

## Performance of Bottle Gourd Genotypes for Earliness and Yield Under Chhattisgarh Plains

VAIBHAV KANT VISEN, DHANANJAY SHARMA AND PADMAKSHI THAKUR

<sup>1</sup>Department of Horticulture, IGKV, Raipur-492012 (C.G.)

<sup>2</sup>Department of Genetics and Plant Breeding, IGKV, Raipur-492012 (C.G.)

\*email visenvaibhav@gmail.com

### ABSTRACT

An experiment was conducted at Horticulture, Research cum Instructional Farm at Department of Horticulture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during *Kharif* season (2014-15) with the objective to find out suitable bottle gourd genotype for earliness and yield under Chhattisgarh plains. Among thirty one genotypes, the genotype IBG 11 was noted for earliness (44 DAT) for days to 50 % flowering and the same genotype was also noted for early male flowering *i.e.* 19.33. The genotype IBG 10 exhibited early fruit setting (51 DAT) and also noted for early harvesting *i.e.* 63 DAT. Maximum number of fruits per plant (24) was recorded in IBG 11. Studies revealed that the genotypes IBG 10, IBG 11, IBG 12, IBG 17 and IBG 25 were found to be promising for earliness and fruit yield.

**Keyword** Bottle gourd, genotypes, earliness, fruit yield.

Bottle gourd [*Lagenaria siceraria* (Mol.) Standl.] belongs to the family cucurbitaceae having chromosome number  $2n=22$ . Bottle gourd is one of the most important cucurbits cultivated in India. It is grown in rainy season and as well as summer season vegetable. Tender fruits are used as cooked vegetable and also for making sweets. 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 cucurbit growing states due to less use of improved varieties. Thus, studies were conducted to evaluate the performance of some genotypes of the crop during summer season to identify promising and stable variety for production.

### MATERIAL AND METHODS

The study was carried out during *Kharif* season (2014-2015) at Horticulture Research cum Instructional farm at Department of Horticulture, IGKV, Raipur. The experiment comprised of thirty one genotypes of bottle gourd *viz.*, IBG Local, IBG 2, IBG 3, IBG 4, IBG 5, IBG 6, IBG 7, IBG 8, IBG 9, IBG 10, IBG 11, IBG 12, IBG 13, IBG 14, IBG 15, IBG 16, IBG 17, IBG 18, IBG 19, IBG 20, IBG 21, IBG 22, IBG 23, IBG 24, IBG 25, IBG 26, IBG 27, IBG 28, IBG 29, IBG 30 and IBG 31. The experiment was laid out in a Randomized Block Design with three replications at  $3.0 \times 1.0$  m row to row and plant to plant spacing. 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 50% flowering, number of branches per plant, node number at which first male and female flower, days to fruit set, days to first fruit harvest, fruit length (cm), fruit girth (cm), average fruit weight (g), number of fruits per plant, total soluble solid (%), 100 seed weight (g), fruit yield per kg, fruit yield per hectare (q/ha) and crop duration. The data were subjected to statistical and biometrical analysis (Singh and Chaudhary, 1985).

### RESULT AND DISCUSSION

The mean values of different growth and yield parameters with respect to genotypes are presented in Table 1. The genotypes significantly differed for days to 50% flowering, number of branches per plant, node number at which first male and female flower appear, days to fruit set, days to first fruit harvest, fruit length (cm), fruit girth (cm), average fruit weight (g), number of fruits per plant, fruit yield (q/ha), crop duration. Significant early flowering for days to 50% flowering was noticed

