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# Evaluation of bottle gourd [*Lagenaria siceraria* (Molina) Standl.] genotypes in Chhattisgarh plain

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**Abstract**
The present investigation was carried out at Horticultural Research cum Instructional Farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.). The experiment was laid out in Randomized Block Design comprised of nine bottle gourd genotypes were evaluated for different quantitative characters. The genotype 2016/B06VAR-3 was found to possess maximum number of days for appearing first male flowers, pusa naveen was recorded to minimum days for appearing first female flowers and earliest days to 50 % flowering. The genotype pusa naveen was noted for earliest node number at first female flowers and genotype 2016/B06VAR-7 for maximum fruit length was recorded. The genotype 2016/B06VAR-8 was found to be maximum fruit girth, maximum number of fruits per plant and maximum number of branches per plant. Performance studies revealed that the genotypes 2016/B06VAR-8 and 2016/B06VAR-1 were found promising for fruit yield.

**Keywords:** Evaluation, bottle gourd, *Lagenaria siceraria*, Chhattisgarh

## 1. Introduction
Bottle gourd [*Lagenaria siceraria* (Mol.) Standl.] belongs to the family Cucurbitaceae having chromosome number 2n = 22, originated in Southern Africa. Bottle gourd or white flowered gourd is commonly known as Lauki, it is one of the important cucurbitaceous vegetable crop cultivated in India. Bottle gourd plants are day neutral, grown as a summer and rainy season crop. It is widely cultivated in tropics and subtropics, mostly grown for its fruit, which are vary in size and shape *viz*; globular, cylindrical, bottle-shaped or club-shaped. It is an economically important crop cultivated worldwide for vegetable purpose. Numerous health benefits are reported in bottle gourd including its anti-cancerous and cardio protective etc. The chhattisgarh agro climatic condition of the state is also suitable for cultivation of all kind of vegetables among those bottle gourd is one of the important vegetable. There is a vast scope for cultivation of bottle gourd in Chhattisgarh as there is a regular demand of crop for vegetable as well as for medicinal uses. It is highly remunerative crop which fetches sizeable income to the farmer within two or three months. However, the yield of bottle gourd in Chhattisgarh is not satisfactory enough in comparison with other states due to lack of improved varieties (Thakur *et al.*, 2013). Therefore a trial for characterization and evaluation of presently available bottle gourd genotypes is carried out in order to identify the potential cultivar for different morphological characters.

## 2. Material and Methods
The present investigation was carried out at the Horticulture Reaserch and Instruction farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during summer season, 2016-2017. The experiment was laid out in a randomized block design with three replications. Nine bottle gourd genotypes were evaluated for different quantitative characters. All the recommended cultural practices were adopted to raise a healthy crop. Data were recorded on five randomly selected plants with respect to characters *viz*., days to first male and female flower appear, node number at which first male and female flower appear, days to 50% flowering, number of branches per plant, vine length, days to first fruit harvest, fruit length (cm), average fruit weight (kg), fruit girth (cm), number of fruits per plant, fruit yield (q/ha) and crop duration. The data were subjected to statistical and biometrical analysis (Singh and Chaudhary, 1985).

## 3. Result and Discussion
The results obtained from the present investigation as well as relevant discussion have been summarised under following heads:

**4. Days to first male flower appears**
Days to first male flower appears ranged from 55.93 to 68.13 days with an overall mean of 63.40 days. Significantly maximum number of days for appearing first male flower was recorded in 2016/B06VAR-3 (68.13 days) followed by 2016/B06VAR-8 (65.66 days) and 2016/B06VAR-7(64.40 days), however significantly minimum days taken by Pusa Naveen (55.93 days) for appearing the first male flower.

**4.1 Days to first female flower appears**
Days to first female flower appears ranged from 59.00 days to 70.40 days with an overall mean of 68.34. Significantly maximum number of days for appearing first female flower was recorded in 2016/B06VAR-3 (70.40 days) followed by 2016/B06VAR-4 (70.20) and 2016/B06VAR-5 (69.66), however significantly minimum days taken by Pusa Naveen (59.00) for appearing the first female flowers.

**4.2 Days to 50% flowering**
Days to 50% flowering ranged from 74.33 to 86.66 days with an overall mean of 79.96 days. Significantly earliest days to 50% flowering were recorded in the Pusa Naveen (74.33 days) which was followed by2016/B06VAR-7 (74.66 days), 2016/B06VAR-8 (76.33), and delayed flowering were recorded in 2016/B06VAR-4 (86.66 days).

