Short Communication

# Variability for pod yield and its components in germplasm of tree bean (*Parkia timoriana* DC)

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## ABSTRACT

Variability for pod yield and its components was estimated among seventeen germplasm lines of tree bean (*Parkia timoriana* DC). Wide range of variations was recorded for the traits indicating diverse genetic nature of the base population. The days to mature immature pods varied from 108.9 to 132.5 but there were no statistical differences among the lines for this trait. Plant height varied from 260.9 to 389.6 cm, pod length from 12.5 to 24.1 cm, number of green pods from 6 to 9, 100-seed weight from 91.5 g to 140.8 g and green pod yield from 113.0 to 291.5 g/plant. A wide range of variations indicated that there was better scope for selection of these traits and identification of promising lines in tree bean.

**Keywords:** Germplasm; pod yield; traits; tree bean; variability

## INTRODUCTION

*Parkia timoriana* DC, popularly known as tree bean (locally Yongchak in Manipuri), belongs to Leguminosae family. It has self-incompatibility. Since flower is not self-pollinated, gene flow is expected to have genetic variation among its population. It plays an important role in traditional agriculture, but has not entered commercial trade to any significant extent. Plant is a highly important source of income and livelihood support for both hill and plain zone people during winter season. It serves as an important dietary supplement as well as is of therapeutic significance for curing various ailments. Its seeds are ground into pungent nutritious spice which is added to soups and stews. It is also used as fodder, fuel, timber, green manure and medicine and protects soil from heat. In the present study local germplasms of tree bean were collected to observe the variations among them so that superior lines could be selected for improvement of green pod yield.

## MATERIAL and METHODS

Seventeen germplasm lines of tree bean (*Parkia timoriana* DC) were collected from villages/ local market of Manipur. These were sown in augmented design in the horticultural farm of the Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh during Kharif 2021. The experimental plot of each line comprised a single row of 3 meters length. Row to row and plant to plant distance was kept at 60 cm x 30 cm. Recommended doses of fertilizers and cultural operations were applied to provide better nutrition for crop growth. The observations were recorded on three random plants from each plot for growth parameters, yield attributes and green pod yield. The analysis of variance for augmented design was done as per Federer and Raghavarao (1975).

## RESULTS and DISCUSSION

The study ravealed wide variations for all the traits indicating sufficient genetic variability to exploit in breeding programmes. The data on response of different germplasm lines wrt growth parameters, yield attributes and pod yield in tree bean are given in Table 1. The days to mature immature pods varied from 108.9 (CGPB21-16) to 132.5 (CGPB21-14) but there were no statistical differences among the lines for this trait. Plant height varied from 260.9 cm (CGPB21-5) (which was at par with all the lines tested

Table 1. Response of germplasm lines wrt growth parameters, yield attributes and pod yield in tree bean

| Germplasm line | Days to mature immature pods | Plant height (cm) | Pod length (cm) | Number of green pods/plant | 100-seed weight (g) | Green pod yield/plant (g) |
|---|---|---|---|---|---|---|
| CGPB21-1 | 118.7 | 320.2 | 18.0 | 8 | 119.1 | 231.0 |
| CGPB21-2 | 112.1 | 350.5 | 22.2 | 9 | 121.8 | 246.5 |
| CGPB21-3 | 120.7 | 354.3 | 23.0 | 8 | 100.5 | 237.0 |
| CGPB21-4 | 125.8 | 371.2 | 24.1 | 9 | 140.8 | 280.5 |
| CGPB21-5 | 122.6 | 260.9 | 19.2 | 7 | 104.4 | 118.5 |
| CGPB21-6 | 114.8 | 365.3 | 18.3 | 7 | 117.5 | 228.5 |
| CGPB21-7 | 128.8 | 360.7 | 17.2 | 8 | 117.6 | 195.0 |
| CGPB21-8 | 121.5 | 379.2 | 18.5 | 8 | 111.5 | 167.0 |
| CGPB21-9 | 119.8 | 296.8 | 16.3 | 7 | 95.1 | 118.0 |
| CGPB21-10 | 120.1 | 321.0 | 18.2 | 7 | 96.8 | 205.0 |
| CGPB21-11 | 125.6 | 358.6 | 19.3 | 8 | 96.6 | 140.0 |
| CGPB21-12 | 130.2 | 286.5 | 15.1 | 6 | 105.2 | 116.5 |
| CGPB21-13 | 115.1 | 305.4 | 15.3 | 7 | 95.1 | 119.5 |
| CGPB21-14 | 132.5 | 310.2 | 12.5 | 8 | 118.3 | 133.0 |
| CGPB21-15 | 111.2 | 340.7 | 15.4 | 6 | 91.5 | 113.0 |
| CGPB21-16 | 108.9 | 358.9 | 19.0 | 8 | 126.2 | 238.0 |
| CGPB21-17 | 118.8 | 389.6 | 21.1 | 9 | 125.3 | 291.5 |
| $CD_{0.05}$ | NS | 109.06 | 5.95 | 2.47 | 35.84 | 60.5 |

except CGPB21-4, CGPB21-8 and CGPB21-17) to 389.6 cm (CGPB21-17) (which was at par with all the lines tested except CGPB21-5). Pod length was lower (12.5 cm) in CGPB21-14 which was at par with CGPB21-12 (15.1 cm), CGPB21-13 (15.3 cm), CGPB21-15 (15.4 cm), CGPB21-9 (16.3 cm) and CGPB21-7 (17.2 cm). Higher pod length (24.1 cm) was recorded in CGPB21-4 which was at par with CGPB21-3 (23.0 cm), CGPB21-2 (22.2 cm), CGPB21-17 (21.1 cm), CGPB21-11 (19.3 cm), CGPB21-5 (19.2 cm), CGPB21-16 (19.0 cm), CGPB21-8 (18.5 cm), CGPB21-6 (18.3 cm) and CGPB21-10 (18.2 cm). Number of green pods varied from 6 (CGPB21-12 and CGPB21-15) to 9 (CGPB21-2, CGPB21-4 and CGPB21-17). 100-seed weight was lower in CGPB21-15 (91.5 g) which was at par with all other lines except CGPB21-4 (140.8 g). On the other hand, higher 100-seed weight was recorded in CGPB21-4 (140.8 g) which was statistically at par with CGPB21-16 (126.2 g), CGPB21-17 (125.3 g), CGPB21-2 (121.8 g), CGPB21-1 (119.10 g), CGPB21-14 (118.3 g), CGPB21-7 (117.6 g), CGPB21-6 (117.5 g), CGPB21-8 (111.5 g) and CGPB21-12 (105.2 g). Green pod yield ranged from 113.0 to 291.5 g/plant. Lower green pod yield was recorded in CGPB21-15 (113.0 g/plant), CGPB21-12 (116.5 g/plant), CGPB21-9 (118.0 g/plant), CGPB21-5 (118.5 g/plant), CGPB21-13 (119.5 g/plant), CGPB21-14 (133.0 g/plant), CGPB21-11 (140.0 g/plant) and CGPB21-8 (167.0 g/plant), all being statistically at par, whereas, higher was recorded in CGPB21-17 (291.5 g/plant), CGPB21-4 (280.5 g/plant), CGPB21-2 (246.5 g/plant), CGPB21-16 (238.0 g/plant), CGPB21-3 (237.0 g/plant) and CGPB21-1 (231.0 g/plant), all being at par.

Thus a wide range of variation indicated that there was better scope for the selection of traits and germplasm lines in tree bean.

## REFERENCES

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