्याण विभाग, D/o Agri., Coopn. & Farmers Welfare
कृषि भवन, नई दिल्ली/Krishi Bhawan, New Delhi-110001

State: Jammu & Kashmir

S.No.	Name of KVKs/ District	Kharif Oilseeds	Rabi Oilseeds	Total Area in ha	No. of FLD	No. of KVKs
		Sesame	Rapeseed & Mustard			
1	Jammu	0	10	10	25	1
2	Doda	0	10	10	25	1
3	Poonch	0	10	10	25	1
4	Pulwama	0	10	10	25	1
5	Baramula	0	10	10	25	1
6	Kupwara	0	10	10	25	1
7	Kulgum	0	10	10	25	1
8	Kathua	0	10	10	25	1
9	Shopian	0	10	10	25	1
10	Anantnag	0	10	10	25	1
11	Bandipora	0	10	10	25	1
12	Reasi	10	10	20	50	1
Total J&K		**10**	**120**	**130**	**325**	**12**

State: Uttarakhand

SS.No.	Name of KVKs/ District	Rabi Oilseeds	Total Area in ha	No. of FLD	No. of KVKs
		Rapeseed-Mustard			
		Area (ha)			
1	Nainital	10	10	25	1
2	Haridwar	10	10	25	1
3	Udhamnagar	10	10	25	1
4	Dehradun	10	10	25	1
Total Uttarakhand		**40**	**40**	**100**	**4**
Zone-I, Grand Total			**780**	**1950**	**42**

तेजपालसिंह/TEJPAL SINGH
सहायक आयुक्त (फसलें)/Assistant Commissioner (Crops)
भारत सरकार/Government of India
कृषि एवं किसान कल्याण मंत्रालय/Min Agriculture & Farmers Welfare
कृषि, सहकारिता एवं किसान कल्याण विभाग/Dte Agri., Coopn & Farmers Welfare
कृषि भवन, नई दिल्ली/Krishi Bhawan, New Delhi-110001

Annexure-II

INDIAN COUNCIL OF AGRICULTURAL RESEARCH
(DIVISION OF AGRICULTURAL EXTENSION)
KAB-I, PUSA, NEW DELHI-12

F.No. 11-2/2018-AE-II **Dated: 17.10.2018**

ORDER

The Competent authority is pleased to sanction an amount of Rs 10,93,44,515/-(Rupees Ten One Crores Ninety Three Lakh forty four thousand five hundred fifteen only) for release to eleven Agricultural Technology Application Research Institutes (ATARIs) for implementation of project titled **"Cluster Frontline Demonstration on Oilseeds and 44 training programmes " funded under NFSM (Oilseeds and Oil Palm) during 2018-19**. The funds have been received under R-Deposit 'General Bank Account. The details are given as under:

S.No	Implementing ATARIs	Proposed Release (Rs in lakh)
1	ATARI,Zone-I,Ludhiana	4200000.00
2	ATARI,Zone-II,Jodhpur	11500000.00
3	ATARI,Zone-III,Kanpur	10500000.00
4	ATARI,Zone-IV,Patna	11000000.00
5	ATARI,Zone-V,Kolkata	13544515.00
6	ATARI,Zone-VI,Guwahati	7000000.00
7	ATARI,Zone-VII, Barapani	5000000.00
8	ATARI,Zone-VIII,Pune	16400000.00
9	ATARI,Zone-IX,Jabalpur	13500000.00
10	ATARI,Zone-X,Hyderabad	12500000.00
11	ATARI,Zone-XI,Bangalore	4200000.00
Total		**109344515.00**

The expenditure of Rs 10,93,44,515/-(Rupees Ten One Crores Ninety Three Lakh forty four thousand five hundred fifteen only) is debitable to the Head R-Deposit 'General Bank Account' for the financial year 2018-19.

17/10/18
(V.P.Chahal)
Assistant Director General (Agril. Extn.)

Distribution:

1. Directors, ATARIs(I to XI) with a request to furnish AUCs/UCs in time.
2. Audit –I Section,ICAR, Krishi Bhawan, New Delhi along with bill (in duplicate).
3. Accounts-I Section,ICAR, Krishi Bhawan, New Delhi with a request to release the amount as indicated above to concerned ATARIs.
4. Assistant Director General (Dr. V. P. Chahal), AE Division,ICAR.
5. PPS to DDG(AE).
6. PS to Deputy Secretary (AE).
7. Guard File.

