

ICAR - ATARI - KANPUR - Technical Bulletin : 2, 2017]

Cluster Frontline Demonstrations on Oilseed (2015-16)



ICAR-Agricultural Technology Application
Research Institute Zone-IV, Kanpur – 208002

Citation:

Gautam U.S., Atar Singh, S.K. Dubey, S.N. Yemu, Chandan Singh, Rajeev Singh, Maneesh Kumar Singh and Manoj Kumar 2017. Cluster Frontline Demonstration on oilseeds (2015-16), published by ICAR-ATARI, Kanpur, P:47

Published by:

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PREFACE

Presented oilseeds and their products mainly oils and meal are the second most valuable commodity in the world trade. The trade in these commodities has expanded rapidly to meet the requirements of growing population. Technologies are being developed to eliminate to make use of oilseed meals from sesame, mustard, Linseed, groundnut, toria, sunflower, Caster, Olive, Safflower in various food products.

Oilseeds are viewed not only as a source of oil, but also potential source of dietary proteins. The per capita availability of oil and fats in many developing countries is about 40% of the minimum required as recommended by Food and Agriculture Organization. Efforts have therefore, been made to increase the production of oilseeds and to improve the supply of oil. About 71% of edible oils are derived from Plant sources.

Sesame and rapeseed & mustard has been an important food in India & Soyabean in China for the thousands of years. I appreciate the efforts of the Directors of Extension of SAUs and Directors of ICAR Institutes, Heads & Scientists of KVKs for and conducting Cluster Frontline Demonstrations on oilseed crops during 2015-16 by the KVKs of Uttar Pradesh and Uttarakhand for creating the awareness programmes for benefiting the farming community. I sincerely thank to my colleagues Principal Scientists Dr. Atar Singh, Dr. S. K. Dubey and for putting hard work in preparing the document which is useful to the different stake holders such as policy makers Scientists.

(U.S. Gautam)

25 March, 2017

Kanpur

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Acronyms

| | |
|--------|--|
| ICAR | Indian Council of Agriculture Research |
| ATARI | Agricultural Application Research Institute |
| DAC&FW | Department of Agriculture, Cooperation & Farmers Welfare |
| CFLD | Cluster Frontline Demonstration |
| NMOOP | National Mission on Oilseeds and Oil Palm |
| NODP | National Oilseed Development Project |
| IPM | Integrated Pest Management |
| INM | Integrated Nutrient Management |
| HYV | High Yield Variety |
| KVK | Krishi Vigyan Kendra |
| GPS | Geographical Positioning System |
| DAP | Di-ammonium Phosphate |
| SSP | Single Super Phosphate |
| NPK | Nitrogen, Phosphorus, Potassium |

EXECUTIVE SUMMARY

A programme was initiated by Ministry of Agriculture and Farmers Welfares GOI, New Delhi to implement the cluster frontline demonstrations of Oilseeds during 2015-16 under NMOOP. Division of Agricultural Extension, ICAR, New Delhi was given the responsibility to laid out the cluster frontline demonstration on important oilseeds crops such as Sesame (*Kharif*), Mustard & Linseed (*Rabi*) Sunflower (*Summer*) and Groundnut (*Kharif* and *Summer*) was given to organize demonstrations through Krishi Vigyan Kendra's of all eight zones. The National program was coordinated by ICAR-ATARI, Jabalpur, Zone VII in which the Head/Sr.Scientist of the KVKs and other scientists were involved for conducting the demonstrations on packages of practices mode on latest technologies.

Indian Council of Agriculture Research, New Delhi initiated National Level Cluster Frontline Demonstration on Oilseed with main Objective to demonstrate the production potential of new oilseeds varieties and the related technologies. The project also aimed for enhancing the oilseeds production of the country during 2015-16.

During *Rabi* 2015-16, in Uttar Pradesh the mustard yield was more than 16.25q/ha, Linseed 5.91 q/ha and Sunflower in *Summer* 16.13 q/ha. which was 31.89, 40.71 and 0.81% higher as compared to local checks respectively. During *Kharif* 2016, the Sesame yield was higher 5.33 q/ha and Groundnut 14.37 q/ha which is 55.81 and 106.16% more as compared to local checks. The major technologies demonstrated at the farmer's field were high yielding varieties, seed treatment, full package of practices, Integrated Nutrient Management, Salt Tolerant Varieties of mustard. First of all availability of the seed was find out from the NSC/SAUs/ICAR institutes and other organizations. There were 1020 ha area allotted to Zone IV by involving KVKs of SAUs/ICARs/NGOs. In total there was a budget allocation for cluster frontline demonstration was Rs. 58.50 Lakhs. Some of the places different team visited to demonstrations on Mustard, Groundnut, Sunflower and Linseed, the demonstrations performance was highly satisfied.

Extension activities (77) were conducted across the states of Zone-IV to popularize oilseed cultivation in which 5666 farmers have actively participated. The extension activities conducted as farmers-scientists, demonstrations on scientific practices, field days, kisan gosthies, etc. KVKs had organized 33 training programmes in which 2589 farmers participated.

Zonal Workshop cum Training Programme on Cluster FLDs on Oilseeds of KVKs of ICAR-ATARI, Zone-IVth as held on 18th-19th November 2015 at ICAR-IIPR, Kanpur. The programme was inaugurated by Director, ICAR-IIPR, Dr. N.P. Singh; Co-chaired by Dr. U.S. Gautam, ICAR-ATARI, Kanpur. Dr. N. P. Singh gave the few remarks about the present scenario and demand of the Pulses and Oilseeds.

Another Workshop on Frontline Demonstrations on *Kharif* Pulses & Oilseeds 2016-17 was organized by ICAR-ATARI, Kanpur on 8 Sept 2016 at ICAR-ATARI, Kanpur. In this workshop Dr. Rajendra Singh, Hon'ble Vice-Chancellor, CSAUA&T, Kanpur was the Chief Guest. In this programme Head/Sr.Scientists from different districts KVKs of Uttar Pradesh & Uttarakhand. In this workshop results of the Performance of FLDs discussed and success stories were presented.

National Workshop on Frontline Demonstrations on Oilseeds 2016-17 during 18-19 Feb 2017 was organized by Zone-VII, ICAR-ATARI, Jabalpur at Indira Gandhi Krishi Vishwa Vidyalaya, Raipur. This workshop was inaugurated by Shri Ajai Singh, IAS, Additional Chief Secretary, Raipur as Chief Guest ; Dr. S.K. Patil, Hon'ble VC, IGKV Raipur; Dr. V.P. Chahal, ADG(AE), ICAR New Delhi; Dr. Anupam Barik, Additional Commissioner (Oilseeds) Chaired this session, New Delhi, and Second day Workshop was inaugurated by Dr. A.K. Singh, DDG(AE), ICAR-New Delhi as Chief Guest; Dr. B. Rajendra, Joint Secretary (Crops), DAC; Dr. M. P. Thakur, DES, IGKV Raipur; Dr. Anupam Mishra, Director ATARI, Jabalpur was Co-Chairperson in this programme. Dr. Anupam Barik discuss about the production of Oilseed and given the guidelines to conduct CFLDs on Oilseeds. Dr. Atar Singh, Principal Scientist(Agronomy) give the presentation on Performance of Oilseed 2016-17 in Zone-IV.

Introduction

India is one of the major oilseeds grower and importer of edible oils. India's vegetable oil economy is world's fourth largest after USA, China & Brazil. The oilseed accounts for 13% of the Gross Cropped Area, 3% of the Gross National Product and 10% value of all agricultural commodities. This sector has recorded annual growth rate of area, production and yield @ 2.44%, 5.47% and 2.96% respectively during last decade (1999-2009). The diverse agro-ecological conditions in the country are favourable for growing 9 annual oilseed crops, which include 7 edible oilseeds (groundnut, rapeseed & mustard, soybean, sunflower, sesame, safflower and niger) and two non-edible oilseeds (castor and linseed). Oilseeds cultivation is undertaken across the country in about 27 million hectares mainly on marginal lands, of which 72% is confined to rainfed farming. During the last few years, the domestic consumption of edible oils has increased substantially and has touched the level of 18.90 million tonnes in 2011-12 and is likely to increase further. With per capita consumption of vegetable oils at the rate of 16 kg/year/person for a projected population of 1276 million, the total vegetable oils demand is likely to touch 20.4 million tonnes by 2017.

A substantial portion of our requirement of edible oil is met through import of palm oil from Indonesia and Malaysia. It is, therefore, necessary to exploit domestic resources to maximize production to ensure edible oil security for the country. Oil Palm is comparatively a new crop in India and is the highest vegetable oil yielding perennial crop. With quality planting materials, irrigation and proper management, there is potential of achieving 20-30 MT Fresh Fruit Bunches (FFBs) per ha after attaining the age of 5 years. Therefore, there is an urgent need to intensify efforts for area expansion under oil palm to enhance palm oil production in the country.

Table 1: Status of Oilseed crops in India

| Crops | Production (lakh tonnes) | Yield(Kg/ha) | Share (%) | World Ranking |
|---|--------------------------|--------------|-----------|------------------|
| Soybean | 30.80 | 1173 | 23.22 | 4 th |
| Groundnut | 17.50 | 1304 | 13.19 | 2 nd |
| R & M | 18.70 | 1188 | 14.10 | 3 rd |
| Sunflower | 1.50 | 667 | 1.13 | 14 th |
| Sesame | 1.80 | 392 | 1.35 | 2 nd |
| Linseed | 0.04 | 462 | 0.30 | 5 th |
| All India | 75.40 | 1122 | | |
| Average of last five years (2009-10 to 2013-14) | | | | |

Crop wise Contribution of Production

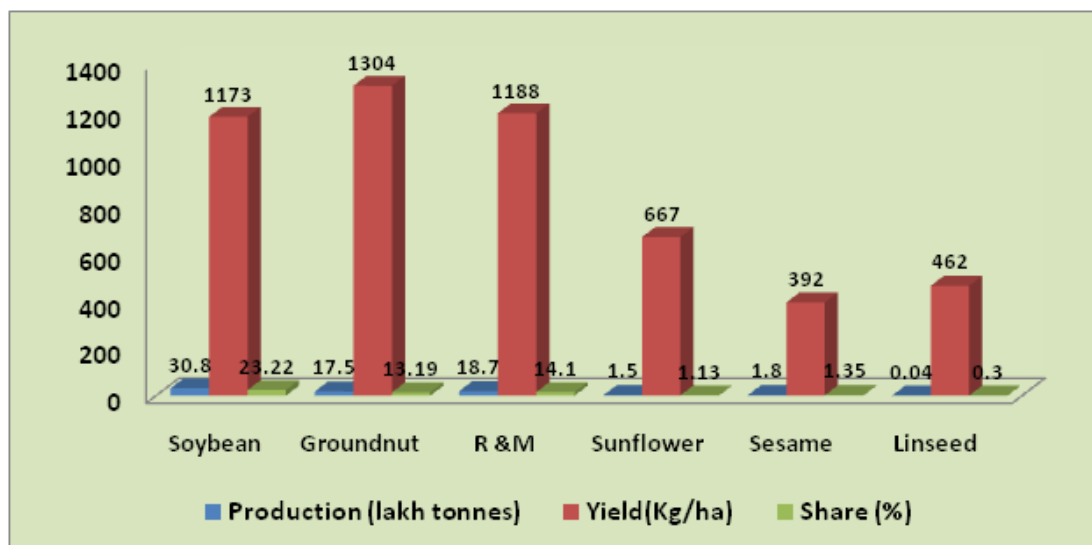


Fig 1: Production, Yield and relative share of different oilseeds India

Oilseed crops and rapeseed-mustard group of crops account for 14.1 and 3% of the gross cropped area in India, respectively. Rapeseed-mustard is the major source of income especially even to the marginal and small farmers in rainfed areas. Because of its low water requirement (80-240 mm), rapeseed mustard crops fit well in the rainfed cropping system. Among the oilseed crops, rapeseed-mustard ranked next to ground nut (*Arachis hypogaea L.*) and soybean [*Glycine max (L.)*] in contribution to the oilseed production. They are being cultivated in 26 states in the northern and eastern plains of the country occupying about 6.75 million ha area during 2004-05. Nearly 34% area is rainfed under these crops (Kumar and Chauhan, 2005). Indian mustard [*Brassica juncea L.*] is predominantly cultivated in Rajasthan, Uttar Pradesh, Haryana, Madhya Pradesh and Gujarat. Uttar Pradesh accounts for 10.85% and 11.19% of area and production, respectively in the country with the average yield of 11.49 q/ha which is equivalent to the national average (11.17q/ha).

