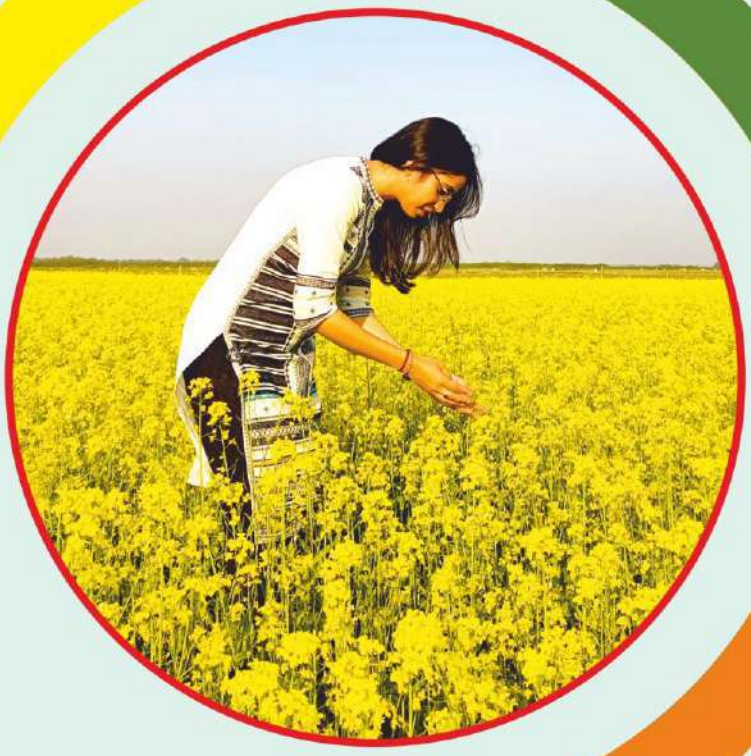
Seventh Progress Report

JULY 2023 - FEB. 2024

ICAR-DRMR-OPIU(Agri.)-APART Project



ICAR-DIRECTORATE OF RAPESEED-MUSTARD RESEARCH
BHARATPUR, RAJASTHAN-321303

ASSAM AGRIBUSINESS & RURAL TRANSFORMATION PROJECT (APART)

Seventh Progress Report (July 2023-February 2024)

July 2023- February 2024

Consulting services for technical advisory support on Augmenting Rapeseed-Mustard Production of Assam Farmers for Sustainable Livelihood Security

Assam Agribusiness and Rural Transformation Project (APART)

Contract No. OPIU Agri/APART/DRMR/23

World Bank Financed

Submitted by

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Augmenting Rapeseed-Mustard Production of Assam Farmers for Sustainable Livelihood Security

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ACRONYMS	
AAU	Assam Agricultural University
AEA	Agricultural Extension Agent
ANLD	Anisotropic Non-Linear Diffusion
APART	Assam Agribusiness & Rural Transformation Project
ARIASS	Assam Rural Infrastructure and Agricultural Services Society
ATM	Assistant Technology Manager
ATMA	Agriculture Technology Management Agency
AWP	Annual Work-Plan
BTM	Block Technology Manager
BVZ	Barak Valley Zone
CBVZ	Central Brahmaputra Valley Zone
CD	Crop Demonstrations
DRMR	Directorate of Rapeseed-Mustard Research
DoA	Department of Agriculture
GDP	Gross Domestic Product
Ha	Hectare
HYV	High Yielding Variety
HZ	Hills Zone
ICAR	Indian Council of Agricultural Research
ICT	Information and Communication Technology
IMD	India Meteorological Department
INM	Integrated Nutrient Management
INR	Indian Rupee
IPM	Integrated Pest Management
ITK	Indigenous Technical Knowhow
IWM	Integrated Weed Management
KVK	Krishi Vigyan Kendra
LBVZ	Lower Brahmaputra Valley Zone
MSP	Minimum Support Price
MT	Master Trainer
NARES	National Agricultural Research and Extension System
NBPZ	North Bank Plain Zone
NEH	North East Hills
NER	North Eastern Region
NGO	Non-Government Organization
PHM	Postharvest Mechanization
ToT	Training of Trainers
TT	Technical Training
UBVZ	Upper Brahmaputra Valley Zone
UPS	Uninterruptible Power Source
WUE	Water-Use Efficiency

Preface

Oilseed crops are the second most important determinant of agricultural economy, next only to cereals. Today, the demand for vegetable oils is out pacing the supply with more than half of its annual requirements being met mainly through imports.

Enhancing the domestic edible oil availability is one of the prime concerns of the policy planners to check the rising edible oil imports. Rapeseed-mustard is one of the important sources of edible oil in the country which has made a significant contribution to domestic edible oil availability over the last few decades. Rapeseed-mustard crop has good production potential, where the cultivation is supported with technology and knowledge inputs.

Over the last decade, the number of rapeseed-mustard technologies have been developed, but for certain proven technologies there is a profound adoption gap particularly among small holder farmers. Increased technology adoption, broadly defined to include adoption of improved agricultural practices, crop varieties, inputs and associated products has the potential to contribute to economic growth through increasing production and productivity of rapeseed-mustard.

Crop area expansion, either through inter cropping or spreading the crop in rice-fallow land in the country may also help in increasing the production of rapeseed-mustard. Rapeseed-mustard is grown in substantial area in Assam. However, low and unstable oilseed system productivity is major problem in these areas where cultivation is undertaken mostly on small and marginal agricultural holdings. Keeping in view the vast availability of natural resources and fertile lands offering ample scope to promote oilseed cultivation in Assam, there is an urgent need to identify.screen the suitable technologies of rapeseed-mustard production for rice–fallow situation and motivate the farmers of these areas to adopt identified technologies through demonstrations, trainings, fairs, exhibitions and visits to research and experimental farm.

With this background, ICAR-DRMR is contributing for enhancing rapeseed-mustard production in Assam through a project on “Consulting services for technical advisory support on augmenting rapeseed-mustard production of farmers of Assam for sustainable livelihood security” since April 28, 2020. ICAR-DRMR as a knowledge partner is providing the expertise under the project to support the Directorate of Agriculture, Govt. of Assam for

a) Enhancing adoption of high yielding short duration rapeseed-mustard varieties.
b) Enhancing area and raising productivity, profitability, and resource use efficiencies of rapeseed-mustard cultivation in Assam through improved crop management and protection technologies.
c) Strengthening post-harvest management, reduce losses, increase efficiency and profitability, and improve mustard value chain.
d) Developing knowledge materials and capacity development of various stakeholders and extension functionaries in Assam.

Keeping in view the low productivity, poor marketing support and low confidence and capacities of the value chain actors, ICAR-DRMR believes that interventions with regards to organizing crop demonstrations along with technical trainings, PHT demonstrations, and training and capacity building of the value chain actors is critical for enhancing the production and productivity of rapeseed-mustard in Assam. Therefore, ICAR-DRMR is working with the Director of Agriculture, Government of Assam on the mustard value chains especially on organizing

demonstrations, and training & capacity building programmes to increase the average productivity of rapeseed-mustard.

Other interventions in the mustard value chain are development of knowledge materials in the form of simple and actionable farmer/friendly extension material and digital / IT tools on the different aspects of scientific production and protection technology of mustard to reach a large number of farmers quickly and simultaneously at a low cost and provide accurate, motivating, credible and distortion free information to them. To create awareness among farmers about varieties, technologies, practices in the mustard value chain including post-harvest and market linkages, ICAR-DRMR is providing technical support to organize farmer fairs.

To reinforce the confidence of the extension personnel and farmers in new technologies, methods, etc., exposure visit of extension functionaries and farmers are being organized to ICAR-DRMR along with interaction with progressive farmers and visit to farmers' field in Bharatpur and surrounding areas, to have better knowledge and understanding of technology/ methods and to improve the skills of the extension personnel and farmers in scientific production and protection technology of rapeseed-mustard.

ICAR-DRMR will also support in organizing a round table conference/workshop/seminar to gain further insight into opportunities in Assam and to include and identify all mustard value chain actors from the agro-system (farmers to consumers).

The activities under the project were carried out in fifteen undivided districts namely; Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri, Golaghat, Jorhat, Kamrup, Kokrajhar, Lakhimpur, Morigaon, Nagaon, Nalbari, Sivasagar and Sonitpur of Assam during 2023-24.

Executive summary

Under the ICAR-DRMR OPIU (Agri)-APART project, 15 districts of Assam namely; Golaghat, undivided Jorhat including Majuli, Sivasagar, Darrang, Sonitpur, Morigaon, Dhubri Kokrajhar, Bongaigaon, Barpeta, Nalbari, Kamrup, Lakhimpur, Dhemaji and Nagaon were selected to implement and organization of approved activities during 2023-24. For better supervision, monitoring, efficient delivery and effective implementation of mustard activities, ICAR-DRMR has deployed its team at all fifteen districts.

A detailed survey of all the selected clusters of 15 districts was conducted to study weather condition, rainfall pattern, soil type, cropping pattern, major crops, resources availability, status of mustard cultivation, insect-pest and disease problems in the areas, seasonal crop activity, irrigation facilities, etc by ICAR-DRMR.

The selection of the sites for conducting demonstrations was done by ATMA personnel of respective districts in consultation with concerned stakeholders and Research Associates/ Sr. Research Fellow keeping in view the accessablity to farmers of neighboring villages and extension workers coming from different parts of the district. During 2023-24, organization of 5000 mustard crop demonstrations and 18000 minikit demonstrations in selected 15 districts were approved. Accordingly, a total of 5000 mustard crop demonstrations in 84 Clusters in fifteen selected districts were laid out.

Based on the climatic situation, cultivation of rapeseed-mustard, prevailing cropping pattern and resources, these demonstrations were conducted with three improved varieties of Indian mustard viz. NRCHB-101 (655), PM-28 (1230) and DRMR-150-35 (1390) and one variety of toria, viz. TS-38 (1725) along with crop management and protection technologies like line sowing, proper seed rate, seed treatment, proper plant population, thinning, weeding, intercultural operations, management of pest and diseases, etc. against the control plot. Under minikit demonstrations, only one kg seed of improved varieties viz. DRMR-150-35, (3000) and PM-28 (7050) of Indian mustard and one variety of toria, viz. TS-38 (7950) was supplied to the farmers.

The seed of demonstrated varieties along with required fertilizers and need based fungicides/pesticides were given to selected farmers for demonstration. Under minikit demonstrations, only one kg seed of improved variety was supplied to the farmers.

Keeping in view of rainfall and land preparation in different clusters, the sowing was done during last week of October to mid Dec. 2023.

Regular visits and monitoring of the crop demonstrations and minikit demonstrations were done by Research Associates, SRF, DRMR Experts, Resident Consultant and ATMA personnel to educate and motivate the farmers to adopt crop management practices like thinning, intercultural operations, weeding, applying irrigation, management of insects and diseases, etc.

The OPIU-Agriculture, Directorate of Agriculture, Assam in collaboration with ICAR-Directorate of Rapeseed-Mustard Research, Bharatpur, Rajasthan organized four training programmes of 2 days each (2 Master Trainers Training and 2 Farmers Training programmes) under ICAR-DRMR-APART project of mustard value chain programme.

These trainings were Master trainers and farmers were organized simultaneously in two batches, one at Jorhat and other at Guwahati district for better understanding of farmers with Master Trainers. The training programmes were organized on "Technology Innovation of scientific Cultivation of Rapeseed- Mustard in Assam". First batch of two days Masters Trainers and farmers training programme was organized at Dhansiri Farmers Hostel, AAU, Jorhat during

12-13 October 2023 and second batch was organized at Krishi Vigyan Kendra (KVK), Kahikuchi, Kamrup, Assam during 16-17 October 2023.

Thus, a total of 55 extension personnel, BTM, ATM of the State Department of Agriculture, Govt. of Assam and 62 farmers from Darrang, Dhubri, Barpeta, Nalbari, Kamrup, Bongaigaom, Morigaom, Kokrajhar, Nagaon, Sonitpur, Golaghat, Lakhimpur, Jorhat, Sivasagar and Dhemaji districts and Research Associates of ICAR-DRMR-APART Project participated in these training programmes.

To provide first-hand information and practical exposure to the farmers about scientific production and protection technology of mustard/ technical trainings were organized in four phases upto last week of January 2024. The first phase of technical training for mustard crop demonstrations farmers on “Scientific production technology of rapeseed-mustard” was conducted cluster wise at Department of Agriculture/ ATMA office/ block office of respective districts before sowing. The technical knowledge and skill about land preparation, seed treatment, fertilizer application, seed rate, sowing method, sowing time, spacing, etc. were provided along with distribution of seeds and fertilizers to the participants. The second phase of technical training was conducted on “Improved agronomic practices of rapeseed-mustard for higher production” during Oct. 2023-Dec. 2023 at the time of vegetative growth of the crop at farmers’ field in each of the selected clusters. The technical knowledge and skill about weeding, hoeing, thinning, irrigation management, top dressing, etc. were provided to the participants by ICAR-DRMR during second phase of technical training.

The third phase of technical training was conducted on “Integrated pest and disease management in rapeseed-mustard” during Dec. 2023 to Jan 2024 at the time of flowering stage of the crop at farmers filed in each of the selected clusters. The fourth phase of technical training was conducted on **“**Harvesting, threshing and storage management in rapeseed – mustard”during January 2024 at the time of maturity stage of the crop at farmers field in each of the selected clusters. The technical knowledge and skill about harvesting time, threshing, moisture percentage and storge management etc.

Thus a total of 250 technical trainings were organized during the period wherein 5732 farmers and farm women participated. These technical trainings were organized at farmers’ field by the District ATMAs with the technical support of ICAR-DRMR.

During 12-14 February 2024**,** ICAR-DRMR organized one Exposure visit-cum-training of progressive farmers and one exposure visit-cum-training of Master trainiers/ extension personnel to ICAR-DRMR. A total of 20 master trainers/extension personnel/ and 20 farmers from selected 20 districts of Assam namely; Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri, Golaghat, Jorhat, Kamrup, Kokrajhar, Lakhimpur, Morigaon, Nagaon, Nalbari, Sivasagar, Sonitpur, Majuli, Hojai, Goalpara, Karbi Anglong and Charaideo participated in the exposure visit-cum-training programme.

ICAR-DRMR developed and published a training manual on "Safe use of pesticides on rapeseed-mustard crop” that will help the agricultural officials and farmers of the state for better understanding and to focus on the safe use of pesticides on crop.

ICAR-DRMR has also developed a simple and actionable farmer-friendly extension material in the form of technical folder on “Important farm implements used for rapeseed-mustard cultivation” that will help the extension personnel and farmers of the state to understand the different types of agricultural implements, their uses during different stages of crop cultivation and promote farm mechanization to save labour and time.

Table 1: Executive summary of physical targets and achievements during July-2023- Feb. 2024

Activities	Unit	Target	Achievement	Remarks
Crop Demonstrations	No.	5000	5000	All demonstrations were laid out successfully
Minikit ATMA	No.	18000	18000	All minikit demonstrations were laid out successfully
Technical trainings	No.	250	250	Completed
Training for Master Trainers	No.	2	2	Completed
Training for progressive farmers	No.	2	2	Completed
Exposure visit of MT	No.	01	01	Completed
Exposure visit of progressive farmers	No.	01	01	Completed
Training manual folder published	No.	01	01	Completed
Technical Extension Folder	No.	01	01	Completed

Chapter 1: Detailed Report

1.1 About ASSAM

Assam, a state with a geographical area of 78,438 km^2, forms about 2.4% of the country's total geographic area and is the core of the North Eastern Region (NER) of India. It is situated in the South of the Eastern Himalayas, between 89°42′ E to 96°E longitude and 24°8′ N to 28°2′ N latitude. A large part of Assam is surrounded by hilly areas and it has both National as well as International boundaries. Assam shares its north boundary with Bhutan and Arunachal Pradesh. Nagaland, Manipur and a part of Arunachal Pradesh are to the east of Assam while Mizoram is to the south of it. States Tripura, Meghalaya and the country Bangladesh are situated to the south.west of the state and West Bengal is to the west of it. Assam comprises three broad natural divisions, namely, the Brahmaputra valley, the Barak valley, and the Hill range. The Brahmaputra valley is the largest strip of plain land extending from the West to North-East in the northern part of the state. The river is the main source of life for the people of Assam and a contributing factor for the fertile agricultural land of the state. Adding quality to alluvial soil, the river Brahmaputra is a perennial source of water for the state.