**4.3 Node number at which first male flower appears**
The node number at which first male flower appears ranged from 3.33 to 8.93 with an overall mean of 5.22. Significantly earliest male node was found in Pusa Naveen (3.33) followed by 2016/B06VAR-8 (3.80) and 2016/B06VAR-7(3.80), however significantly maximum node number at first male flower was recorded in 2016/B06VAR-4 (8.93).

**4.4 Node number at which first female flower appears**
The node number at which first female flower appears ranged from 5.66 to 13.00 with an overall mean of 10.61. Significantly earliest node number at first female was recorded in Pusa Naveen (5.66) followed by 2016/B06VAR-8 (9.06), 2016/B06VAR-6 (10.06), however significantly maximum node number at first female flower was recorded in 2016/B06VAR-3 (13.00).

**4.5 Fruit length (cm)**
Length of fruit ranged from 18.34 to 37.26 cm with an overall mean of 29.23 cm. Significantly maximum fruit length was recorded 2016/B06VAR-7 (37.26) followed by 2016/B06VAR-5 (34.85cm) and 2016/B06VAR-4 (34.23cm), However significantly minimum fruit length was recorded in 2016/B06VAR-8 (18.34 cm).

**4.6 Fruit girth (cm)**
Girth of fruit ranged from 23.73 to 31.86 cm with an overall mean of 26.37. Significantly maximum fruit girth was recorded 2016/B06VAR-8(31.86 cm) followed by 2016/B06VAR-6 (30.00 cm) and Pusa naveen (27.80 cm), however significantly minimum fruit girth was recorded in in 2016/B06VAR-4 (23.73 cm).

**4.7 Vine length (cm)**
The vine length of Bottle gourd differs non significantly among the treatments. However numerically maximum vine length was recorded with 2016/B06VAR-1 (292.33 cm). The genotype Pusa Naveen (207.93 cm) recorded for minimum vine length.

**4.8 Days to first fruit harvest**
Days to first fruit harvest ranged from 77.26 to 86.93 days with a mean of 81.49 days. Significantly earliest days for first fruit harvest was recorded in Pusa Naveen (77.26 days) followed by 2016/B06VAR-1 (79.53days) and 2016/B06VAR-6 (79.54 days), however significantly maximum days for first fruit harvest was recorded in 2016/B06VAR-8 (86.93 days).

**4.9 Number of fruits per plant**
The number of fruits per plant of bottle gourd differs non significantly among the treatments. However numerically maximum number of fruits per plant was recorded with 2016/B06VAR-8 (11.00). The genotype 2016/B06VAR-1 (8.60) recorded for minimum number of fruits per plant**.**

**4.10 Number of branches**
Among the genotypes number of branches per plant ranged from 25.06 to 33.60 with an overall mean of 27.85. Significantly maximum number of branch per plant was recorded in 2016/B06VAR-8 (33.60) followed by 2016/B06VAR-3 (28.93) and 2016/B06VAR-1 (28.86), however significantly pusa naveen (25.06) was noted for minimum number of branches per plant.

**4.11 Average fruit weight (kg)**
Average fruit weight ranged from 0.45 to 1.04 kg with a mean of 0.68. Significantly maximum average fruit weight was recorded in 2016/B06VAR-7 (1.04 kg) followed by Pusa Naveen (0.81 kg) and 2016/B06VAR-8 (0.81 kg). However significantly minimum average fruit weight was recorded 2016/B06VAR-2 (0.45 kg).

**4.12 Fruit yield per plot (kg)**
Fruit yield per plot ranged from 19.56 to 30.95 kg with an overall mean of 24.92 kg. Significantly maximum yield of fruits per plot was recorded in the 2016/B06VAR-8 (30.95 kg) followed by 2016/B06VAR-6 (28.43 kg) and 2016/B06VAR-1 (28.20 kg). However significantly minimum fruits yield per plot 2016/B06VAR-4 (19.56 kg).

**4.13 Fruit yield (q/ha)**
Fruit yield quintal per hectare ranged from 135.80 q/ha (2016/B06VAR-4) to 214.92q/ha (2016/B06VAR-8) with an overall mean of 165.50. Significantly maximum yield of fruits per ha was recorded in 2016/B06VAR-8 (214.92 q/ha) followed by 2016/B06VAR-1 (195.83 q/ha) and 2016/B06VAR-6 (195.36 q/ha). However significantly minimum fruit yield per ha 2016/B06VAR-4 (135.87 q/ha) were noted for minimum fruits yield per ha.