Mustard has been a traditionally important oilseed crop in the India. Cultivation of mustard is between October-November and February-March. Major growing areas are Rajasthan, Uttar Pradesh, and Haryana. Broadly seven varieties of mustard rapeseed are grown in India. Most popular varieties grown in Indian subcontinent are *Brassica juncea*, *Brassica campestris* and *Brassica napus L.* *Brassica juncea* is a highly variable species which has been cultivated for centuries as a oil plant. Rajasthan and Uttar Pradesh are the major mustard producing States in the 2 country. Together, they produce about 50% of the crop. India is estimated to have a total mustard seed output of 5 million ton while oil is around 1.3 million

Cluster Frontline Demonstrations on Oilseed (2015-16)

to have a total mustard seed output of 5 million ton while oil is around 1.3 million tons. Being an important source of edible oil and feed meal to the country, rapeseed is undoubtedly the focus of Indian oilseed industry. The oil is also used as hair oil and as lubricant.

Table 2: Detail of Cluster Front Line Demonstrations by KVKs under NMOOP

| Year | No of KVKs | Season | Target | Achiev | % achieved |
|------------|------------|--------------|--------|---------|-------------|
| 2015-16 | 299 | Rabi | 28175 | 24105 | 85.50 |
| 2016-17 | 423 | Kharif | 19380 | 14875 | 76.50 |
| | | Rabi /Summer | 32285 | Awaited | |
| Rs in Lakh | Allocation | Release | Expen. | UB | % Utilized. |
| 2015-16 | 795.53 | | 610.18 | 185.35 | 62 |
| 2016-17 | 1026.03 | 584.16 (K) | 383.65 | | 66 |
| | | 256.50 (R) | | | |
| | | 185.35 (UB) | | | |
| | | 1026.03 | | | |

The National Mission on Oilseeds and Palm's (NMOOP) latest action plan for Indian fiscal year (IFY) 2016/17 (April-March) proposed to allocate a sum of INR 9 billion as a means to boost oilseed production. For IFY2015/16, the Ministry of Agriculture proposed INR 5.3 billion which covered all three missions (MM-1, MM-II and MM-III, see below). The target proposed for new area to be brought under MM-II and MM-III was 30,000 hectares and 3,236 hectares, respectively. The NMOOP announced in its Twelfth Five-Year Plan (IFY 2012/13 to 2016/17) its intent to increase vegetable oil production by 35 percent over the previous Five-Year Plan's average (of 7.06 MMT) to 9.51 MMT. NMOOP intends that more edible oils be sourced from oilseeds, oil palm, and tree borne oilseeds (TBOs). NMOOP is implemented from Indian fiscal 2014/15 through three Mini Missions with specific target as detailed below:

| Mini Mission (MM) | Target of XIIth Plan |
|----------------------|--|
| MM I (for Oilseeds) | Achieve production of 35.51 MMT, with average yields of 1.328 MT/hectare. Current rates are 28.93 MMT and 1.081 MT/hectare during the Eleventh Plan period respectively. |
| MM II (for Oil Palm) | Bring additional 125,000 hectares area under oil palm cultivation, including utilization of wastelands. Increase yields of fresh fruit bunches (FFB) from 4,927 kg per hectares to 15,000 kg per hectares. |

Oilseeds are important as are the pulses in the country. The principal oilseeds include groundnuts, rapeseeds and mustard seeds. While the former is a *Kharif* crop, depending wholly upon reasonable but timely rainfall, the latter is a *Rabi* crop, fundamentally confined only to non-irrigated areas. As a result their production as well as productivity is subject to climatic variations and market hypotheses. The other oilseeds incorporate sesame, linseed, castor seed, safflower seed, soybeans, sunflower seeds, cotton seeds and copra. Rapeseeds and mustard seeds belong to the wheat belt of north and central India. Groundnut, on the other hand, is grown in west and south India. Gujarat is the dominant producer of groundnut. While population has been mounting at 2 per cent per annum, the demand for oil has been rising at 5 per cent every year.

Oilseeds are raised in almost all the parts of the country. Interestingly, in some regions of the country, they are considered as important oil-seeds. Oilseeds are the source of oil-cake as well as vegetable oil. However, the export of oilseeds has been curtailed to meet the increasing demands of the country. In the year 1950-51, area under groundnut was 4.5 million hectares. By 1996-97 it shot up to 7.8 million hectares. And production too rose to 9 million tonnes from 3.4 million tonnes. The same is true of produce per hectare, which stood at 1155 kg per hectare, against the figure of 775. The story of *Rabi* oilseeds, namely rapeseed and mustard is likewise heartening. The region during this period rose to 6.8 million hectares from mere 2 million hectares, and production from 0.7 million tonnes to almost 7 million tonnes- a ten times ascend. The yield also increased from 368 kg to 1013 kg per hectare. The overall production of nine oilseeds rose to nearly 25 million tonnes by 1996-97. In order to reduce imports of palm oil, plantation of oil palm trees is now being undertaken on a larger scale.

Groundnut is one of the main oilseeds of India. In fact, it is the leading producer in the world. Tropical climates are considered favourable for the growth of groundnuts. This oilseed is raised as a *Kharif* crop. It is not grown mainly in the winter season. Growth of groundnuts is extremely high if sown in well-drained sandy loams. The main months when it is sown are June and July. Gujarat is the main producer of groundnut in India. Other important groundnuts states of the India are Andhra Pradesh, Maharashtra and Tamilnadu.

Mustard is another significant oil-seed in India. It is cultivated mainly in winter season. They are mainly cultivated as *Rabi* crop. They are grown as mixed crop with gram and wheat. Uttar Pradesh and Rajasthan are the principal producers in the country. The oil that is extracted from the mustard seeds are used for cooking in India.

Sesame is one of the main oilseeds produced in the country. India generates almost one-third of the total production. Even the oil that is extracted from this seed is edible. Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa are the major producers of this oil-seed. Linseed is another popular oil-seed in India. Maharashtra, Bihar and Madhya Pradesh are the chief producers of linseed. Castor seed is another major oil-seed produced in India. This country produces more than one-fifth of the total production of castor seed in the world. Castor oil that is extracted from this seed is used as a lubricant, hair oil and is also used in manufacturing soaps. This oil-seed is generally cultivated in light soils and are grown as a *Rabi* crop. It is grown in Gujarat and

Cluster Frontline Demonstrations on Oilseed (2015-16)

Sesame is one of the main oilseeds produced in the country. India generates almost one-third of the total production. Even the oil that is extracted from this seed is edible. Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa are the major producers of this oilseed. Linseed is another popular oilseed in India. Maharashtra, Bihar and Madhya Pradesh are the chief producers of linseed. Castor seed is another major oilseed produced in India. This country produces more than one-fifth of the total production of castor seed in the world. Castor oil that is extracted from this seed is used as a lubricant, hair oil and is also used in manufacturing soaps. This oilseed is generally cultivated in light soils and are grown as a *Rabi* crop. It is grown in Gujarat and Andhra Pradesh. Cotton seed is a major oil seed produced in the country. The oil extracted from these seeds is used in the manufacture of hydrogenated oil. India is of the biggest producers of this particular oil seed. Thus, it can be said that India is a huge producer of oil seeds and most of its states produce one form of oil seed or the other.

Table 3: Yield potential (Kg/ha) of oilseeds various crops

| Crop/Season | World Avg. | National Avg. | FLD | Highest State Average |
|------------------|------------|---------------|----------|-----------------------|
| Groundnut -K | 1573 | 1167 | 1821 | 2202 – TN-2011-12 |
| Groundnut –R/S | | 1849 | 2432 | 3751 – TN-2011-12 |
| Soybean - K | 2278 | 1166 | 1627 | 1966 – AP-2007-08 |
| Rapeseed Mustard | 1708 | 1128 | 1841 | 1869 – Har-2010-11 |
| Sunflower-R | 1242 | 760 (R) | 1453 (R) | 2286-UP-2009-10 |
| Castor | - | 1454 | 2798 | 2054 – Guj.-2011-12 |
| Sesame | 441 | 387 | 651 | 918 –WB-2011-12 |
| Linseed | 872 | 413 | 981 | 889 – Bihar-2010-11 |

Table 4: Area, Production and Yield Scenario of Oilseeds in India

| Year | Area (Lakh ha) | Production (Lakh tones) | Yield Kg /ha |
|--------------------------------|----------------|-------------------------|--------------|
| 2010-11 | 272.20 | 324.82 | 1193 |
| 2011-12 | 263.10 | 297.99 | 1133 |
| 2012-13 | 264.84 | 309.43 | 1168 |
| 2013-14 | 285.25 | 327.49 | 1153 |
| 2014-15 | 257.26 | 275.11 | 1037 |
| 2015-16 | 261.86 | 252.51 | 989 |
| 2016-17 (2 nd adv) | 260-270 | 335.96 | > 1200 |

Cluster Frontline Demonstrations on Oilseed (2015-16)

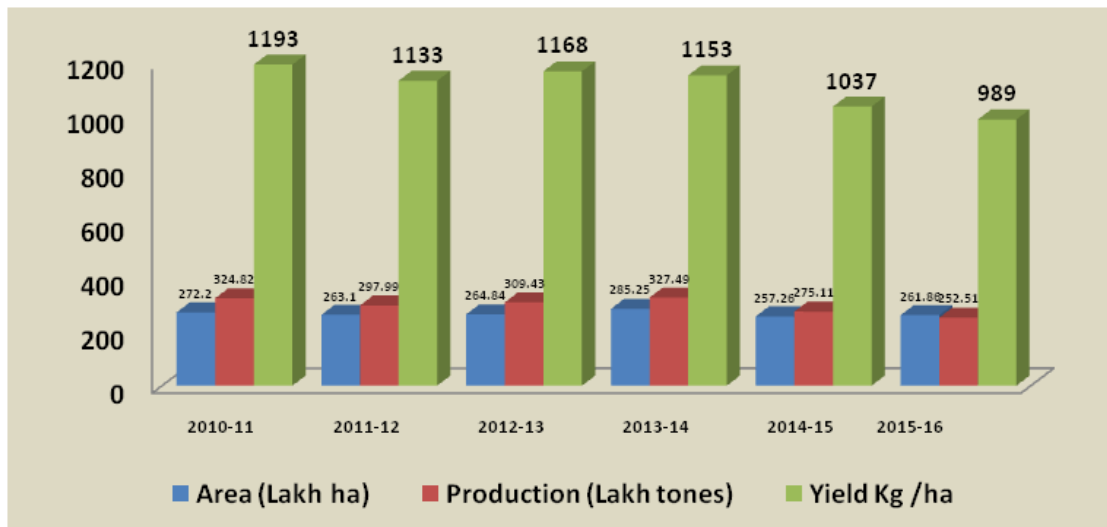


Fig 2: Pictorial depiction of area, production and yield of oilseeds

Production / Consumption:

Food use of oilseeds in MY 2016/17 will increase by five percent to 2.5 MMT, driven by steady demand for value-added food products made from oilseeds, particularly nuggets, snacks, curries, and sauces made from soy, rapeseed, mustard, sesamum, peanuts, and other oilseeds. Additionally, oilseed feed-waste consumption is expected to remain marginally above last year's level of 5.3 MMT, driven by cottonseed and soybean waste, which are forecast at 3.3 and 1.3 MMT, respectively. "Waste" broadly also includes seeds retained for sowing/re-sowing operations, feed and industrial use.

