



# Assessing the Performance of French Bean (*Phaseolus vulgaris* L) in District Virudhunagar of Tamilnadu

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## ABSTRACT

This study was designed in order to evaluate the yield performance and market preference of three French bean varieties namely *Arka Komal*, *Arka Suvidha* and *Arka Anoop* in Virudhunagar district. The green pod yield was more or less similar in *Arka Anoop* (185q/ha) and *Arka Suvidha* (180q/ha) due to their yield contributing traits namely number of primary branches per plant, 4.06 and 4.18; number of green pods per plant, 16.60 and 19.08 and green pod length, 15.32 and 17.00 in *Arka Anoop* and *Arka Suvidha*, respectively as compared to farmer's choice of variety. Even though the green pod yield was recorded more in *Arka Anoop*, the net return and B: C ratio was higher in *Arka Suvidha* due to higher market price. Farmers realized that both *Arka Anoop* and *Arka Suvidha* were better choice of varieties in terms of yield and market price.

**Key Words:** French Bean, Performance, Varieties, Green Pod Yield, Market Preference.

## INTRODUCTION

French bean (*Phaseolus vulgaris* L.) belongs to the family Fabaceae, is a native of Latin America. Being a short duration and a nutritious legume vegetable crop, it is becoming popular with the farmers of India. It is known by different names, viz., kidney bean, haricot bean, snap bean, navy bean, pole bean, bush bean etc. The dry seed type varieties are called as *Rajmah* in India. Its seed contains 21.1 per cent protein, 69.9 per cent carbohydrates, 1.7 per cent fat, 381 mg calcium, 425 mg phosphorous and 12.4 mg iron per 100 g of edible part (Ali and Kushwaha, 1987).

It is grown in the states of Tamilnadu, Karnataka, Maharashtra, Andhra Pradesh, Telengana and Gujarat. There is no variety available which have been recommended for growing in southern region of Tamilnadu. French bean is being cultivated in about 90 ha in Kariapatti, Aruppukottai, Sathur and Rajapalayam blocks of Virudhunagar district. In that region farmers are cultivating old varieties like *Arka Komal*. Number of varieties are available but very little is known regarding their performance. Hence this study was undertaken to assess the green pod

yield and market preference of two new varieties viz., *Arka Suvidha* and *Arka Anoop* in comparison to farmer's choice i.e., *Arka Komal* with the objective to carry out a critical comparison of adapted variety and the newly introduced French bean varieties in Virudhunagar district in order to guide and educate the farmers of the area.

## MATERIALS AND METHODS

The seed of two newly released varieties viz., *Arka Suvidha* and *Arka Anoop* released by Indian Institute of Horticultural Research (IIHR), Bengaluru were used under On Farm Testing during Rabi 2011-12 at ten identified farmers' fields.

Recommended seed rate of 50 kg/ha was adopted. Seed treatment with Carbandazim @ 2 g/kg of seed was done 24 hours before sowing to control fungal diseases. Three varieties were raised on ridges formed at a distance of 30 cm apart at 15 cm intra row spacing as contiguous block in an acre in each farmer's field. Irrigation was applied immediately after sowing and later on as and when required. Farmyard manure @ 25 t/ha was applied during last ploughing of the field.

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Ninty kg of N and 125 kg of P per hectare were applied on one side of the ridges. Two hand weeding were carried out, first at 20 to 25 and second at 40 to 45 days after sowing followed by earthing up.

Regular field visits were made by the team of KVK scientists. The biometrical observations were recorded on number of primary branches per plant, number of green pods per plant, green pod length and green pod yield. Economics was also worked out and compared with farmer's practice from the information obtained from each farmer. The statistical analysis of the data was performed in randomized block design considering locations as replication using PB-Tools software developed by International Rice research Institute, Phillipines.