**4.14 Duration of crop (sowing to last harvest)**
Duration of crop ranged from 120.66 days (2016/B06VAR-1) to 143.00 days (2016/B06VAR-4) with a mean of 133.6 days. Significantly earliest crop duration was recorded in the 2016/B06VAR-1(120.66 days) followed by 2016/B06VAR-2 (125.00 days), 2016/B06VAR-3(135.33days), however significantly maximum crop duration was recorded in 2016/B06VAR-8 (143.00 days). The mean values of different growth parameters with respect to genotypes are presented in table 1.

**Table 1:** Mean performance of bottle gourd genotypes for fruit yield and its components traits

| Character | Days to first male flower | Days to first female flower | 50 % flowering | Node number at male flower | Node number at female flower | Fruit length | Fruit girth | Vine length | First fruit harvest | No. of fruit per plant | No. of branch | Average weight per fruit (kg) | Fruit yield (kg/plot) | Yield (q/ha) | Duration of crop |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016/B06VAR-8 | 65.66 | 69.53 | 76.33 | 3.80 | 9.06 | 18.34 | 31.86 | 255.40 | 86.93 | 11.00 | 33.60 | 0.81 | 30.95 | 214.92 | 134.66 |
| 2016/B06VAR-7 | 64.40 | 69.06 | 74.66 | 3.80 | 10.53 | 37.26 | 25.20 | 237.86 | 82.13 | 10.40 | 27.33 | 1.04 | 26.20 | 182.40 | 138.22 |
| 2016/B06VAR-6 | 62.33 | 68.73 | 78.66 | 5.06 | 10.06 | 26.53 | 30.00 | 265.46 | 79.53 | 9.40 | 25.06 | 0.63 | 28.43 | 195.36 | 141.00 |
| 2016/B06VAR-5 | 63.66 | 69.66 | 79.33 | 6.26 | 10.86 | 34.85 | 23.86 | 259.66 | 79.53 | 9.06 | 27.93. | 0.71 | 26.30 | 182.63 | 136.77 |
| 2016/B06VAR-4 | 63.86 | 70.20 | 86.66 | 8.93 | 12.26 | 34.23 | 23.73 | 223.33 | 81.13 | 8.73 | 27.86 | 0.48 | 19.56 | 135.87 | 143.00 |
| 2016/B06VAR-3 | 68.13 | 70.40 | 82.00 | 4.73 | 13.00 | 33.29 | 24.60 | 225.73 | 83.86 | 9.80 | 28.93 | 0.64 | 21.26 | 147.68 | 135.33 |
| 2016/B06VAR-2 | 63.26 | 69.06 | 81.66 | 4.13 | 12.80 | 28.51 | 24.73 | 242.66 | 83.46 | 9.60 | 28.06 | 0.45 | 19.58 | 135.96 | 125.00 |
| 2016/B06VAR-1 | 63.40 | 69.40 | 86.00 | 7.00 | 11.26 | 21.03 | 25.60 | 292.33 | 79.53 | 8.60 | 26.86 | 0.51 | 28.20 | 195.83 | 120.66 |
| Pusa Naveen | 55.93 | 59.00 | 74.33 | 3.33 | 5.66 | 29.05 | 27.80 | 207.93 | 77.26 | 9.33 | 25.06 | 0.81 | 23.83 | 165.50 | 128.33 |
| Mean | 63.40 | 68.34 | 79.96 | 5.22 | 10.61 | 29.23 | 26.37 | 245.60 | 81.49 | 9.55 | 27.85 | 0.68 | 24.92 | 172.90 | 133.6 |
| CD | 1.45 | 2.51 | 7.47 | 1.13 | 1.46 | 3.79 | 5.35 | N/A | 5.17 | N/A | 2.60 | 96.67 | 6.260 | 43.44 | 7.59 |
| CV | 1.31 | 2.10 | 5. 35 | 12.39 | 7.90 | 7.42 | 11.63 | 16.52 | 3.63 | 14.3 | 5.35 | 8.15 | 14.38 | 14.39 | 3.26 |

## 5. Conclusion

In view of the experimental results obtained during the present investigation, 2016/B06VAR-8 was superior among all the genotypes, which can indicate that the genotype may be utilize as a variety as for future now varietal development breeding programmer for fruit yield.

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