The southern part of the state is another valley with the river Barak passing through it, known as the Barak valley. This region is relatively small and accounts for only about 9% of the area of the state, accommodating about 12% of the state's population. The hilly range of Karbi Anglong and North Cachar lies in the middle of the state, separating the two valleys.

1.2 Agro-climatic Zones

Based on the amount and characteristics of rainfall, temperature, relative humidity, terrain condition (a stretch of land with regard to its natural features), and soil characteristics, Assam has been broadly divided into six agro-climatic regions as shown in fig 1. They are:

1. The North Bank Plain Zone (NBPZ), comprises of the districts Dhemaji, Lakhimpur, Sonitpur, Udalguri (BTAD) and Darrang, contributing to 18.37% area of Assam. Rice, Rapeseed-Mustard and Sugarcane are the major crops of the zone.
2. The Upper Brahmaputra Valley Zone (UBVZ), comprises of the districts Tinsukia, Dibrugarh, Sivasagar, Jorhat, and Golaghat, and accounting for 20.40% of the total area of Assam. Rice, Rapeseed-Mustard and Sugarcane are the major crops of the zone.
3. The Central Brahmaputra Valley Zone (CBVZ) comprises of the districts Nagaon and Morigaon, accounting for only 7.08% of the area of the state. This region is bowl-shaped and often flooded. Rice, Rapeseed-Mustard, Jute and Pulses are the major crops of the zone.
4. The Lower Brahmaputra Valley Zone (LBVZ) comprises of the districts Kamrup, Nalbari, Barpeta, Bongaigaon, Kokrajhar, Chirang, Baksa, Dhubri, and Goalpara covering an area of 20,222 km^2, accounting for 25.75% of the area of the state. Rice, Rapeseed-Mustard, Jute, Potato, Wheat and Pulses are the major crops of the zone.
5. The Barak Valley Zone (BVZ) comprises of the districts Cachar, Hailakandi, and Karimganj and covers a total area of 6,962 km^2, i.e., 8.9 % area of the state. Rice, Sugarcane and Potatoare the major crops of the zone.
6. The Hills Zone (HZ) comprises of two districts Karbi Anglong and North Cachar Hills, encompassing 19.4% of the total state area. Maize and Sugarcane are the major crops of the zone.

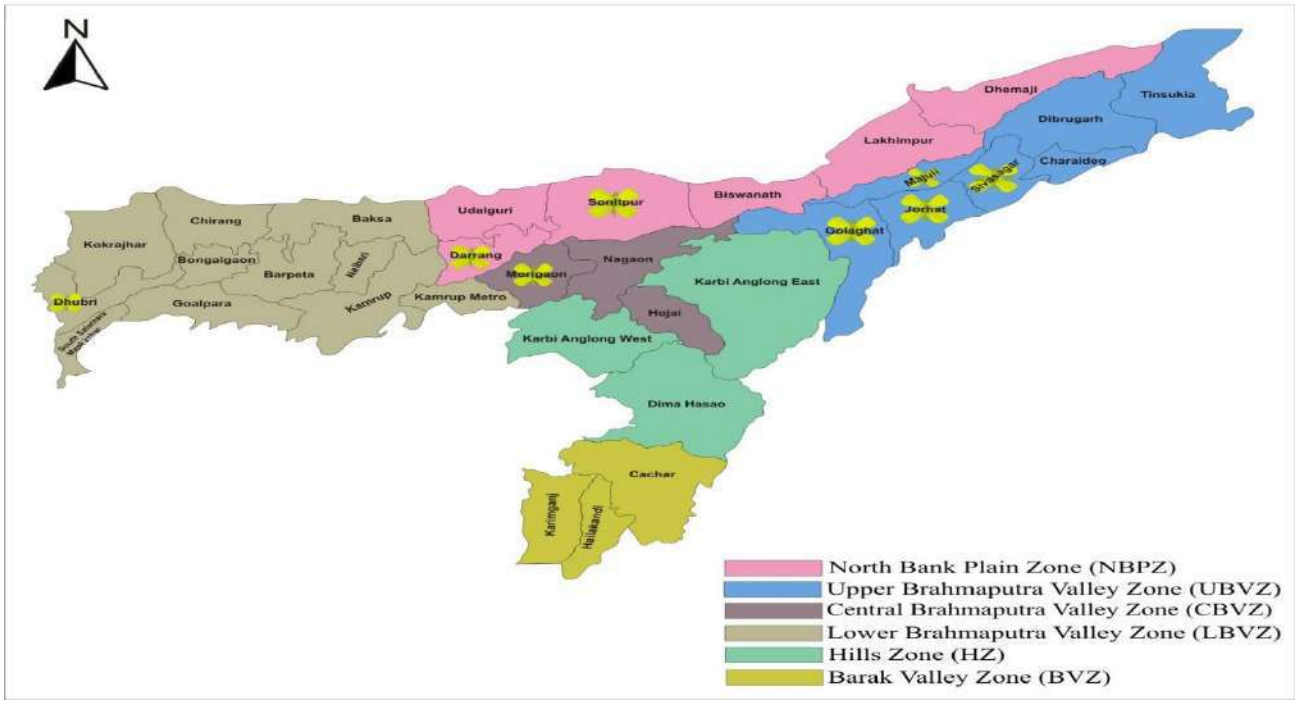

Fig 1: Agro.climatic Zones of Assam

There is a similarity of farm operation in the first five plain agro-climatic zones of Brahmaputra valley and Barak valley. The method of cultivation adopted in the plain region of Assam is more or less similar to that followed in most parts of India. Rice, grown during the wet

season (June-Oct/Nov) also called sali -winter rice, has traditionally been the principal crop in all these zones. Moreover, jute is also grown during the same period at a substantial scale. During the winter months when rainfall is scanty, and the scale of cultivation is also much smaller, the less water requiring crops, such as oilseeds, pulses, potato, and vegetables are traditionally grown in the plains. On the other hand, the system of farming in the hilly areas is significantly different from the system of farming in the plains. The primitive practice of shifting cultivation is still predominant mode of cultivation in the hills.

Climatic Condition: Generally Assam's climate comprises very wet summer season and sunny winter season. The monsoon rain normally starts from early June and continues up to the month of October. Moreover, in late April and May, normally there is also heavy pre-monsoon rain in the state. In Assam, during the summer, temperature normally varies between 25^{o} C and 40^{o} C. During the winter period, i.e., from the month of November to the February, climate mostly remains dry. Sometimes, the temperature during the winter falls bellows 5^{o} C.

The state normally witnesses a very heavy rainfall during the period from June to September. As opposed to monsoon season, the state witnesses on an average 51.0 millimeter rainfall during the winter season. Again in summer and post monsoon period, the average rainfall is 578.00 and 176.00 millimeter, respectively. The average rainfall in the state in a year is 2294 millimeter.

Sources of Irrigation: The major sources of irrigation in Assam are canal, tube well, tank and well supplying irrigation.

1.3 Brief description of the districts identified for rapeseed-mustard programme under the project

For the rapeseed-mustard programme under APART project from 20212-23 onward, fifteen districts of Assam namely; 15 districts of Assam namely; Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri Golaghat, undivided Jorhat including Majuli, Kamrup, Kokrajhar, Lakhimpur, Morigaon, Nagaon, Nalbari, Sivasagar and Sonitpur were selected. For better supervision, monitoring, efficient delivery and effective implementation of mustard activities of APART, ICAR-DRMR has deployed its team at all fifteen district locations. The selected districts belong to different Agro-climatic zones of the state as follows:

Districts for rapeseed-mustard programme	Agro-climatic zone of Assam
Jorhat, Golaghat and Sivasagar	Upper Brahmaputra Valley Zone
Dhemaji, Lakhimpur, Sonitpur and Darrang	North Bank Plain Zone
Nagaon and Morigaon	Central Brahmaputra Valley Zone
Kamrup, Nalbari, Barpeta, Bongaigaon, Kokrajhar and Dhubri	Lower Brahmaputra Valley Zone

Normally, there are considerable variations in physiography, climate, soils, flooding and cropping pattern etc. in an agro-climatic zone and these variations lead to formation of agro-ecological situations within the zone.

Barpeta: This district comprises of 264500 ha area, having 11 blocks. Total cropped area of the district is 249307 ha. and paddy, Jute, maize, seasamum and rapeseed and mustard, potato, lentil, linseed, wheat and rabi vegetables are the major crops. The district is considered as normal / flood prone having sandy soil. About 18,850 ha ha area is under mustard crop and aphids and mustard sawfly are the major pest of mustard in the district. The major cropping pattern are sali paddy–mustard–summer paddy sali paddy–potato–summer paddy. Lack of appropriate variety for rice and mustard, pest and disease problems, shortage of agriculture implements are the major constraints with respect to agriculture. The Bajali, Bhawanipur,

Barpeta, Chenga, Pakabethbari, Sarukhetri, Mandia, Chakachaka, Rupshi, and Gumafulbari blocks of district have been selected for project activities.

Bongaigaon: This district comprises of 172592 ha area, having 5 blocks. Total cropped area of the district is 1,17,685 ha. and paddy, jute, black gram and kharif vegetables, rapeseed and mustard, maize, potato, lentil, wheat and rabi vegetables are the major crops. The district is considered as flood prone having alluvial soil. About 8,487 ha area is under mustard crop aphids, and sawfly are the major pest of mustard in the district. The major cropping pattern are sali paddy – mustard – summer paddy, sali paddy – potato – summer paddy and sali paddy – maize – summer paddy. lack of appropriate high yielding variety for rice and mustard, pest and disease problems and shortage of agriculture implements in farmers the major constraints with respect to agriculture. The Manikpur, Patiladoha and Srijangram blocks of district have been selected for project activities.

Darrang: This district comprises of 158500 ha area, having 6 blocks/clusters. Total cropped area of the district is 73619 ha and paddy, maize, vegetable and mustard are the major crops. The district is considered as sandy loam and clay loam soil. About 15447 ha area is under mustard crop and aphid, white rust and saw fly are the major pest and disease of mustard. The major cropping patterns are sali paddy–maize-vegetable, sali paddy- mustard. Late sowing of sali paddy, laggard to new technology and flood are the major constraints with respect to agriculture. The Bechimari, Sipajhar and Pachim Mangaldai blocks of district have been selected for project activities.

Dhemaji: This district comprises of 3,23700 ha area, having 5 blocks. Total cropped area of the district is 2,02,730 ha. paddy maize, rapeseed and mustard, potato, Blackgram, turmeric and arecanut, are the major crops. The district is considered as flood prone having sandy loam. About 22,456 ha area is under mustard crop aphids, mustard sawfly, bihar hairy caterpillar, pea leaf are the major pest of mustard in the district. The major cropping pattern are sali rice - ahu rice - toria, rice-vegetables and rice- fallow. Flood, non-availability of quality seeds at right time, non- adoption of modern technology, non-availability of input dealers, pests and diseases infestations, improper use of fertilizer and chemicals, lack of knowledge of production technology are the major constraints with respect to agriculture. The Dhemaji, Sissiborgaon, Bordoloni, MSTD and Machkhowa blocks of district have been selected for project activities.

Dhubri: This district comprises 2,36,126 ha. area, having 11 blocks/ cluster. Total cropped area of the district is 2,30,536 ha and paddy, kharif vegetables, black gram, maize, jute, potato, rapeseed-mustard, and pea are the major crops. The district is considered as sandy loam and clay loam. About 23471 ha area is under mustard crop. The major cropping patterns are mustard –boro paddy, sali paddy-rapeseed /mustard/ rabi vegetables/ rice-pumpkin/potato/mustard. The occurrences of flood and water stress, attack of insect pests such as aphids, powdery mildew, early shower during harvesting, non-availability of fertilizers and chemicals during peak seasons etc. are the major constraints with respect to agriculture. The Gauripur, Rupshi, Debitola, Agomani, Birsing Jarua, Chapar-Salkocha, Bilasipara and Mahamaya blocks of district have been selected for project activities.

Golaghat: This district comprises of 350200 ha area, having 8 blocks/clusters. Total cropped area of the district is 2,28325 ha and paddy, banana, pineapple, ginger, chilli tomato, sugarcane, potato, rapeseed-mustard, pea, lentil, green gram, maize and vegetable are the major crops. The district is considered as sandy loam and clay loam soil. About 13450 ha area is under mustard crop and aphid, white rust and saw fly are the major pest and disease of mustard in the district. The major cropping patterns are sali rice-rabi vegetables / rapeseed-mustard / black grams, sali rice-summer paddy and summer paddy-black gram / rapeseed-mustard / rabi vegetables. The occurrences of flood and water stress, attack of insect pests such as aphid, early shower during harvesting, non-availability of fertilizers and chemicals during peak seasons etc. are the major constraints with respect to agriculture. The Morangi, Kakodonga, Dergaon, Sarupathar, Podumoni and Bokakhat blocks of district have been selected for project activities.

Jorhat undivided including Majuli: This district comprises of 192862 ha area, having 8 blocks. Total cropped area of the district is 102839.2 ha and rice, paddy, pea, pulse, cabbage,

cauliflower, brinjal and mustard are the major crops. The district is considered as flood prone having sandy loam soil. The 91% area is under rainfed and only 9% cropped area is covered by tube well irrigation. About 9507 ha area is under mustard crop and aphid and saw fly are the major pest of mustard in the district. The major cropping pattern are paddy- vegetables-vegetables, paddy-potato-vegetables, paddy-pulse-paddy-mustard. The occurrence of flood and sometimes drought in summer are the major constraints with respect to agriculture. The Kaliapani, Selenghat, Dhekorgorah, Majuli and Ujani Majuli blocks of district were selected for project activities.

Kamrup: This district comprises of 4,34,500 ha area, having 22 blocks. Total cropped area of the district is 2,07,344 ha. and paddy, mustard, maize, fruit crops i.e. Banana, and vegetables are the major crops. The district is considered as flood prone having clay loam, sandy loam, sandy soil, alluvial soil and red soil. The 81% area is under rainfed and only 19% cropped area is covered by irrigation. About 15820 ha area is under mustard crop and aphid and saw fly are the major pest of mustard in the district. The major cropping pattern are sali paddy-vegetable-rapeseed and mustard, sali paddy-mustard, sali paddy-boro paddy, fallow (summer)- vegetable/ Mustard, Summer vegetable-toria/ rabi vegetables. The Insect pest and disease, labour constraints, unseasonal rain/ weather constraints, non-availability of improved variety on time, lack of irrigation facilities, and lack of scientific knowledge on crop production are the major constraints with respect to agriculture. The Kamalpur, Rangia, Bihdiya-Ajikona, Sualkuchi, Hajo, Rampur, Bongaon, Goroimari and Chandrapur blocks of district have been selected for project activities.

Kokrajhar: This district comprises of 3,16,900 ha area, having 5 blocks/clusters. Total cropped area of the district is 1,55,276 ha and paddy, maize, rapeseed and mustard, potato, are the major crops. The district is considered as sandy loam. About 23873 ha area is under mustard crop and aphid, white rust and saw fly are the major pest and disease of mustard in the district. The major cropping patterns are mustard-summer paddy/sali paddy- mustard- summer paddy/ sali paddy- vegetables-ahu paddy. The occurrences of flood and water stress, attack of insect pests such as aphid, early shower during harvesting, non-availability of fertilizers and chemicals during peak seasons etc. are the major constraints with respect to agriculture. The Kokrajhar, Dotma, Chapar Part, Kachugaon and Gossaigaon blocks of district have been selected for project activities.

