

# Improving Oilseed Production through Cluster Frontline Demonstration in North India



सत्यमेव जयते  
DAC&FW

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



भारत-अनुसंधान  
ICAR



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Zone-I, PAU Campus, Ludhiana - 141 004**

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

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**ICAR-Agricultural Technology Application Research Institute**

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## Preface

India is the largest producer of oilseed in the world but domestic production of edible oils has not kept pace with the rising demand for edible oils in the country. This has led to a substantial increase in the imports of edible oils.

The country has achieved oilseeds production of 32.52 million tonnes during 2016-17, which may helped in reducing the huge gap between the demand and availability 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 32.52 million tonnes in 2016-17 as per data from Ministry of Agriculture.

Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW) under National Mission on Oilseeds and Oil palm (NMOOP) is striving hard to increase the area under cultivation and increase production of oilseeds in India. Department of Agriculture, Cooperation & Farmer's Welfare (DAC&FW) approved the project "Cluster Frontline Demonstrations on Oilseed 2016-17" and provided improved variety of seed, dissemination of the improved technologies to the farmers which has been generated by State Agricultural Universities and ICAR Institutes. NMOOP sponsored 33.99 lakh rupees for the project to ICAR-ATARI, Zone-I, Ludhiana during May 2017 for conducting frontline demonstrations (CFLDs) in 35 Krishi Vigyan Kendras of the states of Punjab, Haryana, Delhi, Himachal Pradesh and Jammu & Kashmir.

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

In this endeavour, I am highly thankful to Department of Agriculture, Cooperation & Farmer's Welfare (DAC&FW), National Mission on Oilseed and Oil palm (NMOOP) for providing funds for the project. I also thank to Dr. A.K. Singh, Deputy Director General (Agricultural Extension) and Dr. V.P Chahal, ADG (Agricultural Extension) for their valuable guidance and execution of the project.

I extend my gratitude to Directors of Extension Education from various State Agricultural Universities and Programme Coordinators/Nodal Officers of KVKs for implementing under the project and farmers whose joint efforts helped in successful implementation of the project. I would whole-heartedly congratulate all who were associated with the project.



**(RAJBIR SINGH)**

Ludhiana

Date: 26 November, 2018

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## Acronyms

ATARI	Agricultural Technology Application Research Institute
CCSHAU	Chaudhary Charan Singh Haryana Agricultural University
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
SKUAST	Sher-e-Kashmir University of Agricultural Sciences and Technology
SI	Seed Treatment
SRF	Senior Research Fellow
WHO	World Health Organization
YSPUH&F	Dr. Yashwant Singh Parmar University of Horticulture and Forestry



## Executive Summary

India is the largest producer of oilseed in the world but domestic production of edible oils has not kept pace with the rising demand for edible oils in the country. This has led to a substantial increase in the imports of edible oils. To boost the indigenous production of oilseed in India, "Cluster Frontline Demonstrations on Oilseed" project was initiated by the Department of Ministry of Agriculture cooperation and Farmer's Welfare (DAC&FW) with cooperation of Division of Extension Education, ICAR, New Delhi during 2015 and it continued in 2016-17. The main objective for conducting Cluster Frontline Demonstrations was to show the production potential of notified oilseed varieties and package of practices and technologies generated in oilseed for higher production, better productivity and remunerative profitability for the farmers. The project was implemented by ICAR-ATARIs through *Krishi Vigyan Kendras* (KVKs) during 2015 to 2017 with aim to enhance the oilseed production in the country.

In ICAR-ATARI, Zone-I, the project was implemented through 35 KVKs of the states of Haryana, Punjab, Himachal Pradesh and Jammu and Kashmir. A budget for each crop *i.e* groundnut Rs.7500/ha, sunflower Rs 4000/ha, rapeseed & mustard Rs 3000/ha and sesame Rs.3000/ha was given to the respective KVKs for providing basic inputs like seed, biofertilizers *etc.* to the farmers for conducting cluster demonstrations. During *kharif* season, total 13 KVKs laid 284 cluster frontline demonstrations on an area of 96.9 ha on groundnut, sesame and sunflower crops. In Punjab, 4.7 per cent and 10.5 per cent higher yield was recorded from the demonstration plot of sesame and groundnut respectively. In sesame, 47.2 per cent higher yield was reported in Haryana, similarly; in Himachal Pradesh 53.7 per cent higher yield was recorded in comparison to local check. In Jammu & Kashmir sunflower demonstrations recorded 25.9 per cent higher yield than local check.

In *Rabi* season, total 32 KVKs of five states demonstrated 1818 cluster frontline demonstrations on rapeseed & mustard under an area of 589.7 ha. In Rapeseed & Mustard CFLDs, 25.10 per cent, 16.80 per cent, 48.00 per cent, 38.90 per cent and 32.1 per cent higher yields were recorded as compared to local check in Punjab, Haryana, Delhi, Himachal Pradesh, and Jammu & Kashmir. During the summer season, 4 KVKs laid 190 demonstrations on an area 81.09 ha on sunflower and rapeseed & mustard in Punjab, Haryana and Jammu & Kashmir. In Punjab, 13.8 per cent higher yield was recorded on sunflower and 29.1 per cent higher yield was recorded in Jammu & Kashmir on rapeseed

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

&mustard crop as compared to local check. Throughout different seasons, few KVKs were unable to achieve the targets, thus some CFLDs KVKs were unable to achieve the targets, thus some CFLDs were reallocated. While conducting frontline demonstrations, the technologies like improved variety, seed treatment, line sowing of crop, different intercropping system, integrated pest management (IPM) etc. were followed at the farmer's field.

Extension activities play an important role to disseminate the technologies and other related issues in FLDs. During the year 2016-17, 267 extension activities for farmers were conducted across the states of Zone-1 in which as many as 7939 farmers actively participated. The extension activities comprised farmers-scientists interaction, method demonstrations on scientific practices, field days, awareness camps, kisan goshtis, message by Whatsapp, etc. KVKs organized 50 training programmes in which 1398 farmers participated.

The workshop on Cluster Frontline Demonstrations on Oilseeds 2016-17 was organized by ICAR-ATARI, Ludhiana on January 23, 2017. In this workshop ADG (AE) Dr. V.P Chahal, Director, ICAR-ATARI, Dr. Rajbir Singh, Scientists from ICAR-ATARI, Zone-I, PAU, Ludhiana Programme Coordinators and Subject Matter Specialists of 35 KVKs of Zone-1 where the Cluster Frontline Demonstrations on Oilseeds were conducted during Kharif and Rabi season 2016-17. A total of 90 delegates attended the workshop.

## कार्यकारी सारांश

भारत तिलहन का सबसे बड़ा उत्पादक है, लेकिन खाद्य तेलों का घरेलू उत्पादन देश में खाद्य तेलों की बढ़ती मांग के साथ तालमेल नहीं रखता है। इससे खाद्य तेलों के आयात में पर्याप्त वृद्धि हुई है। इस लिए भारत में तिलहन के उत्पादन को बढ़ावा देने के लिए, 2015 में कृषि और किसान कल्याण मंत्रालय (DAC&FW) विभाग द्वारा “ तिलहन पर समूह पंक्ति प्रसार प्रदर्शन” शुरू किया गया था जोकि 2016-17 में भी जारी रखा गया। इस परियोजना का मुख्य उद्देश्य यह था, अधिसूचित तिलहन की किस्मों की उत्पादन क्षमता, उच्च उत्पादन, बेहतर उत्पादकता और किसानों के लाभकारी मुनाफे के लिए तिलहन के उत्पादन के सर्वोत्तम अभ्यासों और तकनीकों का प्रदर्शन करना। देश में तिलहन के उत्पादन को बढ़ाने के उद्देश्य से यह परियोजना आई.सी.ए.आर- अटारी (ICAR&ATARI) के माध्यम से कृषि विज्ञान केंद्रों (के.वी.के) द्वारा कार्यान्वित की गई।

क्षेत्र -1 में इस परियोजना को पंजाब, हरियाणा, दिल्ली, हिमाचल प्रदेश और जम्मू तथा कश्मीर राज्यों में 35 के.वी.के द्वारा लागू किया गया था। तिलहन पर प्रदर्शन करने के लिये मूंगफली का 7500 हेक्टेयर, सरसों का 3000 रुपये हेक्टेयर, सूरजमुखी के लिए 4000 रुपये प्रति हेक्टेयर और तिल के लिए 3000 रुपये प्रति हेक्टेयर के.वी.के. को बीज, जैव उर्वरक आदि जैसे मूलभूत आदानों को प्रदान करने के लिए दिए गए। खरीफ ऋतु के दौरान, 96.9 हेक्टेयर क्षेत्र में मूंगफली, तिल और सूरजमुखी 284 पंक्ति प्रदर्शनिया लगाई गयी। तिल तथा मूंगफली की समूह पंक्ति प्रदर्शन में स्थानीय उपज की तुलना में 4.7 प्रतिशत तथा 10.50 प्रतिशत अधिक उपज क्रमशः पंजाब में दर्ज की गई तथा हरियाणा और हिमाचल में 47 तथा 53.7 प्रतिशत स्थानीय उपज तिल की फसल में पाई गई। जम्मू कश्मीर में सूरजमुखी की फसल में 25.9 फीसदी स्थानीय उपज दर्ज की गई।

रबी में, 589.7 हेक्टेयर क्षेत्र पर सरसों की कुल 1818 समूह पंक्ति प्रदर्शन (CFLD) लगाए गए तथा रबी की ऋतु में सरसों की फसल पर पंजाब में 25.10 प्रतिशत, हरियाणा में 16.80 प्रतिशत, दिल्ली में 48 प्रतिशत, हिमाचल में 38.90 प्रतिशत तथा जम्मू कश्मीर में 32.10 प्रतिशत अधिक उपज दर्ज की गई। गर्मी की ऋतु में 81.09 हेक्टेयर क्षेत्रफल पर सूरजमुखी की कुल 190 समूह पंक्ति प्रदर्शन लगाए गए जिस में पंजाब में 13.8 प्रतिशत तथा जम्मू कश्मीर में 29.10 प्रतिशत अधिक उपज दर्ज की गई। कुछ के.वी.के. खरीफ, रबी तथा गर्मी की ऋतुओं में लक्ष्य को हासिल करने में असमर्थ रहे। अग्रिम पंक्ति प्रदर्शनों में सुधारित किस्में, बीज उपचार, फसल की बुवाई, नमक सहिष्णु प्रणालियों एकीकृत कीट प्रबन्धन तकनीक आदि किसानों के खेत पर प्रदर्शन किए गए।

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

अग्रिम पंक्ति प्रदर्शन में प्रौद्योगिकियों और अन्य संबंधित मुद्दों का प्रसार करने के लिए विस्तार गतिविधियों की एक महत्वपूर्ण भूमिका निभाती है। वर्ष 2016-17 के दौरान, क्षेत्र -1 के राज्यों में कुल 267 विस्तार गतिविधियों का आयोजन किया गया जिसमें लगभग 7939 किसानों ने सक्रिय रूप से भाग लिया। विस्तार गतिविधियों में किसानों-वैज्ञानिकों के बीच बातचीत, वैज्ञानिक प्रथाओं, क्षेत्र दिवसों, जागरूकता शिविर, किसान गोस्ती, वॉट्स द्वारा संदेश आदि शामिल थे। कृषि विज्ञान केंद्रों ने 50 प्रशिक्षण कार्यक्रमों का आयोजन किया जिसमें 1398 किसान सक्रिय रूप से शामिल हुए।

