

Farmer participatory varietal evaluation of French bean in Western Ghats of Erode district, Tamil Nadu

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ABSTRACT

French bean (*Phaseolus vulgaris*) is an important protein rich vegetable crop cultivated in Western Ghats of Erode district of Tamil Nadu. Farmer participatory on-farm trials were conducted by Krishi Vigyan Kendra, MYRADA in Erode district for evaluating French bean varieties for maximizing productivity and nutritional security among the hilly regions during rabi 2019. Results indicated that yield attributing characters such as pod length, pod weight and yield were significantly influenced by the varieties. The highest pod length of 13.88 cm and 100-pod weight of 559.00 gram were observed in Arka Arjun followed by 11.02 cm pod length and 531.00 gram test weight recorded in Arka Sharath. The pod yield of 13.70 and 13.16 tonne/ha was recorded in Arka Arjun and Arka Sharath respectively. The lower yield of 10.20 tonne/ha was recorded in Arka Komal variety. Similarly the higher gross return and net return of Rs 2,87,700/ha and 2,01,180/ha respectively were recorded in Arka Arjun followed by Arka Sharath and Arka Komal varieties. The benefit-cost ratio was recorded 3.32 in Arka Arjun and lower of 2.57 in Arka Komal variety. Based on the results it can be concluded that Arka Arjun and Arka Sharath may be adopted for higher productivity and profitability in the region.

Keywords: Economics; French bean; variety; yield; evaluation

INTRODUCTION

French bean (*Phaseolus vulgaris*) is an important protein-rich vegetable crop cultivated in India and it is used as vegetable and for grain purposes. In Tamil Nadu, it is mainly used for culinary purposes and is mainly cultivated in the Western Ghats of Tamil Nadu. Generally it is cultivated in marginal lands in all the seasons under assured irrigated conditions. The farmers in the region have been cultivating an old variety which is having the capacity of bearing low yield. The production potential of the crop has been reduced to less than 10 tonne/ha. However the area under cultivation of beans has been gradually increasing due to its market demand. Therefore increasing the productivity of French bean is need of the hour for increasing the farmers income.

The productivity of bean was increased by adopting high yielding varieties and improved crop production technologies. The farmers were not aware

on these aspects and about 90 per cent of the area was covered with Arka Komal variety which was released 20 years back. Therefore Krishi Vigyan Kendra, MYRADA conducted farmers participatory on-farm trials on evaluation of high yielding French bean variety for Western Ghats of Tamil Nadu.

MATERIAL and METHODS

The present study was conducted in farmer participatory mode during rabi 2019 by involving five progressive farmers from Bargur, Thurusanampalayam village which is located in the Western Ghats of Erode district. The field was laid out under randomized complete block design. Sowing was taken up in an area of 20 x 20 m for each variety. The varieties like Arka Arjun, Arka Sharath and Arka Komal were selected for trial and the special features of these varieties are presented in Table 1. The selected progressive farmers were trained on scientific French bean cultivation aspects before starting of the experiment. The farmers

were provided with good quality seed, *Pseudomonas* for seed treatment and Arka vegetable specials for foliar application. Regular monitoring visits were made by KVK officials for ensuring the adoption of scientific management practices. The data on pod length, 100-

green pod weight and yield were recorded. The cost of cultivation and profit details for each variety were collected from the farmers for working out the benefit-cost ratio. The cost was worked out based on the prevailing market prices in the local conditions.

Table 1. Varieties and their special features

Variety	Features/traits
Arka Arjun	Plants bushy, vigorous and photo-insensitive; pods green, stringless with smooth surface; suitable for both rabi and summer seasons; resistant to YMV disease; pod yield 17 tonne/ha in 70 days
Arka Sharath	Plants bushy, vigorous and photo-insensitive; pods round stringless, smooth, suitable for steam cooking, crisp, fleshy with no parchment and perfectly round on cross section; pod yield 18.5 tonne/ha in 70 days
Arka Komal	Plants erect, bushy and photo-insensitive; pods flat, green and straight; good for transportation and cooking quality; pod yield 20 tonne/ha in 70-75 days

RESULTS and DISCUSSION

The results of the demonstrations conducted in the farmers fields are presented in Table 2. It was found that higher pod length of 13.88 cm was recorded in Arka Arjun which was on par with Arka Sharath. Similarly 100-green pod weight of 559.00 gram was recorded in Arka Arjun followed by 531.00 gram in Arka Sharath. Arka Komal recorded lowest pod length as well as pod weight. The higher average yield of 13.70 tonne/ha was recorded in Arka Arjun which was on par with Arka Sharath. The lowest yield of 10.20 tonne/ha was recorded in Arka Komal. The findings of the present study are in line with those of Dhaka et al (2010) and Rai et al (2015).

The economic feasibility of different varieties was calculated depending upon the prevailing prices of inputs and output cost and the results are presented in Table 3.

It was found that the cost of production of Arka Arjun variety was Rs 86,520.00/ha with the highest net return of 2,01,180.00/ha and the benefit-cost ratio of 3.32. Economic analysis of yield performance revealed that Arka Sharath variety recorded the higher gross return of Rs 86,900.00/ha and net return of Rs 1,82,880.00/ha with the benefit-cost ratio of 3.10 over local check. The results are in line with the findings of Sreelakshmi et al (2012) and Kumar et al (2010).

Table 2. Yield and yield attributes of different varieties of French bean

Variety	Pod length (cm)	100-pod weight (g)	Yield (tonne/ha)
Arka Arjun	13.88	559.00	13.70
Arka Sharath	11.02	531.00	13.16
Arka Komal	10.20	503.00	10.20

Table 3. Cost of cultivation, gross return, net return and BCR as influenced by varieties of French bean

Variety	Gross cost (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	BCR
Arka Arjun	86,520.00	2,87,700.00	2,01,180.00	3.32
Arka Sharath	86,900.00	2,69,780.00	1,82,880.00	3.10
Arka Komal	87,500.00	2,24,840.00	1,37,340.00	2.57

From the results it is evident that the average pod length, pod weight and yield were recorded higher in Arka Arjun and Arka Sharath varieties as compared to Arka Komal. Thus Arka Arjun and Arka Sharath can help to increase the net income of the farmers per unit area in Western Ghats of Erode district of Tamil Nadu.

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