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Constraints Faced by the Groundnut Growers in Adoption of Cluster Frontline Demonstration of Villupuram District

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ABSTRACT

India is one of the largest producers of oilseeds in the world and occupies an important position in the Indian agricultural economy. The productivity of groundnut farming is currently declining due to pest and disease attacks, use of old and traditional low-yielding varieties. To tackle the issues demonstrations on cluster mode are essential. Cluster Frontline Demonstration (CFLD) is conducted by Subject Matter Specialists (SMSs) and scientists in a systemic manner on selected farmers field to spread the new variety and groundnut production technologies. The ICAR- KVK, Tindivanam had organized CFLDs on groundnut crop in two villages *viz.,* Nolambur and Kilmavilangai. Therefore, the study aimed to know the profile characteristics of CFLD beneficiary farmers and to encounter the major constraints faced by groundnut growers. To get an adequate sample size, 60 CFLD beneficiaries were selected randomly for the present study. The data were collected by using a pre-tested interview schedule. Garrett's ranking technique and percentage analysis were used to analyze the data for meaning interpretation. The majority of beneficiaries belonged to middle age category (61.66%), majority of male beneficiaries (80.00%), educated upto middle school (40.00%), land holdings of 1 to 2 ha (68.33%) as small land, 20- 30 years of farming experience in oilseeds (80.00%), participated in one training (66.67%), medium level of extension agency contact (66.67%) and mass media exposure (56.67%), 55 per cent of farmers were adopted new practices after the successful adoption of other members. The major constraints include poor labour availability, poor transport facilities, lack of proper marketing channels and lack of technical knowledge. Hence, CFLD showed that medium to high level profile characteristics and improved adoption of new technologies.

Keywords: *CFLD intervention; Groundnut; Profile Characteristics; Constraints*.

INTRODUCTION

Groundnut (*Arachis hypogea*) is a self-pollinated, important edible oilseed crop. It provides 570 calories/100 g serving and excellent source of several vitamins B and vitamin E Rai *et al.* (2020). The productivity of groundnut crop is far below the potential yield due to lack of knowledge and adoption of improved practices Singh *et al.* (2019). Krishi Vigyan Kendra's are grassroot level organizations designed to apply technology through assessment, refinement and demonstration of proven techniques in various micro-farming situations within a given area Mishra *et al.* (2018). The various efforts from KVK scientists to familiarize the improved production and protection technology for groundnut cultivation in cluster mode facilities was undertaken Deshmukh *et al.* (2020), Bordoloi *et al.* (2021) and Chaudhary *et al.* (2018). Therefore, to increase the yield and income of oilseeds, the Ministry of Agriculture and Farmers Welfare, Government of India and National Agricultural Research System (NARS) of the Indian Council Agriculture and Research (ICAR) introduced a programme called “Cluster Frontline Demonstration” (CFLD) for Oilseeds in 2015- 16 under National Mission on Oilseeds and Oil Palm (NMOOP). CFLD was implemented through ICAR- ATARI by KVKs Swami and Verma (2022). The main objective of CFLDs was to improve the production potential of improved varieties and new technologies generated by ICAR, SAUs and Regional Research Stations (RRSs) in oilseeds for better production, productivity and profitability Kumar *et al.* (2019). Frontline demonstration is applied tool of extension because, farmers are generally driven by principle of *‘Seeing is believing’*Jat *et al.* (2018). The cultivation of site-specific improved varieties Tomar (1994), obtaining feedback from farmers and boosting the technological diffusion among farmers are the additional components of this programme Bamboriya *et al.* (2023). In the present study, efforts were taken to know the profile of CFLD beneficiaries and to encounter the constraints of CFLD beneficiaries in groundnut cultivation.

MATERIALS AND METHODS

The study was conducted by Ex post facto research design to assess the profile characteristics of CFLD beneficiaries and to encounter the constraints CFLD beneficiaries face in Tindivanam taluk of Villupuram district. Villupuram district was purposefully selected for this study since it is one of the districts where oilseed is cultivated in larger area. Olakkur block under this district was purposively selected where CFLD on groundnut was being implemented. Further, 2 villages (Nolambur and Kilmavilangai) from these Olakkur blocks were selected, covering all the CFLD beneficiary farmers. Simple random sampling was employed in selecting 60 respondents from the selected villages. The data was collected through a structured, comprehensive interview schedule to obtain the data. The statistical tools like percentage analysis for profile characteristics and garrett’s ranking technique for analysis of constraints.