Lakhimpur: This district comprises of 2,27700 ha. area, having 9 blocks. Total cropped area of the district is 2,17,222 ha. and winter paddy, summer rice, rapeseed and mustard, potato, blackgram, arecanut and banana, are the major crops. The district is considered as flood prone having alluvial soil. About 15820 ha area is under mustard crop and aphids, mustard sawfly, bihar hairy caterpillar, Pea leaf miner, powdery mildew, sclerotinina rot, alternaria leaf spot, white rust are the major pest of mustard in the district. The major cropping pattern are Winter Rice-Rape & Mustard, Winter Rice- Potato, winter rice-Summer paddy. Non-availability of seeds at right time, low adoption of early maturing varieties, late sowing, pests and diseases infestations the major constraints with respect to agriculture. The Dhakuakhana, Ghilamara, Narayanpur, Bihpuria, Telahi, Karunabari and Lakhimpur blocks of district have been selected for project activities.

Morigaon: This district comprises of 155100 ha area, having 5 blocks. Total cropped area of the district is 214921 ha. and rice, mustard and maize are the major crops. The district is considered as flood prone having sandy loam soil. The 75% area is under rainfed and only 25% cropped area is covered by tube well irrigation. About 12546 ha area is under mustard crop and aphid and saw fly are the major pest of mustard in the district. The major cropping pattern are Sali Rice-Mustard-Summer Pulses and Sali Rice-Mustard-Jute. The occurrence of flood and sometimes drought in summer are the major constraints with respect to agriculture. The Mayong, Bhurbandha and Kapili blocks of district have been selected for project activities.

Nagaon: This district comprises of 260879 ha area, having 13 blocks. Total cropped area of the district is 151744 ha. and paddy, mustard and maize are the major crops. The district is considered as flood prone having sandy loam soil. The 70% area is under rainfed and only 30%

cropped area is covered by tube well irrigation. About 27236 ha area is under mustard crop and aphid and saw fly are the major pest of mustard in the district. The major cropping pattern are jute- rice-toria/ wheat -summer pulses and cowpea - rice- toria. The irrigation facilities, non-availability of improved variety at the sowing time, lack of knowledge about pests and disease management, fragmented land of farmers, lack of knowledge about soil condition and fertilizer application are the major constraints with respect to agriculture. The Raha, Kaliabor, Batadrava, Khagorijan and Pachim Kaliabor blocks of district have been selected for project activities.

Nalbari: This district comprises of 100957 ha area, having 7 blocks. Total cropped area of the district is 1,03,231 ha. paddy, maize, rapeseed and mustard, potato, vegetables are the major crops. The district is considered as flood prone having clay, loamy and sandy. About 8020 ha area is under mustard crop aphids and mustard sawfly are the major pest of mustard in the district.The major cropping pattern are, sali paddy- mustard- summer paddy, sali paddy-vegetables -ahu paddy and jute-mustard-summer paddy. Non-availability of improved variety on time, non-availability of fertilizers on time and lack of knowledge about pests and disease scenario and management of the same are the major constraints with respect to agriculture. The Barkhetri, Tihu and Borigog-Banbhag block of district have been selected for project activities.

Sivasagar: This district comprises of 159885 ha area, having 5 blocks/ clusters. Total cropped area of the district is 1, 16,579 ha and rice, maize, pulses, jute, sugarcane, potato and mustard are the major crops. The district is considered as alluvial soil, clay loam and sandy loam soil. About 6,093 ha area is under mustard crop and aphid and saw fly are the major pest of mustard in the district. The major cropping pattern are rice-mustard, rice-vegetables, mustard-kharif vegetables. The occurrences of water stress, early shower during harvesting, dense foggy during the month of November are the major constraints with respect to agriculture. The Demow, Sivasagar and Gaurisagar clusters of district have been selected for project activities.

Sonitpur: This district comprises of 271729 ha area, having 7 blocks/cluster. Total cropped area of the district is 112281 ha and rice, maize, pulses, jute, sugarcane, potato and mustard are the major crops. The soil is clay loam and sandy loam. The 91 % area is under rainfed and only 9% cropped area is covered by tube well irrigation. About 15501 ha area is under mustard crop and aphid and saw fly are the major pest of mustard in the district. The major cropping pattern are rice-mustard, rice-vegetables, mustard-kharif vegetables. The occurrence of flood, soil erosion, non-adoption of line transplanting are the major constraints with respect to agriculture. The Gabhoru, Balipara, Bihaguri, Chaiduar, Dhekiajuli, Rangapara, Naduar and Biswanath clusters of district have been selected for project activities.

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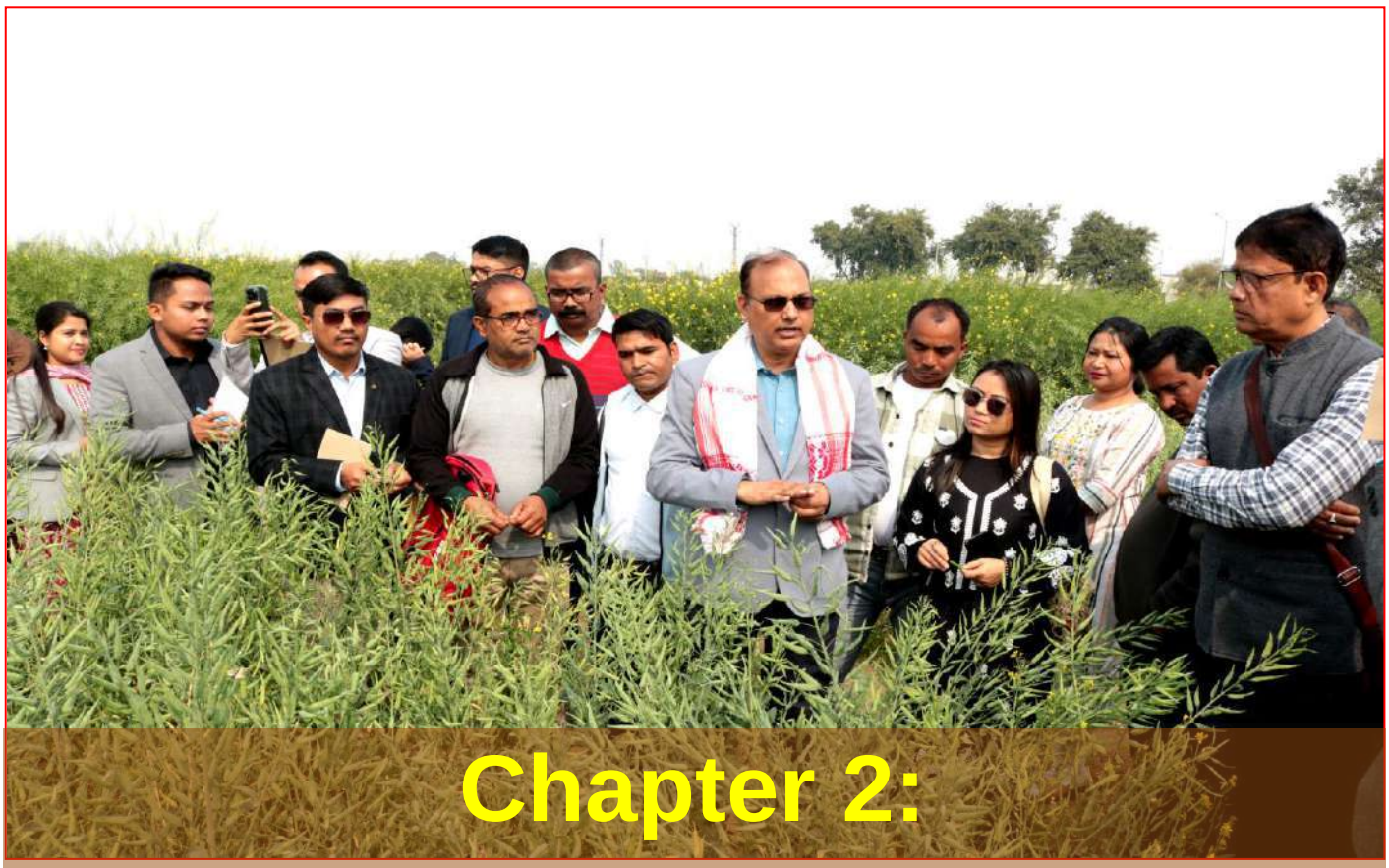

Chapter 2:

Technical Report

(Progress of the Period: July 2023-February 2024)

2. PROGRESS OF THE PERIOD: JULY 2023- FEBRUARY 2024

2.1. Activity 1: Crop demonstrations on rapeseed-mustard organized: Crop demonstration is the method of motivating farmers for adoption of new varieties and techniques by showing their distinctly superior result. Crop demonstration shows the advantages and applicability of a newly recommended practice in farmer's own situation.

During 2023-24, a total of 5000 rapeseed-mustard crop demonstrations in different clusters of 15 districts were laid out successfully. Along with mustard crop demonstrations, 18000 minikit demonstrations in the selected clusters were also laid out.

Based on the climatic situation, cultivation of rapeseed-mustard, prevailing cropping pattern and resources, these demonstrations were conducted with three improved varieties of Indian mustard viz. NRCHB-101 (655), PM-28 (1230) and DRMR-150-35 (1390) and one variety of toria, viz. TS-38 (1725) along with crop management and protection technologies like line sowing, proper seed rate, seed treatment, proper plant population, thinning, weeding, intercultural operations, management of pest and diseases, etc. against the control plot. The seed of these improved varieties were supplied by ICAR-DRMR to DAOs. PD ATMA of 15 selected APART mustard districts. The seed was made available to them timely. The seed of demonstrated variety along with required fertilizers and need based fungicides, pesticides were given to selected farmers for crop demonstration. Under minikit demonstrations, only one kg seed of improved varieties viz. DRMR-150-35, (3000) and PM-28 (7050) of Indian mustard and one variety of toria, viz. TS-38 (7950) was supplied to the farmers. The details of components of demonstrated technology against the control plot or farmers practice is given in Table 2 and district wise details of varieties in mustard crop demonstrations and minikit demonstrations are given in Table 3.

Table 2: Components of demonstrated technology against the control plot

Components of demonstrated technology	Prevailing farmers practices against demonstrated technology
Improved varieties (NRCHB-101,PM-28,DRMR-150-35,TS-38)	Local varieties used by farmers
Proper seed rate	Higher seed rate
Balanced use of fertilizers	Imbalance use of fertilizers
Line sowing	Broadcasting
Proper spacing	No proper spacing
Thinning, Weeding	No thinning/Weeding
Proper plant protection measures	Generally not used plant protection measures

Table 3: District wise details of varieties of rapeseed-mustard in crop demonstrations and minikit demonstrations during 2023-24

SN	District (No. of clusters)	Total crop demo (CP)	Total minikit	Varietal distribution of crop and minikit demonstrations						
				NRCH B-101	DRMR-150-35		PM-28		TS-38	
				No. of Demo	No. of Demo		No. of Demo		No. of Demo	
					CP	Minikit	CP	Minikit	CP	Minikit
1.	Barpeta (3)	400	1200	50	100	200	110	450	140	550
2.	Bongaigaon (3)	300	1200	40	80	200	80	450	100	550
3.	Darrang (3)	300	1000	50	80	200	50	400	120	400
4.	Dhemaji (3)	400	1200	50	120	200	100	450	130	550
5.	Dhubri (4)	400	1800	50	150	200	60	800	140	800
6.	Golaghat (3)	200	800	25	50	200	50	250	75	350
7.	Jorhat (3)	300	1000	50	50	200	100	350	100	450
8.	Kamrup (3)	400	1200	50	80	200	50	450	220	550
9.	Kokrajhar (3)	300	1200	40	80	200	80	450	100	550
10.	Lakhimpur (3)	500	1400	50	150	200	150	600	150	600
11.	Morigaon (2)	200	1000	25	50	200	50	400	75	400
12.	Nagaon (4)	400	1800	50	150	300	100	800	100	700
13.	Nalbari (1)	200	400	25	50	100	50	50	75	250
14.	Sivsagar (2)	200	800	50	50	200	50	250	50	350
15.	Sonitpur (5)	500	2000	50	150	200	150	900	150	900
	Total	**5000**	**18000**	**655**	**1390**	**3000**	**1230**	**7050**	**1725**	**7950**

Regular visits and monitoring of the crop demonstrations and minikit demonstrations have been done by Research Associates, ATMA personnel to educate and motivate the farmers to adopt crop management practices like thinning, intercultural operations, weeding, applying irrigation, management of insects and diseases, etc. The monitoring and supervision of crop demonstrations and activities have also been done by Resident Consultant and experts of ICAR-DRMR. The details of different categories of beneficiaries of crop demonstrations are in Table 4.

Table 4: Summary of crop demonstrations organized by ICAR-DRMR during 2023-24

SN	Activity	Target (No.)	Achieved (No.)	Beneficiaries (No.)	Beneficiaries (No.)						
					Gender		Social Category				Total
					Male	Female	Gen	OBC	SC	ST	
1	**Crop Demonstrations**	**5000**	**5000**	**5000**	**3830**	**1170**	**2007**	**1589**	**481**	**923**	**5000**

Glimpses of crop demonstration on rapeseed-mustard organized in different districts of Assam under ICAR-DRMR- OPIU (Agri)-APART project during 2023-24

Barpeta

Dhemaji

Darrang

Sonitpur

Dhubri

Golaghat

Glimpses of crop demonstration on rapeseed-mustard organized in different districts of Assam under ICAR-DRMR- OPIU (Agri)-APART project during 2023-24

Jorhat

Kamrup

Kokrajhar

Lakhimpur

Morigaon

Nagaon

Glimpses of crop demonstration on rapeseed-mustard organized in different districts of Assam under ICAR-DRMR- OPIU (Agri)-APART project during 2023-24

Nalbari

Nalbari

Sivasagar

Sivasagar

Bongaigaon

Bongaigaon

2.2. Activity 2 and 3: Master Trainers Training and Farmers Training programmes "Technology Innovation of Scientific Cultivation of Rapeseed- Mustard in Assam ".

In order to maximize the mustard production in Assam, there is a need that extension personnel and ultimately farmers must know what is happening in the research fields at all times.

The OPIU-Agriculture, Directorate of Agriculture, Assam in collaboration with ICAR-Directorate of Rapeseed-Mustard Research, Bharatpur, Rajasthan organized four training programmes of 2 days each (2 Master Trainers Training and 2 Farmers Training programmes) under ICAR-DRMR-APART project of mustard value chain programme. These trainings were Master trainers and farmers were organized simultaneously in two batches, one at Jorhat and other at Guwahati district for better understanding of farmers with Master Trainers. The training programmes were organized on **"Technology Innovation of Scientific Cultivation of Rapeseed- Mustard in Assam".**

First batch of two days Masters Trainers and farmers training programme was organized at Dhansiri Farmers Hostel, AAU, Jorhat during 12-13 October 2023 and second batch was organized at Krishi Vigyan Kendra (KVK), Kahikuchi, Kamrup, Assam during 16-17 October 2023.

At the outset of the training programme organized at Jorhat, Sh. Rupam Kakoti, Sr. ADO-cum-Nodal Officer, APART, Jorhat welcomed all dignitaries and participants and said that expansion of the mustard crop in rice-fallow areas will help in increase production, because rapeseed-mustard is capable of growing under diverse agro-climatic zones.

The Chief Guest of the programme, Dr. Mrinal Saikia, Director of Research, AAU said that rapeseed-mustard is important crop for Assam. The vast availability of natural resources and fertile lands offering ample scope to promote oilseed cultivation in Assam. He said that agriculture university developed improved varieties of toria like TS-38, TS-36, TS-67, etc along with complete package of practices of rapeseed-mustard cultivation but lack of scientific knowledge and their adoption among farmers on cultivation practices are the main reason for low production and productivity in the state. Therefore, all out efforts of all extension functionaries are needed for dissemination of scientific technology among farmers. He appreciated the efforts of ICAR-DRMR for promoting scientific mustard cultivation in Assam that will help in making the state self-sufficient in oilseed production.