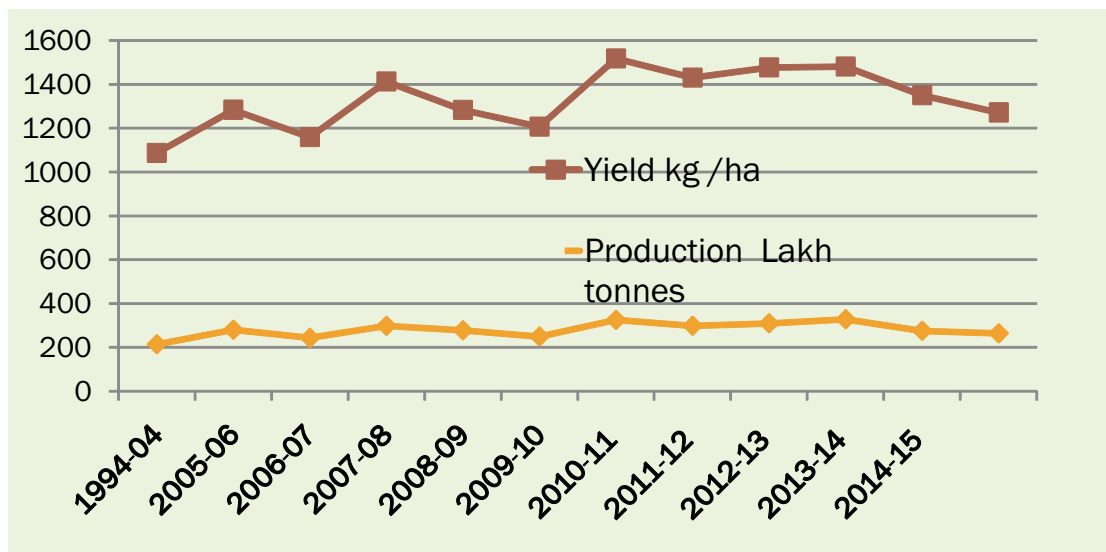


Fig 3: Time series trends of yield and production of oilseeds

India does not occupy any significant position in terms of either acreage or production of oilseeds. In terms of both acreage and production rapeseed and mustard are by far the most important oilseed crops both in terms of area and production. Sesame and linseeds are the other two oilseed crops raised in this U.P. state. A brief review of literature regarding the performance of oilseeds yield and production reveals that a number of factors can be held responsible for the poor performance of the oilseeds sector in the India.

These may be put as-

- a) Shortage of HYV seeds of linseed,
- b) Lack of use of irrigation, fertilizer and pesticide in appropriate doses,
- c) High risk and uncertainty factors in production
- d) Tendency to raise oilseed mixed with other crops
- e) Poor managerial attention
- f) Inadequately of extension facilities.
- g) Climatic variations.

About the Project

The project was started during September 2015 at the farmers' field of Zone-IV covering states of Uttar Pradesh and Uttarakhand conducted the Frontline Demonstration of oilseed crop to increase the production area. Scientists working in KVKs districts assessed the constraints faced by the farmers in respective districts while growing oilseed crop in their fields. For conducting FLD, funds allotted were Rs. 6000 per ha for Oilseeds i.e. Rapeseed & Mustard and Sunflower. The list of FLDs allotted and conducted state wise and crop wise during *Rabi* and *Summer* season 2015-16 by the KVKs of Zone-IVth is given Table 5.

Table 5: State-wise and crop wise FLDs conducted during *Rabi* 2015-16.

| Crop | Alloted (Target) | | Achieved during Rabi/Summer | |
|-------------|------------------|-----------|-----------------------------|------------|
| | Demo. (No.) | Area (ha) | Demo. (No.) | Area (ha) |
| Mustard | 1813 | 725 | 1473 | 589 |
| Linseed | 525 | 210 | 65 | 26 |
| Sunflower | 200 | 80 | 0 | 0 |
| 2538 | 1015 | | 1528 | 611 |

Details of FLDs on rapeseed & mustard and sunflower 2015-16.

In Uttar Pradesh , Rapeseed & Mustard varieties namely Varuna, NRCHB-506, RH-0749, RH-30, CS-56 and T-59 were demonstrated by 33 KVKs district 1528 farmer's field in different blocks in an area of 589 ha during *Rabi* 2015-16 (Table 5)



Demonstration of Mustard in line sowing



Flowering stage of Mustard



Harvesting stage of Mustard



Flowering stage of linseed at Demonstration field



Filed visit of scientist and farmers on Linseed crop

Table 6: FLDs rapeseed & mustard by KVKs during 2015-16

| Sl. No. | District | Conducted | |
|-----------------|----------------|-------------|------------|
| | | Demo. (No.) | Area (ha) |
| 1. | Mainpuri | 42 | 17 |
| 2. | Sonbhadra | 62 | 25 |
| 3. | Siddharth Ngr. | 13 | 5 |
| 4. | Allahabad | 50 | 20 |
| 5. | Agra | 50 | 20 |
| 6. | Aligarh | 50 | 20 |
| 7. | Auraiya | 57 | 23 |
| 8. | Badaun | 0 | 0 |
| 9. | Balrampur | 45 | 18 |
| 10. | Barabanki | 0 | 0 |
| 11. | Bareilly | 75 | 30 |
| 12. | Etah | 0 | 0 |
| 13. | Etawah | 76 | 30 |
| 14. | Fatehpur | 0 | 0 |
| 15. | Firozabad | 75 | 30 |
| 16. | Hamirpur | 75 | 30 |
| 17. | Hardoi | 75 | 30 |
| 18. | Jalaun | 63 | 25 |
| 19. | Jhansi | 50 | 20 |
| 20. | Kanpur City | 0 | 0 |
| 21. | Kanpur Dehat | 50 | 20 |
| 22. | Kheri | 50 | 20 |
| 23. | KushiNgr. | 50 | 20 |
| 24. | Mahamaya Nagar | 0 | 0 |
| 25. | Mathura | 100 | 40 |
| 26. | Pilibhit | 0 | 0 |
| 27. | Ramabai Nagar | 0 | 0 |
| 28. | Sambhal | 0 | 0 |
| 29. | Shahjahanpur | 0 | 0 |
| 30. | Sitapur | 75 | 30 |
| 31. | Pratapgarh | 165 | 66 |
| 32. | Muzzafarnagar | 50 | 20 |
| 33. | Unnao | 75 | 30 |
| Subtotal | | 1473 | 589 |

Table 7: FLDs Linseed during 2015-16 by KVKs

| Sl. No. | District | Conducted | |
|----------|-----------|-------------|-----------|
| | | Demo. (No.) | Area (ha) |
| 1 | Hamirpur | 15 | 6 |
| 2 | Chitrkoot | 50 | 20 |
| Subtotal | | 65 | 26 |

The major technologies demonstrated at the farmer’s field by the KVKs of Uttar Pradesh were improved seed treatment (Thiram@2.5kg/seed), Integrated Nutrient Management, High Yield Varieties, full package of practices, improved varieties and weed control in linseed during *Rabi* 2015-16. However, Improved management practices of linseed var. shekhar, seed treatment with Vitavax power 2.5 g/kg seed and application of sulphur @ 25 kg/ha as basal doses as per soil test recommendation fertilizer.

Table 8: State-wise FLDs and conducted FLDs in *Kharif* 2016.

| Crop State | Crop | Alloted | | Conducted during Rabi/Summer | |
|---------------|-----------|-------------|-----------|------------------------------|-----------|
| | | Demo. (No.) | Area (ha) | Demo. (No.) | Area (ha) |
| Uttar Pradesh | Sesame | 1135 | 444 | 915 | 366 |
| Uttar Pradesh | Groundnut | 50 | 20 | 50 | 20 |
| Grand Total | | 1185 | 464 | 965 | 386 |

FLDs conducted on sesame and Groundnut in *Kharif* 2016.

In Uttar Pradesh ,Sesame and Groundnut varieties namely Shekhar,RT-351,RT-346,Pragati, T-4,T-78,Tarun and Kaushal were demonstrated by 20 KVKs districts in 972 farmer’s field of different block in an area 386 ha during *Kharif* 2016 (Table 9)



Scientist interact with farmer at Sesame field



Sesame at flowering stage under field



Line sowing of sesame

Table 9: FLDs on Sesame and Groundnut in *Kharif* 2016

| Sl. No. | District | Conducted | |
|--------------------|--------------------|-------------|------------|
| | | Demo. (No.) | Area (ha) |
| 1. | Sonbhadra | 50 | 20 |
| 2. | Balrampur | 36 | 18 |
| 3. | Basti | 53 | 20 |
| 4. | Etawah | 34 | 17.5 |
| 5. | Firozabad | 50 | 20 |
| 6. | Hardoi | 25 | 10 |
| 7. | Kanpur Dehat | 50 | 20 |
| 8. | Lalitpur | 62 | 25 |
| 9. | Raibareilly | 40 | 10 |
| 10. | SRD Nagar | 18 | 10 |
| 11. | Kushinagar | 5 | 2.5 |
| 12. | Lucknow | 30 | 10 |
| 13. | Sitapur | 128 | 47 |
| 14. | Unnao | 38 | 10 |
| 15. | Chitrakoot | 57 | 24 |
| 16. | Kaushambi | 45 | 20 |
| 17. | Pratapgarh | 130 | 52 |
| 18. | Allahabad | 25 | 10 |
| 19. | Mirzapur | 21 | 10 |
| 20. | Shahjahanpur | 25 | 10 |
| Grand Total | | 922 | 366 |
| 1 | Shahjahanpur(G.N.) | 50 | 20 |
| Total | | 50 | 20 |

The major technologies demonstrated at the farmer's field by the KVKs of Uttar Pradesh were improved seed, use of Nutrient management (sulphur @20kg/ha), Promising technology demonstrated: RT-346, Seed (4 kg/ha), Pre emergence weedicide @ 3.3 lit/ha (Pendimethelene), Sulphur (80% WDG@500gm/acre), Seed treatment with fungicide like Carbendazim @ 3.0 g/kg seed at 4-5 days before sowing and soil test based recommended fertilizer 30:15:25 N, P, and S /ha was applied. and weed control in Sesame during *Kharif* 2016. However, Improved management practices of Groundnut GG10, seed treatment Carbendazim @ 4g per kg seed and Trichoderma Spp. @ 4 kg/ha Beubarria baissiyian - 4 kg/ha basal doses as per soil test recommendation fertilizer in Groundnut during *Kharif* 2016.