Garrett’s ranking technique was used to rank the constraints faced by groundnut growers in the adoption of CFLD. The respondents were asked to rank the factors that affect their functioning. The orders of merit, thus, given by the respondents were converted into ranks by using the following formula:

Per cent position= 100 (Rij – 0.5)/ Nj

Where,

Rij = Rank given for ith factor by the j th individual.

Nj = Number of factors ranked by the j th individual.

The percent position of each rank, thus, obtained, was converted into scores by referring to the table given by Garrett and Woodworth in (1969). For each factor, the scores of individual respondents were added together and divided by the total number of the respondents for whom scores were added. These mean scores for all the constraints were arranged in descending order; the constraints were ranked accordingly.

RESULTS AND DISCUSSION

Profile of CFLD beneficiaries

Table 1. Profile characteristics of Groundnut growers

Characteristics	Category	Percentage
Age	Young	16.66
	Middle	61.66
	Old	21.66
Gender	Male	80.00
	Female	20.00
Educational status	Illiterate	5.00
	Functionally literate	10.00
	Primary school	18.33
	Middle school	40.00
	Secondary school	26.67
	Higher secondary	0.00
	Collegiate	0.00
Total land area	Marginal (<1ha)	15.00
	Small (1-2 ha)	68.33
	Semi-Medium (2-4 ha)	15.00
	Medium (4-10 ha)	1.67
	High (>10)	0.00
Experience in oilseed cultivation	Low	13.33
	Medium	80.00
	High	6.67
Training undergone	Not participated	25.00
	Participated in one training	66.67
	Participated in more than one training	8.33
	Low	10.00

Extension agency contact	Medium	66.67
	High	23.33
Mass media exposure	Low	30.00
	Medium	56.67
	High	13.33
Innovativeness	As soon as it is brought to my knowledge	21.67
	After I have seen it adopted by other members successfully	55.00
	I prefer to wait and take my own time	23.33
	As soon as it is brought to my knowledge	21.67

Age

The results indicated that majority (61.66%) of the respondents were in middle age group with the age from 35-50 years, followed by (13.00%) in old age, and rest (10.00%) belonged to the young age group. Usually, middle-aged farmers were found to be involved in improved groundnut cultivation rather than old and young age. The reasons might be that young age farmers may have less interest in agriculture and a greater interest in other occupations, while old age farmers might have shifted away from farming and given their land holdings to other farmers for lease. A similar finding was reported by Nikhitha *et al.* (2021)

Gender

Majority (80.00 %) of the respondents was male compared to female (20%). It could be attributed that most of the participants of demonstration programme were attended by male farmers. There is a need to encourage female participation in demonstration programmes by making awareness and campaigns. The finding is supported by Singh *et al.* (2022)

Education status

In the case of educational status 40.00 per cent of CFLD beneficiary farmers were found in the middle school level, followed by secondary school 26.67 per cent and 18.33 per cent of CFLD beneficiaries were educated up to primary school, followed by functionally literate (10%) and Illiterate (5%). Hence, the majority of CFLD beneficiaries were educated primary school to middle school. Educated farmers would have better access to social media usage and have good information seeking behaviour. As well as, the educated farmers were able to learn advanced farming technologies and modern methods. These findings are in tune with the findings of Nikhitha *et al.*(2021) and Singh *et al.* (2022)

Total land area

The study indicated that 68.33 per cent of respondents had small category of land with 1-2 hectares, followed by (15%) of the farmers marginal (< 1 hectare) and semi-medium farmers (2- 4 hectares). This might be due to most of the farmers owing small piece of land, because of land fragmentation from one generation to another. This finding was in conformity with the findings of Gautam *et al.* (2022).

Farming experience in oilseed cultivation

The present study depicted that 80.00% of the respondents were found having 20-30 years' of experience in oilseed cultivation, while 13.33 and 6.67 per cent of respondents had less than 20 years and more than 30 years of experience, respectively. Hence most of the CFLD beneficiary farmers had medium farming experience due to middle to old age group of farmers. The findings was in accordance with Nikhitha *et al.*(2021).