**Table 1. Mean performance for fruit yield & its component in bottle gourd.**

Characters	Days to 50% Flowering	No. of branches per plant	Node no at which 1 <sup>st</sup> female flower appears	Node no at which 1 <sup>st</sup> male flower appears	Days to fruit set	Days to 1 <sup>st</sup> fruit harvest	Fruit length (cm)	Fruit girth (cm)	Average fruit weight (g)	No of fruits per plant	T.S.S. (%)	100 seed weight (gm)	Fruit yield per (kg)	Fruit yield per ha (q/ha)	Duration of crop (sowing to last harvest)
IBG-LOCAL	65.00	18.00	56.00	42.67	72.00	84.00	25.67	50.00	1016.67	5.33	2.53	17.67	52.00	173.35	154.67
IBG-2	68.00	16.00	47.00	34.00	76.00	87.00	27.67	39.00	1266.67	10.67	2.33	20.67	46.00	153.33	152.33
IBG-3	59.00	12.00	48.33	41.00	70.00	79.00	25.00	30.00	1333.33	5.33	2.13	17.00	49.00	163.33	152.00
IBG-4	62.00	18.00	30.00	32.00	71.00	83.00	29.00	33.33	866.67	6.00	3.67	21.00	55.00	183.33	164.00
IBG-5	49.00	16.00	34.33	29.00	58.00	68.00	20.67	42.00	1166.67	8.00	3.13	19.00	65.00	216.66	151.33
IBG-6	48.00	13.00	51.00	45.00	59.00	75.00	15.67	35.00	916.67	5.67	3.93	16.00	49.00	163.33	156.67
IBG-7	54.00	13.00	41.00	20.00	63.00	76.00	44.33	27.33	816.67	9.00	2.27	18.67	62.00	206.66	163.00
IBG-8	46.00	20.00	17.00	27.00	54.00	61.00	37.67	24.00	900.00	11.33	3.07	21.00	48.00	160.00	161.33
IBG-9	55.00	16.33	54.33	48.67	62.00	74.00	42.67	29.00	1066.67	13.00	3.33	20.00	46.00	153.33	151.33
IBG-10	47.00	9.00	38.00	20.33	51.00	63.00	30.33	22.67	1216.67	6.67	3.00	17.33	49.00	163.33	158.67
IBG-11	44.00	21.33	73.00	19.33	57.00	69.00	31.67	30.33	1450.00	24.00	5.20	17.00	158.00	536.66	158.67
IBG-12	49.00	10.00	47.67	31.67	53.00	66.00	29.67	44.00	883.33	12.00	2.40	19.67	56.00	186.66	154.67
IBG-13	51.00	17.00	50.67	49.00	60.00	74.00	18.00	36.00	1000.00	5.00	2.60	18.00	48.00	160.00	151.33
IBG-14	45.00	13.00	60.67	36.33	53.00	65.00	18.67	42.67	716.67	13.33	2.47	21.00	67.00	223.26	156.33
IBG-15	63.00	20.00	67.00	41.67	72.00	83.00	20.00	44.10	1200.00	19.00	2.80	18.00	46.00	153.33	153.33
IBG-16	48.00	13.00	47.00	21.67	59.00	68.00	39.00	25.33	1300.00	10.67	3.00	19.00	55.00	183.50	150.55
IBG-17	44.00	15.00	66.00	34.00	53.00	66.00	39.67	27.00	933.33	15.00	2.47	20.00	45.00	150.00	152.00
IBG-18	54.00	11.00	60.00	38.00	63.00	72.00	31.67	24.00	966.67	10.00	3.27	20.67	53.00	176.66	154.00
IBG-19	58.00	14.33	42.00	30.67	69.00	81.00	24.00	30.00	516.67	9.00	3.20	22.67	43.00	143.33	154.67
IBG-20	61.00	13.67	56.33	40.33	72.00	83.00	30.00	42.00	1016.67	8.00	4.27	17.67	59.00	196.66	154.33
IBG-21	59.00	10.33	53.33	40.33	68.00	79.00	23.67	42.67	816.67	6.00	3.00	20.00	67.00	223.33	159.33
IBG-22	63.00	17.67	40.33	44.00	70.00	81.00	23.33	24.53	1166.67	9.33	3.20	19.00	43.00	143.33	159.00
IBG-23	65.00	8.00	18.33	54.00	73.00	82.00	26.67	35.83	600.00	6.00	2.60	16.00	46.00	153.33	159.00
IBG-24	47.00	13.33	39.33	39.00	54.00	66.00	30.00	44.33	1116.67	9.00	3.20	20.33	59.00	196.66	156.67
IBG-25	56.00	21.33	70.00	22.00	65.00	76.00	35.33	27.67	1336.67	7.00	2.47	21.67	68.00	226.66	154.67
IBG-26	69.00	13.00	53.00	38.00	77.00	89.00	40.67	42.67	533.33	12.33	3.40	20.33	56.00	186.66	150.00
IBG-27	46.00	12.00	46.67	41.00	54.00	67.00	28.00	37.67	850.00	9.00	3.20	19.00	47.00	156.66	152.00
IBG-28	50.00	22.00	66.00	30.00	57.00	70.00	30.67	21.33	1416.67	5.33	4.13	23.00	43.00	143.33	161.00
IBG-29	64.00	13.00	47.67	24.33	71.00	83.00	36.67	33.33	400.00	5.67	4.40	19.33	48.00	160.00	151.00
IBG-30	66.00	7.00	22.67	50.00	73.00	85.00	29.00	42.33	850.00	4.00	3.40	17.00	41.00	136.66	153.00
IBG-31	53.00	18.67	53.67	50.67	62.00	74.00	47.00	25.00	1133.33	6.00	2.87	24.00	62.00	206.66	153.33
Mean (x)	55.10	14.71	48.33	35.99	63.580	75.13	30.06	34.04	992.58	9.25	3.13	19.41	55.84	186.45	155.30
SEm±	1.9612	0.834	1.898	1.051	2.169	2.4237	1.418	0.837	30.049	0.620	0.119	0.842	2.047	7.744	2.870
CD (p=0.05)	5.5479	2.358	5.369	2.974	6.136	6.8563	4.011	2.368	85.003	1.753	0.337	2.381	5.791	21.907	8.119
CV (%)	6.1653	9.816	6.801	5.060	5.909	5.5877	8.168	4.260	5.244	11.608	6.606	7.512	6.350	7.194	3.201