Result and Discussion

Performance of CFLDs on oilseed crops

In Uttar Pradesh , Rapeseed & Mustard varieties namely Kanti, Pitambari, Pusa-27, Pusa Vijay, Shatabdi, Kanti, Maya, RH-406, CS-56 etc. were demonstrated by 23 KVKs indistricts in 1473 farmer's field of different block in an area 589 ha during *Rabi* 2015-16 (Table 10). Shows that overall 31.89 percent higher yield was obtained over the local check(12.32 q/ha).The among the districts demonstration conducted maximum grain yield (26.4)q/ha was recorded at KVK Aligarh followed by Mathura (20.00) q/ha andAuriya(18.2) q/ha whereas the lowest yield was obtained in KVK Hamirpur (7.00) q/ha during the *Rabi* season. This yield increase ranged between 3.83% to 83.47% over farmer practice.

Table 10: Yield of rapeseed and mustard in Uttar Pradesh

| Sl. No. | District | Variety | Demo. (No.) | Area (ha) | Local check (q/ha) | Demo Yield (q/ha) | % increase yield |
|----------|----------------|------------|-------------|-----------|--------------------|-------------------|------------------|
| 1. | Mainpuri | Kanti | 42 | 17 | 9.50 | 13.22 | 39.16 |
| 2. | Sonbhadra | NDR-8501 | 62 | 25 | 8.50 | 12.00 | 41.18 |
| 3. | Siddharth Ngr. | YSH-401 | 13 | 5 | 10.53 | 12.90 | 22.51 |
| 4. | Allahabad | CS-56 | 50 | 20 | 7.20 | 13.21 | 83.47 |
| 5. | Agra | NRCHB-506 | 50 | 20 | 14.18 | 16.60 | 17.07 |
| 6. | Aligarh | Karuna | 50 | 20 | 18.75 | 26.40 | 40.80 |
| 7. | Auraiya | Pusa Vijay | 57 | 23 | 18.20 | 19.80 | 8.791 |
| 8. | Balrampur | NDR-8501 | 45 | 18 | 7.25 | 10.25 | 41.38 |
| 9. | Bareilly | Shatabdi | 75 | 30 | 12.00 | 13.93 | 16.08 |
| 10. | Etawah | NRCYS | 76 | 30 | 12.00 | 14.02 | 16.83 |
| 11. | Firozabad | NRCDR-2 | 75 | 30 | 15.40 | 20.65 | 34.09 |
| 12. | Hamirpur | Pitambari | 75 | 30 | 4.20 | 7.00 | 66.67 |
| 13. | Hardoi | Maya | 75 | 30 | 10.50 | 14.35 | 36.67 |
| 14. | Jalaun | Maya | 63 | 25 | 12.50 | 15.08 | 20.64 |
| 15. | Jhansi | Kanti | 50 | 20 | 12.49 | 12.89 | 3.20 |
| 16. | Kanpur Dehat | Pitambari | 50 | 20 | 9.75 | 13.30 | 36.41 |
| 17. | Kheri | Pitambari | 50 | 20 | 9.00 | 10.63 | 18.11 |
| 18. | KushiNgr. | Shatabdi | 50 | 20 | 11.99 | 12.45 | 3.83 |
| 19. | Mathura | RH-406 | 100 | 40 | 20.00 | 23.00 | 15.00 |
| 20. | Sitapur | Pusa-27 | 75 | 30 | 14.60 | 19.12 | 30.96 |
| 21. | Pratapgarh | CS-56 | 165 | 66 | 7.80 | 10.60 | 35.90 |
| 22. | Muzzafarnagar | Shatabdi | 50 | 20 | 16.00 | 19.00 | 18.75 |
| 23. | Unnao | NDRE-4 | 75 | 30 | 12.20 | 18.65 | 52.87 |
| Subtotal | | | 1473 | 589 | 12.32 | 16.25 | 31.89 |

Linseed

Linseed is an important oilseed crop in India and occupies 468.0 thousand ha with productivity of 349 kg/ha. Every part of the linseed plant is utilized commercially either directly or after processing. The linseed oil primarily goes to industries for manufacture of paints, varnish, oil cloth, linoleum and pad ink. The oil cake is a good for milch cattle. The stem yields fiber of good quality having high strength and durability. ALA provides beneficial effects in numerous clinical conditions such as, cardiovascular disease, inflammatory disorders, immune function and cancer etc. Linseed varieties laxmi-27 and desi alsi were demonstrated for 65 FLD in an area of 26 ha. Linseed is high yielding varieties with oil content for rainfed conditions. It is short duration varieties of 105 days. The Data given in table 7 shows that overall 40.71 percent higher yield was obtained over local check (4.2q/ha). The demonstration conducted given maximum yield (7.25q/ha) was recorded at KVK Chitrakoot whereas the lowest yield (4.6 q/ha) was obtained in KVK Hamirpur during the *Rabi* season.

Table 11: Yield of Linseed in Uttar Pradesh

| Sl. No. | District | Variety | Demo. (No.) | Area (ha) | Local check (q/ha) | Demo Yield (q/ha) | % increase yield |
|---------|------------|-----------|-------------|-----------|--------------------|-------------------|------------------|
| 1 | Hamirpur | Desi Alsi | 15 | 6 | 3 | 4.6 | 53.33 |
| 2 | Chitrakoot | Laxami-27 | 50 | 20 | 5.4 | 7.25 | 34.25 |
| Total | | | 65 | 26 | 4.2 | 5.91 | 40.71 |

Sunflower

Sunflower can be eaten raw, cooked, roasted or dried. They are a popular, nutritious snack containing a good source of protein, vitamins A, B, and E, calcium, nitrogen and iron. Traditionally, North American Indians ground the seeds to make flour for cakes and breads. The petals are also edible; they can be cooked and eaten like artichokes. Humans aren't the only ones that find sunflowers tasty. The seed heads are also a source of food for birds and animals. Sunflower seeds are a major ingredient in commercial birdseed. Sunflower leaves are used as feed for livestock.

Sunflower oil is a popular vegetable oil known for its light colour, mild flavour, low levels of saturated fats and ability to withstand high cooking temperatures. The oil can also be added to soap, lubricants and candles. Sunflower oil can help relieve skin conditions, hemorrhoids and ulcers. Sunflower roots can remove radiation from soils and water. They were used to clean up the Chernobyl disaster. The root of the plant is also used in traditional herbal medicine to treat snakebites and spider bites. The leaves can be made into tea to relieve fevers, lung ailments and diarrhea. The flowers can be used to make an all natural dye. The stalks are used to make paper and clothes. The Data given in table 12 only one KVK Pratapgarh conducted sunflower crop. There was not difference in farmers price & demonstration during *Summer*.

Table 12: Yield of Sunflower in Uttar Pradesh

| Sl. No. | District | Variety | Demo. (No.) | Area (ha) | Local check (q/ha) | Demo Yield (q/ha) | % increase yield |
|---------|------------|---------|-------------|-----------|--------------------|-------------------|------------------|
| 1 | Partapgarh | Swati | 38 | 15 | 16 | 16.13 | 0.81 |
| Total | | | 38 | 15 | 16 | 16.13 | 0.81 |

Sesame

Sesame is the one of the oldest oilseed crops and important oil yielding crop with oil content 40%-50% and popularly known as **Til** or '**Gingelly**'. The sesame seeds or its powder or its oil used in various Indian dishes and flavouring agent. In Uttar Pradesh sesame cultivated in *Kharif* season at while in other state of sesame crop can be cultivated in *Summer* also *Summer-Rabi* crop. Depending upon the variety of seeds they come in different colour like *Yellow, Black, Red, White*.

Sesame should not be any stagnation in the soil, so make sure soil is well drained and light loamy soil for better growth performance. The Soil preference pH range of sesame crop is 5.5 to 8.0. Saline soil are 2.1 too much sandy soils are not suitable for sesame cultivation. Seed rate depend on sowing method and variety of seed and season in broadcasting method, under rainfed conditions seed rate would be 6kg/ha, under irrigated conditions 5kg/ha. The Data given in table 8 show that overall 55.81 percent higher yield was obtained over the local check (3.42 q/ha). The demonstration conducted maximum average yield (7.25q/ha) was recorded at KVK Shahjahanpur whereas the lowest yield was obtained in KVK Sonbhadra (2.6 q/ha) during the *Kharif* season.

Groundnut

Groundnut expending the cultivation in spring season. It requires long or warm growing season. For growing the groundnut most favourable condition is well distributed rainfall at least 50cm for growing season. Proper sunlight and relatively warm temperature must for cultivating groundnut. It seems the plant will grow best when the temperature in the from 21-26.5 degree centigrade. India is the second largest producer of Groundnut after China.

The peanut, also known as the **groundnut** and the goober and taxonomically classified as *Arachis hypogaea*, is a legume crop grown mainly for its edible seeds. It is widely grown in the tropics and subtropics, being important to both small and large commercial producers. The Data given in table 14 only one KVK conducted groundnut crop. Groundnut demonstration resulted yield (14.37q/ha) which was 106.16 percent higher as compared to obtained over the local check (6.97 q/ha).

Cluster Frontline Demonstrations on Oilseed (2015-16)

Table 13: Yield of Sesame in Uttar Pradesh during *Kharif* 2016

| Sl. No. | District | Variety | Demo. (No.) | Area (ha) | Local check (q/ha) | Demo Yield (q/ha) | % increase yield |
|--------------------|------------------|------------|-------------|------------|--------------------|-------------------|------------------|
| 1. | Sonbhadra | T-4 | 50 | 20 | 2.15 | 2.63 | 22.33 |
| 2. | Balrampur | Desi black | 36 | 18 | 2.25 | 6.66 | 196 |
| 3. | Basti | Shekhar | 53 | 20 | 4.5 | 5.8 | 28.89 |
| 4. | Etawah | Tarun | 34 | 17.5 | 3.8 | 5.2 | 36.84 |
| 5. | Firozabad | Shekhar | 50 | 20 | 3.3 | 5.43 | 64.55 |
| 6. | Hardoi | Shekhar | 25 | 10 | 5.3 | 6.31 | 19.06 |
| 7. | Kanpur Dehat | RT-351 | 50 | 20 | 2.7 | 4.8 | 77.78 |
| 8. | Lalitpur | Shekhar | 62 | 25 | 3.6 | 5.4 | 50 |
| 9. | Raibareilly | Tarun | 40 | 10 | 3.6 | 5.5 | 52.78 |
| 10. | SRD Nagar | T-4 | 18 | 10 | 3.1 | 4.2 | 35.48 |
| 11. | Kushinagar | RT-351 | 5 | 2.5 | 0.8 | 4.35 | 443.8 |
| 12. | Lucknow | RT-346 | 30 | 10 | 2.4 | 3.6 | 50 |
| 13. | Sitapur | Sekhar | 128 | 47 | 3.3 | 4.34 | 31.52 |
| 14. | Unnao | T-78 | 38 | 10 | 5.8 | 6.64 | 14.48 |
| 15. | Chitrakoot | Pragati | 57 | 24 | 2.5 | 3.75 | 50 |
| 16. | Kaushambi | RT-346 | 45 | 20 | 5.2 | 7.4 | 42.31 |
| 17. | Pratapgarh | RT-351 | 130 | 52 | 3 | 6.2 | 106.7 |
| 18. | Allahabad | Shekhar | 25 | 10 | 2.2 | 4.08 | 85.45 |
| 19. | Mirzapur | RT-351 | 21 | 10 | 4.83 | 6.21 | 28.57 |
| 20. | Shahjahanpur | T-78 | 25 | 10 | 4.28 | 7.25 | 69.39 |
| Grand Total | | | 922 | 366 | 3.42 | 5.33 | 55.81 |
| 1 | Shahjahanpur(GN) | GG-20 | 50 | 20 | 6.97 | 14.37 | 106.16 |
| Total | | | 50 | 20 | 6.97 | 14.37 | 106.16 |

Technologies Demonstrated

Most of the technologies such as improved variety, biofertilizers, weed management, seed treatment etc were followed while laying FLDs. Such technologies help to obtain better yields under different possibilities.