Training undergone

The majority of farmers (66.67%) had participated one training, followed by 25.00 per cent of farmers who didn't participate in any training and rest of the CFLD beneficiaries (8.33%) participated in more than one training. It is evident that during demonstration season, the ICAR-KVKs should provide seed to seed training to CFLD beneficiaries, assured a better understanding of the package of practices in groundnut cultivation. Some farmers attend KVK training programmes regularly to obtain the inputs delivered under CFLD and are regularly monitored by KVK scientists.

Extension agency contact

The study showed that 66.67 per cent CFLD beneficiaries were found to be involved in extension agency contact at a medium level, while 23.33 per cent and 10.00 per cent CFLD beneficiaries reported that having high and low contact with extension functionaries. The possible reason might be that majority of CFLD beneficiaries had frequent contact with KVK scientists for the implementation of CLFD intervention in their cultivation practices. Farmers sought timely assistance from SMSs of KVKs for their better adoption of improved technologies. It showed that the trust of farming community in the KVK and State Department of Agriculture. As a result, this pattern was found with similar findings of Kiresur *et al.* (2001).

Mass media exposure

Usually, the 56.67 per cent of CFLD beneficiaries had mass media exposure at medium level, followed by 30.00 per cent and 13.33 per cent of beneficiaries having low and high knowledge on the media exposure. The reason for the above results is due to most of farmers are having educated upto middle school and have realized the importance

of print and social media and some farmers having lack of awareness among the importance of media usage.

Innovativeness

The study indicated that the innovativeness of the farmers was adopted new practices after the successful adoption of other members (55. 00%) followed by the respondents who are prefer to wait and take their own time to adopt new practices (23.33%) respectively. The above-mentioned results could be explained by the fact that CFLDs tend to boost farmers' ability to adopt new technologies or innovations in their own farms and assess results based on their productivity. The results are in conformity with Shrivastava *et al.* (2022b)