## RESULTS AND DISCUSSION

### Number of primary branches per plant

The data (Table 1) showed that significantly higher number of primary branches per plant (4.18) were recorded in *Arka Anoop* followed by *Arka Suvidha*. In *Arka Komal*, number of primary branches per plant were 3.94 which is directly related with pod yield. This finding was in congruity with those of Anjanappa *et al* (2000), Abdel-Mawgoud *et al* (2005), Mehra and Singh (2012) and Akhilesh *et al* (2013) for number of primary branches per plant.

### Number of green pods

Table 1 showed that maximum number of green pods per plant (19.08) was recorded in *Arka*

*Anoop* followed by *Arka Suvidha* (16.6) and *Arka Komal* (13.8). This parameter is an important yield contributing trait and was in accordance with the results observed by Anjanappa *et al* (2000), Abdel-Mawgoud *et al* (2005) Mehra and Singh (2012) and Akhilesh *et al* (2013) for number of green pods per plant. Koli and Akashe (1995) observed that pods per plant were higher in 30 cm row spacing instead of 25 cm row spacing French bean varieties. Therefore, it was inferred that *Arka Anoop* may give due response to canopy density.

### Length of green pod

Significantly higher length of green pod per plant (17 cm) was noticed in *Arka Anoop* followed by *Arka Suvidha* where length of green pod per plant was 15.32 cm (Table 1). In *Arka Komal*, length of green pod per plant was 13.25 cm. It was evident that pod length has a direct positive effect on pod yield per plant .

### Green pod yield

The yield parameters (Table 1) showed that significantly higher number of primary branches per plant, maximum number of green pods per plant and higher length of green pod per plant were recorded in *Arka Anoop* followed by *Arka Suvidha*. The pod yield variations amongst the genotypes under varying field conditions have been reported by several workers (Hariharram and Singh 1990; Jadhao 1993). The result revealed that number of primary branches per plant, number of green pods per plant and length of green pod per plant were related to the yield

Table 1. Genotypic effect on yield and yield traits & benefit cost ratio of French bean varieties.

Parameters	Mean			SE <sub>m</sub>	SE <sub>d</sub>
	<i>Arka Komal</i>	<i>Arka Suvidha</i>	<i>Arka Anoop</i>		
Primary branches (no./plant)	3.94	4.06	4.18	0.088	0.088
Green pods (no./plant)	13.80	16.60	19.08	0.492	0.571
Pod length (cm)	13.25	15.32	17.00	0.338	0.239
Green Pod Yield (q/ha)	169.0	180.0	185.0	0.532	0.325
<b>Economics</b>					
Gross cost (Rs./ha)	51,420	52,400	51,400		
Gross return (Rs./ha)	1,69,000	1,98,000	1,85,000		
Net return (Rs./ha)	1,17,580	1,45,625	1,31,625		
B:C ratio	3.29:1	3.78:1	3.55:1		

SE<sub>m</sub>=Standard Error of Mean

SE<sub>d</sub>=Standard Error of the Difference

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mostly through their direct effects which was confirmed by many workers in their correlation and path analysis studied in french bean varieties.

### Economics

The gross cost of cultivation was almost similar for all the three varieties. Market preference for *Arka Suvidha* was good and fetched higher price. Even though the green pod yield was recorded more in *Arka Anoop* but the net return and B: C ratio was higher in *Arka Suvidha* due to higher market price. It was reflected in benefit cost ratio of 3.78 obtained with sale of *Arka Suvidha* green pods whereas benefit cost ratio of 3.55 and 3.29 were obtained through *Arka Anoop* and *Arka Komal*, respectively.

### CONCLUSION

The findings of the present study revealed that cultivating *Arka Anoop* and *Arka Suvidha* in southern districts like Virudhunagar was more beneficial due to their yield contributing traits namely number of primary branches per plant, number of green pods per plant and green pod length which were recorded more as compared to farmer's choice of variety i.e., *Arka Komal*. Farmers realized that both *Arka Anoop* and *Arka Suvidha* were better choice of varieties in terms

of yield and market price.

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