आई.सी.ए.आर-अटारी, लुधियाना द्वारा 23-01-2017 को तिलहन पर अग्रिम पंक्ति प्रदर्शन 2016-17 कार्यशाला आयोजित की गई। इस कार्यशाला में, आई.सी.ए.आर-अटारी, क्षेत्र-1 लुधियाना, के निदेशक डॉ. राजबीर सिंह, आईसीएआर-अटारी, क्षेत्र-1, पी.ए.यू. के वैज्ञानिकों, कृषि विज्ञान केंद्रों के कार्यक्रम समन्वयक और वैज्ञानिकों ने भाग लिया।

## Introduction

India has a wide variety of agro-climatic conditions and soil types that enable cultivation of various kinds of oilseed crops. Since 1995, India's share in world's production of oilseeds has been around 10 per cent. Although, India is a major producer of oilseeds, per capita oil consumption in India is only 10.6 kg/annum which is low compared to 12.5 kg/annum in China, 20.8 kg/annum in Japan, 21.3 kg/annum in Brazil. Among the nine oilseed crops grown in the country, seven are edible oils (soybean, groundnut, rapeseed-mustard, sunflower, sesame, safflower and niger) and two are for non-edible oils (castor and linseed). India ranks first in the production of most of the minor oilseeds (castor, niger, safflower and sesame). In early 1970s, the "canola", a registered trade mark of Canadian Oil Association, oil was introduced in India from Europe and Canada. Generally this oil was derived from *Brassica napus* and *B. rapa* after removing the anti nutritional erucic acid (<2% erucic acid) and bitter glucosinolates (<30 micromoles). This oil was accepted worldwide, having high monounsaturated fats, may reduce the risk of heart disease and regarded as healthy edible oil. The low levels of saturated fats of sunflower oil make it suitable for cooking purposes. The oilseeds are classified as 'Kharif Crop' and 'Rabi Crop'. The Kharif crop that is dependent on the monsoon is harvested around October-November each year. On the other hand, the Rabi crop is harvested around March-April each year.

**Table 1: Area, production and productivity of oilseed crops.**

Crop	Area (million ha)	Production (million tonnes)	Yield (Qt. per ha)
Groundnut	4596.33	6733.33	1465
Sesame	1950.88	850.07	436
Sunflower	487.19	296.30	608
Rapeseed & Mustard	5745.52	6796.72	1183

Source: Ministry of Agriculture, Government of India 2015-16

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

Front Line Demonstration (FLD) concept, initiated by the Indian Council of Agricultural Research (ICAR) to provide direct interface between scientist and farmers. The scientists directly involved in planning, execution, monitoring of demonstrations for the technologies developed and get feedback from the farmer's field about the production. The field demonstration conducted under the close supervision of National Agriculture Research scientists has been a very successfully strategy for introducing new technologies and improved packages of practices specific for the region before the practices are fed into the main extension system of the State Agriculture Department. To improve the production and productivity of oilseed Ministry of Agriculture Cooperation and Farmers Welfare, Government of India has sanctioned a project on “Cluster Frontline Demonstrations of Oilseeds 2016-17” under National Mission on Oilseeds and Oil Palm implemented through ICAR Agricultural Technology Application Research Institutes.

To increase area under oilseed cultivation and increase the production of oilseed, National Mission on Oilseeds and Oil Palm (NMOOP) sponsored Rs. 33.99 lakh to ICAR-ATARI, Zone-I, Ludhiana during 2016-17 for conducting Cluster Frontline Demonstrations (CFLDs) in the states of Punjab, Haryana, Delhi, Himachal Pradesh and Jammu and Kashmir. Thus, cluster frontline demonstrations were laid by 35 Krishi Vigyan Kendras (KVKs) of ICAR-ATARI, Zone-I during the year 2016-17 and they were funded with Rs. 7500 per ha for groundnut, Rs. 4000 per ha for sunflower and Rs. 3000 per ha for rapeseed & mustard and sesame for laying demonstrations on oilseed in the farmer's fields. A total of 2025 CFLDs were allotted (*Kharif, Rabi and Summer*) for an area of 810 ha in the five states. However, some of the KVKs were not able to meet the targets in laying CFLDs on sesame, sunflower and groundnut due to shortage or unavailability of quality seed or as the varieties of the crop were older than 10 years. Therefore, many of the planned CFLDs of sesame, sunflower and groundnut were reallocated to CFLDs on rapeseed & mustard in Rabi season for the year 2016-17.(Table 1)

During Kharif season, out of allotted area of 30 ha, groundnut was demonstrated in an area of 10.80 ha in state of Punjab and 19.20 ha area remained deficit in Himachal Pradesh and J&K. While sunflower crop was demonstrated in 3.60 ha out of 30 ha allotted area.

Similarly, sesame was demonstrated on 82.5 ha area out of 120 ha allotted area in Punjab and Haryana. The deficit area under Kharif CFLDs, in oilseed were reallocated to CFLDs on rapeseed & mustard. Thus, out of total deficit area of 70.7 ha, the area reallocated to CFLDs to rapeseed & mustard was 19.20 ha in Punjab, 46.00 ha in Haryana, 11.50 ha in Himachal Pradesh and 4.00 ha in Jammu & Kashmir.

The project was successfully implemented during the last two years from 2015-2017 and it was also sanctioned for the year 2017-18. In 2015-16, total 400 CFLDs were laid on an area of 160 ha on rapeseed & mustard and sunflower. A total of 2246 CFLDs were conducted under an area of 767.69 ha on the crops groundnut, sesame, rapeseed & mustard and sunflower in five states during the year 2016-17. During 2017-18, 780 ha area has been allotted for conducting CFLDs on groundnut, sesame, rapeseed & mustard in four states of Zone-1.



## Process and Methodology

“Cluster Frontline Demonstrations on Oilseeds 2016-17” under NMOOP had been sanctioned by the Ministry of Agriculture, Cooperation & Farmers' Welfare for disseminating the technologies generated by State Agricultural Universities (SAUs) & ICAR Institutes among farmers to improve the yield and maximize returns of farmers. Under this project, National Mission on Oilseeds and Oil Palm (NMOOP) sanctioned Rs. 33.99 lakh to ICAR-ATARI, Zone-I, Ludhiana during the year 2016-17 for conducting CFLDs by

**Table 2: Details of state-wise and crop wise allotted, conducted and deficit CFLDs during 2016-17.**

State/ Crop	Allotted		Conducted during Kharif/Rabi/ summer/		Deficient area converted to Rapeseed & Mustard in lieu of deficient Groundnut, sesame and sunflower	
	Demo. (No.)	Area (ha)	Demo. (No.)	Area (ha)	Demo. (No.)	Area (ha)
<b>Punjab</b>						
Groundnut	75	30.00	29	10.8	48	19.20
Sesame	25	10.00	25	10.00	-	-
Rapeseed & Mustard	500	200.0	685	219.2	-	-
Sunflower	150	60.00	120	60.00	-	-
<b>Total (Punjab)</b>	<b>750</b>	<b>300.0</b>	<b>859</b>	<b>300.0</b>	<b>48</b>	<b>19.20</b>
<b>Haryana</b>						
Sesame	200	80.00	80	64.00	90	36.00
Rapeseed & Mustard	450	180.0	486	200.0	-	-
Sunflower	50	20.00	50	20.00	-	-
<b>Total (Haryana)</b>	<b>700</b>	<b>280.0</b>	<b>616</b>	<b>284.0</b>	<b>90</b>	<b>36.00</b>
<b>Delhi</b>						
Rapeseed & Mustard	50	20.00	50	20.00	-	-
<b>Total (Delhi)</b>	<b>50</b>	<b>20.00</b>	<b>50</b>	<b>20.00</b>	<b>-</b>	<b>-</b>
<b>Himachal &amp; Pradesh</b>						
Sesame	50	20.00	60	8.50	29	11.50
Rapeseed & Mustard	75	30.00	269	41.50	-	-
Sunflower	25	10.00	-	-	-	-
<b>Total (HP)</b>	<b>150</b>	<b>60.00</b>	<b>329</b>	<b>50.00</b>	<b>29</b>	<b>11.50</b>
Sesame	25	10.00	-	-	10	4.00
Rapeseed & Mustard	300	120.0	373	110.09	-	-
Sunflower	50	20.0	19	3.60	-	-
<b>Total (J&amp;K)</b>	<b>375</b>	<b>150.0</b>	<b>392</b>	<b>113.69</b>	<b>10</b>	<b>4.00</b>
<b>Grand total</b>	<b>2025</b>	<b>810.0</b>	<b>2246</b>	<b>767.69</b>	<b>177</b>	<b>70.70</b>

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

35 Krishi Vigyan Kendras (KVKs) in five states namely Punjab, Haryana, Delhi, Himachal Pradesh and Jammu & Kashmir 2016-17. A total of 2246 CFLDs on oilseed were conducted in an area of 767.69 ha in five states during the year. The details of statewise and cropwise allotted CFLDs in oilseed were conducted during Kharif, Rabi and Summer season in 2016-17 of Zone-I are presented in table 2.

During 2016-17, 810 ha area was allotted, for conducting CFLDs in oilseed crop however, only 96.90 ha area was covered under demonstrations during Kharif season, 589.7 ha area was demonstrated during Rabi season and 81.09 ha area was demonstrated in summer season. During 2016-17 total 35 Krishi Vigyan Kendras conducted 2246 on oilseed under an area 767.69 ha. Out of total deficit area of 70.70 ha was reallocated for demonstrations on rapeseed & mustard crop during *Rabi* season and deficit area 42.37 ha area demonstrations could not be laid due to various reasons like unavailable of quality seed etc.

**Table 3: Details of reallocated deficit area from Kharif to Rabi Season in 2016-17**

Sr.no	Name of University & KVK	Crop	No. of Demo	Area in(ha)
<b>Punjab</b>				
1	Ferozpur	Rapeseed & Mustard	25	10.00
2	Hoshiarpur	Rapeseed & Mustard	23	9.20
	<b>PAU, Ludhiana</b>		<b>48</b>	<b>19.20</b>
<b>Haryana</b>				
3	Bhiwani	Rapeseed & Mustard	40	16.00
4	Mehandargarh	Rapeseed & Mustard	25	10.00
	<b>CCSHAU, Hisar</b>		<b>65</b>	<b>26.00</b>
5	Rewari	Rapeseed & Mustard	25	10.00
	<b>Total(E)</b>		<b>25</b>	<b>10.00</b>
6	Kathua	Rapeseed & Mustard	10	4.00
	<b>SKUAST-J, Jammu</b>		<b>10</b>	<b>4.00</b>
7	Hamirpur	Rapeseed & Mustard	14	5.50
8	Kangra	Rapeseed & Mustard	15	6.00
	<b>CSKHPKV, Palampur</b>		<b>29</b>	<b>11.50</b>
	<b>Grand total</b>		<b>177</b>	<b>70.70</b>
	<b>Deficit</b>			<b>42.37</b>

## Monitoring

### CFLDs on Oilseed during Kharif, Rabi and Summer 2016-17

The purpose of a monitoring visit is to make sure that mandates of project are implemented in the proper method as per the plan. It normally involves meeting with the scientists & farmers involved the proper project, meeting with the participating farmers and observing the activities. Cluster Frontline Demonstrations of Oilseed monitoring programme was carried out by the scientists of ICAR-ATARI, Zone-I, Ludhiana along with Officers/Scientists of the Directorate of Extension of SAUs, Directorate of Oilseed Development, Ghaziabad, New Delhi and Scientist from KVKs. The details of monitoring visits conducted during 2016-17 is presented in Table 4.