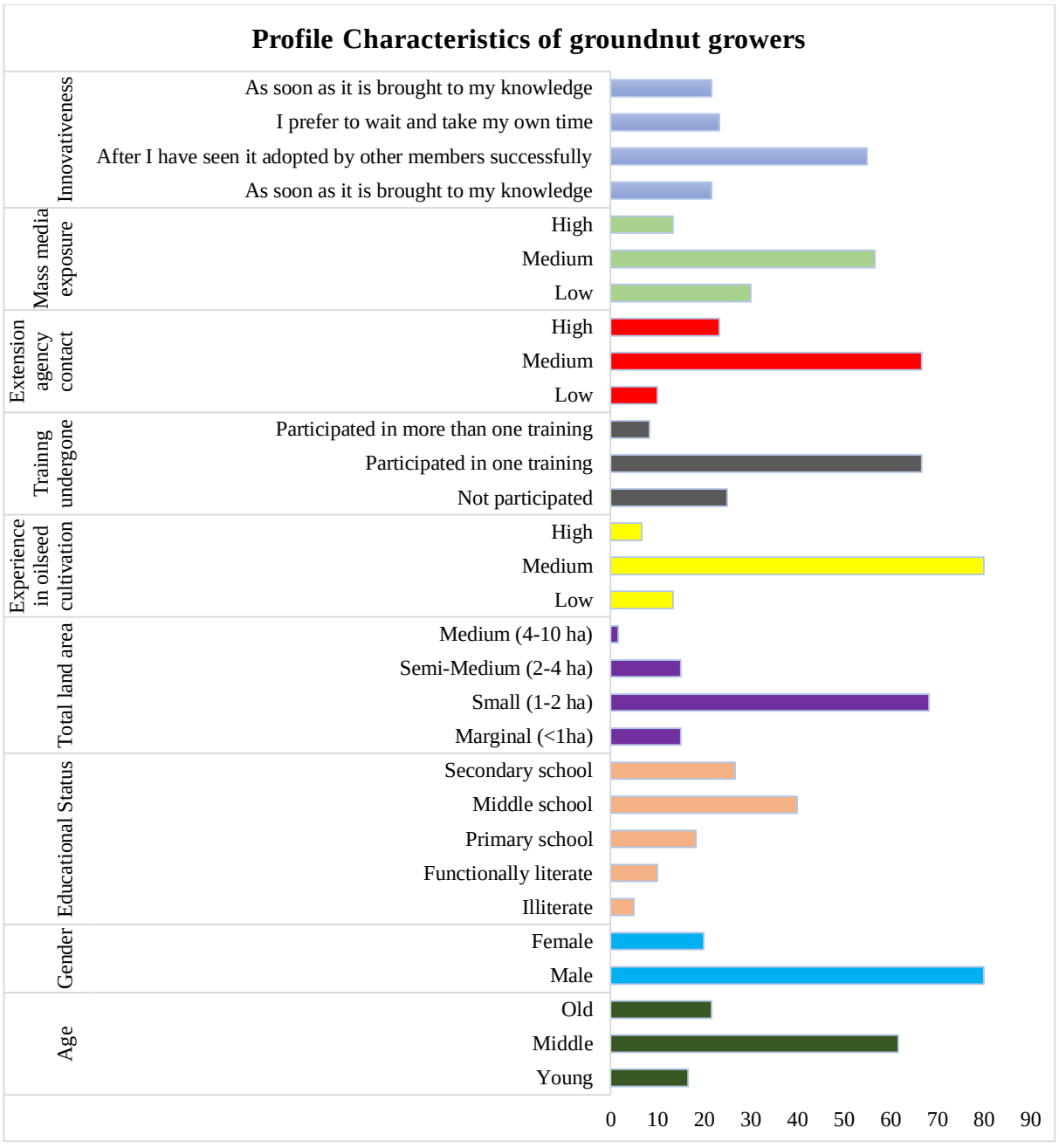

Figure 1. Profile characteristics of CFLD beneficiaries in Olakkur block of Villupuram district

Constraints faced by groundnut in adopting CFLD programme

Table 2. Percent positions and their garrett value

Rank	Percent Position Value= 100* (Rij-0.5)/ Nj		Garrett value
1.	100 (1- 0.5)/8	6.25	80

2.	100 (2- 0.5)/8	18.75	68
3.	100 (3- 0.5)/8	31.25	60
4.	100 (4- 0.5)/8	43.75	53
5.	100 (5- 0.5)/8	56.25	47
6.	100 (6- 0.5)/8	68.75	40
7.	100 (7- 0.5)/8	81.25	32
8.	100 (8- 0.5)/8	93.75	20

The results presented in (Table 3 and Figure 2) revealed that constraints faced by the CFLD beneficiaries where labour scarcity is occupied first rank with an average score of 66.67 is due to higher wages in other locally-available jobs, seasonal nature of agricultural jobs. Shrivastava *et al.* (2022a) was also indicative of this constraint as the shortages and high wages of labour was found to be 57.80 per cent in his study the constraints faced by CFLD on oilseeds. The second major constraint withstood poor transport facilities from field to market with an average score of 56.03 is due to insufficient support and facilities to ensure farmers' timely delivery of their harvest into markets. Third, lack of proper marketing channel with an average score of 53.80 is might be the reason due to involvement of middle man, local lenders and inadequate market infrastructure Shrivastava *et al.* (2022a) also reported the similar constraint, followed by fourth a lack of awareness in application of recommended dose of fertilizers and crop boosters with an average score of 48.28 is due to farmers routinely over-apply fertilizers, or practice imbalanced application, inadequate knowledge on recommended dose of fertilizer and crop boosters become more complex to the standing crop and affect the production and productivity. The findings are in line with Meena (2011) and Patil *et al.* (2018).

Table 3. Ranking of constraints faced by CFLD beneficiaries of groundnut growers

S. No.	Constraints	Total	Average score	Garrett rank
1.	Poor labour availability	4000	66.67	1
2.	Unequal remunerative price of their produce in market	2856	47.60	5
3.	Lack of proper marketing channel	3228	53.80	3

4.	Poor transport facilities from field to market	3362	56.03	2
5.	Lack of awareness among organic input utilization	2378	39.63	8
6.	Added cost due to additional inputs given by KVK as a component of CFLD	2777	46.28	6
7.	Lack of proper technologies from sowing to harvesting	2508	41.80	7
8.	Lack of awareness in application of recommended dose of fertilizers and crop boosters	2891	48.28	4

Unequal remunerative price of their produce in the market is the fifth major constraint with average score of 47.60 might be the reason uneven changes in market price, the demand of the produce is low, as newly introduced HYV seeds with poor quality having bitterness in seeds is only used for oil extraction. The sixth constraint is due to added cost due to additional inputs given by KVK with an average score of 46.28 is due to the additional inputs like seed cost, biofertilizers, organic inputs incurred by farmers. The results are at par with Rai *et al.* (2020) and Samui K *et al*. (2000) Seventh, the lack of proper technologies from sowing to harvesting with an average score of 41.80 is due to lack of awareness among technical knowledge. Similar findings was reported by Singh *et al.* (2016), Rai *et al.* (2020) and Sharma *et al.* (2022). Lack of awareness among organic input utilisation with an average score of 39.63 was eighth due to added cost incurred in the cost of cultivation. The effects will sometimes remain as plant protection.