The Guest of Honour, Dr Manoranjan, Director of Extension, AAU, Jorhat apprised about the efforts of KVKs in transfer of technology among farmers. He said that farmers should change their reluctant attitude and come forward for adoption of recommended scientific production technology to increase their oilseed production. Dr. G.N. Hazarika, Resident Consultant, ICAR-DRMR-APART project said ICAR-DRMR is supporting to conduct the large scale demonstrations, technical trainings and capacity building of stakeholders to develop the confidence of the farmers so that they can adopt the crop in large area with scientific intervention and increase the productivity of mustard. He said that Department personnel should ensure for timely distribution of all inputs to the beneficiary farmers. He said that selection of right beneficiary farmers is the most important aspect for success of the crop demonstrations

Team Leader of ICAR-DRMR and Agri (APART) project & Principal Scientist, ICAR-DRMR, Dr. Ashok Kumar Sharma said that in order to maximize the mustard production in Assam, there is a need that extension personnel and ultimately farmers must have complete knowledge of scientific cultivation of rapeseed-mustard. He said that capacity development of extension functionaries and farmers of Assam in scientific technology of rapeseed-mustard will

amplify the rapeseed-mustard technology dissemination process and ultimately will lead to enhancement of area and production of rapeseed-mustard in the state. He said that Govt of Assam is emphasizing for expansion of mustard area in Assam in a big way to make the state self-sufficient in oilseed production. There is a need for better coordination among all agencies working for this mission to make the programme successful.

The other experts namely Dr. Ranjana Chakrabarty, Sr Scientist and Dr. Rudra Naryan Borkakoty, Jr Scientist from AICRP on Rapeseed-Mustard, AAU-ZRS, Shillongani, Assam and Dr. Arun Kumar, Pr. Scientist and Dr. Harvir Singh, scientist from ICAR-DRMR, Bharatpur delivered lectures as resource persons. The training programme covered all aspects of technology interventions that contribute for higher production of rapeseed-mustard like improved varieties, agronomic practices of rapeseed-mustard, seed treatment, soil treatment, line sowing, plant geometry, irrigation management, balanced use of fertilizers, identification of pest and diseases and their management, quality oil extraction, seed production techniques, harvesting, threshing and storage management, methodology of conducting demonstrations, importance of weather parameters, etc.

On the occasion, one technical folder on “Seed production technology of rapeseed-mustard cultivation” was also released by chief guest and other dignitaries. A total of 27 extension personnel and 32 farmers from Sivsagar, Jorhat, Golaghat, Nagaon, Sonitpur, Lakhimpur and Dhemaji districts of Assam and Research Associates/ SRFs of DRMR-APART Project. participated in this training programme

At the outset of the training programme in the second batch of training programme held at Kahikuchi, Kamrup, Sh. Sorabh Srivastav, Agriculture Specialist, OPIU (Agri)-APART, Khanapara, Guwahati welcomed all dignitaries and participants and said that rapeseed-mustard crop is important oilseed crop in Assam. There is an urgent need to enhance the production and productivity of mustard to meet the demand of the state

Dr. G.N. Hazarika, Resident Consultant, ICAR-DRMR-APART project said that rapeseed and mustard is grown in substantial area in Assam but productivity is very low in comparison to national productivity. Low and unstable oilseed system productivity is major problem in these areas where cultivation is undertaken mostly through small and marginal agricultural holdings. He said that the capacity development of extension functionaries and farmers in Assam will amplify the rapeseed-mustard technology dissemination process and build strong institutional capacity for sustaining the cost-effective technology delivery system. The availability of these trained personnel will ensure sustainable dissemination of rapeseed-mustard technology to the large number of farmers.

On the occasion, Guest of Honour, Dr. Ashok Kumar Sharma, Team Leader of ICAR-DRMR and Agri (APART) project & Principal Scientist, ICAR-DRMR, said that ICAR-DRMR is working with the Directorate of Agriculture, Government of Assam on the mustard value chains for augmenting rapeseed-mustard production of farmers of Assam for sustainable livelihood security. ICAR-DRMR as a knowledge partner is providing the expertise on scientific cultivation of mustard in Assam. He urged the extension personnel to identify suitable technology of rapeseed-mustard for their districts and motivate the farmers to adopt scientific technology that will be a great step to contribute to economic growth through increasing production and productivity of rapeseed-mustard in Assam. ICAR-DRMR is supporting to conduct the large scale demonstrations, technical trainings and capacity building of stakeholders to develop the confidence of the farmers so that they can adopt the crop in large area with scientific intervention and increase the productivity of mustard.

The chief guest of the occasion, Dr. D.N. Kalita, Head, KVK, Kamrup who said that rapeseed-mustard crop has good production potential in Assam, if the cultivation is supported with suitable technology intervention and knowledge inputs. He said that technical support and guidance from scientists of ICAR-DRMR to extension personnel and farmers will help in promotion of scientific cultivation of rapeseed-mustard in Assam. He said that a large number of improved varieties and suitable technologies of rapeseed-mustard were developed by ICAR and AAU, Jorhat. The organization of such training programmes will help in enhancing the knowledge and adoption of such newly developed varieties and scientific technologies.

On the occasion of valedictory function, Chief Guest, Dr Pankaj Kr Dev Choudhury, Pr. Scientist & PI, AICRPRM, AAU-ZRS, Shillongani, Nagaon, Assam said that in view of changing climate, rapeseed-mustard is the best oilseed crop in agroclimatic situation in Assam. He said that a large number of varieties and crop production and protection technologies have been developed by our research system and now there is a need that farmers should come forward and adopt recommended technologies for enhancing production and productivity of the crop.

The other experts namely Dr. Arun Kumar, Pr. Scientist and Dr. Harvir Singh, Scientist from ICAR-DRMR, Bharatpur and Dr. Ranjana Chakrabarty, Sr Scientist and Dr. Rudra Naryan Borkakoty, Jr Scientist from AICRP on Rapeseed-Mustard, AAU-ZRS, Shillongani, Assam delivered lectures as resource persons. The training programme covered all aspects of technology interventions that contribute for higher production of rapeseed-mustard like improved varieties, agronomic practices of rapeseed-mustard, seed treatment, soil treatment, line sowing, plant geometry, irrigation management, balanced use of fertilizers, identification of pest and diseases and their management, quality oil extraction, seed production techniques, harvesting, threshing and storage management, methodology of conducting demonstrations, importance of weather parameters, etc. On the occasion, one technical folder on “Rapeseed-Mustard Cultivation in Assam: Frequently Asked Questions (FAQ)” was also released by chief guest and other dignitaries. A total of 28 extension personnel/master trainers/ATM/BTM and research associates/SRF and 30 farmers from Kamrup, Morigaon, Darrang, Nalbari, Barpeta, Bongaigaon, Kokrajhar and Dhubri districts of Assam and Research Associates/ SRFs of DRMR-APART Project.participated in this training programme.

Thus, a total of 55 extension personnel and 62 farmers participated in these training programmes.

Content of the training

These training programmes have covered all aspects of technology interventions that contribute for higher production of rapeseed-mustard. The subject matter training included improved varieties, agronomic practices of rapeseed-mustard, seed treatment, soil treatment, line sowing, plant geometry, irrigation management, balanced use of fertilizers through identification of nutrient deficiency symptoms, identification of pest and diseases and their management, quality oil extraction, seed production techniques, harvesting, threshing and storage management, methodology of conducting demonstrations, Use of IT for accessing agriculture information, etc. Detailed training schedule held at Guwahati and Jorhat is presented in Table 5 and 6.

Table 5: Schedule of Training Programme held at Dhansiri Farmers Hostel AAU, Jorhat, Assam during 12-13 Oct. 2023

Date	Time	Topic	Speaker
12-10-2023	09:30AM-09:45 AM	Registration of the participants	ATMA Personnel
	09:45 AM-10:00 AM	Introduction of the participants	All Participants
	10:00 AM-10:10 AM	Opening Remarks	Dr. G. N Hazarika
	10:10 AM-10:20 AM	Welcome address	Sh. Rupam Kakoti, Sr. ADO-cum-Nodal Officer, APART, Jorhat.
	10:20 AM-10:40 AM	Role of AAU in oilseed development in Assam	Dr. Mrinal Saikia, DoR, AAU, Assam
	10:40 AM-11:0 AM	Role of KVKs in promotion of rapeseed-mustard in Assam	Dr. Manoranjan Neog, DoE, AAU
	11:00 AM-11:15 AM	An overview of ICAR-DRMR-APART programme	Dr. Ashok Kumar Sharma
	11:15 AM-12:00 Noon	Scope and challenges of rapeseed-mustard production in Assam	Dr. G. N. Hazarika
	12:00 N-01:00 PM	Rapeseed–mustard crop introduction and important varieties	Dr. Arun Kumar
	01:00 PM-2:00 PM	Lunch break	
	2:00 PM-3:00 PM	Integrated agro production technology of rapeseed-mustard	Dr. Harvir Singh
	3:00 PM-4:00 PM	Integrated nutrient management in rapeseed-mustard	Dr. Ashok Kumar Sharma
	3:00 PM-4:00 PM	Integrated disease management in rapeseed-mustard	Dr. Ranjana Chakrabarty
13-10-2023	10:00 AM-11:00 AM	Integrated insect-pest management in rapeseed-mustard	Dr. Rudra Narayan Borkakoty
	11:00 AM-12:00 Noon	Post-harvest management and Important farm Implements for rapeseed-mustard cultivation	Dr. Harvir Singh
	12:00 N-1:00 PM	Crop Demonstrations: Importance and Principles	Dr. Ashok Kumar Sharma
	01:00 PM-2:00 PM	Lunch break	
	2:00 PM-3:00 PM	Use of ICT for enhancing rapeseed-mustard production	Dr. Vinod Kumar
	3:00 PM-4:00 PM	Question-Answer and Discussion Session	All Participants
	4:00 PM-5:00 PM	Valedictory Function	All Participants

Table 6: Schedule of Training Programme held at Krishi Vigyan Kendra (KVK), Kahikuchi, Kamrup, Assam during 16-17 October 2023.

Date	Time	Topic	Speaker
16-10-2023	09:30AM-09:45 AM	Registration of the participants	ATMA Personnel
	09:45 AM-10:00 AM	Introduction of the participants	All Participants
	10:00 AM-10:10 AM	Opening Remarks	Dr. G. N Hazarika
	10:10 AM-10:20 AM	Welcome address	Saurabh Srivastav, AS, OPIU (Agri)-APART
	10:20 AM-10:45AM	Inaugural Address	Dr. D.N. Kalita, Head, KVK, Kamrup
	10:45 AM-11:00 AM	An overview of ICAR-DRMR-APART programme	Dr. Ashok Kumar Sharma
	11:00 AM-12:00 Noon	Scope and challenges of rapeseed-mustard production in Assam	Dr. G. N. Hazarika
	12:00 N-01:00 PM	Rapeseed–mustard crop introduction and important varieties	Dr. Arun Kumar
	01:00 PM-2:00 PM	Lunch break	
	2:00 PM-3:00 PM	Integrated agro production technology of rapeseed-mustard	Dr. Harvir Singh
	3:00 PM-4:00 PM	Integrated nutrient management in rapeseed-mustard	Dr. Ashok Kumar Sharma
	3:00 PM-4:00 PM	Integrated disease management in rapeseed-mustard	Dr. Ranjana Chakrabarty
17-10-2023	10:00 AM-11:00 AM	Integrated insect-pest management in rapeseed-mustard	Dr. Rudra Narayan Borkakoty
	11:00 AM-12:00 Noon	Post-harvest management and Important farm Implements for rapeseed-mustard cultivation	Dr. Harvir Singh
	12:00 N-1:00 PM	Crop Demonstrations: Importance and Principles	Dr. Ashok Kumar Sharma
	01:00 PM-2:00 PM	Lunch break	
	2:00 PM-3:00 PM	Use of ICT for enhancing rapeseed-mustard production	Dr. Vinod Kumar
	3:00 PM-4:00 PM	Question-Answer and Discussion Session	All Participants
	4:00 PM-5:00 PM	Valedictory Function	All Participants

Participants of the training

A total of 27 extension personnel/BTM/ATM of the State Department of Agriculture, Govt. of Assam and 32 farmers from Sivsagar, Jorhat, Golaghat, Nagaon, Sonitpur, Lakhimpur and Dhemaji and Research Associates/ SRFs of DRMR-APART Project participated in Jorhat training programme. While 28 extension personnel/master trainers/ATM/BTM and 30 farmers from Kamrup, Morigaon, Darrang, Nalbari, Barpeta, Bongaigaon, Kokrajhar and Dhubri and Research Associates/ SRFs of DRMR-APART Project participated in Kamrup training programme.

Thus, a total of 55 extension personnel and 62 farmers participated in these training programmes. Table 7 shows the detailed list of the participants.

Table 7a: List of Master Trainers participated in training programme organized at AAU, Jorhat, Assam during 12-13 Oct. 2023.

SN	Name of participants	Designation & Block	Email id	Contact No
1.	Mr. Dibyajyoti Sarmah	BTM, Chipahikhola- Jorhat	dibyasarmah15@gmail.com	9706585864
2.	Mrs. Suman Parasar	ATM, Kaliapani- Jorhat	sumanparasar99@gmail.com	8133072149
3.	Mrs. Mahmuda Begum	ATM, Dhekorgorah- Jorhat	mahmudabegum714@gmail.com	8011609440
4.	Mr. Romen Basumatary	BTM, Bokakhat Bokakhat, SDAO, Golaghat	romen.basumatary@gmail.com	9401355161
5.	Mr. Diganta Gohain	BTM, Morangi, DAO-Golaghat	digantagohain.glt@gmail.com	8638720980
6.	Mr. Tinkumoni Gohain	BTM, Dergaon, Bokakhat-Golaghat	tinkumonigogoi9@gmail.com	7002871406
7.	Mr. Devajyoti Baruah	BTM, Gaurisagar, Kalaogaon Amtol, Sivasagar	devajyotibaruah1@gmail.com	8473915708
8.	Ms. Priyanka Saikia	BTM, Demow, UNB-Sivasagar	priyankasbora@gmail.com	8474052003
9.	Mr. Nitul Saikia	DPD-II, ATMA- DAO, Tezpur- Sonitpur	nitulsaikia1008gmail.com	8811071757
10.	Mr. Hiranjit Pegu	ATM, Rangapara , Rangapara, Sonitpur	phiranjit@gmail.com	9365252501
11.	Mr. Bhaskar Borah	ATM, Naduar, Naduar, Sonitpur	bborah580@gmail.com	8876017887
12.	Dr. Mousumi Dutta	BTM, Bordoloni - Dhemaji	mdutta382@gmail.com	9854112592
13.	Mr. Rijam Pegu	BTM, Sissiborgaon-Dhemaji	rijampegu365@gmail.com	8471880806
14.	Dr. Kuhelee Phukan	BTM, Dhemaji - Dhemaji	pkuhelee@gmail.com	8876514035
15.	Mr. Osman Hazarika	BTM, Lakhimpur	osmanhazarika44@mail.com	8638870322
16.	Mr. Utpal Gogoi	BTM, Karunabari-Lakhimpur	gogoiutpal0999@gmail.com	9435278886
17.	Ms. Parama Kakaty	BTM, Narayanpur-Lakhimpur	paramakakaty82@gmail.com	6900576159
18.	Ms.. Nibedita Mahanta	ATM, Pachim Kaliabor, Nagaon	nibeditamahanta09@gmail.com	7002861381
19.	Ms. Sanghamitra Kalita	ATM, Khagorijan- Nagaon	kalitasanghamitra82@gmail.com	8486297063

20.	Mr. Hitesh Deka	ATM, Raha- Nagaon	hiteshdeka94@gmail.com	9508036314
21.	Ms. Sanjana Bora	SRF, ICAR-DRMR-Nagaon	sanjanabora.37@gmail.com	9101035534
22.	Ms. Nilakhi Dutta	SRF, ICAR-DRMR-APART, Jorhat	nilakhidutta18@gmail.com	8474843559
23.	Mr. Dipankar Sonowal	SRF, ICAR-DRMR-APART, Dhemaji	dipankarsonowal799@gmail.com	9365265823
24.	Dr. Bandhan Subba	RA, ICAR-DRMR-APART, Tezpur, Sonitpur	bandhan_subba@rediffmail.com	8101455138
25.	Dr. Joli Dutta	RA, ICAR-DRMR-APART-DAO, Sivasagar	duttajoli@gmail.com	7002096622
26.	Dr. Sukanya Gogoi	SRF, ICAR-DRMR-APART, Golaghat	sgogoi119@gmail.com	8876980848
27.	Ms. Chayanika Borah	SRF, ICAR-DRMR-APART- Lakhimpur	chayanikaborah17@gmail.com	6001470167

Table 7b: List of farmers participated in training programme organized at AAU, Jorhat, Assam during 12-13 Oct. 2023.