Annexure-III

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

ICAR-ATARI, ZONE – I, LUDHIANA

(7-8th December, 2017)

Training Programme on Improved Practices for Oilseed Production

TRAINING SCHEDULE

Time	Programme Schedule	Official
7th Dec , 2017		
9:00-10:00 hrs	Registration	Mr. Amninder Singh, Ms. Akku Bala
10:00-10:05 hrs	Welcome	Dr. Arvind Kumar, Principal Scientist, ICAR-ATARI, Zone -I
10:05-10:15 hrs	Brief over view of the project "CFLDs on Oilseed 2017-18"	Dr. Preeti Mamgai Sr. Scientist, ICAR-ATARI, Zone-I
10:15-10:20 hrs	Remarks about the project	Director, ICAR-ATARI, Zone -I
10:20-10:30 hrs	Address by Chief Guest	Director of Extension Education PAU, Ludhiana
10:30-10:25 hrs	Vote of Thanks	Dr. Ashish. S.Murai Scientist, ICAR-ATARI, Zone-I
10:25-10:35	High Tea	
Training Session-I		
10:35-11:25 hrs	New varieties and improved package of practices of Groundnut cultivation in Punjab	Dr. K.S Brar, Sr Breeder, PAU, Ludhiana
11:25-12:10 hrs	Integrated pest management and nutrient management in Groundnut	Dr. Sarwaan Kumar, Asstt Entomologist, PAU
12:10 -12:50 hrs	New varieties and improved package of practices of Rapeseed & Mustard	Dr Surinder Sandhu Incharge (Oilseeds), PAU
12:50-01:30 hrs	Integrated pest management and weed management in Rapeseed & Mustard	Dr Sarwaan Kumar, Asstt Entomologist, PAU
01:30 -02:30hrs	Lunch	
	Training Session-II	
02:30-05:00 hrs	Field Visit	Dr Gurpreet Kaur, Asstt. Breeder (Oilseeds), PAU
8th Dec , 2017		
Training Session-III		
09:30-10:30 hrs	New varieties and new cropping system of Sesame crop	Dr. Surinder Sandhu Incharge (Oilseeds), PAU
10:30-11:30 hrs	Integrated pest management and nutrient management in Sesame	Dr. Pankaj Sharma Assistant Pathologist
11:30-11:40 hrs	Tea	
11:40-12:40 hrs	New varieties and improved practices in Sunflower crop	Dr. Shelly Assistant Agronomist
12:40-01:15 hrs	Integrated pest management and nutrient management in Sunflower	Dr Virender Sardana Senior Agronomist, PAU
01:15-02:15 hrs	Lunch	
02:15-04:50 hrs	Results of CFLDs on Oilseed 2017-18	All KVKs of Punjab
	Tea	
Concluding Session		

Annexure-IV

Expenditure Statement under CFLD Oilseeds during 2015-16

Sl. NO.	KVK	State	Crop Name	No. of FLDs	Area (ha)	Budget Allocated (in ₹)	Expenditure	Closing Balance
	PAU, Ludhiana							
1	Kapurthala	Punjab	Sunflower	20	8.0	48000	47963	37
2	Jalandhar	Punjab	Sunflower	20	8.0	48000	47931	69
	Total (A)			**40**	**16.0**	**96000**	**95894**	**106**
	CCSHAU, Hisar							
3	Bhiwani	Haryana	Rapeseed - Mustard	50	20.00	120000	8200	111800
4	Hisar	Haryana	Rapeseed - Mustard	50	20.00	120000	79400	40600
5	Jhajjar	Haryana	Rapeseed - Mustard	50	20.0	120000	0	120000
6	Mahendergarh	Haryana	Rapeseed - Mustard	50	20.0	120000	79550	40450
7	Sirsa	Haryana	Rapeseed - Mustard	50	20.0	120000	44208	75792
8	Yamunanagar	Haryana	Sunflower	10	4.0	24000	22900	1100
	Total (B)			**260**	**104.0**	**624000**	**234258**	**389742**
	SBBA, Rewari							
9	Rewari	Haryana	Rapeseed - Mustard	50	20.0	120000	67313	52687
	Total (C)			**50**	**20.0**	**120000**	**67313**	**52687**
	SKUAST-K, Srinagar							
10	Anantnag	Jammu & Kashmir	Rapeseed - Mustard	50	20.0	120000	120000	0
	Total (D)			**50**	**20.0**	**120000**	**120000**	**0**
	ICAR-ATARI, Zone-I,	**ATARI, Zone-I, Ludhiana**		0	0	473475	105531	367944
	TOTAL ATARI (E)			**0**	**0**	**473475**	**105531**	**367944**
	Grand Total (A+B+C+D+E)			**400**	**160.0**	**1433475**	**622996**	**810479**

Expenditure Statement under CFLD Oilseed during 2016-17

Sr No.	Name of KVK	Crop	FLDs sanctioned in ha	Amount per ha	Monitoring Funds	Amount sanctioned for KVKs after deduction of 5% monitoring	Opening balance available with KVK	Budget release	Total budget released including opening balance	Expenditure	Closing balance
	PAU, Ludhiana										
1	Bathinda	Groundnut	10	7500	3750	71250	0	71250	71250	71160	90
		Sesame	10	3000	1500	28500	0	28500	28500	28494	6
2	Hoshiarpur	Groundnut	0.8	7500	300	5700	0	5700	5700	5700	0
		Rapeseed – Mustard	19.2	3000	2880	54720	0	54720	54720	54681	39