in IBG 11 and IBG 17 (44 DAT) while IBG26 (69 DAT) was found to be late in this respect. Male flower was produced at lower nodes (19.33) in IBG 11 whereas, IBG 8 produced female flower on the lower node (17). The genotype IBG 10 exhibited early fruit setting (51 DAT) followed by IBG 12 and IBG 14 (53 DAT) followed by IBG 8 (54 DAT) and the same genotype also recorded

early harvesting (65 DAT). The results are in agreement with that of Pandey and Singh, 2007 in sponge gourd, Kumar *et al.*, 1999 and Sirohi *et al.*, 1988 in bottle gourd.

Higher number of branches was recorded in IBG 28 (22) followed by IBG 11 (21.33). The length of fruit ranged from 15.67 cm in IBG 6 to 47 cm

**Table 2. Analysis of variance for fruit yield and its component characters in bottle gourd**

S. No.	Character (df)	Mean sums of square		
		Replication	Treatment	Error
		(2)	(30)	(60)
01	Days to 50% flowering	3.835	187.071**	11.539
02	No. of branches per plant	5.452	48.172**	2.085
03	Node no. of 1 <sup>st</sup> female flower appears	1.198	601.089**	10.806
04	Node no. 1 <sup>st</sup> male flower appears	8.849	294.477**	3.316
05	Days to fruit set	3.615	191.555**	14.115
06	Days to 1 <sup>st</sup> fruit harvest	2.225	184.948**	17.623
07	Fruit length (cm)	4.348	193.276**	6.031
08	Fruit girth (cm)	6.047	197.384**	6.888
09	Average fruit weight (gm)	3139.961	215663.799**	2708.790
10	No. of fruits per plant	1.430	57.710**	1.152
11	T.S.S	0.093	1.473**	0.043
12	100 seed weight	7.237	11.949**	2.125
13	Fruit yield/plot (kg)	1.931	1266.019**	12.571
14	Fruit yield (q/ha)	59.623	14756.652**	179.915
15	Duration of crop (sowing to last harvest)	15.791	44.999*	24.712

\*: Significant at 5%, \*\*: Significant at 1%.

in IBG 31. The fruit of IBG local was marked for the maximum fruit girth (50 cm) while fruit of IBG 28 recorded the least girth (21.33 cm). The genotype IBG 11 recorded highest fruit weight (1450 g) and the fruit weight was lowest in IBG 29 (400 g). Number of fruits per plant was highest in IBG 11 (24) and lowest in IBG 30 (4). The results obtained are in accordance with those of Mahto *et al.*, 2010 for fruit length and Sharma and Sengupta, 2013 for fruit length, fruit girth and fruit weight.

Significantly higher fruit yield per hectare was recorded in IBG 11 (536.66 q/ha) followed by IBG 25 (226.66 q/ha). Minimum crop duration (150 days) was recorded in IBG 26 and the maximum crop duration (164 DAT) was observed in IBG 4. Similar results obtained are in lines with those of Mahto *et al.*, 2010, Husna *et al.*, 2011, Yadav and Kumar, 2012, Harika *et al.*, 2012 and Sharma and Sengupta, 2013 for fruit yield.

Performance studies revealed that the genotypes IBG 10, IBG 11, IBG 12, IBG 17 and

IBG 25 were found promising for earliness and fruit yield. In order to improve the fruit yield per plant and other important attributes genotypes falling in distant characters may be utilized in future breeding programme.

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