Fig.: Monitoring of CFLDs on sesame and groundnut crop in Bathinda (Punjab) during Kharif season



Fig: Monitoring of CFLDs on groundnut crop in Bathinda and Hoshiarpur(Punjab) during Kharif season

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1



Fig: Monitoring of CFLDs on rapeseed & mustard in Nawanshahar and Kapurthala (Punjab) during Rabi season

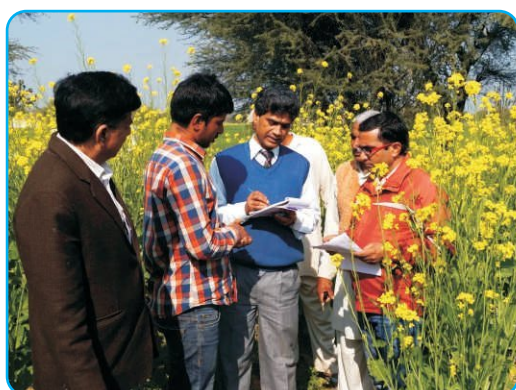


Fig: Monitoring of CFLDs on rapeseed & mustard in Bhiwani and Jhajjar (Haryana) during Rabi season

**Table 4 : Details of Monitoring of CFLDs on oilseed 2016-17**

Sr.No	KVK	Crop	Date
<b>Punjab</b>	Bathinda	Groundnut, Sesame	13 <sup>th</sup> Sept,2016
	Hoshiarpur	Groundnut	20 <sup>th</sup> Sept,2016
<b>Punjab</b>	Nawanshahar	Rapeseed & Mustard	26 <sup>th</sup> Dec 2016
	Kapurthala	Rapeseed & Mustard	27 <sup>th</sup> Dec,2016
	Gurdaspur	Rapeseed & Mustard	28 <sup>th</sup> Dec 2016
	Amritsar	Rapeseed & Mustard	29 <sup>th</sup> Dec 2016
<b>Haryana</b>	Fatehabad	Rapeseed & Mustard	9 <sup>th</sup> Jan,2016
	Hisar	Rapeseed & Mustard	10 <sup>th</sup> Dec,2016
	Bhiwani	Rapeseed & Mustard	11 <sup>th</sup> Dec 2016
	Jhajjar	Rapeseed & Mustard	12 <sup>th</sup> Dec 2016
<b>Punjab</b>	Jalandhar	Sunflower	1 <sup>st</sup> June,2017
	Patiala	Sunflower	13 <sup>th</sup> June,2017



Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1



Fig: Monitoring of CFLDs on sunflower at Patiala (Punjab) during summer season



Fig: Monitoring of CFLDs on sunflower in Jalandhar and harvesting in Patiala (Punjab) during summer season



Fig: Monitoring of CFLDs on sunflower in Jalandhar and Patiala (Punjab) during summer season

## Results and Discussion

### Kharif Season

During Kharif season 2016-17, total 180.00 ha area was allotted by the DAC&FW for laying Cluster Frontline Demonstrations (CFLDs) in the farmer's field. However; only 96.90 ha was covered under groundnut, sesame and sunflower crop (Table 5). In Punjab, total 40 ha area was allocated for conducting CFLDs on groundnut and sesame crops, only 20.80 ha area was demonstrated on groundnut and sesame. In Haryana, total 64 ha area was demonstrated under CFLDs of sesame out of total 80 ha allocated area. In J&K total 3.60 ha was demonstrated on sunflower. In 2016-17 total 13 KVKs conducted the CFLDs in Kharif

**Table 5: Details of state-wise and crop wise details of allotted, conducted and deficit CFLDs on oilseed during Kharif season 2016-17.**

Crop/State	Demonstrations (No.)			Area (ha)		
	Allotted	Conducted	Deficit	Allotted	Conducted	Deficit
<b>Punjab</b>						
Sesame	25	25	-	10.00	10.00	-
Groundnut	75	29	46	30.00	10.80	19.20
<b>Total (Punjab)</b>	<b>100</b>	<b>54</b>	<b>46</b>	<b>40.00</b>	<b>20.80</b>	<b>19.20</b>
<b>Haryana</b>						
Sesame	200	160	40	80.00	64.00	16.00
<b>Total(Haryana)</b>	<b>200</b>	<b>160</b>	<b>40</b>	<b>80.00</b>	<b>64.00</b>	<b>16.00</b>
<b>Himachal Pradesh</b>						
Sesame	50	61	-	20.00	8.50	11.50
Sunflower	25	-	25	10.00	-	10.00
<b>Total (HP)</b>	<b>75</b>	<b>61</b>	<b>25</b>	<b>30</b>	<b>8.5</b>	<b>21.50</b>
<b>Jammu &amp; Kashmir</b>						
Sesame	25	-	-	10.00	-	10.00
Sunflower	50	9	41	20.00	3.60	16.40
<b>Total(J&amp; K)</b>	<b>75</b>	<b>9</b>	<b>66</b>	<b>30.00</b>	<b>3.60</b>	<b>26.40</b>
<b>Total Sesame</b>	<b>300</b>	<b>246</b>	<b>65</b>	<b>120.00</b>	<b>82.50</b>	<b>37.50</b>
<b>Total Groundnut</b>	<b>75</b>	<b>29</b>	<b>46</b>	<b>30.00</b>	<b>10.80</b>	<b>19.20</b>
<b>Total Sunflower</b>	<b>75</b>	<b>9</b>	<b>66</b>	<b>30.00</b>	<b>3.60</b>	<b>26.40</b>
<b>Grand Total</b>	<b>450</b>	<b>284</b>	<b>177</b>	<b>180.00</b>	<b>96.90</b>	<b>83.10</b>

*\*In Himachal Pradesh and Jammu & Kashmir, the number of CFLDs conducted were more than the allotted CFLDs as the farmers have smaller plot size than one acre.*

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

season. The deficit area 83.10 ha under Kharif CFLDs, was reallocated to rapeseed & mustard during Rabi season. Thus, out of total deficit area of 70.7 ha, the area was reallocated to conducted CFLDs in rapeseed & mustard crop was 19.20 ha in Punjab, 36.00 ha in Haryana, 11.50 ha area in Himachal Pradesh and 4.00 ha in Jammu & Kashmir.

### Punjab

Groundnut contains 45-52% oil and 25-30% protein is the fourth most important source of edible oil and third most important source of protein in the world. In Bathinda and Hoshiarpur, SG 99 and TG-37 varieties of groundnut were demonstrated on an area 10.8 ha. In Bathinda, 25 CFLDs on groundnut were conducted on an area of 10 ha in Sangat block. Under CFLDs, seed drilling technology was demonstrated for sowing the groundnut varieties in farmer's field. This resulted in 4.80 per cent higher yield over the local check in demonstrated plots. The complete packages of practices of Punjab Agricultural University (PAU), Ludhiana was demonstrated to conduct the CFLDs. In Hoshiarpur district, 4.10 per

**Table 6: Details of CFLDs conducted on groundnut by KVKs of Punjab**

KVKs	Conducted		Crop varieties	Demonstrated technology	Demo Yield (q/ha)	Local check Yield (q/ha)	Increase in yield (%)
	Demo. (No.)	Area (ha)					
Bathinda	25	10.00	SG 99, TG 37A	Complete package practices	15.40	14.70	4.80
Hoshiarpur	4	0.80	TG 37A	Management of Cercospora leaf-spot disease & defoliators	17.70	17.00	4.10
<b>Wt. Av. Mean</b>	<b>29</b>	<b>10.80</b>			<b>15.60</b>	<b>14.90</b>	<b>4.70</b>



Fig: Cluster Demonstrations on Groundnut in Hoshiarpur and Bathinda (Punjab)



cent higher yield was recorded from the blocks. Mahilpur, Bunga and Hoshiarpur blocks over the local check. The technologies demonstrated included management of cercospora, leaf-spot disease and defoliators at farmer's field.

Sesame oil is sometimes called gingerly oil or til oil. It enjoys a high reputation for its delicious strong fragrance. In the process of manufacturing, the sesame is stir-fried and produces a certain fragrant substance. It is this special fragrance that distinguishes sesame oil from any other oil. It is widely used in cooking and making salads. The demonstrations on sesame were conducted by 9 KVKs in Punjab, Haryana and Himachal Pradesh.

A total of 25 cluster demonstrations on sesame variety HT-1 were conducted on an area of 10 ha in Bathinda. Sangat block of Bathinda was selected to conduct CFLDs by following recommended package of practices of PAU, Ludhiana. In 2016-17, Bathinda recorded 10.50 per cent higher yield as compared to the local check.

In Haryana, a total 164 CFLDs were conducted on an area of 64.00 ha on sesame varieties HT-1, RT-351 in Bhiwani, Hisar, Jhajjar, Mahendergarh, Rewari and Sirsa. The technologies demonstrated under CFLDs were improved variety, weed management, seed treatment with chloropyrifos, bavistin, balanced use of fertilizer and insect pest management in the demonstrations. Hisar recorded highest yield followed by Bhiwani recorded 59.40 percent higher yield in demonstrations of sesame. The details of the demonstrated varieties and technologies has been presented in Table 7.

In Hamirpur and Kangra, LTK-4 & Bajreshwari varieties of sesame were demonstrated on an area of 8.50 ha. In Kangra, integrated nutrient management (INM) and weed management (WM) technologies were demonstrated in Rait ,Kangra and Nagrota Surian,



Fig: Demonstration on Sesame (HT-1 & RT-351) in Bhiwani and Hisar (Haryana)

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

Nurpur and Bhedu Mahadev blocks. As a result, 50.00 per cent higher yield was recorded from CFLDs over the local check. In Hamirpur, 57.40 per cent higher yield was recorded from Nadaun and Sujanpur blocks over the local check given in Table 8.