SN	Name of Participants	Address	Gender	Category	Contact No.
1.	Mr. Mohendra Kalita	Charingia, Chipahikhola- Jorhat	M	GEN	9365127702
2.	Mr. Madan Dutta	Charingia. Chipahikhola- Jorhat	M	GEN	9401518827
3.	Mrs. Debajani Chetia Gogoi	2 No Sonari Mojiabheti, Dhekorgorah- Jorhat	F	OBC	6002347685
4.	Mrs. Mayuri Darabdhara	2 No Sonari Mojiabheti, Dhekorgorah- Jorhat	F	OBC	6003928901
5.	Mr. Mohan Borah	Pirakata, Central Jorhat.	M	OBC	9864493349
6.	Mr. Pankaj Bharali	Da Gayan Gaon, Dhekorgorah-Jorhat	M	GEN	8822089487
7.	Mr. Ananta Neog	2 No Garmora Salmari- North Block Dergaon- Golaghat	M	GEN	6901043668
8.	Mr. Tikaram Pradhan	Misssimiati, Bokakhat- Golaghat	M	GEN	6002504456
9.	Mr. Bhaktalal Upadhayay	Misssimiati, Bokakhat- Golaghat	M	GEN	600812687
10.	Mr. Diganta Gogoi	Morangi- Golaghat	M	OBC	7896570080
11.	Mr. Pallab Khanikar	Charing- Gaurisagar- Sivasagar	M	OBC	9101719779
12.	Mr. Ajut Borah	Charing, Gaurisagar- Sivasagar	M	OBC	8876464334
13.	Mr. Dilip Hazarika	Jamira, Demow- Sivasagar	M	OBC	9101328666
14.	Mr. Nripen Changmai	Betbari Bukabil, Sivasagar	M	OBC	9957619651
15.	Mr. Mainul Haque	Tengabasti, Gabhoru -Sonitpur	M	GEN	9706176619
16.	Mr. Nirmal Nath	Da Besseria, Gabhoru- Sonitpur	M	OBC	8404013399
17.	Ms. Sunmoni Boro	Puthimari, Bihaguri- Sonitpur	F	ST	6009154964
18.	Ms. Nobami Boro	Puthimari, Bihaguri- Sonitpur	F	ST	7896055906
19.	Mr. Sukeswar Narzary	No 1 Nawkata, Jonai- Dhemaji	M	ST	6900846570
20.	Mr.. Bichit Dutta	Mechugaon, Sissi borgaon-Dhemaji	M	GEN	9954736871
21.	Mr. Dimbeswar Panging	Kachutali, Bordoloi- Dhemaji	M	ST	8638410340
22.	Mr. Raju Patir	Gogamukh, Bordoloi- Dhemaji	M	ST	8011882959
23.	Mr. Prasanta Bhuyan	Sandohkhowa, Bihpuria-Lakhimpur	M	GEN	8011302176

24.	Mr. Sameer Duarah	No 1 Bahupathar, Narayanpur- Lakhimpur	M	OBC	9577452314
25.	Mr. Bibekananda Pegu	Kekuri Pamua, Bibekananda Pegu- Lakhimpur	M	ST	9101670576
26.	Mr. Rupam Hazarika	Korson, Lakhimpur	M	OBC	9508740177
27.	Mr. Nayanjyoti Borkakati	Senchowa, Khagorijan- Nagaon	M	GEN	8638379281
28.	Mr. Dipak Das	Senchowa, Khagorijan- Nagaon	M	SC	6000467790
29.	Mr. Rohit Baruah	Senchowa, Khagorijan- Nagaon	M	GEN	8486820331
30.	Mr. Tapan Kr Saikia	Niz Pubtharia, Kaliabor- -	M	GEN	7896508767
31.	Mr. Dilip Borah	Mudoijan Bhorulua- Central Jorhat	M	OBC	6000042803
32.	Mr. Ranjit Bhuyan	Kakojan- Central Jorhat	M	GEN	6900907580

Table 7c: List of Master Trainers participated in training programme organized at Krishi Vigyan Kendra, Kaikuchi, Kamrup, Assam during 16-17 Oct. 2023.

SN	Name Of Participants	Designation & Block	E Mail ID	Contact No
1.	Mr. Anil Chandra Medhi	BTM, Hajo, Kamrup	anilmedhi6664gmail.com	9706213255
2.	Mrs. Lalita Devi	BTM, Kamalpur, Kamrup	devilalita1997@gmail.com	9707826127
3.	Mr. Mukshedur Rahman	BTM, Bihdia-jajikona ,Kamrup	mokshedur.rahman87@gmail.com	9864741435
4.	Mr. Sanjib Saikia	BTM, Goroimari, Kamrup	sanjibsaikia73@gmail.com	9864077170
5.	Mr. Ghanashyam Das	SDAO (Sugarcane), Barketri, Nalbari	ghanashyam3344@gmail.com	9101766692
6.	Mr. Atikur Rahman	RT (APART), Nalbari	arahmanofficials@gmail.com	9957879695
7.	Mr. lswar Chandra Roy	ATM, Hatidhura, Kokrajhar	cssatma.hatidhura@gmail.com	8638124984
8.	Mr. Mrityunjay Basumatary	ATM, Kokrajhar, Kokrajhar	mritunbasu153@gmail.com	7002095843
9.	Mr. Afsar Ali Khan	ATM, Birsing-Jarua, Dhubri	khan.afsarali@gmai.com	8402873518
10.	Mr. Nur Alom Sarkar	ATM, Bilasipara, Dhubri	nooralomsarkar783371:gami.com	7896414386
11.	Mr. Saiful Islam	ATM, Golakganj, Dhubri	saigullovly@gmail.com	7002774026
12.	Mrs. Subhashree Borthakur	BTM, Kapili , Morigaon	subhasreeborthakur@gmail.com	9706065518
13.	Mr. Pabitra Deuri	BTM, Mayong, Morigaon	pabitradeuri1974@gmail.com	9954031402
14.	Dr. Rabi Khan	BTM, Bhawanipur , Barpeta	khanrobi27@gmai.com	8638432759
15.	Mr. Sadeque Ali	BTM, Chakchaka, Barpeta	sadekaliahmed0@gmai.com	8638127140
16.	Mr. Abdul Awal Ahmed	ADO, Srijangam, Bongaigaon	aawal4616@gmail.com	7577917527
17.	Ms. Dipsikha Bonia	ADO, Bidyapur, Bongaigaon	dipsikhabonia01@gmail.com	7086140766
18.	Mr. Bijit Ray Pradhani	ADO, Patiladoha, Bongaigaon	bijitray18@gmail.com	7896006940
19.	Mrs. Sanghamitra Shyam	ADO, Sipajhar, Darrang	s.sanghamitra12@gmail.com	9101268211
20.	Mr. Bilash Kishore Medhi	ADO, Dalgaon, Darrang	bilash.medhi@gmail.com	9365573320

21.	Mr. Imonjyoti Das	SRF, ICAR-DRMR-APART, Kamrup	imonkcx42@gmail.com	7002367590
22.	Ms. Manisha Barman	SRF, ICAR-DRMR-APART Nalbari,	manishabarman234@gmail.com	9957275224
23.	Ms. Akanta Paul	SRF, ICAR-DRMR-APART, Kokrajhar	akantapaul7022@gmail.com	8433292240
24.	Mr. Mohammed Danish	SRF, ICAR-DRMR-APART, Dhubri	mdentomology101@gmail.com	9792306111
25.	Ms. Moukham Wakhet	SRF, ICAR-DRMR-APART, Morigaon	moukhamwakhet55@gmail.com	8876426959
26.	Dr.Vijay Kumar	RA, ICAR-DRMR-APART, Barpeta	vku9077@gmail.com	8435345597
27.	Dr. Binita Basumatary	SRF, ICAR-DRMR-APART, Bongaigaon	basumatarybinita3@gmail.com	9864329973
28.	Dr. Lohita Rabha	SRF, ICAR-DRMR-APART, Darrang	lohitarabha111@gmail.com	8011664293

Table 7d: List of farmers participated in training programme organized at Krishi Vigyan Kendra, Kaikuchi, Kamrup, Assam during 16-17 Oct. 2023.

SN	Name of Participants	Address	Gender	Category	Mobile
1.	Mr. Muzaffar Ali	Bongalpara, Hajo- Kamrup	M	GEN	8753910546
2.	Mr. Khajimuddin Ahmed	Bongalpara, Hajo- Kamrup	M	GEN	7099412077
3.	Mr. Arifuddin Ahmed	Barkuriha, Bihdia jajikona-Kamrup	M	GEN	8876221642
4.	Mr. Dinesh Das	Baruajani, Kamalpur-Kamrup	M	SC	7086334340
5.	Mr. Pradip Kalita	Angradi, Borketri- Nalbari	M	GEN	6001262609
6.	Mr. Krishna Debnath	Naherbari, Borigog Banbhag- Nalbari	M	GEN	8135994209
7.	Mr. Sushil Baishya	Naherbari, Borigog Banbhag- Nalbari	M	GEN	9435289195
8.	Mr. Parthasarathi Basumatary	Simultapu No.1, Kachugaon- Kokrajhar	M	ST	9365290659
9.	Mr. Jaleswar Ray	Kauniabhasa Mazpara, Titaguri- Kokrajhar	M	OBC	9957719536
10.	Mr. Zakir Hussain	Gopigaon Part 3, Bilasipara- Dhubri	M	GEN	9678588523
11.	Mr. Nur Hoque Sikdar	Kiamari Pt 2, Agomani-Dhubri	M	GEN	9957478489
12.	Mr. Abdul Karim Seikh	Paniyawari Pt 4, Mahamaya- Dhubri	M	GEN	7086956819
13.	Mr. Monowar Hussain	Sagolia Pt 1, Agomani-Dhubri	M	GEN	9957171057
14.	Mr. Asutosh Mandal	Garakhiadhap, Mayong-Morigaon	M	GEN	9864891826
15.	Mr. Lakhikanta Nath	Bharbhagia- Kapili-Morigaon	M	OBC	9365516683
16.	Mr. Pranab Kumar Nath	Habibarangabari, Bhurbandha- Morigaon	M	OBC	9401844875
17.	Mr. Aswini Kr. Ray	Kalitapara, Chakchaka-Barpeta	M	OBC	8720991573
18.	Mr. Nandamohan Das	Meda, Chakchaka-Barpeta	M	SC	6900579492
19.	Mr. Manoj Talukdar	Paschimhati, Bhawanipur-Barpeta	M	GEN	9365182287
20.	Mr. Nibarun Talukdar	Kalbari, Bhawanipur-Barpeta	M	GEN	8486295366
21.	Mr. Joydip Das	Kasharpara, Boitamari-Bongaigaon	M	GEN	8399951996

22.	Mr. Rajkumar Rajbongshi	Jamdoha No. 5, Manikpur-Bongaigaon	M	OBC	6001678277
23.	Mr. Kamal Mahajan	Kayaethpara, Boitamari - Bongaigaon	M	OBC	9706263732
24.	Mr. Chanakya Baruah	Dholagaon, Dangtal-Bongaigaon	M	OBC	8011243857
25.	Mr. Bireswar Kalita	Barthekerabari, Paschim Mangaldai -Darrang	M	GEN	8404065484
26.	Mr. Mukul Bora	Gharowa Sonapur, Sipajhar- Darrang	M	GEN	7002414840
27.	Mr. Mridul Goswami	Jaljali Gariapara (B), Paschim Mangaldai-Darrang	M	GEN	6003118391
28.	Mr. Keshab Nath	Gharua Sonapur, Sipajhar-Darrang	M	OBC	9859883238
29.	Mr. Rachinath Brahma	Kazigaon, Kachugaon-Kokrajhar	M	ST	8638823288
30.	Mr. Ashad Ali Sheikh	Kauniabhasabhatipara, Titaguri- Kokrajhar	M	GEN	7636040718

Output of the training

The capacity development of extension functionaries in Assam will amplify the rapeseed-mustard technology dissemination process and builds strong institutional capacity for sustaining the cost / effective technology delivery system. The capacity development of farmers in Assam will augment the rapeseed-mustard technology dissemination process among farmers. The availability of these trained extension personnel and farmers will ensure that the sustainable dissemination of rapeseed-mustard technology to the large number of farmers even after the exit of the project.

The summary of master training programme and farmers training programme is given in Table 8 and 9.

Table 8: Summary of master training programme organized by ICAR-DRMR during 2023-24.

SN	Activity	Target (No.)	Achieved (No.)	Beneficiaries (No.)	Districts covered (No.)
1	Masters' Training Pogramme	02	02	55	15 (Darrang, Dhubri, Barpeta, Nalbari, Kamrup, Bongaigaom, Morigaom, Kokrajhar, Nagoan, Sonitpur, Golaghat, Lakhimpur, Jorhat, Sivasagar and Dhemaji districts of Assam

Table 9: Summary of farmers training programme organized by ICAR-DRMR during 2023-24.

SN	Activity	Target (No.)	Achieved (No.)	Beneficiaries (No.)	Beneficiaries (No.)						
					Gender		Social Category				Total
					Male	Female	Gen	OBC	SC	ST	
1	Progressive farmers training	02	02	62	58	04	31	20	03	08	62

Glimpses of Training programmes of Master Trainers and Farmers organized during at Dhansiri Farmers Hostel, AAU, Jorhat during 12-13 October 2023

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Glimpses of Training programmes of Master Trainers and Farmers organized during at Dhansiri Farmers Hostel, AAU, Jorhat during 12-13 October 2023

Glimpses of Training programmes of Master Trainers and Farmers organized during at Krishi Vigyan Kendra (KVK), Kahikuchi, Kamrup, Assam during 16-17 October 2023

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Glimpses of Training programmes of Master Trainers and Farmers organized during at Krishi Vigyan Kendra (KVK), Kahikuchi, Kamrup, Assam during 16-17 October 2023

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2.3. Activity 4: Technical Training programmes organized in different districts.

There were 250 technical trainings sessions approved linked with crop demonstration for 2022-23. These technical training programmes were planned to organize in four phases at different stages of crop growth during the crop season so that farmers can be advised properly by experts of ICAR-DRMR about technological interventions at different stages. A timely advice to the farmers is very crucial and effective for adoption of scientific cultivation practices. To provide practical exposure and technical advice to the farmers, 250 technical trainings on different aspects of rapeseed-mustard cultivation for farmers were organized in four phases at different places/ villages of the selected 15 districts of Assam from 6th November 2023 to 31st January 2024.

The first phase of technical training on "Scientific production technology of rapeseed-mustard" was conducted cluster wise at Department of Agriculture/ ATMA office/ block office/ villages of respective districts before the sowing during November 2023. During the training, all participating farmers were distributed seeds and fertilizers for conducting crop demonstrations. The technical knowledge and skill about land preparation, seed treatment, fertilizer application, seed rate, sowing method, sowing time, spacing, etc. were provided to the participants by ICAR-DRMR. A total of 1739 farmers and farm women participated in 64 technical trainings of first phase.

The second phase of technical training was conducted on "Improved agronomic practices of rapeseed-mustard for higher production" during November-December 2023 at the time of vegetative growth of the crop at farmers' field in each of the selected clusters. The technical knowledge and skill about weeding, hoeing, thinning, irrigation management, top dressing, etc. were provided to the participants by ICAR-DRMR during second phase of technical training. A total of 1405 farmers and farm women participated in 62 technical trainings of second phase.

