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Impact Study of Cluster Front Line Demonstrations Pulses Programme in Karaikal District

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Abstract

Pulses are one of the major crops in Karaikal District. Rice fallow pulses (black gram and green gram) are cultivated both in the Rabi and summer seasons. Cluster FLD is a unique project implemented using the cluster approach method. Under this Cluster FLD, the newly released black and green gram varieties were demonstrated, along with a full package of practices adopted in the selected farmers' fields to demonstrate the potentiality of the technologies. During 2020-21, 2021-22, and 2022-23, the CFLD blackgram and greengram was adopted in all major villages of Karaikal district. An interview schedule was well constructed with the help of experts to measure the adoption level of improved pulses production technologies before and after implementation of the cluster FLD programme. after implementation of the cluster FLD program, above 90 percent of the participants adopted the improved high-yielding pulse varieties like VBN 8, CO-8, and WGG-42 and followed seed treatment techniques to avoid the infestation of soil-borne pathogens.

***Key words*:** Cluster front line demonstrations, Krishi Vigyan Kendra, Integrated nutrient management, Agricultural technology application research institute

Cluster frontline demonstration is a unique approach by the Indian Council of Agricultural Research on oilseed and pulse crops to provide a direct interface between scientists and farmers where farmers are guided by KVK scientists during demonstrations in the implementation of improved technologies like seed treatment, IPM, INM, land preparation, etc., The main objective of front line demonstrations is to demonstrate newly released crop production and protection technologies and its management practices in the farmer's field. During demonstration in the farmer's field, scientists are required to study the factors contributing higher crop production, field production constraints and there by convince the farmer to adopt the technology for higher yield. Here in front line demonstration farmer's participatory approach is very useful method of owning and continuous interacting with scientists and getting the useful tips for getting higher yield in farmers own field which otherwise get lower yields [1].

Pulses are a good and chief source of protein for a majority of the population in India. Protein malnutrition is prevalent among men, women and children in India. Pulses contribute 11% of the total intake of proteins in India [2]. Pulses are one of the major crops in Karaikal district. Rice fallow pulses (black gram and green gram) are cultivated in an area of 819.85 ha (2022), and the production is 1630 Qtl. It is cultivated both in the rabi and summer seasons. The crops are being cultivated in all the communes of Karaikal district under Rice-fallow conditions. The VBN 8, Co-8, and WGG-42 are the major black gram and green gram varieties cultivated by the Karaikal district farmers, respectively. The major problems in black gram are yellow mosaic virus disease incidence, which is transmitted by white flies, and root rot and pod borer problems in green gram cultivation. The pulse farmers are obtaining low yields due to the non-adoption of integrated crop management practices. Hence, to impart knowledge and skills on integrated crop management practices, a cluster FLD scheme on black gram and green gram was implemented by KVK in Karaikal during 2020–2023. Cluster FLD – blackgram and green gram.

Cluster FLD is a unique project implemented using the cluster approach method. Under this Cluster FLD, the newly released black and green gram varieties were demonstrated, along with a full package of practices adopted in the selected farmers' fields to demonstrate the potentiality of the technologies. During 2020–21, 2021–22, and 2022–23, the CFLD blackgram and greengram was adopted in all major villages of Karaikal district, namely, Pandaravadai, Sethur, Kannapoor, Nallezhendur, Thennangudy, T.R.Pattinam, Thirunallar, Pettai, Vadamattam, Karaikal, Karukkangudy, Serumavilangai, Kezhakasakudy, Vizhidiyur, Neravy, Vishvanathapuram, Kurumbagaram, Thenpidagai, Kumarakudi, Thamanankudy, Thennangudy, Puthakudi, Vadamattam, Karukkangudy, Thirunallar, Vadakattalai, Kezha Ponpethy, Keliyanoor, Annavasal, Kurumbagaram in all communes of Karaikal district.

During this demonstration, the farmers were given yielding black gram and green gram varieties, viz., VBN 8, Co-8, and WGG-42, respectively, seed treatment with bio-agent and bio-fertilizer, application of TNAU pulse wonder and installation of traps. The on and off-campus training programs,

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demonstrations on the application of TNAU pulse wonder, and pest and disease management were also conducted for the cluster FLD pulse farmers.