**Table 7: Details of CFLDs conducted on sesame by KVKs of Punjab and Haryana.**

State	KVKs	Conducted Demo. (No.)	Area (ha)	Crop variety	Demonstrated technology	Demo Yield (q/ha)	Local check Yield (q/ha)	Increase in yield (%)
Punjab	Bathinda	25	10.00	HT-1	Complete package practices	4.20	3.80	10.50
	<b>Total (Punjab)</b>	<b>25</b>	<b>10.00</b>					
Haryana	Bhiwani	10	4.00	HT-1	Seed treatment, weed management at proper time and IPM	5.50	3.45	59.40
	Hisar	25	10.00	RT-351	Integrated Pest Management	4.80	2.40	100.0
	Jhajjar	25	10.00	HT-1	Seed treatment	5.60	4.48	25.00
	Mahendergarh	50	20.00	RT-351	Balanced use of fertilizer and insect pest management	5.74	4.79	19.80
	Rewari	15	10.00	HT-1	Improved variety	1.40	1.20	16.70
	Sirsa	25	10.00	HT-1	Integrated Pest Management	4.10	3.00	36.70
	<b>Total (Haryana)</b>	<b>164</b>	<b>64.00</b>					
<b>Grand Total</b>	<b>175</b>	<b>74.00</b>						



Fig: Demonstration on Sesame in Hisar and Mahendergarh (Haryana)

**Table 8: Details of CFLDs conducted on sesame by KVKs in Himachal Pradesh**

State	KVKs	Conducted		Crop Variety	Demonstrated technology	Demo Yield (q/ha)	Local check Yield (q/ha)	Increase in yield (%)
		Demo. (No.)	Demo. (No.)					
Himachal Pradesh	Hamirpur	34	4.50	LTK -4	Integrated pest management	4.28	2.72	57.40
	Kangra	27	4.00	Bajreshwari	Improved variety , INM and weed management	4.50	3.00	50.00
<b>Total</b>		<b>61</b>	<b>8.50</b>			<b>4.4</b>	<b>2.9</b>	<b>53.9</b>
<b>Wt. Avg. Mean</b>								



Fig: Cluster demonstrations on sesame in Hamirpur and Kangra(HP)

### Jammu & Kashmir

Sunflower is a robust oilseed crop, the seeds of which contain about 20% protein in addition to 40—50% oil which has a mild taste, pleasant flavour, good keeping quality with acceptable amounts of vitamins A, D and E. The demonstrations on sunflower variety Morden were conducted in districts of Bandipora and Kupwara in Jammu & Kashmir. As compared to the local check, 37.50 per cent higher yield was recorded over the local check from Aloosa, Bandipora and Arin blocks in Bandipora district.

In Kupwara district, 11.10 per cent higher yield over the local check was recorded at Handwara, Magam, Zachaldara and Langate blocks where cluster demonstrations were conducted on sunflower variety Morden. The details of the variety and demonstrated technologies has been presented in Table 9.



**Table 9: Details of CFLDs conducted on sunflower by KVKs of Jammu & Kashmir**

KVKs	Conducted		Crop variety	Demonstrated technology	Demo Yield (q/ha)	Local check Yield (q/ha)	Increase in yield (%)
	Demo. (No.)	Area (ha)					
Bandipura	8	1.50	Morden	Integrated weed management and INM	11.00	8.00	37.50
Kupwara	11	2.10	Morden	Line sowing	5.00	4.50	11.10
<b>Total</b>	<b>19</b>	<b>3.60</b>			<b>8.0</b>	<b>6.0</b>	<b>34.3</b>
<b>Wt. Avg. Mean</b>							



Fig: Demonstration on Sunflower (Morden) at Bandipora (Jammu & Kashmir)

## Rabi Season 2016-17

### Rapeseed & Mustard

Rapeseed & Mustard is a group of crops comprising rapeseed (toria, brown sarson and yellow sarson) cultivar of *Brassica campestris*; Indian mustard (*Brassica juncea*); black mustard (*Brassica nigra*) and taramira (*Eruca sativa*). The cluster demonstrations were conducted on rapeseed & mustard by 32 KVKs of four states Punjab, Haryana, Delhi, Himachal Pradesh and Jammu & Kashmir. The technologies demonstrated included improved variety (IV), balanced use of fertilizer, orobanche management, seed treatment (ST) effect of gypsum application, intercropping, integrated nutrient management (INM); integrated pest management (IPM) and weed management (WM). The varieties used in CFLDs were namely GSC-7, PC-6, TL-17, PBG-7, Raya (RLC 3) KBS-3, Neelam, HPN-1, CS-56, RB-50, NRC DR-2 and Pusa Vijay were demonstrated in the fields of farmers in different districts. Canola is a trade name for rapeseed oil carrying <2% erucic acid in oil and <30 micromoles of glucosinolates/defatted meal. Oil rich in erucic acid is not desirable for edible purposes as it causes thickening of arteries and leads to heart problems. Canola variety was released for general cultivation in Punjab in the year 2014. The oil from canola varieties is healthy oil for human consumption. The demand for canola oil is increasing exponentially as people have become more familiar with the health benefits (heart friendly) attached with the oil.

In Punjab total 12 KVKs conducted CFLDs on rapeseed & mustard GSC-7, RLC-3 and Pusa Vijay varieties were demonstrated during rabi season. A total of 685 demonstrations were conducted under an area of 219.20 ha.



Fig: Demonstration on Rapeseed & Mustard at Rewari

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

**Table 10: Details of state-wise and crop wise allotted, conducted and deficit CFLDs during Rabi season 2016-17.**

State/crop	Demonstrations (No.)			Area (ha)			Deficit Area in (ha)
	Allotted	Reallocated	Conducted	Allotted	Reallocated	Conducted	
Punjab	500	48	685	200	19.20	219.20	0.00
<b>Total (Punjab)</b>	<b>500</b>	<b>48</b>	<b>685</b>	<b>200</b>	<b>19.20</b>	<b>219.20</b>	<b>0.00</b>
Haryana	450	90	486	180	36.00	200	16.00
<b>Total (Haryana)</b>	<b>450</b>	<b>90</b>	<b>486</b>	<b>180</b>	<b>36.00</b>	<b>200</b>	<b>16.00</b>
New Delhi	50	0	50	20	0.00	20	0.00
<b>Total (Delhi)</b>	<b>50</b>	<b>0</b>	<b>50</b>	<b>20</b>	<b>0.00</b>	<b>20</b>	<b>0.00</b>
Himachal Pradesh	75	29	269	30	11.5	41.5	0.00
<b>Total (Himachal Pradesh)</b>	<b>75</b>	<b>29</b>	<b>269</b>	<b>30</b>	<b>11.5</b>	<b>41.5</b>	<b>0.00</b>
Jammu & Kashmir	275	10	373	110	4.00	110.09	5.00
<b>Total (Jammu &amp; Kashmir)</b>	<b>275</b>	<b>10</b>	<b>373</b>	<b>110</b>	<b>4.00</b>	<b>110.09</b>	<b>5.00</b>
<b>Total (Rabi Season)</b>	<b>1350</b>	<b>177</b>	<b>1818</b>	<b>540</b>	<b>70.7</b>	<b>589.7</b>	<b>21.00</b>

**Table 11: Details of CFLDs conducted on rapeseed & mustard during 2016-17 KVKs of Punjab**

KVK	Variety	CFLDs (no.)	Area (ha)	Demo Yield (q/ha)	Local check Yield (q/ha)	Increase yield (%)
<b>Punjab</b>						
Amritsar	GSC -7	63	20.00	22.20	14.35	54.70
Faridkot	GSC-7	84	20.00	19.80	14.10	40.40
Ferozpur	GSC-7	80	20.00	18.75	15.00	25.00
Gurdaspur	GSC-7	50	20.00	20.26	18.05	12.20
Hoshiarpur	GSC-7 , RLC 3	41	19.20	15.82	12.50	26.60
Kapurthala	GSC-7	24	10.00	20.90	16.25	28.60
Muktsar	GSC-7	50	20.00	19.17	17.80	7.70
Nawanshahar	GSC-7	36	20.00	20.00	14.50	37.90
Ropar	GSC-7	50	20.00	19.40	15.10	28.50
Sangrur	GSC-7	85	20.00	20.50	20.17	1.60
Barnala	Pusa Vijay	97	20.00	22.23	17.71	25.50
TarnTaran	GSC-7	25	10.00	18.24	12.56	45.20
<b>Total (Punjab)</b>		<b>685</b>	<b>219.20</b>	<b>19.80</b>	<b>15.80</b>	<b>25.10</b>
<b>Wt. Av. Mean</b>						

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

In Amritsar, 63 CFLDs on rapeseed & mustard were conducted on an area of 20 ha in Majitha, Verka, Ajnala, Harsha Chinna, Attari, Rayya and Jandiala blocks. The increased in yield 54.70 per cent was recorded in variety GSC-7 in district, Amritsar followed by Tarn Taran with same variety and 45.20 per cent increase in yield over the local check (GSC-6) Table 11. The recommended package of practices of PAU, Ludhiana were followed to conduct the CFLDs by KVKs of Punjab.



Fig: CFLDs plots on rapeseed & mustard (GSC-7) in Gurdaspur & Tarn Taran (Punjab)

**Table 12: Details of CFLDs conducted on rapeseed & mustard during 2016-17 in Haryana and Delhi.**

KVK	Variety	CFLDs (no.)	Area (ha)	Demo Yield (q/ha)	Local check (q/ha)	Increase yield (%)
Bhiwani	RH 0749	75	30.00	23.10	15.61	48.00
Fatehabad	RH-0749	21	10.00	24.50	22.00	11.40
Hisar	RH 0749	50	20.00	20.50	18.05	13.60
Jhajjar	RH-0749	50	20.00	24.04	20.65	16.40
Mehandargarh	RH-0749	75	30.00	19.48	16.50	18.10
Sirsa	RH 0749	75	30.00	25.10	23.00	9.10
Gurgaon	RB-50	50	20.00	18.90	18.68	1.20
Rewari	NRCDR -601, RB 50, CS 54, CS 56 &NRCDR-2	90	40.00	24.46	21.28	14.90
<b>Total</b>		<b>486</b>	<b>200.00</b>	<b>22.50</b>	<b>19.04</b>	<b>16.80</b>
<b>Wt. Avg. Mean</b>						
Delhi (Ujwa)	RH 0749, RH 406	50	20.00	24.48	22.90	48.00
<b>Total</b>		<b>50</b>	<b>20.00</b>	<b>24.48</b>	<b>22.90</b>	<b>48.00</b>
<b>Wt. Avg. Mean</b>						



## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

In Haryana total 8 KVKs conducted 486 CFLDs on rapeseed & mustard varieties i.e. RH 0749, NRCDR-601, RB-50, CS-54 ,CS-56 and NRCDR-2 in Bhiwani, Fatehabad ,Hisar, Jhajjar, Mahendergarh, Sirsa, Gurgaon and Rewari districts on an area of 200 ha (Table 12). As compared to the local check, 16.80 weighted average mean was recorded from CFLD on rapeseed & mustered. The technologies demonstrated at the farmer's field were integrated disease management (IDM) and complete package practices.

Alipur and Nazafgarh blocks were selected by KVK Delhi for laying cluster demonstrations on two varieties i.e RH 0749 and RH 406 on an area of 20 ha. As compared to the local check (T- 59), 48.00 per cent higher yield was recorded from the demonstrations (Table.12).



Fig: Cluster demonstrations on rapeseed & mustard (RH 0749) in Bhiwani and Mahendargarh (Haryana)

In Himachal Pradesh, major technologies demonstrated in farmer's field was INM, IPM, IV & ST with *Rhizobium*. A total of 269 CFLDs were conducted on an area of 41.50 ha at farmer's field in Bilaspur, Hamirpur ,Kangra, Chamba and Una. Some varieties of rapeseed & mustard GSC-7, TL-17, KBS-3, GSC-7 & Neelam, HBS-3 and HPN-1 were used for conducting demonstrations (Table.13). As compared to the local check 53.9 percent increase in yield was recorded in Chamba district.