Input availabilities to the farmers by KVKs

Improve variety of Mustard RGN-73 with application of Penta sulphur @10 kg/ha, seed treatment with carbendazim@2.5-3gm/kg of seed along with soil test based recommended fertilizer NPK @75:40:40 kg/ha(DAP-87Kg/ha,Urea-125Kg/ha MOP-65kg/ha,FYM-15qt/ha).Application of pre-emergence weedicide Pendimethaline 30EC @3.3litre/ha.

Pre-sowing Ghoshti/Training & Input distribution



KVK Sitapur



Crop: Mustard

Variety: Pitambari (Yellow Sarson)

Promising technology demonstrated:

Mustard variety- Pitambari, Seed treatment with *Trichoderma harzianum* @ 4-5g/kg of seed, application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS, one spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid along with soil test based recommended fertilizer NPKS @ (120:60:60:25 kg/ha)

Specific characteristics of technology and performance

| Specific characteristic | Performance |
|--|--|
| 1.Variety: Pitambari a. Duration - 115-125 days, b. Oil content 42 -44%, c. Application of Sulphur 25 kg/ha. | Potential yield -22-24q/ha, |
| 1. Seed treatment with <i>Trichoderma harzianum</i> @ 4-5gm/kg of seed | Control seed borne fungal diseases |
| 3. Application of soil test based recommended fertilizer NPK @ (120:60:60 kg/ha). | To enhance yield |
| 2. Intercultural operation a. application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS b. one spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid. | Weed & pest control |
| 3. Field visit of Scientist | Observation & monitoring |
|  |  |

Full packaged of practices resulted yield of (20.25q/ha) which was 38.69 % higher over local check. The demonstrated yield was higher by above 3times at district level, where as 3.5 times more as State average productivity. Hence, there is lot of scope to enhance the Production.

KVK- Sitapur


Crop: Mustard

Variety: Pusa-27 (Black Yellow)

Promising technology demonstrated:

Mustard variety-Pusa-27: Seed treatment with *Trichoderma harzianum* @ 4-5g/kg of seed, application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS, one spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid along with soil test based recommended fertilizer NPKS @ (120:60:60:25 kg/ha)

Specific characteristics of technology and performance

| Specific characteristic | Performance |
|--|--|
| 1. Variety: Pusa-27 a. Duration- 115-125 days, b. Oil content 42-44%, c. Application of Sulphur 25 kg/ha. | Potential yield -22-24q/ha, |
| 1. Seed treatment with <i>Trichoderma harzianum</i> @ 4-5gm/kg of seed | Control seed borne fungal diseases |
| 3. Application of soil test based recommended fertilizer NPK @ (120:60:60 kg/ha). | To enhance yield |
| 4. Intercultural operation a. Application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS b. One spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid. | Weed & pest control |
| 5. Field visit of Scientist, Observation & monitoring |  |

Cluster Frontline Demonstrations on Oilseed (2015-16)

Full packaged of practices resulted yield of (22.25q/ha) which was 52.39 % higher over local check. The demonstrated yield was higher by above 3.2 times at district level, where as 3.8 times more as State average productivity. Hence, there is lot of scope to enhance the Production.





KVK- Auraiya

Crop : Mustard

Variety: Pusa Vijay

Promising technology demonstrated: High Yielding Variety

Specific characteristics of technology and performance

| Specific characteristic | Performance | Quality photographs |
|---|----------------------------|---|
| 1.Variety - Pusa Vijay | Potential yield- 25q/ha |  |
| 2.Duration -140-145 Days | Average Yield : 19.8 q/ha. |  |
| 3.High yielding Variety | |  |
| 4. Medium height and Branches is more, Tolerant in high temperature in germination time and tolerant in saline soil. Average oil 38.5 % | |  |



KVK- Firozabad

Crop 1: Mustard

Variety: NRC DR-2

Promising technology demonstrated: NRC DR-2 variety of mustard

Specific characteristics of technology and performance

| Specific characteristic | Performance | Quality photographs |
|---|---|--|
| <ol style="list-style-type: none"> Potential yield 19-26 q/ha Suitable for irrigated conditions It matures in 130-140 days Plant height is 175-200 cm | <ol style="list-style-type: none"> Average yield 20.65 q/ha Average branch 13-14 / plant Sub branch 9, 40 pod, 10 grain/pod |   |

Full packaged of practices resulted yield of (20.65q/ha) which was 34.09 % higher over local check. The demonstrated yield was higher by above 1.3 times at district level, where as 1.8 times more as State average productivity. Hence, there is lot of scope to enhance the Production.

Extension Activities conducted to demonstrate Improved Technologies of Oilseed Cultivation

KVKs organized 26 field days, 10 field visit, 3 Scientific visit, 3 Seed production training, 1 Soil Health card distribution programme and Training in which 1679, 876, 130, 86, 250 and 2528 farmers participated in rapeseed & mustard respectively 1 training and 1 field day in which 61 and 56 farmers participated in linseed.

The extension activities organized by KVKs for showing the technologies related to oilseed crop. A total 77 programmes were organized on various aspects like varietal performance, weed management, pest management, production technologies etc.



Field Day in Allahabad



Field Day in Pratapgarh

Training Programmes

KVKs organized 32 training programmes with 2528 beneficiaries of rapeseed & mustard 1 training programmes of 61 farmers on taken part in linseed crop. Training programmes were organized on oilseed cultivation technologies both for farmer as well as extension personnel. These training programmes were conducted on specific topic like use of urea, package of practices, seed treatment, and weed management in oilseed crops.

Cluster Frontline Demonstrations on Oilseed (2015-16)



Training given to the farmers by Scientists in Allahabad

Table 8: Detail of Extension activities conducted *Rabi* 2015-16

| S. No. | Type of extension activity | No. of programmes | No. of Farmers |
|-------------------------------|--------------------------------|-------------------|----------------|
| Rapeseed & Mustard | | | |
| 1 | Field day | 26 | 1679 |
| 2 | Field Visit | 10 | 876 |
| 3 | Scientific visit | 2 | 106 |
| 4 | Scientist Visit | 1 | 24 |
| 5 | Seed production training | 3 | 86 |
| 6 | Soil health cards distribution | 1 | 250 |
| 7 | Training | 32 | 2528 |
| Linseed | | | |
| 1 | Training | 1 | 61 |
| 2 | Field day | 1 | 56 |
| | Total | 77 | 5666 |

Zonal Workshop Cum Training Programme On Frontline Pulses and Oil Seeds Demonstration held at ICAR-IIPR, Kanpur

18th & 19th November 2015

ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-IV, Kanpur organized two days sensitization zonal workshop cum training programme on frontline pulses and oil seeds demonstration during 18th & 19th November 2015 at conference hall of ICAR-IIPR, Kanpur. The programme was

inagurated by Director, ICAR-IIPR, Dr. N. P. Singh; Co-chaired by Dr. U. S. Gautam, ICAR-ATARI, Kanpur. Dr. Atar Singh and Dr. S. K. Dubey Principal Scientist of ICAR-ATARI, Kanpur and Dr. S. K. Singh PS (Extension) & Head Social Sci. ICAR-IIPR, Kanpur was present in the workshop. In this workshop 81, Heads of



the KVK from Uttar Pradesh and Uttarkhand participated. The programme was started with the formal welcome address by Dr. Atar Singh, PS (Agronomy), ICAR-ATARI, Kanpur, after that the Dr. U. S. Gautam, Director, ICAR-ATARI, Kanpur presented brief remarks in the workshop with a presentation by which he directed to the house what are the mandates and guidelines of pulse programme.

Director, ICAR-IIPR, Dr. N. P. Singh gave the few remarks about the present scenario and demand of the pulses. Ministry



of Agriculture Govt. of India, New Delhi raise the question for enhancing the pulses production presently the sky rocketing prices of pulses is an issue. In this

context grow more pulses for sufficiency of pulses production. He narrated that production declined by 12% from previous year and the prices shoot up to 136%. He stated that the small processing unit may be established at village level to get relief from middleman. The KVK wise presentation was started after the inaugural session to review the progress on pulses/oilseeds programme, 4 crops (Chickpea, Lentil, Field pea & Rajmash) were allotted for demonstrations. Out of total allotted demonstrations in 2704 ha. area, the net sown area was 1946 ha. The rest area (758 ha.) will be converted to green gram & black gram. In the oilseeds programme, 3 crops (Rapeseeds & Mustard, Linseed & Sunflower) were allotted for demonstrations. Out of total allotted demonstrations area of 1015 ha. The net sown area was 646 ha. The rest area (268 ha.) would be completed on priority. **The delay in sowing was reported by the KVKs because of following reasons**

1. Less amount of rainfalls during *Kharif* season resulted low moisture in the soil for *Rabi* sown crops.
2. Non availability of seeds in required quantity.
3. Non availability of seeds on time.
4. Delayed of winter rainfall.
5. Delayed release of budget from the host institutions for the same.

On second day of workshop, different interactive lectures were given by Scientist of ICAR-IIPR Kanpur. Such as State specific varieties of chickpea, lentil and field pea with specific features by Dr. S. K. Chaturvedi, HoD, Crop Improvement, State specific varieties of mungbean & urdbean with specific features presented by Dr. Sanjeev Gupta, HEAD, MULLaRP. State specific varieties of pigeonpea with specific features presented by Dr. Vohra Pigeon pea Breeder, besides the information in related Agro-techniques for *Rabi* pulses by Dr. S. S. Singh HoD, Crop production, Agro-techniques for *Kharif* pulses by Dr. C. S. Prahraj PS, CPD, Insect-pest management in pulse crops by Dr. Hem Saxena and Disease management in pulse crops by Dr. Naimuddin. General Discussion was held at the end of the technical session. Zonal Level Monitoring team was also constituted for both the crops which will be as follows.

For Pulses:

- 1) Nomini from Director, ICAR-ATARI, Kanpur.
- 2) Nomini from ICAR- IIPR, Kanpur.

- 3) Nomini from DAC GOI New Delhi.
- 4) Nomini from State Agriculture UP /DDA from respective District.
- 5) Nomini from ICAR-Division of Agril. Extn. New Delhi.

For Oilseeds:

- 1) Nomini from Director, ICAR- ATARI, Kanpur.
- 2) Nomini from ICAR-IIPR, Kanpur.
- 3) Nomini from State Agriculture UP /DDA from respective District.
- 4) Nomini from AE Divisions.
- 5) Nomini from CSAUA&T, Kanpur.

The programme was concluded by the Dr. Divakar Nodal Officer NFSM and Director, Directorate of Sugarcane Development, Lucknow. He said that the present land holdings decreasing day by day and pressure for more production to meet out the demand of Pulses and Oilseeds is a major challenge. He wanted that, KVKs must work on pulses and oilseed crops. He also stated that all the KVKs of India should participate in the pulse production programme. In this session Dr. U. S. Gautam, ICAR-ATARI, Kanpur said that the Heads of KVK need to actively participate in this programme from sowing to harvest. The 80% of sowing has been completed. The technical committee shall visit the farmers' field and review the actual position of the crop. Dr. Gautam, Director ICAR-ATARI also presented the details of the area shift from *Rabi* pulses like black gram and green gram. Similarly, for *Rabi* oilseeds linseed was converted to groundnut.