Sr No.	Name of KVK	Crop	FLDs sanctioned in ha	Amount per ha	Monitoring Funds	Amount sanctioned for KVKs after deduction of 5% monitoring	Opening balance available with KVK	Budget release	Total budget released including opening balance	Expenditure	Closing balance
3	Amritsar	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	56978	22
4	Faridkot	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	57000	0
5	Ferozpur	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	57000	0
6	Gurdaspur	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	56930	70
7	Kapurthala	Rapeseed - Mustard	10	3000	1500	28500	37	28463	28500	28500	0
		Sunflower	20	4000	4000	76000	0	76000	76000	75748	252
8	Muktsar	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	57000	0
9	Nawanshahar	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	56730	270
10	Ropar	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	56990	10
11	Sangrur	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	57000	0
12	Jalandhar	Sunflower	20	4000	4000	76000	69	75931	76000	75931	69
13	Patiala	Sunflower	20	4000	4000	76000	0	76000	76000	75963	37
	Total (A)		**270**	**60000**	**45930**	**872670**	**106**	**872564**	**872670**	**871805**	**865**
	GADVASU, Ludhiana										
14	Barnala	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	57000	0
15	Tarn Taran	Rapeseed - Mustard	10	3000	1500	28500	**0**	28500	28500	28500	0
	Total (B)		**30**	**6000**	**4500**	**85500**	**0**	**85500**	**85500**	**85500**	**0**
	CCHAU, Hisar										
16	Bhiwani	Sesame	4	3000	600	11400	11400	0	11400	0	11400
		Rapeseed - Mustard	46	3000	6900	131100	100400	30700	131100	13820	117280
17	Hisar	Sesame	10	3000	1500	28500	28500	0	28500	28200	300
		Rapeseed - Mustard	20	3000	3000	57000	12100	44900	57000	52430	4570
18	Sirsa	Sesame	10	3000	1500	28500	28500	0	28500	5000	23500
		Rapeseed - Mustard	30	3000	4500	85500	47292	38208	85500	54560	30940
19	Jhajjar	Sesame	10	3000	1500	28500	28500	0	28500	5000	23500
		Rapeseed - Mustard	20	3000	3000	57000	91500	0	91500	40250	51250
20	Fatehabad	Rapeseed - Mustard	10	3000	1500	28500	0	28500	28500	28500	0
21	Mahender-garh	Sesame	20	3000	3000	57000	40450	16550	57000	37800	19200
		Rapeseed - Mustard	30	3000	4500	85500	0	85500	85500	56850	28650
22	Yammu-nagar	Sunflower (2015-16)	10	2400	0	0	1100	0	1100	0	1100
	Total (C)		**220**	**35400**	**31500**	**598500**	**389742**	**244358**	**634100**	**322410**	**311690**

23	Ambala	Sunflower	20	4000	4000	76000	0	76000	76000	76000	0
24	Rewari	Sesame	10	3000	1500	28500	52687	0	52687	15206	37481
		Rapeseed - Mustard	40	3000	6000	114000	0	114000	114000	108689	5311
25	Gurgaon	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	56110	890
	Total (D)		**90**	**13000**	**14500**	**275500**	**52687**	**247000**	**299687**	**256005**	**43682**
	Delhi										
26	Ujwa (Delhi)	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	53811	3189
	Total (E)		**20**	**3000**	**3000**	**57000**	**0**	**57000**	**57000**	**53811**	**3189**
	CSKHPKV, Palampur										
27	Hamirpur	Sesame	4.5	3000	675	12825	0	12825	12825	0	12825
		Rapeseed - Mustard	5.5	3000	825	15675	0	15675	15675	7430	8245
28	Bilaspur	Rapeseed - Mustard	10	3000	1500	28500	0	28500	28500	27850	650
29	Una	Rapeseed - Mustard	10	3000	1500	28500	0	28500	28500	28000	500
30	Kangra	Sesame	4	3000	600	11400	0	11400	11400	11400	0
		Rapeseed - Mustard	6	3000	900	17100	0	17100	17100	17100	0
	Total (F)		**40**	**18000**	**6000**	**114000**	**0**	**114000**	**114000**	**91780**	**22220**
	Dr. YSPUH&F, Solan										
31	Chamba	Rapeseed - Mustard	10	3000	1500	28500	0	28500	28500	25110	3390
	Total (G)		**10**	**3000**	**1500**	**28500**	**0**	**28500**	**28500**	**25110**	3390
	SKUAST, Jammu										
32	Kathua	Rapeseed - Mustard	14	3000	2100	39900	0	39900	39900	39900	0
	Total(H)		**14**	**3000**	**2100**	**39900**	**0**	**39900**	**39900**	**39900**	**0**
	SKUAST, Srinagar										
33	Bandipura	Sunflower	1.5	4000	300	5700	0	5700	5700	0	5700
34	Kupwara	Sunflower	2.1	4000	420	7980	0	7980	7980	7980	0
35	Ganderbal	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	54760	2240
36	Kulgam	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	57000	0
37	Srinagar	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	38665	18335
38	Aanatnag	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	57000	0
39	Leh(Addl.)	Rapeseed-Mustard	10	3000	1500	28500	0	28500	28500	4320	24180
40	Baramulla	Rapeseed - Mustard	20	3000	3000	57000	0	57000	57000	56749	251
	Total	**(I)**	**113.6**	26000	17220	327180	0	327180	327180	276474	50706
Total(A+B+C+D+E+F+G+H+I)			**807.6**	**167400**	**126250**	**2398750**	**442535**	**2016002**	**2458537**	**2022795**	**435742**
ICAR-ATARI, Zone-I,							**367944**	**431153**	799097	**556617**	**242480**
Funds for monitoring							0	126250	126250	61211	**65039**
Grand Total							**810479**	**2573405**	**3383884**	**2640623**	**743261**