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

**Table 13: Details of CFLDs conducted on rapeseed & mustard during 2016-17 in Himachal Pradesh**

KVK	Variety	FLDs (no.)	Area (ha)	Demo Yield	Local check	Increase yield (%)
Bilaspur	GSC-7	25	10.00	10.50	7.40	41.9
Una	TL-17	75	10.00	6.00	4.30	39.5
Hamirpur	KBS-3	24	5.50	5.80	4.50	28.9
Kangra	KBS-3 , GSC 7 & Neelam	53	6.00	10.50	8.25	27.3
Chamba	HBS-3 HPN-1	117	10.00	5.85	3.80	53.9
<b>Total (Himachal Pradesh)</b>		<b>269</b>	<b>41.50</b>			



Fig: Cluster demonstrations on rapeseed & mustard (GSC-7, TL-17) in Bilaspur and Una (HP)

**Table 14: Details of CFLDs conducted on Rapeseed & Mustard during 2016-17 in Jammu & Kashmir.**

KVK	Variety	CFLDs (no.)	Area (ha)	Demo Yield (q/ha)	Local check Yield	Increase yield (%)
Kathua	DGS-1	40	14.00	10.78	7.00	54.0
Anantnag	KS-101	71	20.00	8.67	7.30	18.8
Baramulla	SS-01,KB-49	50	20.00	13.11	10.70	22.5
Gandarbal*	KS-101	29	15.00	10.90	7.50	45.3
Kulgam	Shalimar brown sarson-1	115	20.00	12.70	9.30	36.6
Srinagar	KOS-1	48	20.00	14.25	10.48	36.0
<b>Total (Jammu &amp; Kashmir)</b>		<b>373</b>	<b>110.09</b>			

\*KVK Gandarbal could not conduct demonstration on 5.00 ha area.

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

In Jammu & Kashmir, 373 demonstrations were conducted on an area of 110.09 ha in Kathua, Anantnag, Baramulla, Gandarbal, Kulgam and Srinagar district on rapeseed & mustard. The demonstrated varieties included DGS-1, SS-01, KB-49, KS-101, Shalimar Brown Sarson-1 and KOS-1 (Table 14). The technologies demonstrated on farmer's fields were IV, INM & IPM. In Jammu & Kashmir 54 per cent higher yield was obtained from variety DGS-1 in Kathua district of Jammu region.

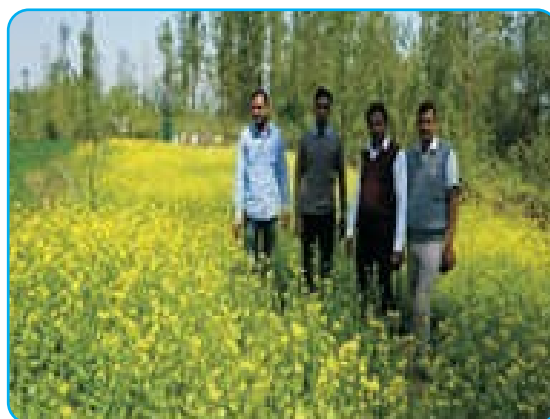


Fig: Cluster demonstrations on rapeseed & mustard (DGS-1, SS-01 & KB-49) in Baramulla and Kathua (J&K)

**Table 15: Details of crop wise deficit area under CFLDs oilseed during 2016-17**

Sr.No	Name of KVK	Crop	Area(ha)
<b>Kharif</b>			
1	Bandipora	Sunflower	6.40
2	Kathua	Sesame	6.00
<b>Total(Kharif)</b>			<b>12.40</b>
<b>Rabi</b>			
3	Bhiwani	Rapeseed & Mustard	16.00
4	Gandarbal	Rapeseed & Mustard	05.00
<b>Total(Rabi)</b>			<b>21.00</b>
<b>Summer</b>			
5	Leh (Addl.)	Rapeseed & Mustard	8.91
<b>Total ( Summer )</b>			<b>8.91</b>
<b>Total(Kharif+Rabi+Summer)</b>			<b>42.37</b>

**Summer Season 2016-17****Table 16: Details of state-wise and crop wise allotted and conducted CFLDs during season 2016-17.**

State/crop	Demonstrations (No.)		Area (ha)	
	Allotted	Conducted	Allotted	Conducted
<b>Punjab</b>				
Sunflower	150	120	60.00	60.00
<b>Total (Punjab)</b>	<b>150</b>	<b>120</b>	<b>60.00</b>	<b>60.00</b>
<b>Haryana</b>				
Sunflower	50	50	20.00	20.00
<b>Total (Haryana)</b>	<b>50</b>	<b>50</b>	<b>20.00</b>	<b>20.00</b>
<b>Jammu &amp; Kashmir</b>				
Rapeseed & Mustard	50	20	10.00	1.09
<b>Total (Jammu &amp; Kashmir)</b>	<b>50</b>	<b>20</b>	<b>10.00</b>	<b>1.09</b>
<b>Total (Sunflower)</b>	<b>200</b>	<b>200</b>	<b>80.00</b>	<b>80.00</b>
<b>Total (Rapeseed &amp; Mustard)</b>	<b>25</b>	<b>20</b>	<b>10.00</b>	<b>1.09</b>
<b>Total (Summer Season)</b>	<b>225</b>	<b>190</b>	<b>90.00</b>	<b>81.09</b>

During summer season, 190 demonstrations were conducted on an area of 81.09 ha in Zone-I. Sunflower was demonstrated on 60.00 ha area in Punjab and 20.00 ha in Haryana (Table 16). In Jammu & Kashmir 1.09 ha area was demonstrated under rapeseed & mustard in district Leh (Nyoma).

**Table 17: Details of CFLDs conducted on sunflower during 2016-17 in Punjab and Haryana**

KVK	Variety	CFLDs (no.)	Area (ha)	Demo Yield (q/ha)	Local check	Increase in yield (%)
<b>Punjab</b>						
Jalandhar	PSH-1962	50	20.00	19.41	16.85	15.2
Kapurthala	PSH-1962	20	20.00	18.00	18.00	-
Patiala	PSH-1962	50	20.00	20.25	18.00	12.5
<b>Total (Punjab)</b>		<b>120</b>	<b>60.00</b>	<b>19.20</b>	<b>17.60</b>	<b>9.10</b>
<b>Wt. Av. Mean</b>						
<b>Haryana</b>						
Ambala	PSH-1962	50	20	-	7.5	-
<b>Wt. Av. Mean (Haryana)</b>		<b>50</b>	<b>20</b>		<b>7.5</b>	



## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1



Fig: Cluster demonstration Plot of Sunflower (PSH-1962) in Patiala

The cluster demonstrations were conducted on sunflower by KVKs of Punjab and Haryana. The technologies demonstrated included IPM & INM. The results revealed that technologies demonstrated increased the yield of sunflower by 20.25 & 19.41 per cent in Patiala and Jalandhar districts of Punjab. In Ambala district, crop failed due to the poor germination of seed. So, the yield data could not be obtained (Table 17).

In Jammu & Kashmir, CFLDs on rapeseed mustard were conducted in 1.09 ha against the allocated area of 10 ha. The technologies demonstrations included IV & INM (Table 18). The variety RLM-514 was demonstrated at farmer's field. The results revealed that 29.10 higher yield was recorded than the local check varieties used by the farmers.



Fig: CFLDs on Sunflower crop stand in Jalandhar and Patiala

**Table 18: Details of CFLDs conducted 2016-17 in Jammu & Kashmir**

KVK	Variety	CFLDs (no.)	Area (ha)	Demo Yield (q/ha)	Local check Yield (q/ha)	Increase in yield (%)
<b>Jammu&amp;Kashmir</b>						
Leh (Nyoma)	RLM-514	20	1.09	9.55	7.40	29.1
<b>Total</b>		<b>20</b>	<b>1.09</b>			

## Technologies demonstrated

Besides generating new technologies, concerted efforts are needed to transfer the existing technologies from research laboratories to the farmers' fields through efficient and effective technology dissemination programme. Many technologies such as improved variety, bio fertilizers inoculation, seed treatment etc. were followed while laying CFLDs. These technologies helped to obtain better yield under different agro-climatic situations.



Fig: Field preparation in Sirsa and in Bhiwani (Haryana)

### Line sowing method

In India most of the oilseed crops are being grown by the broadcasting methods. Line sowing is the dropping of seeds into the soil with help of implements such as seed drill, mechanical seed drill and then seeds are covered by harrow to have contact between seed and soil. The advantages of line sowing method is seeds are placed at proper & uniform. It is helps in proper sunlight to all the plants.



Fig. Line sowing of sesame in Hisar (Haryana) and Bathinda (Punjab)



### Seed Treatment

The seed of groundnut and sunflower crops are available at very high cost and availability of good quality seed is often limited. So, it is essential to prevent the seeds from biotic and a -biotic stresses. Therefore, it is important to treat the seed before sowing so that the protective coating around seed, acts as a barrier once the seed is planted to ward off attach by both seed-borne and soil-borne organisms.



Fig. Method demonstrations on seed treatment at KVK Bhiwani (Haryana)



Fig: Sowing of rapeseed & mustard at Anantnag (J&K) and KVK Bilaspur(HP)



Fig. Raised bed sowing groundnut in Hoshiarpur and Bathinda (Punjab)

## Extension Activities

### Extension activities conducted to demonstrate improved technologies on oilseed cultivation

During the year different extension activities were conducted under the project for encouraging the farmers to adopt the practices disseminated by the KVKs in their district for improving oilseed production. Various stakeholders were invited during these programmes (Table 19).

**Table 19: Extension activities conducted during 2016-17**

Extension activities	No. of programmes	No. of farmers
Farmer scientist interaction	21	577
Trainings	50	1398
Awareness camp	20	1121
<i>KisanGoshti</i>	15	784
Field day	56	2496
Field visit	81	1227
Monitoring on FLDs	24	336
<b>Total</b>	<b>267</b>	<b>7939</b>



Fig: Farmer-Scientist Interaction at Amritsar (Punjab) and Bhiwani (Haryana)



Fig: Field day in Faridkot (Punjab) and Baramulla (J&K)



## Glimpses of field days organised by KVKs during the year

### Tarn Taran organized field day on Gobhi Sarson

Krishi Vigyan Kendra, Booh, Tarn Taran was organized Field Day on Gobhi Sarson (GSC-7) on 01.02.2017 at village Toot of Valtoha block. The main mandate of the programme was to motivate farmers towards crop diversification through the inclusion of oilseed crops in crop rotation to get higher returns from the system. The farmers of village toot and neighbouring villages were brought to field, where Gobhi Sarson (GSC-7) a variety was cultivated. Dr. Balwinder Kumar, Programme Coordinator of KVK, Tarn Taran highlighted the importance of crop diversification in sustainable crop production.



### KVK, Kapurthala organized crop seminar on Rapeseed & Mustard:

A crop seminar on cultivation of rabi oilseed crop was organized at Krishi Vigyan Kendra, Kapurthala on 17th February, 2017 for the benefit of the farmers in the district. In this programme, 321 farmers and students in addition to the district heads and staff of various line departments namely agriculture, horticulture, animal husbandry, fisheries, dairy development, soil conservation, forest department and lead district bank participated.