Dr. N. P. Singh, Director ICAR-IIPR, Kanpur stated that the pulses crops are more prone to the insect pests and diseases, so watch the crop properly up to the harvest. At last vote of Thanks given by Dr. S. K. Singh, Pr. Scientist (AE) and Head social science Division, ICAR-IIPR, Kanpur.

Zonal Workshop on Oilseeds and Pulses in ICAR-ATARI, Kanpur

The meeting of Mid Term Review was held on 8 September 2016 at Directorate ICAR-ATARI, Kanpur. In this Workshop Dr. Rajendra Singh, Honorable Vice Chancellor, CSAUA&T, Kanpur was Chief Guest; Dr. U.S. Gautam, Director; Dr. Atar Singh, PS(Agro); Dr. Dhoom Singh, Director Extension, CSAUA&T, Kanpur; Dr. S.K. Dubey, PS(AE); other Head of the KVKs were present in the meeting. Thereafter, the agenda items were discussed and following recommendations were made. The meeting was attended by 60 Program Coordinators and SMSs of KVKs from Uttar Pradesh and Uttarakhand of ICAR-ATARI, Zone-IV



Workshop inaugurated by Hon'ble VC of CSAUA&T, Kanpur

Dr. U.S. Gautam, Director, ICAR_ATARI highlighted the role of KVKs. The KVKs have been involved in many activities like Soil Health Cards, Swach Bharat, Mera Gaon Mera Gaurav, Jai Kisan Jai Vigyan etc program and the targets for KVKs are time bound and result oriented. He emphasized the need of develop agri-business model for oilseed to attract more farmers in oilseed production and direct marketing in market.

Technical Session:

Technical session was chaired by Dr. Atar Singh and co-chaired by Dr. S. K. Dubey and Dr. Akhilesh Shrivastava was the rapporteur of the session.

Plenary session was conducted under the chairmanship of Dr. U. S. Gautam. It was

followed by general discussion among the participants and the dignitaries. Dr. U. S. Gautam, Director, ICAR-ATARI, gave the concluding remarks.

Major issues emerged:

- 1) KVKs do not get budget on time for effective delivery of services and proper functioning.
- 2) At present, as per guidelines, any chemical fertilizer to the crops under FLDs shall not be applied.
- 3) It is difficult to convince farmers for growing recommended varieties/hybrids released by SAU.

Instructions to the KVKs:

- 1) KVKs should save and utilize some part of crop produce from the existing FLDs as seed for next year.
- 2) Insecticides at 30-35 DAS can be applied for controlling Thrips infestation, if required.
- 3) Crop varieties and package of practices followed in FLDs should be preferably adopted from respective State Agricultural Universities (SAUs). Similarly, SAUs should be preferred for procuring seeds for FLDs.
- 4) Farmers should also be made aware about different types of nozzles for spraying weedicide and insecticide as well as about spraying volume.

General Recommendations:

- 1) Diversification must be promoted with parallel policy support.
- 2) A buy back mechanism should be established with Cluster FLDs scheme.
- 3) A literature, preferably leaflet or folder, should be distributed by all the KVKs and to the farmers containing recommendations and package of practices on pulses from ICAR, SAUs
- 4) Few critical fertilizer applications like SSP for oilseeds should be allowed.
- 5) The budget should be timely allocated to the respective KVKs.

**National Review Workshop at IGKV(Indira Gandhi Krishi Vishwavidyala) ,
Raipur during 18-19 Feb, 2017**

The National Review Workshop of Oilseeds programme was inaugurated in two days and Four technical Session. First day First technical session inaugurated by Shri Ajai Singh, IAS, Additional Chief Secretary Raipur, Chief Guest ; Dr. S.K. Patil, Hona'ble VC, IGKV Raipur; Dr. V.P. Chahal, ADG(AE), ICAR New Delhi; Dr. Anupam Barik, Additional Commissioner (Oilseeds), New Delhi.

Second day technical session inaugurated by Dr. A.K. Singh, DDG(AE), ICAR- New Delhi, Chief Guest; Dr. B.B. Singh, ADG(Oilseeds); Dr. B. Rajendra, Joint Secretary (Crops), DAC; Dr. M. P. Thakur, DES, IGKV Raipur; Dr. Anupam Mishra, Director ATARI, Jabalpur was Co-Chairperson in this programme were present.



Workshop inaugurated by Shri Ajai Singh, IAS, Additional Chief Secretary, Raipur



Workshop inaugurated by Dr. A.K. Singh, DDG(AE), New Delhi



Dr. Atar Singh, PS(Agro) giving the presentation on Performance of oilseed

Remarks on following point on Oilseeds by Dignitaries.

Developing Action Plan on Oilseeds continuously to achieve success story and it is main agenda of this programme.

- 60% defficiency in oilseeds.
- Best three national award and regional award to every year on KVK.
- How to update innovation.
- Price utilization in Oilpalm.
- Small Bulletin publishing in month.
- Awariness about GOI, State Govt. Scheme planning to the farmers.
- Skill development training for 200hrs for every KVK.
- Identification of critical inputs.
- Technology focus of Oilseeds.

First day in Technical session-II nine KVKs give the presentation on oilseeds from all ATARI Zone. KVK Pratapgarh also give the presentation on oilseeds from ICAR-ATARI Zone-IV. Next day on 18.02.2017 Field visit of IGKV Raipur in morning with all participants. In Technical session -III presentation on Oilseeds was given by Dr. Atar Singh, PS(Agro), ICAR-ATARI, Zone -IV and all ICAR-ATARIs give the presentation in this technical session. At the completing programme vote of thanks given by Dr. A.K. Singh, DDG(AE), ICAR-New Delhi.

Second day Field visit of IGKV Farm. In which all participants were present.



Field visit by Scientists at Indira Gandhi Krishi Vishwavidyalay, Raipur

Success Stories of FLDs during *Rabi* Season

Success Story – Sitapur -1

- i. Name of KVK-Sitapur-I
ii. Name and address of farmer along with photograph

Name- Drigpal Singh s/o Lakhan Singh

Vill- Alipur

Block- Sidhauri

Dist- Sitapur



- iii. Crop and variety- Mustard and Var. Pusa-27

Details of technology demonstrated- Improved management practices of mustard var. Pusa-27; Seed treatment with *Trichoderma harzianum* @4-5gm/kg of seed, application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS, one spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid along with soil test based recommended fertilizer NPKS @ (120:60:60:25 kg/ha).

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

Improved management practices of technology performed well with increased in yield by 52.39% over local check

- v. Farmers feedback–

- Farmers are satisfied with this variety Pusa-27
- This technology improves pod yield significantly under irrigated condition
- Pusa-27 variety maturity 120-130 days in *Rabi*.
- Application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS, one spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid and increase mustard yield.



Success Story – Sitapur -1

- i. Name of KVK-Sitapur-I
- ii. Name and address of farmer
along with photograph
Name- Indrapal s/o Brajlal
Vill- Nai Basti
Block- Sidhauri
Dist- Sitapur



- iii. Crop and variety- Mustard and Var. Pitambari (Yellow sarson)

Details of technology demonstrated- Improved management practices of mustard var. Pitambari; seed treatment with *Trichoderma harzianum* @4-5gm/kg of seed, application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS, one spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid along with soil test based recommended fertilizer NPKS @ (120:60:60:25 kg/ha).

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

Improved management practices of technology performed well with increased in yield by 39.66% over local check

- v. Farmers feedback

- Farmers are satisfied with this variety Pitambari
- This technology improves pod yield significantly under irrigated condition
- Pitambari variety maturity 115-125 days in *Rabi*.
- Application pre emergence weedicide pendimethelene @ 3.3 lt/ha one DAS, one spray of Imidachloroprid (0.5ml/lit of water) for the management of aphid and increase mustard yield.

Success Story – Firozabad

i. Name of KVK Firozabad

ii. Name and address of farmer along with photograph

Name- Sri Jaymant Singh S/o Sri Baare Lal

Address- Vill- Karanpur, Shikohabad (Firozabad)



iii. Crop and variety- Mustard NRC DR-2

iv. Details of technology demonstrated: High yielding variety of mustard NRC DR-2

Balance Fertilizer (120:40:40:40)

Line Sowing (Line to Line 45 cm)

Thinning (20 DAS) Maintain plant to plant distance 15 cm

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

Progressive farmer Mr. Jaymant Singh showing mustard variety NRC DR-2 and adopted above technology in mustard crop and production of mustard 25.86 q/ha and followed by farmer practice 15.40 q/ha, increase yield % 67.92 and net return Rs. 57380/ha

vi. Farmers feedback :- NRC DR-2 Variety is better than other variety

Farmer need dwarf variety of mustard

vii. Quality photograph



Success Story – Auraiya

- i. **Name of KVK:** Auraiya
- ii. **Name and address of farmer along with photograph:**

Name of Farmer: Sh. Naresh Kumar

Village: Purwa Uzzene, Acchalada

District: Auraiya



- iii. **Crop and variety:** Mustard –Pusa Vijay

iv. **Details of technology demonstrated:** High Yielding Variety of Mustard. seed treatment with carbendazin 2.5g/kg seed. seedrate 5kg/ha. The sowing was done by broadcasting during 17-25Oct 2015. the crop fertilized with 10kg Urea, 50 kg DAP, 10kg Sulphur, the crop was weeded by hand weeding 35 DAS the crop was irrigated twice, first irrigation 40 DAS & second irrigation at 75 - 80 DAS. Crop mature in 135 Days and provided yield of 19.8q/ha.

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

Improved Variety of Mustard –Pusa Vijay performed well with increased yield - 17.3 % over local check.

- vi. **Farmers feedback :**

- Farmers are satisfied by Pusa Vijay variety of Mustard average yield is 19.8 qu.
- No. Of branches more than local variety
- Mustard Variety Pusa Vijay maturity 140-145 days
- Plant size is medium.



Shahjahanpur- Groundnut

A shift from low income to high income through Oil Seed - Groundnut cultivation

Krishi Vigyan Kendra, Shahjahanpur; SVPDAT, Meerut

Consumption of oil in human food is very important for growth and development of body and groundnut is richer source of oil and traditionally essential part of Indian food habit. Even the farmers of district Shahjahanpur were cultivated traditionally. The average yield of groundnut is very low due to various valid reasons.

KVK Intervention

To increase the area and productivity of oil seed - Groundnut cultivation the scientist of KVK motivated farmers for cultivating the crop in both seasons i.e. *Kharif* and *zaid*. There are 50 farmers from 20 villages 05 blocks of Shahjahanpur district forwarded for groundnut in *Kharif* season, While, 50 farmers cultivated Groundnut in *Zaid* Season under oilseed cluster demonstration with supervision of KVK scientists and provided them package of practices right from the seed treatment, nutritional management, weed management and irrigation method.

Technology in Oil Seed crop- Groundnut:

1. **Crop:** Groundnut,

Variety- GG20, **Seed rate** - 100 kg/ha, **Seed treatment** - Carbendazim @ 4g per kg seed

Soil Treatment - Trichoderma Spp. @ 4 kg/ha Beubarria baissian - 4 kg/ha

Weed Management – Imizathyphur @ 2.5 Unit/ha

Nutritional Management – Boran @ 4 kg/ha and Bentonite Sulphur @ 25 kg/ha

Dieses Management: Mancozeb + Carbendazim @ 1.25 kg/ha,

Insect Management: Imidachloprid @ 0.250l/ha

Impact of Technology.

