

**RESEARCH ARTICLE :**

Impact of cluster frontline demonstrations on red gram in Davanagere district

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SUMMARY : In order to introduce suitable intercrop in maize, ICAR-Taralabalu Krishi Vigyan Kendra, Davanagere has taken up cluster frontline demonstrations on integrated crop management in red gram and introduced BRG-5 variety. The demonstrations were conducted in 2 clusters namely, Santebennur and Devarahalli during 2017-18 and 2018-19, respectively covering 100 farmers (50/year). The results reveals that the increase in yield was found to be 27.13 per cent and 27.8 per cent during 2017-18 and 2018-19, respectively. The technology index was 20.66 per cent and 20.93 per cent. During 2018-19, FLD farmers sold 31.4q as seeds to 280 farmers. In 2019-20, 26 FLD farmers sold 26.8q as seeds to 169 farmers. The seed procurement agency sold 20.6 q. and 74.5q. during 2018-19 and 2019-20, respectively, including through Raith Sampark Kendras. The data on vertical spread of technology reveals that 68 per cent and 52 per cent FLD farmers continued with BRG-5 variety during 2018-19 and 2019-20, respectively. Main reasons for non-adoption of BRG-5 red gram variety during 2019-20 are red gram is not profitable as maize (79.1%), lack of rainfall during June and July (45.83%), difficulty in use of weedicide maize (33.33%) and wilt problem (20.83%).

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BACKGROUND AND OBJECTIVES

Frontline demonstrations on integrated crop management of red gram were conducted by ICAR-Taralabalu Krishi Vigyan, Davanagere under National Food Security Mission on cluster demonstration concept. The demonstrations were conducted in Santebennuru and Devarahalli clusters during 2017-18 and 2018-19, covering 50 farmers per year. The BRG-5 variety (Source: University of Agricultural Sciences, Bengaluru) has been introduced for the first time in the district. The

new variety with medium duration, red coloured seeds, tolerance to wilt and bold seeds are preference in the market. The farmers were motivated to sell the red gram as seeds since, BRG-5 variety is newly introduced in the district and reddish colour and bold seeds are accepted in the market. Maize occupies 189436 ha in Davanagere district mainly grown as mono crop and red gram in 8143 ha (Anonymous, 2017-18). The cluster demonstrations aimed at introducing suitable intercrop in maize as well as red gram as sole crop.

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Objectives:

This paper has been prepared with following objectives.

- To analyse the performance of cluster frontline demonstrations on red gram.
- To know the vertical and horizontal spread of BRG-5 red gram variety in Davanagere district.
- To identify the reasons for non-adoption of BRG-5 red gram variety by demonstrated farmers.

RESOURCES AND METHODS

The frontline demonstrations on integrated crop management of red gram were conducted in 2 clusters namely; Santebennuru and Devarahalli during 2017-18 and 2018-19 covering 100 farmers. The ICM practices like land preparation, seed treatment, spacing, intercultivation, nipping, integrated nutrient management, integrated pest and disease management, harvesting and marketing technologies were demonstrated to the farmers. Post demonstrated survey was conducted during August 2019 to know the adoption of BRG-5 variety by the demonstrated farmers and spread of the variety among other farmers. Following procedure employed to analyse the performance of demonstrations.

- Benefit cost ratio: Gross return/cost of cultivation.
- Technology gap = Potential yield-Demonstration yield.
- Extension gap= Demonstration yield – Local check yield.

- Technology index = $[(P_y - D_y)/P_y] \times 100$,
 where, P_y = Potential yield and
 D_y = Demonstration yield.