Expenditure Statement under CFLD Oilseed during 2017-18

S. No.	Name of KVK	Crop	Area (ha)	Amount (per ha)	Monitoring funds	Opening balance available with KVK (Rs.)	Total budget allocation in (Rs.)	Total budget allocation with OB. in (Rs.)	Expenditure (Rs.)	Closing balance (Rs.)
	PAU, Ludhiana									
1	Amritsar	Rapeseed - Mustard	20	6000	6000	22	113978	114000	114000	0
2	Baithnda	Groundnut	12.6	8500	5355	96	101649	101745	101745	0
		Sesame	10	5000	2500	0	47500	47500	47247	253
		Rapeseed - Mustard	30	6000	9000	0	171000	171000	156448	14552
3	Ferozpur	Rapeseed - Mustard	20	6000	6000	0	114000	114000	114000	0
4	Faridkot	Rapeseed - Mustard	20	6000	6000	0	114000	114000	114000	0
5	Fategarh Sahib	Rapeseed - Mustard	20	6000	6000	0	114000	114000	113390	610
6	Gurdaspur	Rapeseed - Mustard	20	6000	6000	70	113930	114000	113900	100
7	Hoshiarpur	Groundnut	20	8500	8500	39	161461	161500	161410	90
		Sesame	10	5000	2500	0	47500	47500	47343	157
		Rapeseed - Mustard	20	6000	6000	0	114000	114000	114000	0
8	Jalandhar	Rapeseed - Mustard	20	6000	6000	69	113931	114000	114000	0
9	Kapurthala	Rapeseed - Mustard	20	6000	6000	252	113748	114000	111284	2716
10	Ludhiana	Rapeseed - Mustard	20	6000	6000	0	114000	114000	113930	70
11	Moga	Rapeseed - Mustard	20	6000	6000	0	114000	114000	113915	85
12	Muktsar	Rapeseed - Mustard	20	6000	6000	0	114000	114000	114000	0
13	Nawashahar	Rapeseed - Mustard	20	6000	6000	270	113730	114000	63839	50161
14	Patiala	Rapeseed - Mustard	12	6000	3600	37	68363	68400	68400	0
15	Ropar	Rapeseed - Mustard	30	6000	9000	10	170990	171000	170989	11
16	Sangrur	Rapeseed - Mustard	10	6000	3000	0	57000	57000	57000	0
	Total(A)		**374.6**	**123000**	**115455**	**865**	**2192780**	**2193645**	**2124840**	**68805**
GADVASU, Ludhiana										
17	Taran taran	Rapeseed - Mustard	20	6000	6000	0	114000	114000	114000	0
18	Barnala	Rapeseed - Mustard	40	6000	12000	0	228000	228000	141356	86644
19	Mohali	Rapeseed - Mustard	30	6000	9000	0	171000	171000	137867	33133

