

On Farm Testing of Long Bean in Tirap District of Arunachal Pradesh

Abhimanyu Chaturvedi¹, Arvind Pratap², V. K. Pandey³ and A. K. Pandey⁴

¹SMS (Horticulture), Krishi Vigyan Kendra, Tirap

²SMS (Agronomy), Krishi Vigyan Kendra, Tirap

³SMS (Horticulture), Krishi Vigyan Kendra, Lower Dibang Valley

⁴SMS (Soil Science), Krishi Vigyan Kendra, Lower Dibang Valley

ARTICLE ID: 44

Introduction

The long bean (*Vigna unguiculata* (L.)) is a economically important leguminous vegetable crop. It is generally known as vegetable cowpea. It is also called as Chinese long bean, string bean, snake bean, snap pea with chromosome number $2n = 2x = 22$. This plant is of a different genus from the common bean. It is a vigorous climbing annual vine. It is a variety of the cowpea and grown primarily for its strikingly long (35- to 75-cm) immature pods and has uses very similar to that of the green bean. The varieties of yard long beans are usually distinguished by the different colors of their mature seeds. The plant attracts many pollinators, specifically various types of yellow jackets and ants. It is a highly self-pollinating annual crop. Natural crossing between plants in a row is less than 1%. The crop is mainly cultivated for its green tender pods for vegetable purpose. Now-a-days it is being cultivated in several states of India. It is most extensive cultivated in north eastern states of India, however in Arunachal Pradesh, it is generally cultivated in isolated pockets and mostly in kitchen gardens. Being leguminous vegetable, it is generally valued for its nutritive value.

It contains a good amount of digestible protein both in pods (23.5 -26.3%) and in leaves. Yard long beans are a good source of vitamins A and C, providing 17% and 31% of the recommended daily allowance for these vitamins respectively. It is also rich in calcium (72.0 mg), phosphorus (59 mg), iron (2.5 mg), carotene (564 mg), thiamine (0.07 mg), riboflavin (0.09 mg) and vitamin C (24 mg) per 100 g of edible pods. It is also a good source of micronutrients containing 102.69 - 120.02 mg kg⁻¹ of iron, 32.58-36.66 mg kg⁻¹ of zinc, 2.92-3.34 mg kg⁻¹ of manganese, and 0.33- 0.57 mg kg⁻¹ of cobalt (Ano and Ubochi, 2008).

It enriches soil fertility by fixing atmospheric nitrogen. Because of its quick growth habit it has become an essential component of sustainable agriculture in marginal lands of the tropics. It is usually grown intercropped with sorghum or millet and also in rotation cropping system. Optimum average temperature during the growing period is 20°C to 30°C. It prefers full sunshine during growth and development, whereas cloudy and rainy weather cause low yield due to poor fruit set and dropping of young pods. It can be grown in various soil types from sandy loam to clay, but loam and sandy loam with pH 6.2-7.0 are the best for yard long bean production. Although it is a highly nutritive legume vegetable, commercial cultivation of yard long bean for vegetable purpose was very low. The production and productivity of yard long bean is mainly constrained by low yield, sensitive to adverse climatic conditions and susceptibility to pests and diseases. Yardlong bean varieties with high yield and better pod quality has not been populazed in Tirap district of Arunachal Pradesh till now.

The selection of suitable varieties is an important step for successful and economic cultivation of any crop. In view of its nutritive value and being as legume vegetable plays key role in sustainable crop management programme. Hence, promotion of the crop in Tirap district will certainly improve the soil fertility status and nutritional imbalance. So, keeping all these facts in mind the On Front Testing (OFT) of Long Bean were conducted at selected farmers field.

The OFT conducted during Kharif season of 2022-23. Total three long bean cultivars viz., Arka samridhi (T-1), Arka Mangala (T-2) and local (T0) were sown in OFT. Data on growth parameters, yield attributes and yield was collected during the experimental period from five randomly selected plants from each demonstration plot. The data was recorded on plant height (cm), days taken for first flowering, days to 50 % flowering, days to first pod harvesting, number of pods per plant, pod length (cm), pod girth (cm), number of seeds per pod, pod yield (q/ha).

It is clear from Table no -1 that the highest plant height (3.20 m) recorded with T-0, followed by T-2 (3.10 m) and minimum with T-1 (2.98 m) while maximum no pf branches /plant (12.62) recorded with T-1, followed by T-2 (10.24) and minimum (9.10) recorded with T-0. In concern of flowering, fruiting and 1st harvest; T-2 took minimum days (39. 20, 57 and 61) followed by T-1 (39.89, 59 & 63) while delayed with recorded with T0 (41.80, 61 & 64).

Table: 1. Growth attributes of long bean

Parameters	Arka samridhi (T-1)	Arka Mangala (T-2)	local (T0)
Plant height (m)	2.98	3.10	3.20
No of branches	12.62	10.24	9.10
Days to 1 st flowering	39.89	39.20	41.80
Days to 50% flowering	59	57	61
Days to 1 st harvest	63	61	64

The table: 2 clearly showing that the Variety Arka Samridhi (T-1) was best in terms of - pod length, pod girth, no of fruits per fruiting, no of pods per plant, average pod weight and yield maximum with (39, 3.3, 21.6, 46, 12.4 and 171 respectively) followed by T-2 (34, 3.2, 20.9, 42, 11.8, 164 and 164) while the poorest values recorded with T0 (26, 2.9, 18.4, 37. 9.6 and 136 respectively). In respect of crop duration, variety: Arka Meghna (T-2) was earliest (98 days) followed by Arka samridhi (T-1- 105 days) while local was the delayed (T0- 112 days). Similarly the Arka Samridhi was the best in term of benefit cost ratio followed by Arka meghna while Local was the poorest.

Table :2. Yield attributes and Economics of long bean

Parameters	Arka samridhi (T-1)	Arka Mangala (T-2)	local (T0)
Pod length (cm)	39	34	26
Pod girth (cm)	3.3	3.2	2.9
No of fruit/fruiting	21.6	20.9	18.4
No of pods/plant	46	42	37
Average pod weight (gm)	12.4	11.8	9.6
Yield (q)/ha	171	164	136
Crop duration	105	98	112
Gross cost (Rs/ha)	37,768	38,912	34,951
Gross return (Rs/ha)	1,71,000	1,64,000	1,36,000

Net return (Rs/ha)	1,66,232	1,77,088	1,01,049
B.C Ratio	4.52	4.21	3.88

