



Evaluation of bottle gourd (*Lagenaria siceraria*) to growth and yield parameter

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ABSTRACT

The experiment was conducted at Instructional-cum-Research farm of Horticulture Section, College of Agriculture, Kolhapur during the Kharif 2016. To evaluate the growth and yield performance of ten bottle gourd selections. The data revealed, that among different selection of bottle gourd, the selection RHRBG - 19 also recorded the maximum fruit length (38.53 cm), highest diameter (7.62 cm) and average fruit weight (690.00 g). Similarly the selection RHRBG -19 recorded more number of fruits per vine (23.00), highest fruit yield/vine (15.87 kg) and per hectare (529.00 q) followed by RHRBG - 18 which recorded fruit length (35.73), diameter (7.24), average fruit weight (608.00 g), number of fruits per vine (22.20), fruit yield/vine (13.37) and per hectare (449.66 q).

Keywords: Bottle gourd selection, growth and yield parameter

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INTRODUCTION

Bottle gourd (*Lagenaria siceraria* (Mol.) Standl.) belongs to the family Cucurbitaceae having chromosome number ($2n = 22$). It is one of the most important cucurbitaceous crop in India. It is grown in rainy season as well as summer season vegetable and its fruits available in the market throughout the year. (11). The young tender fruit of Bottle gourd is used as vegetable preparation. However, the delicious preparation like burfi, juice, raita, kaporkand, pickles, kofta, doodhihalwa etc. Nutritional value of bottle gourd per 100 g of edible portion is 96.1% moisture, 0.2 g protein, 0.1 g fat, 0.5 g mineral, 0.7 mg fiber, 2.5 g carbohydrate, 12 kcal energy, 20 mg calcium, 10 mg phosphorus, 0.2 mg niacin, 0.01 mg riboflavin, 0.03 µg thiamine and it is also rich source of minerals like iron and vitamins like C and B complex (10). The area under bottle gourd cultivation in India is reported to be 111 thousand hectares with annual production of 1836 thousand metric tons. The bottle gourd growing leading states in India are Rajasthan, Gujarat, Punjab, Uttar Pradesh, Bihar, West Bengal, Madhya Pradesh, Maharashtra, Andhra Pradesh and Tamil Nadu (1). Collection and evaluation of germplasm is a pre-requisite for their utilization and detailed evaluation determines the potential of an accession in specific crop improvement programme the different selections were made by AICRP on vegetable improvement, MPKV Rahuri are need to be evaluated for their yield performance. Therefore, the present investigation was carried out to evaluate the growth and yield performance of bottle gourd selections under sub montane zone of Maharashtra.

MATERIAL AND METHODS

The experiment was conducted at Instructional-cum-Research farm of Horticulture Section, College of Agriculture, Kolhapur during *kharif* season of 2016 to evaluate their ten bottle gourd selections viz. RHRBG- RHRBG - 3, RHRBG -18, RHRBG -19, RHRBG -22, RHRBG -23, RHRBG-24, RHRBG-27, RHRBG-30 and RHRBG-36 and were sown in randomized block designed with three replication. The recommended dose of fertilizers i.e. 100 kg N, 50 kg P₂O₅ and 50 kg K₂O was applied to the soil and the entire quantity of phosphorus and potassium and half of nitrogen was mixed thoroughly in each plot in equal amount as basal dose before sowing. The well rotten FYM @ 40 tons per hectare was mixed thoroughly in the soil before seed sowing. The top dressing of half nitrogen was applied after one month of planting and second done was given at the time of flowering. The planting distance used for the present investigation was 3 x

1 m and sowing was done on 27th July 2016. Five plants from the population were randomly selected for recording of observations on eight characters *viz.* days to first male flower anthesis, days to first female flower anthesis, fruit length (cm), fruit weight in (kg), fruit diameter (cm), fruit yield (q/ha). The data generated through the present investigation was subjected to statistical analysis (5).

RESULTS AND DISCUSSION

All the bottle gourd selections were found to be differed significantly with respect to mean number of days required for appearance of first male flower (Table. 1).

Table. 1 Mean Performance of Bottle gourd selections in Growth and Yield Parameter

