

Agronomic quality of *Lagenaria siceraria* (Bottle Gourd)

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Abstract: The bottle gourd is a popular crop in the India. The plant grows in a trailing fashion. Vegetables are fruits in the green stage and leaves with stems. Hard shells are used by the tribal group as utensils and for the production of various musical instruments. Fruit pulp is high in fiber-free carbs. The testing of growth and yield of once lines (B1 to B11) of bottles gourds during the period from November 2020 through March 2021 was carried out at the Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior. 55-75 days after sowing, bottle gourd can be harvested. When the fruit's rind is very tender and green, it's time to harvest it. Fruit that is not harvested in a timely manner becomes unfit for marketing. The average yield is between 100 and 150 q/ha. The B11 followed by the vintage was found for maximum vine length (6.7 m), leaf surface (975.3 cm²), number of fruits (14.2), fruit length (54.8 cm), fruit single weight (1.42 kg), yield/plant (20.5 kg). The minimum sex ratio (male to female) (0.22), first-time appearance of male flora (37.4) and female (42.0) was found in L. on the other hand.

Index Terms: *Lagenaria siceraria*, Bottle gourd, growth and yield, Agronomic.

INTRODUCTION

Bottle gourd is of the Cucurbitaceae family, is an important, popular vegetable in India. It belongs to the Cucurbitaceae family. A high genotypical variation coefficient for yield/plant, fruits/plants number, fruit length and fruit width and wider range of variation indicate that better genotypes can be selected [1,2]. Bottle gourd has great morphological and genetic variability in nature and can adapt widely to the environment [1] Indian farmers have been using various local crops and releasing bottle gourd variant from different organizations. However, their yields are not satisfactory. Varietal performance may be helpful in addressing this issue. In view of these conditions, the study has been undertaken to assess 11 bottle gourd lines' growth and return performance.

MATERIALS AND METHOD

In November 2019 to March 2020, the performance of bottle gourd lines was assessed on the Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior. On the experiment coded from B1-B11, eleven bottle gourd lines were used. Seeds were sown on 50 cm × 50 cm × 45 cm sized pit. 2 m × 2 m remained distance. Mist and fertilisers were applied according to BARI recommendations (2011). Data on vine length, leaf area, chlorophyll content, sex ratio, days when the males first appeared, days when they appeared, number of fruit/plant, fruit length, fruit diameter, fruit weight, yield/plant, yield/plot and yield/ha were gathered. Visually counted and calculated by following formula the number of male and female flowers; Sex ratio = Male and female flowers number [3]. Statistically, data collected were analysed with the MSTAT-C computer programme. Differences between treatments have been assessed at a 5 percent meaning level by the LSD test [4].

Result and discussion

Vine length: B11 (6.7 m) was the longest, and B10 (6.5m) the lowest, while B3 (4.8 m) was the minimum (Table 1). The bottle gourd line length ranged between 391.67 and 748.33 cm with 90 DAS [5].

Table 1. Response of bottle gourd lines to some crop characters^X.

Bottle gourd lines	Vine length (m)	Leaf area (cm ²)	Chlorophyll content (%)	Sex ratio				
B1	6.2	b	925.7	c	39.6	h	0.25	cde
B2	5.1	e	855.7	g	47.5	e	0.32	bcd
B3	4.8	f	761.3	k	55.5	a	0.42	a
B4	5.4	d	883.8	e	45.8	f	0.36	abc
B5	5.2	e	772.8	j	52.7	b	0.35	bc
B6	4.7	f	800.9	i	35.8	j	0.37	ab
B7	5.8	c	904.9	d	48.6	d	0.41	ab
B8	5.1	e	885.5	f	42.7	g	0.33	bcd
B9	5.3	e	822.6	h	48.6	d	0.33	bc
B10	6.5	b	946.2	b	38.6	i	0.26	de
B11	6.7	a	975.3	a	49.4	c	0.21	e
LSD0.05	0.2	3.2	0.3	0.09				
CV%	1.9	0.2	0.5	7.5				

^XIn a column means having similar letter(s) are statistically identical and those having dissimilar letter(s) differ significantly as

per 0.05 level of probability.

Area of the leaves:

Maximum area of the leaf of B11 (975,3 cm²) and L10 (947,2 cm²) were found while B 3 (761,2 cm²) was found. The following was found: (Table 1).

Chlorophyll Content: The chlorophyll content was considerably varying in bottle gourd lines. B3 (55,5 percent) showed a maximum of chlorophyll, while B6 (35,8 percent) had a minimum.

Sex Ratio (Male to female): B11 (0.22) has been reported to be the lowest sex ratio (B10(0.24) and B1(0,26), while B3 (0.43) was reported to be statistically related (Table 1).^[6] and ^[7]reported also in bottle gourd that the sex relationship may vary because of the adaptability of different genotypes.

The first female and male flowers appeared on days: Early female flowers appeared from B11 (37,3 days) and B10 (40.3 days) (54.3 days). The B11 (41.0 days) was the early male floral followed by B10 (43.7 days), while B5 (59.0 days) was statistically similar to B3 (58.0 days) (Table 2). The bottle gourd took up to 60.67 days in different genotypical trials for at least 48.17 days^[8]. Experts^[9-10]also observed changes in the first female and masculine appearance in different genotypes of bottles of gourd.