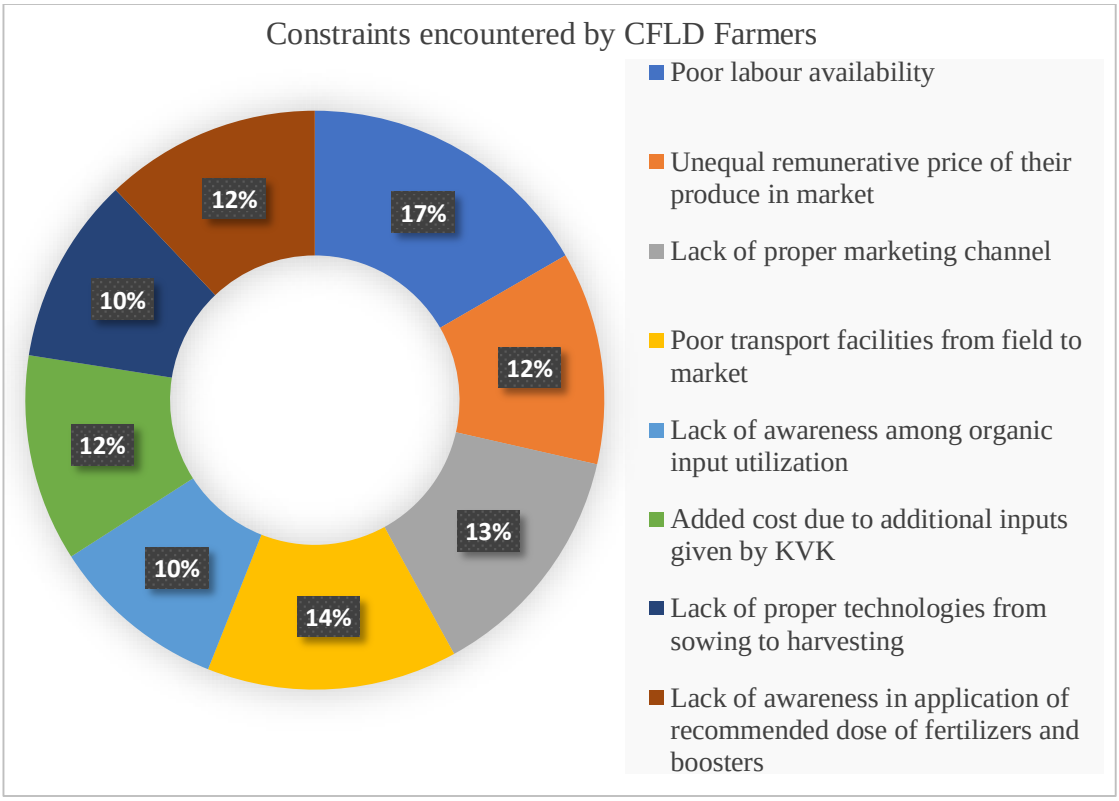

Figure 2. Constraints faced by groundnut growers of Villupuram district during 2019-2020 and 2020- 2021

CONCLUSION

The findings have shown that the role of CFLD organised by KVK on groundnut cultivation was useful in enhancing the productivity of oilseed crops vertically and ensured rapid spread of recommended practices of groundnut crop horizontally. Thus, it can be inferred that the effective intervention of CFLD to demonstrate the new variety and improved technologies in groundnut cultivation on cluster basis should impact the profile of CFLD beneficiaries in a positive way. Therefore, it is recommended that extension agencies should provide additional support to transfer the technologies on farmers field and reduce the constraints encountered by groundnut farmers by adopting cluster approach for harnessing profitability and sustainability. Additionally, policymakers provide the adequate financial support to CFLDs under close supervision of KVK scientists and Subject Matter Specialists (SMSs). This study suggests strengthening of extension approaches to educate farmers for better adoption and increase the profitability of the farm under cluster manner.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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