MATERIALS AND METHODS

A study was conducted to know the impact of Cluster FLD programme. For this, an Ex-post facto research design was used. The study was conducted in Pandaravadai, Sethur, Kannapoor, Nallezhendur, Thennangudy and Pettai villages of Thirunallar commune with the sample size of 30. An interview schedule was well constructed with the help of experts to measure the adoption level of improved pulses production technologies before and after implementation of the cluster FLD programme. The data was collected with the help of interview schedule and evaluated by assigning scores and cumulative frequency to categorize the adoption level of the participants.

RESULTS AND DISCUSSION

It could be found from the above table.1 that before the implementation of the cluster FLD programme only 09 participants had followed the improved high-yielding varieties in pulses, and about 47% of the participants had adopted integrated nutrient management. Only a few participants had knowledge and adopted post-harvest technologies and seed storage techniques in pulses before the cluster FLD programme, but after implementation of the cluster FLD program, above 90 percent of the participants adopted the improved high-yielding pulse varieties like VBN 8, CO-8, and WGG-42 and followed seed treatment techniques to avoid the infestation of soil-borne pathogens. The higher yield of black gram under improved technology was due to use of latest high yielding varieties, integrated nutrient management and integrated pest management [3].

The increase yield of demonstration under improved technology was due to use of wilt resistant high yielding varieties, integrated pest management, integrated nutrient management, adopt line sowing method, applied soil test best fertilizer, seed treatment. Similar yield enhancement in different crops in cluster frontline demonstrations were documented by in black gram; Jha *et al.* [4] in pigeonpea; Kantwa *et al.* [5] in chickpea; Tiwari *et al.* [6] in soybean. The results were in conformity with the findings of Saikia *et al.* [7], Kumar *et al.* [8].

Table 1 Technology adoption level before and after implementation of the CFLD-Pulses program in the Karaikal district

S. No.	Technologies	Before		After	
		Number of persons	Percentage	Number of persons	Percentage
1	Improved black gram and green gram varieties	9	30	28	93
2	Seed treatment	19	63	27	90
3	Integrated nutrient management	14	47	23	77
4	Integrated pest and disease management	9	30	23	77
5	Post harvest technologies	4	13	20	67
6	Seed storage techniques	4	13	21	70
	Average	16	33	24	79

The major constrains or lower yield of black gram is mainly attributed to their cultivation on poor soils with inadequate and imbalanced nutrition, use of local varieties, use of disease susceptible varieties, lack of seed treatment, lack of integrated weed management (IWM) and lack of integrated pest management (IPM) [9].

Table 2 Ranks given by farmers for different constraints

S. No.	Constraints	RBQ	Overall rank
1	Lack of high yielding varieties	81.50	I
2	Incidence of Yellow mosaic virus	75.35	II
3	Non adoption of seed treatment	71.00	III
4	Inadequate nutrient management	64.00	IV
5	Labour shortage	51.70	V

Constraints in cluster front line demonstrations pulses production before the conduct of the CFLDs, preferential ranking techniques were utilized to identify the constraints faced by the respondent farmers in pulse cultivation. The ranks given by the different farmers are presented in (Table 2). The finding indicates the lack of suitable high yielding varieties (81.50 per cent), Incidence of yellow mosaic virus (75.35 per cent), Non adoption of seed treatment (71.00 per cent) Inadequate nutrient management (64.00 per cent) were there major constraints. Similar findings were reported by Sreelakhshmi *et al.* [10]. The findings reveal several prominent challenges. The most frequently cited constraint was the lack of suitable high-yielding pulse varieties, which affected 81.5% of respondents. This indicates a significant gap in access to or availability of high-performing varieties that could potentially increase productivity. The second major issue, reported by 75.35% of farmers, was the high incidence of yellow mosaic virus, a disease that severely impacts yield and crop quality. Additionally, 71.0% of farmers had not adopted seed treatment practices, a crucial step in safeguarding crops from pests and diseases early in the growth cycle. Lastly, 64.0% of respondents indicated inadequate nutrient management as a constraint, highlighting potential issues with soil fertility or access to proper fertilizers.

These findings underscore the importance of addressing these specific issues—varietal availability, disease management, seed treatment, and nutrient management—in CFLDs to improve the productivity and sustainability of pulse cultivation among farmers.

CONCLUSION

Impact of the cluster FLD programme about 77 percent of the respondents adopted integrated nutrient management, including the foliar application of TNAU pulse wonder to enhance the yield. Overall, it was found that the majority (79%) of the participants adopted improved production technologies in Rice Fallow pulses cultivation after the implementation of

the cluster frontline demonstrations (FLD) program by the Krishi Vigyan Kendra, Karaikal.

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