Number of fruit/plant: The amount of fruit/plant between bottle gourd lines differed significantly. The B11(14.2) was found to be maximum number of fruit/plant and the B10(13.7) and B1 (13.3), followed by the B2, B4 and L8(12.3) were statistically identical with the B10(13.7) (Table 2).

Table 2. Response of bottle gourd lines to flower and fruit attributes^X.

Bottle gourd lines	Days to appearances of first			Fruit Number/plant		Fruit length (cm)		Fruit diameter (cm)		
	male flower		female flower							
B1	42.3	h	46.7	e	13.3	ab	38.5	c	17.5	ab
B2	46.7	e	50.3	d	12.3	bc	26.6	f	12.2	c
B3	53.3	b	58.0	a	9.2	f	18.1	k	17.5	b
B4	45.3	f	49.3	d	12.3	bc	27.0	e	18.3	a
B5	54.3	a	59.0	a	11.0	de	23.2	h	18.4	a
B6	51.3	c	55.7	b	11.0	de	19.0	j	18.4	a
B7	43.3	g	47.7	e	10.0	ef	33.0	d	18.0	ab
B8	51.3	c	56.3	b	12.3	bc	21.3	i	17.9	ab
B9	49.7	d	53.7	c	11.7	cd	24.5	g	18.4	a
B10	40.3	i	43.7	f	13.7	a	53.1	b	9.7	d
B11	37.4	j	41.0	g	14.2	a	54.8	a	9.8	d
LSD0.05	0.7		1.6		1.1		0.2		0.7	
CV%	0.9		1.9		5.7		0.5		2.7	

^XIn a column means having similar letter(s) are statistically identical and those having dissimilar letter(s) differ significantly as per 0.05 level of probability.

Fruit length: The length of fruit between the bottle gourd lines was significantly different. B11 (54.8 cm) followed by B10 (53.2 cm), while B3 (18.1 cm) was found with the least length of the spring fruit (Table 2). In the twenty-five genotypes,^[11] found maximum length of fruit of 58,92 cm and minimum 9,18 cm. Diameter of the fruit: Bottles with gourd lines.

*Fruit diameter variations :*B9 (18.4 cm) was found with statistically similar diameter, B5 (18.4 cm), B6 (18.4 cm), B4 (18.3 cm), B7 (18.0 cm) and B8 (17.5 cm), while B10 (9.7 cm) had a statistically similar maximum diameter, with B11 (9.8 cm) having statistically similar diameter (Table 2). Fruit ranges from 16.3 cm to 6.47 cm and from the different bottle gourd genotype this range was found^[11]. Single weight of fruit: The single weight of fruits between the gourd lines was significantly varied. The B11 (1,42 kg) and B10 (1.35 kg) and B1 (1,32 kg) respectively, were recorded for a maximum single fruit weight and B3 (0.89 kg) (Table 3)^[12].

Render/plant: The render/plant variations in the bottle gourd lines were significant. However, B11 (20.6 kg) and B10 (18.4 kg) and B1 (17.5 kg) were found to have maximum yield / plant whereas B3 (8) was found to be the minimum^[13].

Table 3. Response of bottle gourd to yield related attributes^X.

Bottle gourd lines	Single fruit weight (kg)		Yield/plant (kg)		Yield/plot		Yield (ton)/ha	
B1	1.32	b	17.5	b	70.1	b	42.6	b
B2	0.98	de	12.3	c	48.8	c	29.3	c
B3	0.89	g	8.3	f	33.1	f	19.5	f
B4	1.01	d	12.4	c	49.5	c	29.8	c
B5	0.92	fg	10.1	e	40.2	e	23.9	e
B6	0.96	def	10.5	de	41.9	de	25.0	de
B7	1.13	c	11.3	cde	45.0	cde	27.0	cde
B8	0.94	efg	11.7	cd	46.4	cd	27.8	cd
B9	0.97	de	11.4	cde	45.2	cde	27.1	cde
B10	1.35	b	18.4	b	73.4	b	44.7	b
B11	1.42	a	20.6	a	81.0	a	50.1	a
LSD0.05	0.05		1.4		5.6		3.5	
CV%	2.1		6.2		6.3		6.5	

^XIn a column means having similar letter(s) are statistically identical and those having dissimilar letter(s) differ significantly as per 0.05 level of probability.

Yield/Plotting: B11 (81.0 kg) maximum yield/plot, B10 (73.4 kg) and B1 (70.1 kg) followed by B3 (33.1 kg) (Table 3).

Yield/ha: B11 (50.1 tonnes) was maximised and B10 (44.7 tonnes) and B1 (42.6 tonnes) were determined, while B3 (19.5 tonnes) was found as minimum (Table 3).

CONCLUSION

The bottle gourd, which belongs to the Cucurbitaceae family, is a very important vegetable crop in India. Vegetables in their green stage and leaves with stems are used. The hard shell of the Bottle Gourd is used for different purpose. Finally, it can be concluded that B11 was the best line of bottle gourds in the experiment, followed by B10. Following repeated trials B11 could be used in the farmers' levels.

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