	Total(B)		**90**	**18000**	**27000**	**0**	**513000**	**513000**	**393223**	119777
CIPHET, Ludhiana										
20	Fazilka	Rapeseed - Mustard	40	6000	12000	0	228000	228000	108625	119375
	Total(C)		**40**	**6000**	**12000**	**0**	**228000**	**228000**	**108625**	**119375**
CSKHPKV, Palampur										
21	Hamirpur	Sesame	0	0	0	12825	0	12825	0	12825
		Rapeseed - Mustard	0	0	0	8245	0	8245	0	8245
22	Bilaspur	Rapeseed - Mustard	10	6000	3000	650	56350	57000	36300	20700
23	Kangra	Sesame	10	5000	2500	0	47500	47500	36072	11428
		Rapeseed - Mustard	10	6000	3000	0	57000	57000	37462	19538
24	Mandi	Rapeseed - Mustard	10	6000	3000	0	57000	57000	57000	0
25	Sirmaur	Sesame	10	5000	2500	0	47500	47500	7500	40000
	Sirmaur	Rapeseed - Mustard	10	6000	3000	0	57000	57000	10000	47000
26	Una	Rapeseed - Mustard	0	0	0	500	0	500	0	500
	Total (D)		**60**	**34000**	**17000**	**22220**	**322350**	**344570**	**184334**	**160236**
	Dr. YSPUH&F, Solan									
26	Chamba	Rapeseed - Mustard	10	6000	3000	3390	53610	57000	0	57000
	Total (E)		**10**	**6000**	**3000**	**3390**	**53610**	**57000**	**0**	**57000**
	SKUAST,Jammu									
27	Jammu	Rapeseed - Mustard	10	6000	3000	0	57000	57000	7444	49556
28	Kathua	Rapeseed - Mustard	10	6000	3000	0	57000	57000	35184	21816
29	Poonch	Rapeseed - Mustard	6	6000	1800	0	34200	34200	3600	30600
30	Reasi	Sesame	10	5000	2500	0	47500	47500	0	47500
		Rapeseed - Mustard	10	6000	3000	0	57000	57000	0	57000
	Total(F)		**46**	**29000**	**13300**	**0**	**252700**	252700	**46228**	**206472**
	SKUAST,Kashmir									
31	Anantnag	Rapeseed - Mustard	10	6000	3000	0	57000	57000	57000	0
32	Bandipora	Rapeseed - Mustard	10	6000	3000	5700	51300	57000	57000	0
33	Kupwara	Rapeseed - Mustard	5.3	6000	1590	0	30210	30210	26470	3740
34	Kulgum	Rapeseed - Mustard	5	6000	1500	0	28500	28500	28500	0
35	Shopian	Rapeseed - Mustard	4	6000	1200	0	22800	22800	22800	0
36	Pulwama	Rapeseed - Mustard	10	6000	3000	0	57000	57000	57000	0
37	**Gandarbal**	Rapeseed - Mustard	0	0	0	2240	-2240	0	0	0

38	**Leh (Addl.)**	Rapeseed - Mustard	0	0	0	24180	-24180	0	0	0
39	**Srinagar**	Rapeseed - Mustard	0	0	0	18335	-18335	0	0	0
	Total(G)		**44.3**	**36000**	**13290**	**50455**	**202055**	**252510**	**248770**	**3740**
40	**Baramulla**	Rapeseed - Mustard	0	0	0	251	0	251	0	251
	Total(H)		**0**	**0**	**0**	**251**	**0**	251	**0**	251
41	Nainital	Rapeseed - Mustard	10	6000	3000	0	57000	57000	0	57000
	Totat(I)		**10**	**6000**	**3000**	**0**	**57000**	**57000**	**0**	**57000**
	Total(A+B+C+D+E+F+G+H+J)		**674.9**	**258000**	**204045**	**77181**	**3821495**	**3898676**	**3106020**	**792656**
	ATARI monitoring					65039	0	65039	63372	**1667**
	ATARI Funds					242480	86592	329072	329072	**0**
	CCHAU, Hisar and New Delhi					358561	0	0	0	358561
	Grand Total					**743261**	**3908087**	**4292787**	**3498464**	**1152884**

Annexure-IV

NAME OF INSTITUTE ZCU: ICAR-AGRICULTURAL TECHNOLOGY APPLICATION RESEARCH INSTITUTE, ZONE-I, PAU CAMPUS, LUDHIANA

Audit Utilization Certificate with respect of ATARI and KVKs of Zone-I under the Project Cluster Frontline Demonstrations of Oilseed 2017-18 funded by NMOOP for the year 2017-18

(Amount in Rupees)

Name of Zone-I	Opening balance as on 01.04.2017	Remittance by DAC & FW during the year	DAC&FW share of receipts realized from the scheme during the year 2017-18	Total (Col 2+3)	DAC&FW share of sanctioned grant for the year 2017-18	Actual expenditure for the year 2017-18	DAC&FW share of expenditure actually incurred and audited during the year 2017-18	Closing balance at the end of the year i.e., 31.3.2018
1	2	3	4	5	6	7	8	9
ICAR-ATARI ZONE-I	242480	86592	100%	329072	100%	329072	329072	0
ATARI Monitoring	65039	0		65039		63372	63372	1667
KVKs	77181	3821495	100%	3898676	100%	3106020	3106020	792656
Grand Total	384700	3908087	2	4292787	2	3498464	3498464	794323

*Excluding Rs. 358561/- unspent balance for the year 2016-17 available with Haryana and Delhi.