The third phase of technical training was conducted on "Integrated pest and disease management in rapeseed-mustard" during Dec 2022 -January 2024 at the time of flowering stage of the crop at farmers' field in each of the selected clusters. The technical knowledge and skill about identification of insect pests, diseases, their management, types of pesticides, fungicides, precautions in spraying, etc. were provided to the participants by ICAR-DRMR during third phase of technical training. A total of 1523 farmers and farm women participated in 66 technical trainings of third phase.

The fourth phase of technical training was conducted on **"**Harvesting and threshing management in rapeseed–mustard" during January 2024 at the time of maturity stage of the crop at farmers field in each of the selected clusters. The technical knowledge and skill about harvesting and threshing the crop at proper maturity, harvesting time, moisture percentage and storage management etc. were provided to the participants by ICAR-DRMR during fourth phase of technical training. A total of 1065 farmers and farm women participated in 52 technical trainings of fourth phase.

Thus a total of 250 technical trainings were organized during the period wherein 5732 farmers and farm women participated. These technical trainings were organized at farmers' field by the District ATMAs with the technical backstopping of ICAR-DRMR. The phase wise detailes of trainings are given in Table 10, 11, 12 and 13. The number of trainings and beneficiaries of different social categories are given in Table 14.

These technical trainings will help in increasing the production and productivity of rapeseed-mustard crop through adoption of scientific intervention and promote the efficient use of energy resources, natural resources such as land, water etc. and other inputs like chemicals, fertilizers, seeds etc.

Table 10: List of First Phase Technical Trainings conducted on "Scientific production technology of rapeseed-mustard" under the project during 2023-24.

SN	District	Cluster	Name of cluster	Place/ village	Date	Beneficiaries (No.)
1.	Barpeta	1	Pakabethbari	Kaljhar	02.01.2024	20
		2	Chenga	Barbhita	24.11.2023	20
		3	Barpeta	Keotkuchi	11.11.2023	20
		4	Surakehti	Bechimari	05.01.2024	20
		5	Mandia	Jania	13.11.2023	23
2	Bongaigaon	1	Srijangram	Srijangram B.R.C	16.11.2023	20
		2	Patiladoha	Garugaon	17.11.2023	27
		3	Manikpur	Manikpur	17.11.2023	20
				Dompara	22.11.2023	20
3	Darrang	1	Sipajhar	FIAC, Pachim Mangaldoi	09.11.2023	22
		2	Bechimari	SDAO, Dalgaon	10.11.2023	30
		3	Pachim Mangaldoi	FIAC, Pachim Mangaldoi	13.11.2023	25
				FIAC, Pachim Mangaldoi	16.11.2023	20
4	Dhemaji	1	MSTD	No.2 Majgaon	08.11.2023	20
		2	Dhemaji	DAO,Office	09.11.2023	23
		3	Bordoloni	Bordolini Chariali	09.11.2023	24
		4	Sissiborgaon	Chekai Majgaon	10.11.2023	20
		5	Machkhowa	Bengenagarh Lason	10.11.2023	18
5	Dhubri	1	Gauripur	Madhusoulmari	17.11.2023	56
		2	Agomani	Hakakura	18.11.2023	47
		3	Ropshi	Madhusoulmari	21.11.2023	53
		4	Mahamaya	Bilasiparar	13.11.2023	57
		5	Chapar-Salkocha	Bilasiparar	13.11.2023	38
6	Golaghat	1	Morongi	Chesamukh	06.11.2023	28
		2	Bokakhat	SDA,Office	14.11.2023	32
		3	Sarupathar	Chungajan	22.11.2023	30
				Naojan	22.11.2023	17
7	Jorhat & Majuli	1	Kaliapani	Bhogamukh	8.11.2023	36
		2	Chipahikhola	Borkhat	10.11.2023	21
		3	Dhekorgorah	Da-gaon	16.11.2023	28
		4	Ujani Majuli	Jengraimukh	30.11.2023	24
8	Kamrup	1	Kamalpur	Bordekpar	09.11.2023	20
		2	Sualkuchi	Kismat	09.11.2023	20
		3	Hajo	Majorkuri	10.11.2023	20
		4	Bihdia-Jajikona	Sahan	23.11.2023	20
9	Kokrajhar	1	Kokrajhar	Chedamari	10.11.2023	26
		2	Kachugaon	Kamalsing	10.11.2023	25
		3	Kachugaon	Mojatigaon	17.11.2023	25
		4	Dotma	Dumariguri	18.11.2023	27
		5	Chapar Part	Bashbari Part 1	21.11.2023	27
10	Lakhimpur	1	Bihpuria	SD Office, Narayanpur	08.11.2023	26
		2	Karunabari	FIIAC, Karunabari	10.11.2023	25
		3	Narayanpur	Narayanpur	10.11.2023	25
		4	Telahi	Chukulibhuyan	14.11.2023	20
		5	Dhakuakhana	Manikachuk gaon	16.11.2023	22
		6	Ghilamara	Chetia gaon	16.11.2023	23
		7	Lakhimpur	Amaraguri Gaon	17.11.2023	22
11	Morigaon	1	Bhurbandha	DAO Office	06.11.2023	20
		2	Mayong	DAO Office	06.11.2023	30

		3	Kapili	DAO Office	10.11.2023	25
12	Nagaon	1	Khagorijan	Senchuwa	14.11.023	33
		2	Batadrava	Salaguri	15.11.2023	35
		3	Pachim Kaliabor	SDAO,Office	16.11.2023	25
		4	Kaliabor	SDAO,Office	16.11.2023	20
		5	Raha	Khaigarh	17.11.023	27
13	Nalbari	1	Barkhetri	Loharkatha	13.11.2023	25
		2	Borigog-Banbhag	Borajol	17.11.2023	25
				Balitara	17.11.2023	25
		3	Tihu	Nathkuchi	20.11.2023	25
14	Shivsagar	1	Sivasagar	DAO,Sivasagar	06.11.2023	24
		2	Demow	DAO,Sivasagar	06.11.2023	25
		3	Gaurisagar	DAO,Sivasagar	07.11.2023	31
15	Sonitpur	1	Dhekiajuli	Bhotpara	14.11.2023	20
		2	Bihaguri	Puthimari-I	11.11.2023	35
		3	Gabhoru	Mazgaon	10.11.2023	22
		4	Balipara	FTS, Chariduar	10.11.2023	25
		5	Rangapara	Khelmati Gaon	15.11.2023	34
		6	Naduar	Jamuguri	16.11.2023	26
		7	Biswanath	Bhirgaon	24.11.2023	24
		8	Chaiduar	Dhopabar	20.11.2023	29
	Total Trainings (70)					**1739**

Table 11: List of Second Phase Technical Trainings conducted on "Improved agronomic practices of rapeseed-mustard for higher production" under the project during 2023-24.

SN	District	Cluster	Name of cluster	Place/ village	Date	Beneficiaries (No.)
1.	Barpeta	1	Bhawanipur	Kuchiajhar	10.01.2024	20
		2	Bajali	Bagana	29.01.2024	20
		3	Barpeta	Nagon	03.01.2024	20
		4	Gomafullbari	Gomra	19.01.2024	20
		5	Chakchaka	Nichikua	08.01.2024	20
		6	Rupshi	Titapani	09.01.2024	20
2	Bongaigaon	1	Manikpur	Aolaguri	19.12.2023	20
		2	Patiladoha	Salabila	19.12.2023	21
		3	Srijangram	Bakhalgaon	29.12.2023	20
				Ambari	30.12.2023	26
3	Darrang	1	Bechimari	Batabari	14.12.2023	24
		2	Pachim Mangaldai	Tamulipara	29.12.2023	20
		3	Sipajhar	Basachuba	20.12.2023	30
				Gharowa Sonapur	20.12.2023	30
4	Dhemaji	1	Ssisiborgaon	Pipalguri Gaon	08.12.2023	30
		2	Dhemaji	Lakhtakia Block	14.12.2023	30
		3	Machkhowa	No.2 Phatia Bordubi	16.12.2023	20
		4	MSTD	Missamara	17.12.2023	20
		5	Bordoloni	Naharbari	18.12.2023	21
5	Dhubri	1	Gauripur	Kumargati	29.01.2024	20
		2	Birsing Jarua	Chirakhowa Pt-IV	27.01.2024	20
		3	Bilasipara	Hakama-Pt-IV	22.12.2024	20
		4	Debitola	Ghageralga Pt-II	06.11.2024	20
		5	Chapar –	Shimlitola Pt-I	11.01.2024	20

			salkocha			
6	Golaghat	1	Morongi	Thurajan	26.12.2023	18
		2	Podumoni	Da Chamuah	28.12.2023	17
7	Jorhat & Majuli	1	Kaliapani	Charingia	19.12.2023	25
		2	Chipahikhola	Norahiloidhari	20.12.2023	20
		3	Selenghat	Mogroi	21.12.2023	23
		4	Majuli	Adielengi	26.12.2023	20
		5	Ujani Majuli	Nayabazar	27.12.2023	20
8	Kamrup	1	Chandrapur	Ghoramarajanpaam	13.12.2023	24
		2	Rampur	Dahali	14.12.2023	20
		3	Goroimari	Merganda	14.12.2023	26
		4	Rangia	Gossaisolmari	22.12.2023	20
		5	Bongaon	Deochar	06.01.2024	20
		6	Bihdia-Jajikona	Muktapur	08.01.2024	20
9	Kokrajhar	1	Kachugaon	Barzabil	08.12.2023	27
		2	Dotma	Pratapkata Part 2	14.12.2023	28
10	Lakhimpur	1	Dhakuakhana	Chetia chuk	21.12.2023	20
		2	Ghilamara	Kalita gaon	21.12.2023	25
		3	Narayanpur	Tintia	22.12.2023	15
		4	Lakhimpur	Amguri	26.12.2023	17
11	Morigaon	1	Bhurbandha	Mazgaon	14.12.2023	22
		2	Mayong	Laukhuwa	01.12.2023	25
		3	Kapili	Ahom gaon	27.12.2023	25
12	Nagaon	1	Raha	Senchuwa	20.12.2023	33
		2	Batadrava	Salaguri	22.12.2023	35
		3	Khagorijan	Kachamari	26.12.2023	25
		4	Pachim Kaliabor	Namgaon	28.12.2023	20
		5	Kaliabor	Bhomuraguri	29.12.2023	37
13	Nalbari	1	Barkhetri	Naapara	30.12.2023	20
		2	Borigog-Banbhag	Mahina	12.01.2024	20
14	Shivsagar	1	Demow	Bogpara	16.12.2023	24
		2	Sivasagar	Ligiribari	29.12.2023	21
		3	Gaurisagar	Chitntamoni	02.01.2024	30
15	Sonitpur	1	Bihaguri	No. 1 Puthimari	24.01.2024	27
		2	Gabhoru	Gutlong	22.01.2024	19
		3	Balipara	Dakhin sila Gaon	18.12.2023	21
		4	Rangapara	Phuloguri	18.01.2024	20
		5	Naduar	Bamunbari	23.01.2024	20
		6	Chaiduar	Dhopabar	11.01.2024	24
	Total training (62)					**1405**

Table 12: List of Third Phase Technical Trainings conducted on "Integrated pest and disease management in rapeseed-mustard" under the project during 2023-24.

SN	District	Cluster	Name of cluster	Place/ village	Date	Beneficiaries (No.)
1.	Barpeta	1	Pakabethbari	Balapara	31.01.2024	20
		2	Bhawanipur	Medhikuchi	24.11.2024	20
		3	Barpeta	Radhakuchi	19.01.2024	20
		4	Surakehti	Rangiagaon	08.01.2024	20
		5	Mandia	Puthikuchi	20.01.2024	20
2	Bongaigaon	1	Patiladoha	Garugaon Part-II	10.01.2024	21
		2	Manikpur	Aolaguri Dakhinpart	10.01.2024	22
				Barbila	11.01.2024	22
		3	Srijangram	Baregarh	21.01.2024	24
3	Darrang	1	Bechimari	Dalgaon	20.12.2023	20
				No.1 Majgaon	23.01.2024	40
		2	Pachim Mangaldai	Tamulipara	30.12.2023	20
		3	Sipajhar	Jayantipur	09.01.2024	20
4	Dhemaji	1	Bordoloni	FPC Office, Gogamukh	20.12.2023	22
		2	Dhemaji	Tekjuri	26.12.2023	28
		3	Ssisiborgaon	Amguri kuli	27.12.2023	30
		4	MSTD	Missamara	30.12.2023	20
		5	Mchkhowa	Bengenagarah	20.01.2024	25
5	Dhubri	1	Bilasipara	Jhelturchar	03.01.2024	20
		2	Agomani	kheksialy	24.01.2024	50
		3	Rupsi	Shukatikata	25.01.2024	20
		4	Mahamaya	Bhasanigaon	25.01.2024	20
		5	Chapar - salkocha	Simlabari Pt-I	19.01.2024	20
6	Golaghat	1	Dergaon	Kaitani	21.12.2023	18
		2	Morongi	Thurajan	26.12.2023	16
7	Jorhat & Majuli	1	Chipahikhola	Pakhimara	19.01.2024	20
		2	Selenghat	Lunpuria	20.01.2024	20
		3	Kaliapani	Guwal gaon	24.01.2024	29
		4	Dhekorgorah	Ghorfolia	29.01.2024	20
8	Kamrup	1	Chandrapur	Govali	20.01.2024	20
		2	Sualkuchi	Bangshor	21.01.2024	20
		3	Rampur	Dakhala	25.01.2024	20
		4	Goroimari	Hatipara	25.01.2024	20
		5	Kamalpur	Baruajani	28.01.2024	20
		6	Hajo	Halogaon	29.01.2024	20
9	Kokrajhar	1	Dotma	Hogmabil	16.12.2023	31
		2	Kachugaon	Boshgaon	19.12.2023	35
		3	Kokrajhar	Kauniabhasa Ujanpara	21.12.2023	26
		4	Dotma	Kauradumni	22.12.2023	26
		5	Chapar Part	Damodarpur Pt.2	10.01.2024	27
10	Lakhimpur	1	Bihpuria	Mornoi Gaon	11.01.2024	20
		2	Karunabari	Sandohkhowa	17.01.2024	23
		3	Narayanpur	Rajgarh	20.01.2024	15
		4	Telahi	Amtola	22.01.2024	20
		5	Dhakuakhana	Dhenukhana	29.01.2024	20

		6	Ghilamara	Deolia gaon	29.01.2024	17
		7	Lakhimpur	Korson	19.01.2024	22
11	Morigaon	1	Mayong	Katahjari	09.01.2024	27
		2	Kapili	Mazorbori	19.01.2024	25
12	Nagaon	1	Raha	Pub Digholdari	25.12.2023	31
		2	Batadrava	Salaguri	28.12.2023	25
		3	Khagorijan	Senchowa	18.01.2023	30
		4	Pachim Kaliabor	Boraligaon	25.12.2023	20
				Namgaon	30.01.2023	28
		5	Kaliabor	Pub thoria	24.01.2023	20
13	Nalbari	1	Barkhetri	Bezpara	18.01.2024	20
				Hidilattari	29.01.2024	20
		2	Tihu	Nathkuchi	30.01.2024	20
14	Shivsagar	1	Demow	Demowmukh	09.01.2024	28
		2	Gaurisagar	Napam Bokajan	18.01.2024	30
		3	Sivasagar	Desungmukh	19.01.2024	21
15	Sonitpur	1	Dhekiajuli	Panbari	14.11.2023	20
		2	Bihaguri	Bapubheti	11.11.2023	25
		3	Gabhoru	Uriamguri	10.11.2023	20
		4	Balipara	Buragaon Chapori	10.11.2023	24
		5	Biswanath	Panibharal	15.11.2023	20
	Total Training (66)					**1523**

Table 13: List of Fourth Phase Technical Trainings conducted on "Harvesting and Threshing Management of Rapeseed and Mustard" under the project during 2023-24.