A. Technical Parameters:

| Name of the crop | Demos (No.) | Variety | | State average yield (q/ha) | District average yield (q/ha) | Potential yield of the demo variety (q/ha) | Yield gap-I (%) | Yield gap-II (%) |
|------------------------|-------------|---------|-------|----------------------------|-------------------------------|--|-----------------|------------------|
| | | Check | Demo | | | | | |
| Groundnut (Moongphali) | 100 | Kaushal | GG 20 | 8.64 | 10.17 | 19.00 | 24.37 | 51.50 |

Yield and net returns

The farmers who followed wheat/paddy-sugarcane-ratoon in past and they were not able to procure even their input cost easily. Groundnut produced on an average 14.37 q/ha in demonstration plots while 6.97 q/ha in farmers practice. The yields were increase over farmers’ practice 106.20 per cent. The yield gapes were recorded in groundnut 24.37 per cent in case of yield gap-I while, 51.50 per cent in case yield gap-II. Groundnut Crop was obtained more yield 66.3 per cent and 41.3 per cent at district level and state level, respectively.

Table: 2 Yield

| Crop | Yield obtained (q/ha) | | | | | | Yield increase (%) |
|------------|-----------------------|-----|------|------|-------|-------|--------------------|
| | Check | | | Demo | | | |
| | Max | Min | Av. | Max. | Min. | Av. | |
| Ground nut | 8.3 | 5.3 | 6.97 | 16.5 | 13.30 | 14.37 | 106.2 |

The farmers got relatively higher net return in Groundnut i.e. Rs 50635/ha by adopting improved technology of Groundnut cultivation than the Rs. 13135 per ha by using traditional technology in past years and this is at near four time fold from local practice return. The Net Return was 285 per more recorded in case CFLD demonstration fields. The B:C ratio was recorded higher 2.78 in adopting practices than the local practice 1.52. On an average per capita consume 19 kg oil/year while, presently per capita availability is 8 kg so, that much oil production will be sufficient to ensouer oil need of the human.

Finally, it is concluded that the technology of cluster oil seed production technology highly impacted on yield, socio-economic status of the farmers of district Shahjahanpur. Farmers of the district will increase more area in *Kharif* and *Zaid* oil seeds crops - Groundnut during next cropping season. It also recorded improvement in soil health and environment and increase the productivity of the land.



Scientist interacting farmer at Groundnut field

Cluster Frontline Demonstrations on Oilseed (2015-16)

Fund Utilization

Out of total allotted Rs. 3955500 funds from NMOOP during *Rabi* 2015-16 in Rapeseed and Mustard Rs. 2041856 utilized. Out of total allotted Rs. 130000 during *Rabi* 2015-16 in Linseed Rs.72909 utilized.

Table 9: Detail of the fund utilization for FLDs oilseed 2015-16 in Zone-IV, Kanpur.

| KVK | State | Crop Name | No. of FLDs Proposed | Area (ha) | Budget (in Rs) | Achievements during Rabi | | Expenditure | Unspent Balance (in Rs.) |
|-----------------|-------|--------------------|----------------------|------------|----------------|--------------------------|-----------|--------------|--------------------------|
| | | | | | | No. of FLDs Achievements | Area (ha) | | |
| Banda | U.P. | Linseed | 75 | 30 | 0 | 0 | 0 | 0 | 0 |
| Hamirpur | U.P. | Linseed | 15 | 6 | 30000 | 15 | 6 | 0 | 30000 |
| Jhansi | U.P. | Linseed | 50 | 20 | 0 | 0 | 0 | 0 | 0 |
| Mahoba | U.P. | Linseed | 50 | 20 | 0 | 0 | 0 | 0 | 0 |
| Mirzapur | U.P. | Linseed | 75 | 30 | 0 | 0 | 0 | 0 | 0 |
| Chitrakoot | U.P. | Linseed | 50 | 20 | 100000 | 50 | 20 | 72909 | 27091 |
| Chanduli | U.P. | Linseed | 50 | 20 | 0 | 0 | 0 | 0 | 0 |
| Jalaun | U.P. | Linseed | 25 | 10 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | | | 390 | 156 | 130000 | 65 | 26 | 72909 | 57091 |
| Mainpuri | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 42 | 17 | 0 | 180000 |
| Sonbhadra | U.P. | Rapeseed & Mustard | 62 | 25 | 150000 | 62 | 25 | 8675 | 141325 |
| SiddharthNgr. | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 13 | 5 | 3032 | 116968 |
| Allahabad | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 50 | 20 | 180000 | 0 |
| Agra | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 50 | 20 | 112360 | 7640 |
| Aligarh | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 50 | 20 | 119035 | 965 |
| Auraiya | U.P. | Rapeseed & Mustard | 57 | 23 | 25500 | 57 | 23 | 25500 | 0 |
| Badaun | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Balrampur | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 45 | 18 | 32121 | 147879 |
| Barabanki | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bareilly | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 75 | 30 | 10500 | 169500 |
| Etah | U.P. | Rapeseed & Mustard | 0 | 0 | 180000 | 0 | 0 | 0 | 180000 |
| Etawah | U.P. | Rapeseed & Mustard | 88 | 35 | 210000 | 76 | 30 | 264416 | -54416 |
| Fatehpur | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Firozabad | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 75 | 30 | 25368 | 154632 |
| Hamirpur | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 75 | 30 | 0 | 180000 |
| Hardoi | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 75 | 30 | 92235 | 87765 |
| Jalaun | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 63 | 25 | 22355 | 157645 |
| Jhansi | U.P. | Rapeseed & Mustard | 100 | 40 | 240000 | 50 | 20 | 119035 | 120965 |
| Kanpur City | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kanpur Dehat | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 50 | 20 | 23250 | 96750 |
| Kheri | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 50 | 20 | 116297 | 3703 |
| KushiNgr. | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 50 | 20 | 46544 | 73456 |

Cluster Frontline Demonstrations on Oilseed (2015-16)

| | | | | | | | | | |
|-----------------|------|--------------------|-------------|-------------|----------------|-------------|------------|----------------|----------------|
| Mahamaya Nagar | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mathura | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 100 | 40 | 0 | 120000 |
| Pilibhit | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ramabai Nagar | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sambhal | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Shahjahanpur | U.P. | Rapeseed & Mustard | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sitapur | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 75 | 30 | 180000 | 0 |
| Pratapgarh | U.P. | Rapeseed & Mustard | 163 | 65 | 390000 | 165 | 66 | 390000 | 0 |
| Muzzafarnagar | U.P. | Rapeseed & Mustard | 50 | 20 | 120000 | 50 | 20 | 92183 | 27817 |
| Unnao | U.P. | Rapeseed & Mustard | 75 | 30 | 180000 | 75 | 30 | 178950 | 1050 |
| Subtotal | | | 1620 | 648 | 3955500 | 1473 | 589 | 2041856 | 1913644 |
| Farrukhabad | U.P. | Sunflower | 25 | 10 | 60000 | 0 | 0 | 0 | 60000 |
| Kannauj | U.P. | Sunflower | 75 | 30 | 180000 | 0 | 0 | 0 | 180000 |
| Kanpur City | U.P. | Sunflower | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mainpuri | U.P. | Sunflower | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hardoi | U.P. | Sunflower | 25 | 10 | 60000 | 0 | 0 | 0 | 60000 |
| Pratapgarh | U.P. | Sunflower | 38 | 15 | 90000 | 38 | 15 | 89447 | 553 |
| Subtotal | | | 163 | 65 | 390000 | 38 | 15 | 89447 | 300553 |
| Badaun | U.P. | Groundnut | 75 | 30 | 150000 | 0 | 0 | 0 | 150000 |
| Philibhit | U.P. | Groundnut | 25 | 10 | 50000 | 0 | 0 | 0 | 50000 |
| Aligarh | U.P. | Groundnut | 50 | 20 | 100000 | 0 | 0 | 0 | 100000 |
| Etawah | U.P. | Groundnut | 63 | 25 | 125000 | 0 | 0 | 0 | 125000 |
| Mainpuri | U.P. | Groundnut | 75 | 30 | 150000 | 0 | 0 | 0 | 150000 |
| Saharanpur | U.P. | Groundnut | 40 | 16 | 80000 | 0 | 0 | 0 | 80000 |
| Farrukhabad | U.P. | Groundnut | 50 | 20 | 100000 | 0 | 0 | 0 | 100000 |
| Subtotal | | | 378 | 151 | 755000 | 0 | 0 | 0 | 755000 |
| GT | | | 2551 | 1020 | 5230500 | 1576 | 630 | | |

| Zone | Funds for Contractual Staff | | Expenditure for finds of Contractual Staff | | Unspent balance | | Funds for training programme | Expenditure for raining | Unspent Balance | Funds for Miscellaneous expenditure | Exp. for Miscellaneous expenditure | Unspent Balance |
|----------------|-----------------------------|--------------|--|--------------|-----------------|--------------|------------------------------|-------------------------|-----------------|-------------------------------------|------------------------------------|-----------------|
| | SRF | DEO | SRF | DEO | SRF | DEO | | | | | | |
| ATARI, Zone-IV | 201600 | 90000 | 7588 | 44516 | 194012 | 45484 | 144000 | | 144000 | 37875 | 22158 | 15717 |
| Total | 201600 | 90000 | 7588 | 44516 | 194012 | 45484 | 144000 | 0 | 144000 | 37875 | | 15717 |

Cluster Frontline Demonstrations on Oilseed (2015-16)

Fund Sanction



INDIAN COUNCIL OF AGRICULTURAL RESEARCH
Krishi Anushandhan Bhawan, Pusa, New Delhi – 110 012

F.No. A.Extn.10-31/2016 AE-II

Dated: 26.07.2016

Subject: Revised Utilization Certificate for Grants-in –Aid released to ICAR for Cluster Frontline Demonstration of *Rabi* Oilseeds under NMOOP-reg

Kindly find enclosed herewith the ATARI-Wise Revised Utilization Certificate for Grants-in –Aid released to ICAR for Cluster Frontline Demonstration of *Rabi* Oilseeds under NMOOP in Form GFR-19-A. A consolidated table of funds released and expenditure incurred has also been given in table below.

ATARI/Zone-wise Consolidated AUC of FLD of *Rabi* Oilseeds Conducted during 2015-16

(In Rs.)

| S.No | ATARIs/Zone | Opening Balance | Sanction & Release (In Rs.) | Actual Expenditure | Closing balance as on 31.03.2015 |
|--------------|------------------------|-----------------|-----------------------------|--------------------|----------------------------------|
| 1 | ATARIs,Zone -I | 0.00 | 1433475.00 | 607880.00 | 825595.00 |
| 2 | ATARIs,Zone -II | 0.00 | 21430275.00 | 16936943.00 | 4493332.00 |
| 3 | ATARIs,Zone -III | 0.00 | 8736675.00 | 5826089.00 | 2910586.00 |
| 4 | ATARIs,Zone -IV | 0.00 | 6323475.00 | 2797225.00 | 3526250.00 |
| 5 | ATARIs,Zone -V | 0.00 | 5986275.00 | 5775348.00 | 210927.00 |
| 6 | ATARIs,Zone -VI | 0.00 | 10358475.00 | 9749401.00 | 609074.00 |
| 7 | ATARIs,Zone -VII | 0.00 | 17474775.00 | 14543165.00 | 2931610.00 |
| 8 | ATARIs,Zone -VIII | 0.00 | 7810275.00 | 7473135.00 | 337140.00 |
| Total | | 0.00 | 79553700.00 | 63311529.00 | 16242171.00 |

Administrative approval

Approved budget for the project on Cluster Demonstrations on oilseeds during 2015-2016 under NMOOP to be implemented by KVKs, ICAR- Agricultural Technology Application Research Institute (ATARI), Kanpur.