Principal Investigator 8/1/19

Asstt. Finance & Accounts Officer 8/1/19

Director 10.1.19

Annexure-VI

Details of Project "CFLDs on Oilseeds" from 2015-16 to 2018-19

(₹. in la kh)

Sr. No.	Item		2015-16	2016-17	2017-18	2018-19
1.	Total fund allocation		14,33,475	33,99,000	55,18,000	59,41,000
2	Fund received		14,33,475	33,99,000	39,08,087	42,00,000
3.	Date of receipt of funds		08.10.2015	28.09.2016	18.10.2017	17.10.2018
4	**Fund Utilized component wise:**					
I	Fund utilized under Demonstrations		517465	2053086	4085289	2748094 (approx.)
Ii	Contractual staff					
	a. SRF	Allocation	201600	360000	360000	360000
		Expenditure	41897	357000	204000	221475
	b. DEO	Allocation	90000	180000	180000	216000
		Expenditure	46935	147500	101000	99685
	c. TA	Allocation	-	-	-	-
		Expenditure	-	-	-	-
iii	Zonal Workshop and Training	Allocation	144000	144000	160000	80000
		Expenditure	-	39490	24002	-
iv	Group meeting	Allocation	-		-	-
		Expenditure	-		-	-
v	Misc. expenses	Allocation	37875	40000	48000	20000
		Expenditure	16699	40000	48000	-

Year 2015-16

Crop	Allocation		Achievements		Technologies demonstrated	Yield (q/ha)		Yield gap	
	Area (ha)	No. of CFLDs	Area (ha)	No. of CFLDs		CFLDs	Check	q/ha	%
Rapeseed-Mustard	120	350	120	350	Improved variety and Orobanche management	18.40	14.71	3.69	25.1
Sunflower	20.0	50	20.0	50	Improved variety & Integrated pest management	16.63	15.03	1.60	10.6
Total	**140.0**	**400**	**140.0**	**400**					

Year 2016-17

Crop	Allocation		Achievements		Tech. demonstrated		Yield (/ha)		Yield gap	
	Area (ha)	No. of CFLDs	Area (ha)	No. of CFLDs	Name of variety used	Other component	CFL Ds	Check variety	q/ha	%
Sesame	120.0	300	82.50	165	HT-1, RT-351, LTK-4	Seed Treatment, Weed Management	4.58	3.63	0.95	26.17
Groundnut	30.0	75	10.80	29	SG 99, TG-37 A	Complete package	15.00	13.95	1.05	7.53

Sunflower (*Kharif*)	30.0	75	3.60	19	Morden	Integrated nutrient management Irrigation at critical stages	8.00	6.25	1.75	28.00
Rapeseed-Mustard (*Rabi*)	540.0	1350	589.7	1843	DGS-1, KS-101, Shalimar brown sarson-1, KBS-101,SS-1, KBS-3 , Neelam, HPN-1, KBS-3	Improved variety, Proper Plant Protection, INM, Inter cropping with sugarcane	17.21	13.97	3.24	23.19
Sunflower (*Spring*)	80.0	200	80.00	200	PSH-1962	Seed Treatment, carbedazim	19.22	15.08	4.14	27.45
Rapeseed& Mustard *(Summer)*	10.0	25	1.09	20	RLM-514	Integrated nutrient management	9.55	7.40	2.15	29.05
Total	**810**	**2025**	**767.69**	**2276**						

Year 2017-18

Crop	Allocation		Achievements		Variety/ Technology demonstrated		Yield (q/ha)		Yield gap	
	Area (ha)	No. of CFLDs	Area (ha)	No. of CFLDs	Variety used	Other component	CFLDs	Check	q /ha	%
Sesame (*Kharif*)	60.0	150	50.00	125	PB Til No-1, RT 346	Improved variety, Seed Treatment with Bavistin	550	441	109	24.72
Groundnut (*Kharif*)	40.0	100	32.40	87	TG 37-A	Management of Cercospora leaf-spot disease & defoliators	1855	1715	140	8.16
Rapeseed-Mustard (*Rabi*)	680.0	1700	587.58	1469	Hyola, GSC 6, GSC-7, KS-101, Shalimar Brown Sarson, RSPR 01, GSL 1, PUSA Bold, NRCDR 1	Implementation of package of practices	1572	1213	359	29.60
Total	**780.0**	**1950**	**669.98**	**1681**						

Year 2018-19

Crop		Allocation		Achievements			Variety/ Technology demonstrated		Yield (q/ha)		Yield gap	Yield gap
		Area (ha)	No. of CFLDs	Area (ha)	No. of CFLDs	Far-mers	Variety used	Other component	CFLDs	Check	q/ha	%
Kharif												
1	Sesame	110.0	275	97.20	243	243	PB Til No. 2, LTK-4	IV, INM	5.41	4.43	9.8	22.12
2	Groundnut	30.00	75	26.00	65	65	SG 99	INM	23.40	21.70	1.70	7.83
3	Soybean	30.00	75	17.7	47	47	VLS 77, PS-	HYV	15.20	10.60	4.60	43.40