SN	District	Cluster	Name of cluster	Place/ village	Date	Beneficiaries (No.)
1.	Barpeta	1	Bajali	Patacharkuchi	30.01.2024	20
		2	Chenga	Barbhita	24.01.2024	20
		3	Barpeta	Khruapara	25.01.2024	20
		4	Chakchaka	Kismatdwarika	09.01.2024	20
2	Bongaigaon	1	Srijangram	Bowlimari	21.01.2024	20
		2	Manikpur	Aolaguri	30.01.2024	20
		3	Patiladoha	Briddhabashi Pt-II	31.01.2024	21
3	Darrang	1	Sipajhar	Gharowa Sonapur	10.01.2024	20
		2	Pachim Mangaldai	Dahi Nagaon	20.01.2024	20
		3	Bechimari	Batabari	25.01.2024	20
4	Dhemaji	1	Ssisiborgaon	Amguri Kuli Gaon	25.01.2024	22
		2	Bordoloni	Bordoibam	29.01.2024	10
		3	Dhemaji	Matikhula	29.01.2024	20
		4	MSTD	No.1 Nawkata	31.01.2024	13
		5	Mchkhowa	Sissi Grazing	31.01.2024	16
5	Dhubri	1	Gauripur	Ghewmari	31.01.2024	20
		2	Debitola	Kiamari Pt -II	24.01.2024	20
		3	Rupsi	Fulkumari	25.01.2024	20
		4	Birsing Jarua	Chirakhowa Pt - VI	27.01.2024	20
		5	Bilasipara	Koimari	31.01.2024	20
6	Golaghat	1	Bokakhat	Budhbari	30.01.2024	14

		2	Morongi	3 No. Koiborta	31.01.2024	17
7	Jorhat & Majuli	1	Dhekorgorah	Ghorfolia	29.01.2024	15
		2	Selenghat	Hindu gaon	30.01.2024	20
8	Kamrup	1	Bihdia-Jajikona	Barkuriha	24.01.2024	20
		2	Rangia	Barkukuria	24.01.2024	20
		3	Hajo	Bamundi	29.01.2024	20
		4	Bongaon	Dhelachaar	30.01.2024	20
9	Kokrajhar	1	Dotma	Simlaguri	20.01.2024	22
				Kauradumni	22.01.2024	21
		2	Kokrajhar	Joregaon	24.01.2024	29
10	Lakhimpur	1	Bihpuria	Kolabil mornoi	24.01.2024	16
		2	Karunabari	Sandohkhowa	24.01.2024	20
		3	Narayanpur	Rajgarh	25.01.2024	25
		4	Telahi	Amtola moluwal	22.01.2024	15
		5	Dhakuakhana	Jiamoria	30.01.2024	22
		6	Ghilamara	Kekuri	30.01.2024	20
		7	Lakhimpur	Sanaton gaon	20.01.2024	17
11	Morigaon	1	Bhurbandha	Haldhibari	30.01.2024	30
		2	Mayong	Nizghagua	31.01.2024	30
12	Nagaon	1	Raha	Haluagaon Dhemaji gaon	30.01.2024	26
		2	Batadrava	Bilotia	26.01.2024	29
		3	Pachim Kaliabor	Haluagaon	22.01.2024	27
		4	Kaliabor	Pub Thoria	29.01.2024	20
13	Nalbari	1	Borigog-Banbhag	Balitara	30.01.2024	20
14	Shivsagar	1	Demow	Gorukhuti	29.01.2024	28
15	Sonitpur	1	Dhekiajul	Batasipur	29.01.2024	20
		2	Gabhoru	Tengabusti	30.01.2024	20
		3	Rangapara	Hatidubi	17.01.2024	21
		4	Naduar	Dikarai Gaon	27.01.2024	20
		5	Biswanath	Bhergaon	30.01.2024	21
		6	Chaiduar	Baruah Pather	30.01.2024	18
		Total trainining (52)				**1065**

Table 14: Summary of technical trainings organized by ICAR-DRMR during 2023-24.

SN	Technical Training Activity	Target (No.)	Achieved (No.)	Beneficiaries (No.)	Beneficiaries (No.)						
					Gender		Social Category				Total
					Male	Female	Gen	OBC	SC	ST	
1	I Phase	70	70	1739	1279	460	665	637	148	289	1739
2	II Phase	62	62	1405	835	570	552	503	108	242	1405
3	III Phase	66	66	1523	978	545	604	464	160	295	1523
4	IV Phase	52	52	1065	719	346	512	325	76	152	1065
	Total	**250**	**250**	**5732**	**3811**	**1921**	**2333**	**1929**	**492**	**978**	**5732**

Glimpses of First PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Barpeta

Bongaigaon

Darrang

Dhemaji

Dhubri

Golaghat

Glimpses of First PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Jorhat

Kamrup

Kokrajhar

Lakhimpur

Morigaon

Nagaon

Glimpses of First PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Nalbari

Nalbari

Sivasagar

Sivasagar

Sonitpur

Sonitpur

Glimpses of Second PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Barpeta

Bongaigaon

Darrang

Dhemaji

Dhubri

Golaghat

Glimpses of Second PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Jorhat

Kamrup

Kokrajhar

Lakhimpur

Morigaon

Nagaon

Glimpses of Second PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Nalbari

Nalbari

Sivasagar

Sivasagar

Sonitpur

Sonitpur

Glimpses of Third PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Barpeta

Bongaigaon

Darrang

Dhemaji

Dhubri

Golaghat

Glimpses of Third Phase Technical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Jorhat

Kamrup

Kokrajhar

Lakhimpur

Morigaon

Nagaon

Glimpses of Third Phase Technical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Nalbari

Nalbari

Sivasagar

Sivasagar

Sonitpur

Sonitpur

Glimpses of Fourth PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Barpeta

Bongaigaon

Darrang

Dhemaji

Dhubri

Golaghat

Glimpses of Fourth PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Jorhat

Kamrup

Kokrajhar

Lakhimpur

Morigaon

Nagaon

Glimpses of Fourth PhaseTechnical Trainings programmes organized during 2023-24 under ICAR-DRMR-OPIU (Agri)-APART project

Nalbari

Nalbari

Sivasagar

Sivasagar

Sonitpur

Sonitpur

2.4. Activity 5 and 6: Exposure visit-cum-training programme of master trainers and progressive farmers organized during 12-14 February 2024.

Exposure visit is one of the important extension tools to reinforce the confidence of the extension personnel and farmers in new technology, methods, etc. Exposure visits enable farmers from different regions to interact with and learn from each other, allowing them to view practical examples of successful adoption of scientific technology in different farming situation. It motivates farmers by showing what others have been able to achieve. As per the approved activity under ICAR-DRMR-APART programme, one Exposure visit-cum-training of progressive farmers and one exposure visit-cum-training of Master trainiers/ extension personnel to ICAR-DRMR was organized during 12-14 February 2024**.**

For these visits, field level extension workers and farmers were nominated by OPIU, Guwahati from selected 20 districts of Assam namely; Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri, Golaghat, Jorhat, Kamrup, Kokrajhar, Lakhimpur, Morigaon, Nagaon, Nalbari, Sivasagar, Sonitpur, Majuli, Hojai, Goalpara, Karbi Anglong and Charaideo. The programme of exposure visit was designed in such a way that experts from ICAR-DRMR provided technical knowledge and exposure of latest technological advances in rapeseed-mustard to the participants. Alongwith the lectures, participants were made to visit experimental field/trials of variety development, technology park, crop cafeteria, latest varieties, insect-pest and disease management, agronomical practices, seed production programme, mini oil expeller unit, seed processing unit, technology display museaum, krishi mandi, agriculture machinaries like seed drill, combined harvester, weeders, power sprayers, threshers, etc. at ICAR-Directorate of Rapeseed-Mustard Research, Bharatpur, Rajasthan. The participants also got an opportunity to visit an oil mill having a large production capacity with complete automatic packaging system.

The participants also visited FLDs sites at Ludhawai village of Bharatpur district of Rajasthan to see the performance of improved varieties of mustard at farmers field, and participated in field day programme organized by ICAR-DRMR where they got the opportunity to interact with local progressive farmers. They understood the gap in technology adoption and explore the feasibility in adoption of new practices in their own situations. Since “seeing is believing”, the exposure visit provided better knowledge and understanding of technology, methods and improved the skills of the extension personnel/ master trainers and farmers on scientific production and protection technology of rapeseed-mustard. It exposed them to a new and different situation which would help in changing their outlook and extend their mental horizon. Detailed list of master trainers and farmers participated in exposure visit-cum-training along with summary is presented in Table 15, 16 and 17, respectively.

Table 15: List of Master Trainers (MT) participated in exposure visit-cum-training organized by ICAR-Directorate of Rapeseed-Mustard Research at Bharatpur, Rajasthan during 12-14 Feb. 2024.

SN	Name	Designation/	District	M/F	Mob. No.	email ID
1.	Siddiki Shajon Ahmed	Sr.ADO,	Bongaigaon	M	9854657079	siddikishajon@gmail.com
2.	Raja Phukan	ADO,Jengrai	Majuli	M	7002092298	rajaphukan03@@gmail.com
3.	Pradip Kumar Medhi	ADA (D/L)	Nalbari	M	8638549833	pkmedhi7@gmail.com
4.	Jishnu Protim Mudoi	ADO,Sarupathar	Golaghat	M	8638490693	jishnumudoi@gmail.com
5.	Suraj Baruah	ADO, Bamungaon-I	Hojai	M	8876983573	surajbaruha573@gmail.com
6.	Amal Jyoti Debnath	ADO, Boko	Kamrup	M	7086457263	amalnath062@gmail.com
7.	Kangkan Kakati	ADO, Chaboti	Lakhimpur	M	9678338208	kangankakati321@gmail.com
8.	Debashis Saikia	ADO, Chunari	Goalpara	M	8638693580	dbshssk48@gmail.com
9.	Gyanpradeep Borgohain	ADO, Konwarpur	Sivasagar	M	7086769570	gyan.borgohain@gmail.com
10.	Prabal Pratim Kalita	ADO, Salkocha	Dhubri	M	8724842975	prabalpkalita@gmail.com
11.	Anupam Dutta	ADO, Sissiborgaon	Dhemaji	M	9127594352	anupamdutta7170@gmail.com
12.	Rakesh Baishya	ADO,Tarabari	Barpeta	M	7002390185	rakeshbaishya5454@gmail.com
13.	Horipriya Borah	ADO	Nagaon	F	6000921692	horipriya777@gmail.com
14.	Mousumi Saikia	ADO	Tezpur	F	7002730374	mousumisaikia.ado@gmail.com
15.	Kasturi Shivam	ADO, Jagibhakatgaon	Morigaon	F	7002250594	kasturi.3309@gmail.com
16.	Pirbi Tissopi	ADO, Karbi Anglong	Karbi Anglong	F	8876109140	tissopiprso@gmail.com
17.	Abhinanda Hazarika	ADO, Kharupetia	Darrang	F	7002731618	abhinanda25hazarika@gmail.com
18.	Rani Amchi Kachari	ADO, Madhapur	Jorhat	F	9707312547	rani.amchi123@gmail.com
19.	Parthana Gogoi	ADO, Serfanguri	Kokrajhar	F	8638006915	prathanagogoi@gmail.com
20.	Jerifa Ullah	ADO, Suffry Circle	Charaideo	F	8011568256	ullahjerifa18@gmail.com

Table 16: List of Progressive farmers participated in exposure visit-cum-training organized by ICAR-Directorate of Rapeseed-Mustard Research at Bharatpur, Rajasthan during 12-14 Feb. 2024.

SN	Name	Village	Block	District	M/F	Caste	Mob. No.
1.	Anita Rajbangshi	Haripara	Kharapeta	Darrang	F	OBC	7002638905
2.	Nijara Rabha	Tamulbari	Bihaguri	Tezpur	F	ST	9365277680
3.	Pankaj Gogoi	Lahor Gaon	Uqari gniari	Majuli	M	OBC	8135064139
4.	Matiyar Sarkar	Bandali	Chenda	Barpeta	M	Gen	9101808362
5.	Dambaru Sarma	Dompara	Manikpur	Bongaigaon	M	Gen	8011924567
6.	Kukil Ramchiary	Majgaon	Jonai	Dhemaji	M	ST	9101581764
7.	Gitartha Choudhury	Hakama	Rani Ganj	Dhubri	M	Gen	8403931360
8.	Chiranjeeb Daulaguphu	Dhansiri, Karabi Anglong	Lumbajong	Karbi Anglong	M	ST	7002890207
9.	Dufang Brahma	Sarfanguru	Dotoma	Kokrajhar	M	ST	9954349097
10.	Sailen Kr. Dutta	Deolia	Anila roga	Lakhimpur	M	OBC	8402815275
11.	Jyotiprasad Borah	Ouguri	Mayong	Morigaon	M	OBC	9613955664
12.	Palash Prakash Saikia	Dakarghat	Pakhimoury	Nagaon	M	OBC	9101357812
13.	Dhrubajyoti Baishya	Balitara	Bonigog Bhabhag	Nalbari	M	SC	8822110978
14.	Paresh Yein	Demow mukh	Kolotra	Sivasagar	M	ST	6001934648
15.	Rofiqul Islam	Tarangopara	Jakeswar	Goalpara	M	Gen	7896654319
16.	Dipjyoti Phukon	Laicheng	Mahmora	Charaideo	M	OBC	9957299160
17.	Diganta Gogoi	Theramakh, Bebegia	Monangori	Golaghat	M	OBC	7896570080
18.	Sonalal Bhagat	Kharikhame	Delpokhruri	Hojai	M	OBC	7002814970
19.	Mahendra Kalita	Charingia	Koliapani	Jorhat	M	OBC	9365127702
20.	Gautam Kalita	Kamrur	Haji	Kamrup	M	Gen	9954750115

Table: 17: Summary of Exposure Visit-cum-Training Programme of Master trainers/ Extension Personnel and Progressive Farmers organized during 12-14 Feb. 2024.

SN	Activity	Target (No.)	Achieved (No.)	Beneficiaries (No.)	Districts covered (No.)
1	Exposure visit-cum-training programme of Master Trainers	01	01	20	Barpeta, Bongaigaon, Darrang, Dhemaji, Dhubri, Golaghat, Jorhat, Kamrup, Kokrajhar, Lakhimpur, Morigaon, Nagaon, Nalbari, Sivasagar, Sonitpur, Majuli, Hojai, Goalpara, Karbi Anglong and Charaideo
2	Exposure visit-cum-training programme of Progressive farmers	01	01	20	

Master Trainers

Progressive Farmers

Progressive Farmers

Master Trainers

Glimpses of Exposure Visit-cum-Training Programme of MT and Farmers organized at ICAR-DRMR, Bharatpur, Rajasthan during 12-14 February 2024.

Glimpses of Exposure Visit-cum-Training Programme of MT and Farmers organized at ICAR-DRMR, Bharatpur, Rajasthan during 12-14 February 2024.

Glimpses of Exposure Visit-cum-Training Programme of MT and Farmers organized at ICAR-DRMR, Bharatpur, Rajasthan during 12-14 February 2024.

Glimpses of Exposure Visit-cum-Training Programme of MT and Farmers organized at ICAR-DRMR, Bharatpur, Rajasthan during 12-14 February 2024.

2.5. Activity 7: Publication of Training Manual on "Safe use of pesticides on rapeseed-mustard crop" during 2023-24.

A pesticide is any material used to control, prevent, kill, suppress, or repel pests. No doubt pesticides are reliable source to keep the pest population below check but if they are used injudiciously, they may pose serious health hazards to human beings, domestic animals, natural enemies of crop pests. Non-judicious use results in some time development of resistance to insect-pests against chemical pesticides, pest resurgence, secondary pest out-break and increase in cost of production due to high cost of pesticides are other disadvantages. Therefore, a sensible approach suggested and generally accepted to increase crop production and sustaining higher yields for judicious use of pesticides.