Cluster Frontline Demonstrations on Oilseed (2015-16)

(FLDs by KVKs during *Rabi* 2015-16: Zone-IV)

| S.No | Crops | State | No. of KVKs | No. of Demo | Area (ha) | Budget (In Rs.) |
|-------------------------|--|--------------|-------------|-------------|------------|-----------------|
| 1. | Linseed | UP | 11 | 675 | 270 | 1350000 |
| | | TOTAL | 11 | 675 | 270 | 1350000 |
| 2 | Rapeseed & Mustard | UP | 27 | 1600 | 640 | 3840000 |
| | | TOTAL | 27 | 1600 | 640 | 3840000 |
| 3. | Sunflower | UP | 5 | 275 | 110 | 660000 |
| | | TOTAL | 5 | 275 | 110 | 660000 |
| Total Of Zone-IV | | | 43 | 2550 | 120 | 5850000 |
| <u>4</u> | Four training Programme of Scientists in-charge of FLDs in KVKs @ Rs. 36000 per training of 20 officers for 2 days | | | | | <u>144000</u> |
| <u>5</u> | One SRF@Rs 28000/-per month+HRA@20% for seven months. | | | | | <u>235200</u> |
| <u>6</u> | One Data Entry Operator(DEO)@Rs 15000(Consolidated)/- per month | | | | | <u>105000</u> |
| <u>7</u> | Miscellaneous expenditure for printing of reports etc@ Rs 37875/- | | | | | <u>37875</u> |
| Grand Total | | | | | | 6372075 |

Approved budget for the project on Cluster Demonstrations on oilseeds during 2016-2017 (*Kharif, Rabi, Summer*) under NMOOP to be implemented by KVKs, ICAR- Agricultural Technology Application Research Institute (ATARI), Kanpur.

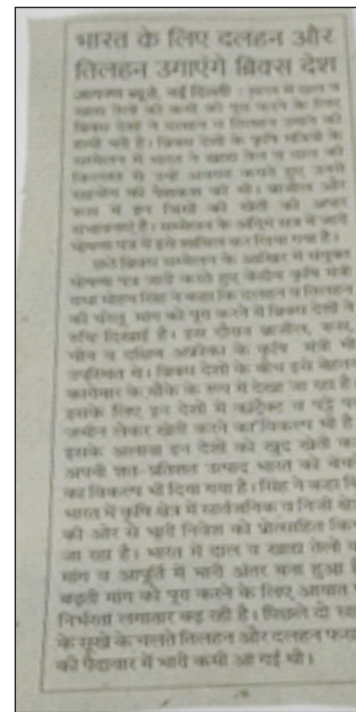
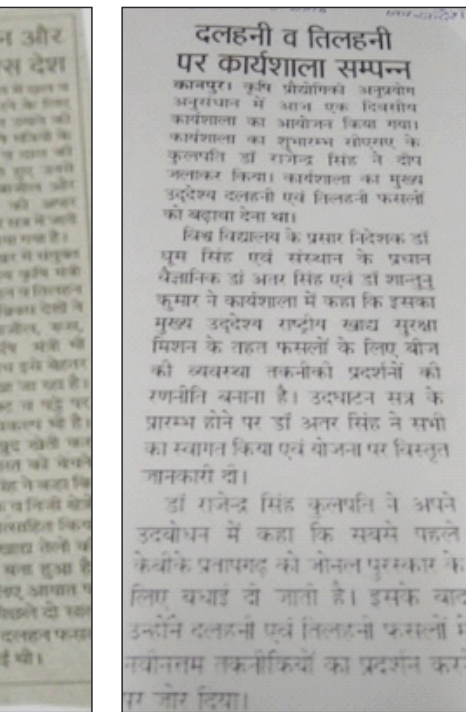
Cluster Frontline Demonstrations on Oilseed (2015-16)

(Oilseeds by Cluster Demonstration KVKs during *Kharif & Rabi* 2016-17: Zone-IV)

| S.No. | Crops | State | KVKs involved in Cluster Demonstration implementation | | No. of Demonstration in acre | Area in ha | Assistance for Cluster Demonstration per ha(in Rs.) | Budget (in Rs) |
|----------------------------|--|---------------|---|---------------|------------------------------|-------------|---|----------------|
| | | | Unique KVKs | KVKs Repeated | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Kharif Season | | | | | | | | |
| 1. | Groundnut | Uttar Pradesh | 2 | 0 | 100 | 40 | 7500 | 300000 |
| 2. | Soybean | Uttar Pradesh | 1 | 0 | 75 | 30 | 4500 | 1350000 |
| 3. | Sunflower | Uttar Pradesh | 23 | 2 | 1075 | 430 | 4000 | 1720000 |
| Total Kharif Season | | | 26 | | 1250 | 500 | | 3370000 |
| Rabi Season | | | | | | | | |
| 1 | Rapeseed & Mustard | Uttar Pradesh | 19 | 9 | 1450 | 580 | 3000 | 1740000 |
| 2 | Linseed | Uttar Pradesh | 2 | 9 | 825 | 330 | 3000 | 990000 |
| Total Rabi Season | | | 21 | | 2275 | 910 | | 2730000 |
| 3. | Total (Kharif + Rabi) | | 47 | | 3525 | 1410 | | 6100000 |
| 4. | Four Training programmer of Scientists in -charge of Cluster Demonstration in KVKs@36000 per training of 20 officers for two days. | | | | | | | 144000 |
| 5. | One Senior Research Fellow (SRF) @Rs 25000 + HRA@20% for twelve months. | | | | | | | 360000 |
| 6. | One Data entry operator (DEO) at ATARI @Rs 15000(consolidated) per month for twelve months. | | | | | | | 180000 |
| 7. | One Technology Agent each at 4 KVKs @Rs.10000/- consolidated per month (for 6 months) | | | | | | | 240000 |
| 8. | Miscellaneous Expenditure on account of printing of reports etc @40000/for each ATARI. | | | | | | | 40000 |
| Total (4 to 8) | | | | | | | | 964000 |
| Grand Total | | | | | | | | 7064000 |

The following guidelines were followed by the KVKs while conducting the Demonstrations:

1. The demonstrations of each pulse crop should be organized in cluster approach (at least 10 ha. for each cluster).
2. ICAR should provide seed as one of critical inputs to farmers for organizations of demonstration.
3. The varieties of pulse crops to be included in the demonstration should not be older than 10 years.
4. More focus should be given to organize demonstration of pulse in rise fallow areas in eastern India.
5. 10% of FLD fund earmarked (Rs. 7500/ha) is allowed to utilized for monitoring, distribution of literature and organization of field day.
6. Chemical fertilizers are not allowed as input under FLD. However payment of various operation/ services and inputs (seed, bio fertilizer, soil ameliorants ,micro nutrients etc.) are allowed. Farmers have to apply recommended dose of chemical fertilizers to attain potential yield.
7. The scientists from KVK will conduct visit to the demonstration site to resolve problem on spot.
8. Each KVK will furnish cafeteria of intervention for each crop to be undertaken at the demonstration site .
9. For individual farmer, field should not exceed than 0.80ha .
10. The qualification and salary of the 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 , head quarter New Delhi.
12. Travelling allowance and daily allowance is admissible as per norms of Govt. of India.
13. The organizational of workshop cum training and group meetings should be organized as per norms of ICAR .
14. The list of beneficiary-farmers should be maintain at each ATARI level .
15. The contribution of individual intervention should also be documented .
16. KVKs which small conduct FLDs in 100 ha or more area during both the cropping season of a year is allowed to hire PTA for 12 month and KVK which shall conduct FLDs in at least 50 ha or more area either in *Kharif*, *Rabi* and *Summer* season is allowed PTA for six month.
17. Eack KVK should try to choose interior areas; farmers have generally been deprived of demonstrations conducted by extension agencies.
18. KVK should focus on use of micro-nutrients , soil ameliorants and IPM practices .
19. Farmers should be trained for seed production, primary processing etc.
20. Each ATARI designated for a particular zone will prepare a detailed report on the demonstrations of pulse and a final report will be submitted by department of agricultural Extension-ICAR, New Delhi.



Cluster Frontline Demonstrations on Oilseed (2015-16)

Annexure I

Formate : on FLDs on Oilseed conducted during *Rabi/Summer* 2015-16 form
**Preliminary Report for Frontline Demonstrations conducted on oilseeds conducted by
the KVKs during *Rabi* season 2015-16**

1. KVK wise Format

A. Technical Parameters:

| Sl. No. | Crop demonstrated | Existing (Farmer's) variety name | Existing yield (q/ha) | Yield gap (Kg/ha) w.r.to | | | Name of Variety + Technology demonstrated | Number of farmers (Area in acre) | Yield obtained (q/ha) | | | Yield gap minimized (%) | | |
|---------|-------------------|----------------------------------|-----------------------|--------------------------|-----------------|---------------------|---|----------------------------------|-----------------------|------|-----|-------------------------|---|---|
| | | | | District Yield*(D) | State Yield*(S) | Potential yield (P) | | | Max. | Min. | Av. | D | S | P |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

B. Economic parameters

| Sl. No. | Variety demonstrated | Farmer's Existing plot | | | | Demonstration plot | | | | Farmers, feedback |
|---------|----------------------|------------------------|----------------------|--------------------|-----------|--------------------|----------------------|--------------------|-----------|-------------------|
| | | 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 | |
| | | | | | | | | | | |

C. Socio-economic impact parameters

| Sl. No. | Crop and variety Demonstrated | Total Produce Obtained (kg) | Produce sold (Kg/household) | Selling Rate (Rs/Kg) | Produce used for own sowing (Kg) | Produce distributed to other farmers (Kg) | Purpose for which income gained was utilized | Employment Generated (Mandays/house hold) |
|---------|-------------------------------|-----------------------------|-----------------------------|----------------------|----------------------------------|---|--|---|
| | | | | | | | | |

Cluster Frontline Demonstrations on Oilseed (2015-16)

D. Oilseed Farmer’s perception of the intervention demonstrated

| Sl. No. | Technologies demonstrated (with name) | Farmers' Perception parameters | | | | | |
|---------|---------------------------------------|-------------------------------------|----------------------|---------------|---------------------|--|---|
| | | Suitability to their farming system | Likings (Preference) | Affordability | Any negative effect | Is Technology acceptable to all in the group/village | Suggestions, for change/improvement, if any |
| | | | | | | | |

E. Extension activities under FLD conducted till dates:

| Sl. No. | Extension Activities organized | Date and place of activity | Number of farmer attended |
|---------|--------------------------------|----------------------------|---------------------------|
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2. Famar wise Format

| S.N. | KVVK Name | Name of Farmer | Father Name | Address | | | | GPS Co-Ordinates | Crop Demonstrated | Cluster number (I, II or III) | Area (ha) Under Demo. | Variety & Sowing details | | | | | | | | | | | | |
|------|-----------|----------------|-------------|---------|-------|----------|---------|------------------|-------------------|-------------------------------|-----------------------|--------------------------|----------|-----------------------------|----------------------|-------------------|--|----------------------|---------------------------|----------------|-------------------|----------------|--|--------------------|
| | | | | Village | Block | District | Mob.No. | | | | | Longitude | Latitude | Variety Used & Release year | Crop Duration (days) | Seed Rate (Kg/ha) | Sowing Method (line/broadcasting/R&F/Ra ised bed, etc.) | Seed Treatment (Y/N) | if Yes then gives details | Source of Seed | Small/Bold Seeded | Date of Sowing | Bench mark Productivity of the clusters (q/ha) | Soil Testing (Y/N) |
| | | | | | | | | | | | | | | | | | | | | | | | | |

3. Latest Photographs of FLDs conducted on farmer fields with caption of the photographs.