At the outset, participants were welcomed and highlighted the role of KVK and schemes run by the line departments for the welfare of the farmers. Dr. Bindu delivered a talk on use of machines for management of crop residues. Dr. Jatinder Manan highlighted the cultivation of gobhi sarson. Dr. Gumeet Singh elaborated about the insect pest and diseases of rabi oilseed. He also talked about adoption of subsidiary occupations after acquiring training from the KVK.

## Glimpses of extension activities conducted during the year 2016-17



Fig: Training on IPM of Mustard and Kisan ghosti in Ujwa (Delhi)



Fig: Field visit in Bhiwani and Hisar (Haryana)



Fig: Kisan Ghosti in Amritsar (Punjab) and Training programme in Ujwa (Delhi)





## Success story of Groundnut growing farmer

**State : Punjab**

Crop 1 : Groundnut

**Variety:** TG 37A

**Technology demonstrated:** Seed treatment with *Indofil* M-45 per kg of kernel

**Specific characteristics of technology and performance**

**Bed sowing:** Yield obtained 17.7 q/ha.

**Management of *Cercospora* leaf-spot disease:** For collar rot and tikka disease, seed treatment was done.

**Yield (q/ha)**

- Demonstration (q/ha):

**TG-37A=17.70q/ha.**

- District average (previous year) (q/ha): **18.6q/ha.**

- State average (Previous year) (q/ha): **18.6q/ha.**

**1. State-wise success stories of farmers where highest yield was obtained (with quality photographs)**

**i. Name of KVK :** Hoshiarpur

**ii. Name and address of farmer ;** *Maharaja Ranjit Singh Kandi'* Self Help Group and Bhunga block

**iii. Crop and variety:** Groundnut and *TG-37A*

**iv. Details of technology demonstrated:**

Recommended seed rate

Seed Treatment with *Indofil* M-45 per kg of kernel

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

### v. Performance of technology vis-à-vis local check (increase in productivity and returns)

Variety Demonstrated	Farmer's Existing Plot				Demonstration Plot			
	Gross Cost (Rs/ha)	Gross Return (Rs./ha.)	Net Return (Rs./ha.)	B:C Ratio	Gross Cost (Rs./ha)	Gross Return (Rs. /ha.)	Net Return (Rs. /ha.)	B:C Ratio
TG 37 A	42050	62858.6	20808.6	1.49	46165	75372.5	29207.5	1.63

### vi. Farmers feedback: Less incidence of Tikka or Cercospora leaf-spot

In Hoshiarpur district, groundnut is cultivated in spring as well as in *kharif* season. The optimum time of sowing of groundnut for spring crop is second fortnight of February, while the optimum time of sowing of groundnut for *kharif* crop is last week of April to last week of May in Punjab.

The Reviving the Green Revolution (RGR), Ludhiana along with the expertise of the Central Institute of Post Harvest Engineering & Technology (CIPHET), Ludhiana and PAU, Ludhiana formed a 11-member '*Maharaja Ranjit Singh Kandi*' Self Help Group in June 2012 in the Bhunga block of Hoshiarpur district. The group members were cultivating groundnut on an area of 179 acres in the 2012-13 during *Kharif* season. Initially, about one ton out of the total 128 tons produced were pooled and sold by the members through collective marketing. The members increased from 11 to 150 from the year 2012-13 to 2016-17. The demonstration yield observed 17.7 (q/ha) at higher than farmers field. The gross return from the cluster frontline demonstrations conducting during 2016-17 was Rs 62858.6 / ha in case of farmer's field against the return of Rs 75372.5/ ha in case of demonstrated plot.



Fig: Farmer-scientist interaction





**Table 20 : Frontline demonstration of groundnut in during 2012 to 2016.**

Year	Technology demonstrated	No.	Area (ha)	Average Demo. Yield.	Local Yield	Increase in yield (%)
2012	Improved variety (SG 99), Mgt. of <i>Tikka</i> and collar rot disease	12	1.2	23.0	18.9	21.7
2013	Improved variety (SG 99), Mgt. of <i>Tikka</i> and collar rot disease	5	1.0	19.3	16.1	19.9
2014	Improved variety (SG 99), Mgt. of <i>Tikka</i> , collar rot disease and white grub	6	0.6	18.8	15.7	19.7
2015	Improved variety (SG 99), Mgt. of <i>Tikka</i> , collar rot disease and white grub	8	0.8	18.25	15.2	20.1
2016	Management of <i>Tikka</i> or <i>Cercospora</i> leaf-spot	4	0.8	17.7	17.0	4.1

## Success story : 2

### Technology demonstrated : Line sowing

Title : Mustard cultivation - A source of higher income  
 Name of farmer : Mr. Kulwinder Singh S/o Mr. Baldev Singh  
 & Address : Village: Dhilwan, District: Barnala

### Details of technology demonstrated:

The field was prepared by cultivator and then line sowing was done with the help of seed cum fertilizer drill. The fertilizer applied was 98 N: 29 P<sub>2</sub>O<sub>5</sub> and 123 kg gypsum/ha. For the better use of fertilizers, half N & full P<sub>2</sub>O<sub>5</sub> and gypsum were applied at the time of sowing. The remaining half N was broad casted at first irrigation. One hoeing and 25 days after sowing and two irrigations were applied at the stages 28-30 DAS and at flowering stage in the standing crop. The major insect mustard aphid was seen. For the control of this insect-pest, foliar spray of Actara 25 WG (Thiamethoxam) @ 98.8 gm/ha in 250 liters of water was used at siliqua formation stage.

**Performance of technology :**

Crop	Variety	Demo yield (qt/ha)	Control yield (qt/ha)	Increase (%)
Rapeseed & Mustard	Pusa Vijay	22.72	18.08	25.66

Total cost of	Gross income	Net income	Cost benefit ratio
Rs.14024/ha	Rs.79520/ha	Rs.65496/ha	5.67

**Farmer's feedback:**

This is a high yielding variety as compared to their local available varieties in the village. The crop growth and development was good due to balanced use of fertilizers. Aphid was controlled well in time. The returns were higher as compared to locally grown varieties due to application of proper doses of nutrients and in time control of insect pest attack on the crop.

**Success story : 3****Cultivation of mustard in sugarcane as an intercropping**

S. Amarjeet Singh, a farmer of village Noorpur, block Banga district SBS Nagar was cultivating sugarcane as a sole crop. He adopted intercropping of mustard in sugarcane for earning extra income; he obtained good yield and profit from the particular field.

**KVK Intervention:** Intercrop in sugarcane (sugarcane + mustard)

**Output/impact:** He obtained 9.45 quintals of yield from mustard without any other specific input supply in sugarcane crop. He has also received net income of Rs 60,200/- from solo crop and Rs 85,300/- from intercrop (sugarcane + mustard). The gross income was Rs 1,30,320/- and Rs 95,200/- as solo crop, respectively. The cost of cultivation was Rs. 45,050/- in intercropping and Rs 35,000/- in solo crop. He was very satisfied with the profit earned and decided to grow intercropping during the next year. Buoyed by the success of intercropping of mustard in *Rabi* season, he decided to grow mustard as an intercrop in next season also.

Amarjeet Singh said, "I strongly advise the farmers to visit the KVKs in their respective areas and follow their guidance for getting good returns from crops." he elates; He gives credit of his success to the timely guidance provided by the KVK scientist.

## Mid-Term Review Meeting of CFLD on Oilseed at KVK Kaithal

Midterm review meeting under Cluster Front Line Demonstrations of Oilseeds was held on 12.07.2016 at KVK, Kaithal under the Chairmanship of Dr. Rajbir Singh, Director ICAR-ATARI. All the KVKs of Haryana except KVK, Mahendergarh attended this meeting. The Programme Coordinators and scientists of the KVKs of Haryana and 19 progressive farmers of Kaithal district attended this meeting.



Dr. Rajbir Singh highlighted the importance of oilseed in the Indian economy. He told that there is a huge import of oilseed due to a large gap in production and consumption. It is utmost important increase acreage and productivity of oilseed.

Programme Coordinators/Scientists presented the progress of CFLDs conducted under CFLD oilseed project of their respective KVK during the year. At last, Dr. Rajbir Singh emphasized that the CFLDs on oilseed should be conducted in clusters by various KVKs. The literature on production technology of various crops should also be published. Field days should also be organized at the maturity of the crops, so that the results can be shown to the large number of farmers of the area. He also stressed on the preparing the video clippings of the views of the farmers about various crops. Moreover, the success story of at least one farmer should also be prepared by each KVK.



Fig: Mid-term review meeting at KVK Kaithal

## Workshop on CFLDs on Oilseed during 2016-17

A review workshop on project Cluster Frontline Demonstrations on Oilseed 2016-17 was organized by ICAR-ATARI, Zone-I, Ludhiana on January 23, 2017. Dr. A. K. Mehta, Former Consultant NFSM and former ADG was the Chief Guest of the programme. Dr. V.P. Chahal (ADG) Ext., Dr. Rajbir Singh, Director, ICAR-ATARI, Ludhiana; Dr. R.S. Sidhu, Director Extension Education, PAU, Ludhiana; Dr.



H.K. Verma, Director Extension Education, GADVASU, Ludhiana; Dr. D.S. Dillon, Director (Seeds), PAU, Ludhiana; Dr. Aulakh and Dr. G.S. Buttar, Additional DEE, PAU, Ludhiana and Dr. Suresh Kumar Yadav, Technical Officer, Directorate of Wheat Development, Gaziabad were the other dignitaries present during the workshop. Moreover, the workshop was attended by around eighty (80) Programme Coordinators and Scientists of Krishi

Vigyan Kendras (KVKs) of Zone-I conducting demonstrations under the project and the scientists from ICAR-ATARI, Ludhiana.

The Chief Guest of the programme, Dr. A. K. Mehta, Former Consultant NFSM and former ADG (Extension) discussed about the production and import scenario of oilseed crop in India and highlighted the broad objectives of the project.

Dr. V.P. Chahal (ADG), (AE) emphasized on the latest technologies for oilseeds should be disseminated to the KVKs. He also discussed about the need for value addition /value change, linkage and feedback from the farmers.



Dr. Rajbir Singh, Director, ICAR-ATARI, Ludhiana gave a brief remark about the project and highlighted the problems faced by the KVKs in implementing the project. He demanded more flexibility in allocating the CFLDs to the KVKs.

Dr. S. K. Sandhu, head of oilseed section, and Dr. Sardana, PAU, Ludhiana delivered a lecture on current scenario of Rapeseed & Mustard in India.

Programme Coordinators of KVKs presented the activities conducted under the project, budget utilization, problems faced and lessons learned. The workshop involved in-depth discussion on various issues in implementing the project and resulted in practical way out of the problems faced by the KVKs.