Sr. No.	Name of selections	Number of days required to first		Fruit length (cm)	Fruit diameter	Fruit weight (g)	Number of fruits per vine	Fruit yield per vine (kg)	Fruit yield per ha (q)
		Male	Female						
1.	RHRBG- 1	48.26	50.73	29.20	5.47	459.66	18.33	8.41	282.04
2.	RHRBG - 3	44.06	46.53	29.13	5.53	461.66	18.66	8.69	289.66
3.	RHRBG -18	40.26	43.33	35.73	7.24	608.00	22.20	13.49	449.66
4.	RHRBG -19	36.33	39.66	38.53	7.62	690.00	23.00	15.87	529.00
5.	RHRBG -22	41.00	44.60	28.33	4.19	385.66	17.00	6.54	217.77
6.	RHRBG -23	41.60	45.00	35.00	7.17	606.66	22.13	13.41	446.99
7.	RHRBG-24	44.46	47.46	34.46	6.15	506.33	20.80	10.52	350.66
8.	RHRBG-27	45.33	49.26	31.33	5.43	426.66	19.00	8.09	269.55
9.	RHRBG-30	51.73	55.16	34.66	7.05	582.00	22.00	12.81	427.00
10.	RHRBG-36	46.20	53.33	30.06	6.93	575.00	20.66	11.88	395.97
	SE ±	1.51	0.68	2.06	0.19	12.25	0.94	0.48	20.08
	CD at 5%	4.59	2.03	6.13	0.57	36.40	2.80	1.44	60.24

The maximum number of days required for appearance of first male flower were noticed in the selection RHRBG – 30 (51.73 days) as compared to the remaining selections under study whereas the lowest mean number of days required for appearance of first male flower in the selection RHRBG - 19 (36.33). Similar results were reported by (6)(12) and (11) in bottle gourd. The data revealed that the number of days required for first female flower was significantly differed among the bottle gourd selections (Table. 1). The selections RHRBG - 30 had recorded the maximum number of days required for appearance of first male flower (55.16 days) which were found to be significantly highest among all the selections of bottle gourd under study, while the significantly lowest number of days required for appearance of first female flower in the selection RHRBG - 19 (39.66 days). The difference in flowering period among the different selections might be due to genetic variation. The similar results were reported by (4), (13), (12), (8) and (11) in bottle gourd and (2) in cucumber. The data with respect fruit length was found to be differed significantly among the selections under study (Table 1). The highest fruit length was recorded in selection RHRBG – 19 (38.53 cm), whereas the lowest fruit length was recorded in selection RHRBG -22 (28.33 cm). The results of present finding are in close conformity with the results of (3) who observed the considerable variability in fruit length ranged from 9.18 cm (Elina) to 58.92 cm (Anand bottle gourd -1). The average fruit diameter was found to be differed significantly among the selections of bottle gourd (Table 1). The maximum diameter of fruit was recorded in RHRBG – 19 (7.62 cm) followed by RHRBG – 18 (7.24 cm) and RHRBG -23 (7.17cm) whereas the selection RHRBG – 22 recorded the lowest mean fruit diameter (4.19 cm). The difference in fruits diameter could be attributed to inherent characteristics of the genotypes fruit diameter increase with the increase in size of fruit. These results are in agreement with the results obtained by (3) in bottle gourd, (8) and (10) and (3) in bottle gourd under different growing conditions. The average fruit weight directly contributes to the fruit yield of bottle gourd. The maximum fruit weight was recorded in RHRBG -19 (690.00 g) which was significantly superior among the different selections of bottle gourd (Table 1). The lowest average fruit weight was recorded by the selection RHRBG -22 (385.66 g) followed by RHRBG -27 (426.66 g) and RHRBG -3 (461.66g). Similarly (8) reported that fruit yield per plant had positive and highly significant correlation with average fruit weight of bottle

gourd. The selection RHRBG -19 produced more number of fruits per vine (23.00) and RHRBG - 18 (22.20) but it was at par with RHRBG - 23 (22.13). The selection RHRBG - 22 recorded the lowest number of fruits per vine (17.00). The variation in fruits per vine might be due to internodal length, increased female flower and fruit set percentage. Similar results were obtained by (8), (9), (10), (12) and (11) in bottle gourd. The data pertaining to fruit yield per vine revealed that the highest fruit yield per vine (15.87 kg/vine) was recorded in RHRBG -19 which was significantly superior over the other selections of bottle gourd under study (Table 1). The lowest fruit yield per vine was recorded in the selection RHRBG - 22 (6.54 kg) followed by RHRBG -27(8.09 kg) and RHRBG - 1(8.41 kg). The maximum fruit yield per hectare was observed in selection RHRBG -19 (529.00 q) which was found to be significantly superior over the other selections of bottle gourd. The minimum fruit yield per hectare was recorded in selection RHRBG - 22 (217.77 q) closely followed by RHRBG -27 (269.55q) and RHRBG -1 (282.04 q). The variation in fruit yield of bottle gourd selection might to be due to genetic characters. Similar results were reported by (4), (9) and (11) in bottle gourd.

CONCLUSION

In view of the experimental results obtained during the present investigation, the selection RHRBG - 19 showed the maximum number of female flowers, fruits per vine, fruit yield and yield contributing characters such as fruit length, fruit diameter, fruit yield per plot and hectare and all the selections exhibited considerable variations in the growth yield parameter.

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