OBSERVATIONS AND ANALYSIS

The results of cluster frontline demonstrations under national food security mission has been presented in Table 1. Through demonstrations BRG-5 red gram variety has been introduced in Santebennuru and Devarahalli clusters during 2017-18 and 2018-19, respectively. The results reveals that there was 27.13 per cent and 27.8 per cent increase in yield in demonstrations were recorded over the check plots. This clearly indicates efforts of scientists in disseminating agricultural information to the demonstrated farmers resulted in significant increase in yield. Similar increase in yield levels in sunflower were recorded by Mamgai *et al.* (2017). The highest technology gap was found during 2018-19 (314 kg/ha) followed by 310 kg/ha during 2017-18. The possible reasons for this were individual farmers understanding of technology demonstrated, soil moisture levels, variation in soil fertility status and previous crops grown in the same land. This clearly indicates the need for location specific recommendations to narrow down the existing gap. Higher technology gap in mustard was also recorded by Meena *et al.* (2012). Higher technology gap was found in both the years than extension gap and the gap was narrow. Previous knowledge of farmers in red gram cultivation and performance of local check variety (BRG-

Table 1: Results of frontline demonstrations on BRG-5 red gram variety

Year	Particulars	Gross cost (Rs./ha)	Gross returns (Rs./ha)	Net return (Rs./ha)	Yield (q/ha)	% increase	B:C ratio	Technology gap (kg/ha)	Extension gap (kg/ha)	Technology index (%)
2017-18	Demonstration	12063	40480	28417	11.9	27.13	3.34	310	254	20.66
	Check	11816	29958	18142	09.36		2.53			
2018-19	Demonstration	21322	47456	26134	11.86	27.80	2.24	314	258	20.93
	Check	20338	37128	16790	9.28		1.83			

Note: Potential yield of BRG-5 is 1500 kg/ha

Table 2: Other results of cluster frontline demonstrations on BRG-5 red gram variety

Parameters	2017-18		Per cent change	2018-19		Per cent change
	Demonstration	Check		Demonstration	Check	
Plant height (cm)	190.75	172.48	10.59	176.06	169.35	03.96
No. of pods/Plant	98.99	77.31	40.26	93.1	76.18	22.21
Wilt incidence (%)	3.15	6.25	98.41	4.24	7.38	74.05
Pod borer incidence (%)	4.20	12.50	197.62	6.72	12.58	87.20

2) also contributed to lower extension gap. Lower values of technology index, 20.66 and 20.93 per cent during 2017-18 and 2018-19, respectively, this clearly indicates the higher rate of adoption of demonstrated technologies. The demonstrations on red gram were taken up in integrated crop management mode. The technologies like land preparation, seed treatment, seed rate, spacing, nipping, integrated nutrient management, integrated pest and disease management, harvesting and marketing were demonstrated.

The other results of cluster frontline demonstration of BRG-5 variety compared to check variety (Table 2) reveals that 10.59 and 03.69 per cent increase in plant height over check during 2017-18 and 2018-19, respectively. Further, it was observed that 40.26 and 22.21 per cent increase in number of pods per plant, 98.41 and 74.05 per cent reduction in incidence of wilt and 197.62 and 87.20 per cent reduction in incidence of pod borer were recorded during 2017-18 and 2018-19, respectively. The newly introduced BRG-5 red gram variety is tall growing with more branches there by increased branches and pods per plant which contributes to increased yield. Further, nipping practice was demonstrated to farmers 55 days after sowing. The distinctive character of BRG-5 variety is tolerant to wilt and pod borer incidence and results of the demonstration confirms the same when compared to check varieties. Less incidence of pest and diseases

directly contribute to the increase in yield. Similar findings were reported by Noorjehan *et al.* (2017).

Since BRG-5 red gram variety is newly introduced in Davanagere district, there exists demand for this red coloured seeds as it is preferred in market. During 2018-19, 42 per cent FLD farmers sold 31.4q of seeds to 280 fellow farmers and 20.6q to private seed procurement agency and in 2019-20, 52 per cent of CFLD farmers sold 26.8 q seeds to 169 farmers and 74.5q to seed procurement agency. Considering demand for BRG-5 seeds ICAR-Taralabalu Krishi Vigyan Kendra organized special seminar for CFLD farmers in collaboration with seed procurement agency and Rashtriya Chemicals and Fertilizers Limited (RCF) to motivate the farmers to sell BRG-5 variety as seeds. The seed procurement agency offered price of Rs. 50/kg immediately after harvest as against Rs. 35/kg existed in open market. Direct selling to the farmers as seed fetched Rs. 100/kg. The list of CFLD farmers along with their contact details was given publicity through KVK WhatsApp groups and Raitha Samparka Kendras.