Fig: Field visit on Rapeseed & Mustard at PAU, Ludhiana during workshop 2016-17

### **Following action points emerged during the workshop:**

- All the Subject Matter Specialists in KVKs should work as a team and plant protection scientists should actively be actively involved during field days etc.
- For proper implementation approval, sanction and release of funds of the project from the ICAR Headquarter should be timely.
- If there is any delay in release funds, KVKs may utilize funds from regular contingency and revolving fund of the KVKs.
- FLDs should be allocated as per the action plan and there should be more flexibility to reallocating FLDs at ATARI Institute.
- KVKs and concerned Universities should ensure the timely submission of the crop-wise Utilization Certificate, Audit Utilization Certificates (AUCs) for the project for early release of funds.



## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

- Directorate of Extension Education of State Agricultural Universities should ensure timely availability of quality seed of latest varieties and should give priority to FLDs.
- KVKs should strictly conduct FLDs following cluster approach in the adopted villages.
- Local checks must be defined in concrete terms to properly compare the results of FLDs.
- KVKs should send information strictly in given format and good quality action photographs in JPEG format.
- Provision of funds for few crops like groundnut (7500/ha) should be increased considering the high cost of the seed.
- Deficit FLDs from Rabi season should be re-allotted to summer season to meet targets.
- Soil testing of all the fields covered under CFLD project should be an integral part of the project.
- Case studies and success stories of individual farmers as well as over a large area such as block or district level should be carved out of the project activities.
- To showcase the technologies demonstrated by the scientist of oilseed section.
- KVKs should go beyond oilseed production and should popularize processing and value addition of oilseed (canola) for higher profitability to the farmers.
- KVKs should collaborate with district extension officials for showcasing their technologies in Frontline demonstrations.
- Each KVK should publish comprehensive report about the project.
- Case studies and success stories of individual farmers as well as over a large area such as block or district level should be carved out of the project activities.
- In Salt affected areas, salt tolerant varieties of ICAR-CSSRI, Karnal should be promoted.
- KVKs should go beyond oilseeds production and should popularize processing of oilseeds for higher profitability to the farmers.
- KVKs should collaborate with other departments like District Agricultural and Extension Officer for showcasing their technologies in Frontline demonstrations.
- Whats app group of the farmers under the project should be formed to disseminate information regularly and advisory services should be provided to the farmers through SMS.
- KVKs should promote cultivation of oilseeds for domestic consumption of the farmers and as seed for the next coming season.

**Fund utilization 2016-17****Annexure-I**

Out of total allotted Rs. 33,99,000/- funds from NMOOP during 2016-17, 77.94 per cent (Rs. 2637676) funds were spent for conducting CFLDs on oilseeds in by KVKs implementing the project during the reports year.

CFLDs Oilseed 2016-17	Allotted (Rs.)	Expenditure (Rs.)	Balance (Rs.)
KVK Budget for CFLDs	2675000	2053686	606198
ICAR-ATARI, Zone-I	724000	583990	140010
<b>Total</b>	<b>33,99,000</b>	<b>2637676</b> 77.60%	<b>746208</b> 21.95%

**ICAR-ATARI, Zone- I, Ludhiana**  
**Head wise Utilization Certificate with respect of ATARI and KVKs of Zone-I**  
**under the Project Cluster Frontline Demonstrations of Oilseed 2016-17 funded**  
**by NMOOP for the year 2016-17**

S. No.	Particulars (Budget Head)	Opening Balance 2015-16	Funds released for the year 2016-17	Total funds Sanction for the year 2016-17 (Col 2+3)	Expenditure for the year 2106-17	Closing balance at the end of the year i.e., 31.3.2017
1	2	3	4	5	6	7
1.	ICAR-ATARI ZONE-I	367944	431153	799079	556617	242480
2.	Monitoring	0	126250	126250	61211	65039
3.	KVKs	442535	2016002	245837	2022795	435742
<b>Grand Total</b>	<b>ATARIs + KVKs</b>	<b>810479</b>	<b>2573405</b>	<b>3383884</b>	<b>2640623</b>	<b>743261</b>

*Preeti*  
21/6/18  
Principal Investigator

*Z. Singh*  
21/6  
Asstt. Finance & Accounts Officer

*R. H.*  
21/6  
Director

# Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

## Annexure-II

*Dr. Prateek / Dr. Ashish*  
*8/6/16*

रसीद सं./Receipt No.	513
दिनांक/Date	2-6-16
भारतीय कृषि अनुसंधान परिषद Indian Council of Agricultural Research	
कृषि प्रौद्योगिकी अनुसंधान संस्थान, क्षेत्र-1 Agricultural Technology Application Research Institute, Zone-1	
पटियाणा/PAU Campus Ludhiana-141004.	

No.7-9/2016/Oilseeds/CA  
 Govt. of India  
 Ministry of Agriculture & Farmers' Welfare  
 Department of Agriculture, Cooperation & Farmers' Welfare  
 \*\*\*\*\*

Krishi Bhawan, New Delhi  
 Dated: 26<sup>th</sup> May, 2016  
30

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 Demonstrations on oilseeds for 2016-17 (kharif/rabi/summer) under NMOOP to be implemented by KVKs, ATARIs-reg.**

Sir,

I am directed to refer to your D.O. no.10-33/2015-AE-II dated 12.05.2016 and to convey the administrative approval for the project entitled "Cluster Demonstrations on Oilseeds for 2016-17 (kharif/rabi/summer)" under NMOOP is to be implemented by 8 Zones of ICAR- Agricultural Technology Application Research Institute (ATARIs) and 423 no. of KVKs with a total outlay of Rs. 10,26,03,000/- (Rupees Ten Crores Twenty Six Lakh Three Thousand only). Details enclosed in annexure- I to IX.

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

Implementing agency/ Zone	No. of KVK	No. of Demonstration (in acre)	(Area in ha)	Budget For cluster demonstration (in Rs.)	*Contractual Staff (in Rs.)							Training Programme	Misc. exp.	Total (in Rs.) (Col. 5+7+9+11+13+14)	
					SRF (for 12 months)		DEO (for 12 months)		126 Technology Agent at KVKs @ 10000 per month						
					No	Amount	No	Amount	No.		Amount				
									6 month	12 month					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
ATARI, Zone-I, Ludhiana	59	2025	810	2675000	1	360000	1	180000	0	0	0	4	144000	40000	3399000
ATARI, Zone-II, Kolkata	81	12975	5190	18550000	1	390000	1	180000	32	14	3600000	8	288000	40000	23048000
ATARI, Zone-III, Meghalaya	32	3850	1540	5025000	1	330000	1	180000	10	1	720000	4	144000	40000	6439000
ATARI, Zone-IV, Kanpur	47	3525	1410	6100000	1	360000	1	180000	4	0	240000	4	144000	40000	7064000
ATARI, Zone-V, Hyderabad	65	3550	2220	10750000	1	390000	1	180000	12	0	720000	5	180000	40000	12260000
ATARI, Zone-VI, Jodhpur	51	5775	2310	10035000	1	360000	1	180000	3	0	180000	5	180000	40000	10975000
ATARI, Zone-VII, Jabalpur	84	13125	5250	22265000	2	750000	2	360000	22	9	2400000	8	288000	80000	26143000
ATARI, Zone-VIII, Bengaluru	24	4840	1936	10997000	1	390000	1	180000	12	7	1560000	3	108000	40000	13275000
<b>Total</b>	<b>423</b>	<b>51665</b>	<b>20666</b>	<b>86397000</b>	<b>9</b>	<b>3330000</b>	<b>9</b>	<b>1620000</b>	<b>95</b>	<b>31</b>	<b>9420000</b>	<b>41</b>	<b>1476000</b>	<b>360000</b>	<b>102603000</b>

Contractual staff including one SRF and one DEO for each ATARI and one \*SRF and one DEO for ICAR Headquarter, New Delhi for period of twelve months.

Annexure-II contd....

-2-

- 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. 7500/-, Soybean Rs. 4500/- and Sunflower Rs. 4000/-, R&M, Sesame, Niger, Safflower and Linseed Rs. 3000/-, is allowed to be utilized for monitoring, distribution of literature and organization of field day.
  5. Cluster 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 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.
  16. Supply of chemical fertilizers, which are already subsidized, will not supported as input under cluster 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

Contd...



**Annexure-II contd....**

4. Director, Agricultural Technology Application Research Institute (Formerly Zonal Project Directorate), Ludhiana (Zone-I)/ Kolkata (Zone-II)/ Barapani (Zone-III)/ Kanpur (Zone-IV)/ Hyderabad-AP (Zone-V)/ Jodhpur (Zone-VI)/ Jabalpur (Zone-VII) and Bengaluru (Zone-VIII) for information and necessary action.
5. The Secretary (Agriculture), Govt. of Punjab, West Bengal, Meghalaya, Uttar Pradesh, Andhra Pradesh, Rajasthan, Madhya Pradesh and Karnataka
6. Director of Agriculture, Govt. of Punjab, West Bengal, Meghalaya, Uttar Pradesh, Andhra Pradesh, Rajasthan, Madhya Pradesh and Karnataka
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/Crops) DAC&FW, Shastri Bhawan, New Delhi
6. Additional Commissioner (Crops), DPM/ APS, DAC&FW, Krishi Bhawan, New Delhi
7. National Consultants (Oilseeds), Shastri Bhawan, New Delhi
8. Director, Directorate of Oilseeds Development, Himayatnagar, Hyderabad
9. Sh. Dinesh Arora, Dy. Secretary (Fin.) DAC&FW, Krishi Bhawan, New Delhi
10. Under Secretary (Oilseeds), DAC&FW Krishi Bhawan, New Delhi
11. Dy. Director (Cordn.)/AD (OS) Oilseeds Division, Shastri Bhawan, New Delhi
12. Programmer (Oilseeds) DAC&FW, Shastri Bhawan is requested to upload this matter on website of DAC

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

### Annexure-II contd....

#### ATARI, Zone-I, Ludhiana. Punjab

S.No	Name of KVK	Kharif Oilseeds		Rabi Oilseeds	Summer Oilseed	Total Area (in ha)
	/District	Sesame	Groundnut	Rapesed & Mustard/Gobhi Sarson/Raya/Brown Sarson	Sunflower	
1	Jalandhar	0	0	0	20	20
2	Taran Taran	10	10	10	0	30
3	Ferozpur	0	10	10	0	20
4	Hoshiarpur	0	10	10	0	20
5	Ropar	0	0	20	0	20
6	Muktshar	0	0	20	0	20
7	Kapurthala	0	0	10	20	30
8	Sangrur	0	0	20	0	20
9	Gurdaspur	0	0	20	0	20
10	Amritsar	0	0	20	0	20
11	Faridkot	0	0	20	0	20
12	Barnala	0	0	20	0	20
13	Nawanshahar	0	0	20	0	20
14	Patiala	0	0	0	20	20
<b>Total</b>		<b>10</b>	<b>30</b>	<b>200</b>	<b>60</b>	<b>300</b>

#### Haryana

S.No	Name of KVK /District	Kharif Oilseeds	Rabi Oilseeds	Summer	Total Area (in ha)
		Sesame	Rapesed & Mustard/Gobhi Sarson/Raya/Brown Sarson	Oilseeds	
				Sunflower	
1	Bhiwani	20	30	0	50
2	Hissar	10	20	0	30
3	Jhajjar	10	20	0	30
4	Mahendergrh	20	20	0	40
5	Fatehabad	0	10	0	10
6	Rewari	10	30	0	40
7	Sirsa	10	30	0	40
8	Ambala	0	0	20	20
9	Gurgaon	0	20		20
<b>Total</b>		<b>80</b>	<b>180</b>	<b>20</b>	<b>280</b>

**ATARI, Zone-I, Ludhiana.  
Punjab**

Annexure-II contd....