In view of that, ICAR-DRMR has developed and published an extension literature on "Safe use of pesticides on rapeseed-mustard crop" in the form of training manual that will help the agricultural officials and farmers of the state for better understanding and to focus on the safe use of pesticides on crop. ICAR-DRMR has developed this training manual in English (Master copy) and that will be translated into local language by OPIU-Agriculture for printing of multiple copies and distribution to farmers will be done by District ATMAs. It covers precaustions during purchase of pesticides transportation of pesticides, storage of pesticides, use suitable nozzles, precautions while spraying, precaution while applying dusts, precaution after spraying/dusting, sign and symptoms of pesticide poisoning, first aid for victims of poisoning, etc. It will provide support to other extension methods and facilitate use at convenience and will serve as a future reference.

frequent clogging of the nozzle and do not blow/clean clogged nozzles with mouth. Pesticides should not be applied with the wind blowing towards an adjoining susceptible crop, water bodies, pasture field and grazing animals. Do not eat, drink or smoke beedi, cigarette, chewing tobacco, gutkha etc. during spraying. Children, animals, birds etc. should not be allowed to come in the fields at the time of spraying/dusting. Spraying should be done in the evening when there is no wind. Spraying should be done only in the direction of the wind. Avoid spraying on windy, hot and rainy days. Hold the sprayer nozzle at the knee height to avoid drift and marked the sprayed area to avoid repeated spraying. Spraying should be done in such a way that the pesticides sticks on both the upper and lower side of the leaves of the plant because most of the pest-diseases are more prevalent on the lower surface of the leaves.

8. **Precaution while applying dust-** Select proper duster as per need and dust the crop in early hours of the day and avoid application during the wind. Adopt boom dusting for uniform coverage and wet dusting technique in dry land crops. Do not dust the crop against the wind and maintain proper speed of the blower for uniform coverage.

9. **Precaution after spraying/dusting-** Leftover spray solution should be disposed off in barren isolated area or give to the needy neighbour if essential. Always keep the leftover pesticide in original container and away from the food stuff and children.

Never put the pesticide in other containers that could be mistaken for a drink container as many people have been reported to be poisoned and killed by inadvertently drinking from these containers. Destroy the empty container of pesticide by crushing and digging in barren land. Put the thorny bushes around the pit to safeguard the grazing animals. Do not dump excess, unwanted, or old pesticides in to the drain, soil, open waterways, gutters, storm drains or sewers. Put the flag written with the signal word in bold red letters i.e.

'DANGER' the field is sprayed or dusted with pesticide at appropriate places in the field. Do not allow the children, animals and non-workers to enter the sprayed/dusted field. Do not eat, drink or smoke with

contaminated hands after spraying. Wash the hand thoroughly with soap after handling pesticide. Wash the equipment three times with soap and water and then rinse with water properly. Remove and wash the protective cloths with detergent, take a bath and wear clean cloths. Drink sour lemon or milk and sit in a well ventilated place at least one hour after spraying/dusting to reduce the immediate effect of any pesticide. Maintain a proper record of pesticide application.

Sign and symptoms of pesticide poisoning

Pesticide poisoning mainly occur due to ignorance and negligence about the pesticides use. The symptoms of pesticidal poisoning differ with the type of pesticide, absorption and extent of exposure. Based on the extent of poisoning, the symptoms may be mild (headache, nausea, dizziness, irritation in skin, eyes, nose and throat and sense of fatigue, perspiration and loss of appetite), moderate (vomiting, blurred vision, stomach cramps, increased pulse rate, suffocation and difficulty in breathing, contracted pupils of eyes, excessive perspiration, twitching of the muscles, trembling and nervous distress etc) and severe (convulsions, respiratory failure, loss of pulse, blue skin, unconsciousness and even death).

First aid for victims of poisoning

- Remove the patient from the site of contamination to a safe and airy sheltered place.
- Remove any contaminated clothing immediately, wash all the affected parts of the body with clean water or wipe with a piece of cloth if available, or even with paper or leaves.
- Maintain the breathing of the patient through artificial respiration if unconscious.
- Never administer anything when the patient is unconscious, in coma or having convulsion.
- Took the patient and pesticide container (for identification of poisoning) to the nearest hospital or clinic for medical help.

Training Manual No. : 172023-24

Author : Drs. Ashok Kumar Sharma, Pankaj Sharma, Vinod Kumar and P.K. Rai

This folder has been published under ICAR-DRMR-OPIU (Agri.)-APART Project

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Printer09783855551

Training Manual

APART

Safe use of pesticides on rapeseed-mustard crop

ICAR-DIRECTORATE OF RAPESEED-MUSTARD RESEARCH
(Indian Council of Agricultural Research)
Sewar, Bharatpur 321 303 (Rajasthan) India
(An ISO 9001:2008 Certified Organization)

2.6. Activity 8: Publication of technical folder on "Important farm implements used for rapeseed-mustard cultivation" during 2023-24.

Farm Mechanization is the using agricultural machinery for different agricultural operations from land preparation to harvesting and threshing. The farm mechanization contributes to increase production through saving the time and ease the work. It helps farmers to grow more crops in less time and with greater efficiency. Agricultural implements are the tools needed or used for agricultural practices like ploughing, levelling, sowing seeds, irrigation harvesting, etc. The different types of agricultural implements used in rapeseed-mustard cultivation are harrow, cultivator, rotavator, leveler, seed drills, hand hoe, weeder, harvester, power tiller, sprayers, thresher, winnower, etc. It is essential for farmers and extension personnel to get the knowledge of different implements and their use for doing agricultural operations effectively using them.

Keeping in view of this, a simple and actionable farmer-friendly extension material in the form of technical extension folder on "Important farm implements used for rapeseed-mustard cultivation" in English was developed and published by ICAR-DRMR (master copy) and translation into local languages will be done by OPIU-Agriculture. Printing of multiple copies and distribution to farmers will be done by District ATMAs. The folder contains the details of agricultural implements used in rapeseed-mustard cultivation. It will help the extension personnel and farmers of the state to understand the different types of agricultural implements, their uses during different stages of crop cultivation and promote farm mechanization to save labour and time. The folder is handy that will provide opportunity to farmers and extension workers for reading, learning and/or referring. They are the best method for dissemination of information or a message. They save time and resources in dissemination of information to a large group of people. They can be used at any age. More efficient than oral languages.

insect pest and weeds in standing crop. Now, it is available in battery operated system also.

Power Sprayer : It is used for applying liquid substances such as fertilizers and pesticides to plants during the crop growth cycle. It is used for applying water and water/chemical solutions containing acids or caustic materials for crop-performance.

Hand Sickle : The hand sickle is general purpose harvesting hand tool. Sickle is one of the most common hand tools used for harvesting of the crops, grass and cutting of other vegetative matters. Nowadays Naveen sickle is used which is light in weight and easy to handle. This reduces the drudgery and time taken for harvesting

Combine Harvester : The combine harvester, sometimes known as the combine, is a device made to efficiently harvest a variety of agricultural crops. Mature crop of mustard can be harvested through combine machine. Harvesting, threshing and winnowing can be done simultaneously through combine harvester. It separates the seed and stover. Harvested produce can be collected in bags. It saves time, labour and cost. But it generally required large field for operation

Thresher : Any delay between cutting and threshing causes rapid deterioration of the grains, especially during field drying or when the crop is stacked or piled in the field. Therefore, threshers should be used for threshing purpose. A threshing machine or a thresher is a piece of farm equipment that threshes grain, that is, it removes the seeds from the stalks and husks. It does so by thrash the plant to make the seeds fall out. The thresher consists of threshing cylinder, oscillating box, straw walker, and winnowing and cleaning attachment.

Care and maintenance of agricultural machineries

Agricultural machinery is used for a limited period and has to be kept for later use. Therefore, it is essential for farmers to have accurate Knowledge about its care and maintenance so that they can increase agricultural yield by using agricultural machinery for longer period, as well as earn more profit by controlling agricultural production costs and proper care and maintenance. The following care should be taken :

- Every part of agricultural machinery should be inspected. If any nut-bolt or part is broken or not installed in its proper place or properly, it should be replaced or repaired or tightened as necessary. Worn parts of agricultural machinery should be edge.
- For the proper speed of agricultural machinery, necessary adjustment should be made in the machine so that the tension of the belt etc. is correct and the machine works smoothly.
- Seed and fertilizer sowing machines and crop protection machines etc. should be calibrated and adjusted under trial so that proper amount of seed and fertilizer can be applied.
- Tractor brakes, oil level, filter etc. should be adjusted as required and inspected periodically.
- Agricultural machinery should be cleaned properly after use to remove dust, soil etc.
- Agricultural machinery should be washed thoroughly after use. After the water on the agricultural machinery has dried, its rotating part should be lubricated with grease.
- Parts of agricultural machinery that come into contact with fertilizer and soil should be thoroughly cleaned.
- If agricultural machinery has rubber wheels, do not forget to check their pressure and keep them at the approved pressure.
- Clean the nozzle holes of all types of sprayers thoroughly and keep the tank washed to prevent rust, etc.
- Agricultural machinery that has come off paint etc. can be painted or greased to keep the machine in use for a long time.
- Wrap or tie pipes or wires to protect them from cuts.
- Keep te motor under the shed to prevent water from falling on the electric motor.
- Keep the wheel of the fodder harvester locked with the stand to prevent accidents. If the farmer takes care and maintenance of the agricultural machinery with all these things in mind, he can certainly work for many years with the available agricultural machinery and can earn financial gains.

Author : Drs. Ashok Kumar Sharma, Harvir Singh, Arun Kumar and P.K. Rai

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Technical Extension Folder No. 83/2023-24

Important farm implements used for rapeseed-mustard cultivation

ICAR-DIRECTORATE OF RAPESEED-MUSTARD RESEARCH

(Indian Council of Agricultural Research)
Sewar, Bharatpur 321 303 (Rajasthan) India
(An ISO 9001:2008 Certified Organization)

3. Workforce involved in the assignment:

In APART, ICAR-DRMR has appointed the key and non-key experts to take care of the project activities during the period. The list of ICAR-DRMR staff engaged in the project and locally appointed staff are given in Tables 18 and 19.

Table 18: Client's ICAR-DRMR staff engaged

SN	Name of Experts	Key or Non-Key	Designation in ICAR-DRMR	Designation in APART	Place of deployment	Date of availability for work in the assignment
1	Dr. P.K. Rai	Key	Director	Chief Advisor	Bharatpur	In place
2	Dr. Ashok Kumar Sharma	Key	Principal Scientist (Ag. Extension)	Team Leader	Bharatpur	In place
3	Dr. Harvir Singh	Key	Scientist (Agronomy)	Expert	Bharatpur	In place
4	Dr. Vinod Kumar.	Non-key	Pr. Scientist (Comp. Appl.)	Expert	Bharatpur	In place
5	Dr. Arun Kumar	Non-key	Pr. Scientist, (Plant Breeding)	Expert	Bharatpur	In place
6	Dr. Narpat Singh	Non-key	Research Associate	Research Associate	Bharatpur	In place
7	Ms. Anita	Non-key	Data entry Operator	Data entry Operator	Bharatpur	In place

Table 19: Client's local staff engaged

SN	Name of Experts	Key or Non-Key	Designation in ICAR-DRMR	Designation in APART	Place of deployment	Date of availability for work in the assignment
1.	Dr. G.N. Hazarika	Key	Resident Consultant	Resident Consultant	Guwahati	In place
2.	Dr. Bandhan Subba	Non-key	Research Associate	Research Associate	Sonitpur	In place
3.	Dr. Vijay Kumar	Non-key	Research Associate	Research Associate	Barpeta	In place
4.	Dr. Joli Dutta	Non-key	Research Associate	Research Associate	Sivasagar	In place
5.	Dr. Sukanya Gogoi	Non-key	Sr. Research Fellow	Sr. Research Fellow	Golaghat	In place
6.	Dr. Nilakhi Dutta	Non-key	Research Associate	Sr. Research Fellow	Jorhat	In place
7.	Dr. Lohita Rabba	Non-key	Sr. Research Fellow	Sr. Research Fellow	Darrang	In place
8.	Dr. Binita Basumatary	Non-key	Sr. Research Fellow	Sr. Research Fellow	Bongaigaon	In place
9.	Ms. Chayanika Borah	Non-key	Sr. Research Fellow	Sr. Research Fellow	Lakhimpur	In place
10.	Ms. Sanjana Bora	Non-key	Sr. Research Fellow	Sr. Research Fellow	Darrang	In place
11.	Dr. Mohd. Danish	Non-key	Sr. Research Fellow	Sr. Research Fellow	Dhubri	In place
12.	Mr. Imonjyoti Das	Non-key	Sr. Research Fellow	Sr. Research Fellow	Kamrup	In place
13.	Ms. Akanta Paul	Non-key	Sr. Research Fellow	Sr. Research Fellow	Kokrjahar	In place
14.	Ms. Manisha Barman	Non-key	Sr. Research Fellow	Sr. Research Fellow	Nalbari	In place
15.	Ms. Moukham Wakhet	Non-key	Sr. Research Fellow	Sr. Research Fellow	Morigaon	In place
16.	Ms. Kankana Bordoloi	Non-key	Sr. Research Fellow	Sr. Research Fellow	Dhemaji	In place
17.	Mr. Banikanto Patiri	Non-key	Office Assistant cum comp. Operator	Office Assistant cum comp. Operator	Guwahati	In place

4. Consultants Invoice and payment by the client:

Table 20. Invoice details

SN	Invoice No. and Date	Date of submission of invoice to OPIU	Date of clarification sought by OPIU, If any	Date of replies given by the consultant, if any	Date of payment by OPIU
1	ICAR-DRMR-APART-2019.20.4 dated 14.5.2020 Rs. 43.12 lakh	17.6.2020	NA	NA	5.10.2020
2	ICAR-DRMR / TAD ./APART / 2020-21 /86 dated 2.2.2021 Rs. 38.81 Lakh	2.2.2021	NA	NA	20.5.2021
3	ICAR-DRMR-TAD-APART /2020-21 /118 dated 28.6.2021 Rs. 30.18 Lakh	28.6.2021	NA	NA	15.7.2021
4	ICAR-DRMR-TAD-APART/2021-22/171 (Rs. 52.03 lakh)	02.12.2021	Nil	Nil	28.12.2021
5	ICAR-DRMR-TAD/APART-2021-22./207 (Rs.101.11 lakh)	15.2.2022	Nil	Nil	30.3.2022 (Rs. 94.63 Lakh) and 17.8.2022 (6.48 lakh)
6	ICAR-DRMR / TAD/ APART/ 2022-23/ 47-I (Rs. **7687734)**	24-9-2022	Nil	Nil	30-11-2022 (50.0 Lakh) and 31-3-2023 (26.87734)
7	**F. No.** ICAR-DRMR/TAD/APART/2023-24/ 188-I (Rs. **2505554.0**)	9-8-2023	Nil	Nil	Pending

5. Contractual issues (if any) and changes desired: Nil

6. Work plan for the next six months

Table 21: Month-wise work-plan

SN	Month wise activities	No.
March 2024		
1	Crop cutting and data collection	-
2	PHT demonstrations	45
April 2024		
1	Feedback collection	-
2	Data analysis	-
May 2024		
1	Data analysis	-
2	Awareness meetings	25
3	Base line survey	-
June 2024		
1	Report Writing	-
2	Awareness meetings	22
3	Collection of data	-
July 2024		
1	Report Writing	
2	Awareness meetings	30
3	Base line survey	
August & Sept. 2024		
1	Submission of report	-

7. Summary of the overall progress.

The achievements and results of the period under report are summarised in the table 22, below.

Table 22. Summary of the progress of work done during July 2023-February 2024

Activities	Unit	Target	Achievement	Remarks
Crop Demonstrations	No.	5000	5000	All demonstrations were laid out successfully
Minikit ATMA	No.	18000	18000	All minikit demonstrations were laid out successfully
Technical trainings	No.	250	250	Completed
Training for Master Trainers	No.	2	2	Completed
Training for progressive farmers	No.	2	2	Completed
Exposure visit of MT	No.	01	01	Completed
Exposure visit of progressive farmers	No.	01	01	Completed
Training manual folder published	No.	01	01	Completed
Technical Extension Folder	No.	01	01	Completed

Augmenting Rapeseed-Mustard Production of Assam Farmers for Sustainable Livelihood Security

Contract No. OPIU Agri/APART/DRMR/23/ dated 28th April 2020