							1225, SL 958					
Rabi												
4	Rapeseed-Mustard	680	1700	619.0	1540	1540	GSC 6, PAC 401, GSC-7, KS-101, Shalimar Brown Sarson, RSPR 01, GSL1,PUSA Bold, NRCDR	Complete package of practices	Results Awaited			
5	Linseed	10	25	0	0	0	0	0				
Grand Total		**860.0**	**2150**	**759.9**	**1895**	**1895**						

Other Details

Sr. No.	Item	2016-17	2017-18	2018-19
1	Whether booklet of results of CFLDs was got printed?	Yes	In progress	
2	Date of Zonal Workshop and Training	January 23, 2017	December 7-8, 2017	9-10 Feb,2019
3	No. of participants in Zonal Workshop and Training	80	25	40
4	Date of Group Meeting	12.07.2016	-	
5	No. of Participants in Group Meeting	25	-	
6	No. of field visits by officials of ICAR/ DAC & FW	13	-	

Table 2: Name and number of field visits by officials of ICAR/ DAC&FW

S.No.	No. of field visit	Officials
2016-17	7	Dr. Rajbir Singh, Director, ICAR-ATARI, Ludhiana Dr. MN Singh, Director, DWD, Gaziabad Dr. Mahesh Kumar, Assistant Director, DWD, Ghaziabad Dr. H.S. Bajwa, Extension Specialist, Punjab Agricultural University, Ludhiana Dr. S K Sandhu, Incharge, Oilseeds Section, PAU, Ludhiana Dr. Pankaj Sharma, Assistant Plant Pathologist Dr. Preeti Mamgai, Senior Scientist, ICAR-ATARI, Zone-I, Ludhiana Ms.Akku Bala, SRF Oilseeds, ICAR-ATARI, Ludhiana
2017-18	4	Dr. Preeti Mamgai, Senior Scientist, ICAR-ATARI, Zone-I, Ludhiana Dr. S K Sandhu, Incharge, Oilseeds Section, PAU, Ludhiana Dr. R.S.Uppal, Senior Extension Specialist, PunjabAgricultural University, Ludhiana Dr. Satpal Saini, Senior Extension Specialist, Punjab Agricultural University, Ludhiana Dr. Gurpreet Kaur, Assistant Breeder, Oilseeds section, Department of Plant Breeding and Genetics, Dr. Ashish.S.Murai, Scientist, ICAR-ATARI, Zone-I, Ludhiana Ms.Akku Bala, SRF Oilseed, ICAR-ATARI, Ludhiana
2018-19	3	Dr. Rajbir Singh, Director, ICAR-ATARI, Ludhiana Dr. Preeti Mamgai, Senior Scientist, ICAR-ATARI, Zone-I, Ludhiana Ms.Akku Bala, SRF Oilseeds, ICAR-ATARI, Ludhiana

Annexure-VII

Consolidated Report of CFLDs on Oilseeds since 2015-16

State	Crop	KVKs (No.)	FLD (No.)	Area(ha)
Haryana	Rapeseed-Mustard	6	300	120.0
Jammu &Kashmir	Rapeseed-Mustard	1	50	20.0
Total (Rabi)			**400**	**140.0**
Punjab	Sunflower	2	40	16.00
Haryana	Sunflower	1	10	4.0
Total (Summer)			**50**	**20.0**
Total			**400**	**160.0**

2016-17

State	Crop	KVKs (No.)	FLD (No.)	Area(ha)
Punjab	Sesame	1	25	10.00
Punjab	Groundnut	2	29	10.80
Haryana	Sesame	6	164	64.0
Himachal Pradesh	Sesame	2	61	8.50
Jammu&Kashmir	Sunflower	2	19	3.60
Total (Kharif)			**298**	**96.9**
Punjab	Rapeseed-Mustard	12	685	219.20
Haryana	Rapeseed-Mustard	8	486	200.00
Delhi	Rapeseed-Mustard	1	50	20.0
Himachal Pradesh	Rapeseed-Mustard	5	269	41.50
Jammu &Kashmir	Rapeseed-Mustard	6	373	110.09
Total (Rabi)			**1863**	**590.79**
Punjab	Sunflower	3	120	60.00
Haryana	Sunflower	1	50	20.00
Jammu &Kashmir	Rapeseed-Mustard	1	20	1.09
Total (Summer)			**190**	**81.09**
Total			**2351**	**768.78**