The data on vertical spread of BRG-5 red gram variety reveals that 68 per cent and 52 per cent adopted this variety during 2018-19 and 2019-20, respectively. The major reasons for non-adoption of BRG-5 variety were red gram is not profitable as maize (79.1%) followed by lack of rainfall during June-July (45.85%), difficulty in use of weedicide in maize (33.33%) and incidence of

Table 3: Spread of BRG-5 red gram variety

Year	No. of CFLD farmers	No. of CFLD farmers sold seeds	Per cent	Quantity (q)	No. of farmers	Sold to seed procurement agency (q)
2018-19	50	21	42	31.4 (238)*	280	20.6
2019-20	50	26	52	26.8 (237.2)*	169	74.5

* Figures in parenthesis indicates total production of BRG-5 red gram variety under CFLDs

Table 4: Vertical spread of BRG-5 red gram variety

Year	No. of FLD farmers	No. of FLD farmers adopted	Adoption per cent
2018-19	50	34	68
2019-20	50	26	52

Table 5: Reasons for non-adoption of BRG-5 red gram variety among the FLD farmers (2019-20)

Sr. No.	Reasons	No.	Per cent
1.	Red gram is not profitable as maize	19	79.1
2.	Lack of rainfall during June-July	11	45.83
3.	Difficulty in use of weedicide in maize	08	33.33
4.	Incidence of wilt	05	20.83

wilt (20.83%). The prices of red gram in open market ranged from Rs. 3000-3500/q which might influenced these farmers not to go for red gram in the following year. The district received 60 mm rainfall against 76 mm (-56% deficit) in June-2019 and 76 mm against normal rainfall of 97 mm (-21 % deficit) in July-2019. This played vitol role in not taking up red gram and sown maize instead. In addition the cluster received continuous rains during October and November in the previous year resulting in incidence of wilt might have discourage farmers to continue with red gram. Similar findings of 40 per cent partial and 16.7 per cent non-adoption of demonstrated red gram varieties were reported by Venkateshwar Rao *et al.* (2017).

Conclusion:

The cluster frontline demonstrations resulted in higher yield and income through selling of red gram for seed purpose. The efforts of Krishi Vigyan Kendra bringing changes in marketing behaviours of farmers are resulted in partial changes. The spread of BRG-5 variety in the district is encouraging as it reached Raitha Samparka Kenras (RSK) and has the good potential to replace maize upto some extent in the district in the coming years.

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REFERENCES

Anonymous, Davanagere District at a Glance-2017-18, Department of Statistics, Davanagere.

Annual Reports, 2017-18 and 2018-19, ICAR-Taralabalu Krishi Vigyan Kendra, Davanagere.

Mangai, Preeti, Singh, Narinder and Bala, Akku (2017). Enhancement in production of sunlower in North India through conductance of cluster front line demonstrations, *J. Krishi Vigyan*, **5** (2) : 67-69.

Meena, B.L., Meena, R.H. and Balai C.M. (2012). Yield gap analysis of mustard through frontline demonstrations in agro climatic zone-1 of Rajasthan, *J.Oilseed Brassica*, **3**(1) : 51-55.

Noorjehan, A. K. A. Hanif, Ramasamy, R.S., Davidson, Joshua and Pandiyan, M. (2017). Popularization of horse gram (*Macrotyloma unilorum*) in Vellore district of Tamil Nadu. *J. Krishi Vigyan*, **6** (1) : 148-150.

Venkateshwar Rao N., Jain, P. K., Jagan Mohan Reddy, M. and Kishor Kumar, N. (2017), Production technologies of red gram (*Cajanus cajan* L.) adopted by farmers of Karimnagar district of Telangana, *J. Krishi Vigyan*, **6** (1) : 157-161.

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