S.No	Name of KVK	Kharif oilseeds		Rabi Oilseeds	Summer oilseeds	Total Area (in ha)
	/District	Sesame	Sunflower	Rapesed & Mustard/Gobhi Sarson/Raya/Brown Sarson	Rapeseed & Mustard	
1	Anantnag	0	0	20	0	20
2	Kathua	10	0	10	0	20
3	Bandipora	0	10	0	0	10
4	Kupwara	0	10	0	0	10
5	Baramula	0	0	20	0	20
6	Srinagar	0	0	20	0	20
7	Gandarbal	0	0	20	0	20
8	Kulgam	0	0	20	0	20
9	Leh (Addl)	0	0	0	10	10
<b>Total</b>		<b>10</b>	<b>20</b>	<b>110</b>	<b>10</b>	<b>150</b>

**Delhi**

S.No.	Name of KVK/District	Rabi Oilseeds (Area in ha)
		Rapesed & Mustard/Gobhi Sarson/Raya/Brown Sarson
1	Delhi	20
<b>Total</b>		<b>20</b>

**Himachal Pradesh**

S.No	Name of KVK /District	Kharif Oilseeds		Rabi Oilseeds	Total Area (in ha)
		Sesame	Sunflower	Rapesed & Mustard/Gobhi Sarson/Raya/Brown Sarson	
1	Kangra	10	0	0	10
2	Hamirpur	10	0	0	10
3	Shimla	0	10	0	10
4	Bilashpur	0	0	10	10
5	Una	0	0	10	10
6	Chamba	0	0	10	10
<b>Total</b>		<b>20</b>	<b>10</b>	<b>30</b>	<b>60</b>

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

### Yield report Format

S. N.	Name of Farmer	Address				Adhar card No.	Input details	Cost of Inputs	GPS Co-Ordinates		Crop Demonstrated	Cluster number (I, II or III)	Area (ha) Under Demo.	Variety Used & Release year	Crop Duration (days)	Seed Rate (Kg/ha)	Sowing Method (line/broadcasting/R&F/Raised bed, etc.)	Seed Treatment (Y/N)	if Yes then give details	Soil Testing (Y/N)
		Village	Block	District	Mo. b.No.				Longitude	Latitude										

### Extension activities under CFLD Oilseed

S.N.	Extension Activities Organized	Date and Place of Activity	Number of Farmer Attended

### Details of monitoring of cluster demonstrations on oilseeds during Kharif 2016-17

S. No.	State	Visits by Director ATARI	Visits by Scientists of ATARI	Visit by Director Extension	Visits by Scientists of DEE	Visits by other members such as representative of DAC&FW, ICAR, etc (Please specify)

### Summary of demonstration on oilseed 2016-17

S. No.	State	Name of crop	No. of KV Ks	Area under demonstrations				No. of demonstrations			Major technologies/ varieties demonstrated	Average Yield	
				Allocated	Conducted	Being Conducted in Rabi	If, area being covered in Rabi, Name of crop	Allocated	Conducted	Being Conducted in Rabi		Demonstration	Farmer Practice



## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

### Annexure: Details of cultivars used for conducting FLDs

#### Annexure-IV

Crop	Variety	Developed by	Year of releases	Areas of adaptation Zone/State	Days to maturity	Potential yield (q/ha)
<b>Groundnut</b>	SG 99	PAU, Ludhiana	2004	Punjab	120	10
	TG-37 A	Bhabha Atomic Research Centre, Trombay, Mumbai PAU, Ludhiana	2004	Released for zone I comprising Punjab, Rajasthan and Uttar Pradesh	100	18-20
<b>Sesame</b>	HT-1	CCSHAU, Hisar	1978	Punjab, Haryana, Delhi and Rajasthan	77	7
	RT-351	CAZRI, Rajasthan	2011	Rajasthan, Haryana, Punjab, Himachal Pradesh, Gujarat, Western U.P. and adjoining areas of Maharashtra and Karnataka	80-90	10
	LTK-4	CSKHPKV, Palampur	2000	Himachal Pradesh	80-85	6-8
	Punjab Til No. 2	PAU, Ludhiana	2015	Punjab	90	5-7
<b>Sunflower</b>	Morden	SKUAST-K			90	
	PSH 1962	PAU, Ludhiana	2015	Punjab, Haryana	99	8.2
<b>Rapeseed &amp; Mustard</b>	GSC-7 (canola gobhi sarson)	PAU, Ludhiana	2014	Zone-I & II (J&K, Himachal, Punjab, Haryana, Delhi and parts of Rajasthan)	154	8.9
	DGS-1 (gobhi sarson)	SKUAST-Jammu	1996	Recommended for cultivation in Jammu Region	160	12
	TL 17 (Torja)	PAU, Ludhiana	2011	Punjab	90	11
	RLC 3 (canola raya)	PAU, Ludhiana	2015	Punjab	145	7.3
	Pusa Vijay (raya)	IARI, New Delhi	2008	Irrigated conditions	135-154	25
	NRCDR-2 (raya)	DRMR, Bharatpur	2007	Punjab, Haryana, Delhi and Rajasthan	144	32.7

## Cluster Frontline Demonstrations on Oilseed 2016-17, Zone-1

Crop	Variety	Developed by	Year of releases	Areas of adaptation Zone/State	Days to maturity	Potential yield (q/ha)
<b>Rapeseed &amp; Mustard</b>	NRCDR-601 (raya)	DRMR, Bharatpur	2010	Punjab, Haryana, Delhi and Rajasthan	144	37.23
	CS 54 (salinity tolerant)	CSSRI, Karnal	2005	Punjab, Haryana, Delhi and Rajasthan	132	19
	CS 56 (salinity tolerant)	CSSRI, Karnal	2008	Punjab, Haryana, Delhi and Rajasthan	138	19
	RB 50 (raya)	CCSHAU, Hisar	2009	Punjab, Haryana, Delhi and Rajasthan	146	28.17
	RH 0749 (raya)	CCSHAU, Hisar	2012	Haryana	145-150	17.5
	RH 406 (raya)	CCSHAU, Hisar	2013	Punjab, Haryana, Delhi and Rajasthan	145-150	22
	KBS-3	CSKHPKV, Palampur	1996	Himachal Pradesh	150-155	10.6
	Neelam	CSKHPKV, Palampur	2001	Himachal Pradesh	150-160	15.6
	HPN-1 (raya)	CSKHPKV, Palampur	1995	Himachal Pradesh	175-180	18
	KS-101(raya)	SKUAST-Kashmir	1999	Plains & mid - altitude of Kashmir valley	230-235	10
	KB-49 (raya)	SKUAST-Kashmir	2008	Plains & mid-altitude of Kashmir valley	200-235	17
	Shalimar Brown sarson-1	SKUAST-Kashmir	2009	Plains & mid-altitude of Kashmir valley	225-230	16.5
	RLM-514	PAU Ludhiana	1983	Rainfed and irrigated area	143	8
	RLM 619 (raya)	PAU Ludhiana	1983	Rainfed and irrigated area	143	8-9

## List of contributors under the project "Cluster FLDs on Oilseed 2016-17"

Sl. no.	KVK/district	Name of the Programme Coordinator	Name of the Nodal Officer
<b>Punjab</b>			
1.	Amritsar	Dr. Bhupinder Singh Dhillon	Dr. Jagmohan singh
2.	Bathinda	Dr. Jatinder Singh Brar	Dr. Gurmeet Singh Dhillon
3.	Faridkot	Dr Jagdish Grover	Sukhwinder Singh, Dr Gurdarshan Singh , Dr Rakesh Kumar
4.	Ferozpur	Dr. Gurjant Singh Aulakh	Dr. Pardeep Kumar
5.	Gurdaspur	Dr. (Mrs.) Parminder Kaur	Dr. Satwinderjit Kaur
6.	Hoshiarpur	Dr. Maninder Singh Bons	Er. Ajaib Singh, Dr. Ajay Singh, Dr. Dhram Parkash
7.	Jalandhar	Dr. Kuldeep Singh	Dr.Pawan Kumar
8.	Kapurthala	Dr. Manoj Sharma	Dr.Bindu
9.	Muktsar	Dr. Yashwant Singh	Mr. Balkaran Singh Sandhu
10.	Nawashehar	Dr. Jugraj Singh	Dr. Navjot Singh
11.	Patiala	Dr. Jasvinder Singh	Dr. Rachna Singla
12.	Ropar	Dr. Harinder Singh	Dr. Jagdish Singh,
13.	Sangrur	Dr. Mandeep Singh	Dr. Sunil Kashyap
14.	Tarn Taran	Dr. Balwinder Kumar	Dr. Anil Kumar, Navjot Singh Brar
<b>Haryana</b>			
15.	Ambala	Dr. Upasana Singh	Dr. Rakesh Choudhary
16.	Bhiwani	Dr. Attar Singh	Dr.Vinod Kumar
17.	Fatehabad	Dr. Rajesh Dahiya	Dr. G.S. Rana, Dr. Sandeep Arya
18.	Hisar	Dr. S.K Dhanda	Dr.Pawan Kumar
19.	Gurgaon	Dr. Anjani Kumar	Sh. Ram Sewak
20.	Hisar	Dr. Sunil Kumar Dhanda	Dr. Pawan Kumar
21.	Jhajjar	Dr. Shashi Vashisht	Dr. U.K Sharama
22.	Mehandargarh	Dr. SS Yadav	Dr. Ramesh Kumar and Dr. Jai Lal Yadav
23.	Rewari	Dr. Kapur Singh	Dr.V.J Singh
24.	Sirsa	Dr. Lakshvir Singh Beniwal	
<b>Delhi</b>			
25.	Ujwa	Sh. R.K Yadav	Dr. D.K Rana
<b>Himachal Pradesh</b>			
26.	Bilaspur	Dr. KS Verma	Dr.Sanjay Kumar
27.	Chamba	Dr. Rajeev Raina	Dr. Anurag Sharma
28.	Hamirpur	Dr. S. K.Upadhyay	Dr. Dhanbir Singh
29.	Kangra	Dr.VishalDogra	Dr. Deep Kumar
30.	Una	Dr.AR Khan	Dr Sanjay Kumar Sharma
<b>Jammu and Kashmir</b>			
31.	Anantnag	Dr. M. Amin Zarger	Dr. Ab Shakoor Khanday
32.	Bandipora	Dr. Munir-ul-Hassan Samoon	Dr.Tariq Sultan
33.	Baramulla	Dr. Manoj Kumar	
34.	Gandarbal	Dr. Shamim Ahmed Simnani	
35.	Leh(Addl)	Dr. Maheshwar Singh	
36.	Kathua	Dr.AmrishVaid	Dr. Berjesh Ajrawat, Dr. Anamika Jamwal
37.	Kulgam	Dr. Tasneem Mubarak	
38.	Kupwara	Dr. Peerzada Shafat Hussain	
39.	Srinagar	Dr. Rekhi Singh	







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