2017-18

State	Crop	No of KVKs	FLD (No.)	Area(ha)
Punjab	Groundnut	2	80	32.4
Punjab	Sesame	2	50	20
Himachal Pradesh	Sesame	2	50	20
Jammu &Kashmir	Sesame	1	25	10
Total (Kharif)			**205**	**82.4**
Punjab	Rapeseed -Mustard	22	1130	452
Himachal Pradesh	Rapeseed -Mustard	6	138	55.28
Jammu &Kashmir	Rapeseed -Mustard	2	201	80.3
Uttrakhand	Rapeseed -Mustard	1	0	0
Total (Rabi)			**1469**	**587.58**
Total			**1674**	**669.98**

2018-19

State	Crop	No of KVKs	FLD (No.)	Area(ha)
Punjab	Groundnut	2	62	26.0
Punjab	Sesame	5	125	50.0
Himachal Pradesh	Sesame	3	66	27.2
Himachal Pradesh	Soybean	1	15	6.00
Jammu &Kashmir	Sesame	1	25	10.0
Uttrakhand	Sesame	1	25	10.0
Uttrakhand	Soybean	2	30	11.7
Total (Kharif)			**348**	**140.9**
Punjab	Rapeseed -Mustard	22	1100	440.0
Himachal Pradesh	Rapeseed -Mustard	6	125	50.0
Jammu &Kashmir	Rapeseed -Mustard	8	178	71.0
Uttrakhand	Rapeseed -Mustard	5	163	67.0
Total (Rabi)			**1566**	**628.0**
Total			**1914**	**768.9**

Annexure-VIII

ICAR-ATARI, Ludhiana Project Team

	2017-18
Nodal Officer/ PI	Preeti Mamgai
Co-Nodal Officer / Co-PI	Ashish Santosh Murai
Senior Research Fellow	Akku Bala
Data Entry Operator	Amninder Singh

List of contributors who implemented the project CFLD on Oilseed 2017-18

Sl.No.	Name of KVK	Programme Coordinator	Nodal Officer
1	Amritsar	Dr Bhupinder Singh Dhillon	Dr Astha
2	Bathinda	Dr. J. S. Brar	Dr. G. S. Dhillon
3	Ferozepur	Dr. Gurjant Singh Aulakh	Dr. Jagdeep Kaur
4	Faridkot	Dr.Jagdish Grover	Mr. Sukhwinder Singh
5	Fategarh Sahib	Dr. Harinder Singh	Mrs. Reet Verma /Dr. Ajay Singh
6	Gurdaspur	Dr (Mrs) P K Ghuman	Dr Satwinderjit Kaur
7	Hoshiarpur	Dr Maninder Singh Bons	
8	Jalandhar	Dr Kuldeep Singh	Dr.Arpandeep Kaur
9	Kapurthala	Dr. Manoj Sharma	Dr. Bindu Marwaha
10	Ludhiana	Dr. S.C.Sharma	Dr. Harshpreet Singh
11	Moga	Dr Amandeep Singh Brar	Mrs Amanpreet
12	Muktsar	Dr. Nirmaljit Singh Dhaliwal	Dr. Balkaran Singh Sandhu
13	Nawashahar	Dr. Jugraj Singh	
14	Patiala	Dr. Jasvinder Singh	Dr. Rachna Singla
15	Ropar	Dr. Vipin Kumar Rampal	Dr. Sanjeev Ahuja
16	Sangrur	Dr. Mandeep Singh	Dr. Pawan Kumar
17	Taran taran	Dr Balwinder Kumar	Navjot Singh and Anil Kumar
18	Barnala	Dr. Prahalad Singh Tanwar	Dr. Suryendra Singh
19	Mohali	Dr. Yashwant Singh	Dr. Harmeet Kaur
20	Fazilka	Dr. Sunil Kumar	Sh. Prithvi Raj
21	Bilaspur	Dr Jai Dev Sharma	Dr Sanjay Kumar
22	Kangra	Dr Vishal Dogra	Dr Deep kumar
23	Mandi	Pankaj Sood	LK Sharma, DS Yadav
24	Sirmaur	Dr. Anand Singh	Dr Manoj Gupta/Dr SS Paliyal
25	Hamirpur	Dr. Sanjiv Upadhyay	
26	Chamba	Dr. Rajiv Raina	
27	Jammu	Dr. Vikas Tandon	
28	Kathua	Dr. Amrish Vaid	
29	Poonch	Dr. Ajay Gupta	
30	Reasi	Dr. Banarsi Lal	
31	Anantnag	Dr. M Amin Zargar	
32	Bandipora	Dr. M H Samoon	
33	Kupwara	Peerzada Shafat Hussain	
34	Kulgum	Dr Tasneem Mubarak	
35	Shopian	Dr. Inayat Mustafa Khan	
36	Pulwama	Prof. Arshid H. Mughal	

Notes

Notes

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

Agrisearch with a human touch

भाकृअनुप
ICAR

ICAR-Agricultural Technology Application Research Institute, Zone-I
PAU Campus, Ludhiana - 141 004
Website: www.atari1icar.res.in