

VARIETAL EVALUATION OF BRINJAL (*SOLANUM MELONGENA* L.) CULTIVARS UNDER ALLAHABAD AGRO-CLIMATIC CONDITIONS

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ABSTRACT

An experiment was conducted at Horticultural research farm, Allahabad Agricultural Institute-Deemed University, Allahabad during Rabi season 2007-08 to study the performance of ten varieties *viz.* Ramnagar Giant, HABR-4, Oblong White, CHB4-1, JNDBH-01, REMV-1748, HABL-1, PR-5, Jawahar Brinjal-64, Uttara and two Hybrids *viz.*, Phule Hybrid-2 and Punjab Hybrid Round (Surabhi). The results indicated that, growth in terms of plant height and fruit set (%) were found maximum in the variety HABL-1 whereas, number of primary and secondary branches were found maximum in Oblong White. In the respect of yield and contributing characters *i.e.* number of flower clusters per plant, number of flowers per cluster, number of fruits per cluster, number of fruits per plant, fruit yield per plant, per plot and per hectare were found maximum in variety JNDBH-01.

Key words: Brinjal, Varietal performance, egg plant, B:C ratio

INTRODUCTION

India is the second largest producer of vegetables in the world after China. The present area under vegetable production in the country is around 6.75 million hectare, which is 2.8% of the total cropped area. Production of vegetable is 101 million tons, which is 2.65% of total production. Our share in the world vegetable production is 13.28% respectively (NHB Data Base, 2004-05).

Brinjal is second major vegetable crop, it is grown almost throughout the country, covering an area of 5.30 lakh hectares with a total production of 87.03 lakh tons. It contributes 8.46 and 9.0% of the area and production respectively. (NHB Data Base, 2004-05). In Uttar Pradesh it cultivated area is 20,000 ha and productivity of 30.65 t ha⁻¹ (NHB Data Base, 2004-05).

The productivity can be increase by manipulating in various factors *i.e.* environment, soil, production technology and protection from insect-pest and diseases. Lack of widely adopted HYV, lack of short duration superior varieties to fit in different farming systems, non-availability of seed of improved HYV, limited extension services support, several disease and pests, unorganized marketing and lack of organizational set up for research and development programmes are the major constrains in the production scenario of Brinjal. Hence, for increasing productivity of brinjal, and the performance of varieties under particular agro-climatic conditions is essential. With a view to select a high yielding variety, a study was undertaken for its adoptability under Allahabad conditions.

MATERIALS AND METHODS

The experiment was conducted at Department of Horticulture, Allahabad Agricultural Institute-Deemed University, Allahabad during Rabi season 2007-08. The treatment consist of ten varieties viz. Ramnagar Giant, HABR-4, Oblong White, CHB4-1, JNDBH-01, REMV-1748, HABL-1, PR-5, Jawahar Brinjal-64, Uttara and two Hybrids viz., Phule Hybrid-2 and Punjab Hybrid Round (Surabhi). The experiment was laid out in Randomized Block Design with three replications. Sowing was done on 1st September, 2006 and transplanting was done on 4th October, 2006 with 60 cm x 60 cm spacing by applying recommended dose of fertilizer (100:40:40 NPK kg ha⁻¹) and usual cultural practices for brinjal cultivation. The observation were recorded the height of plant, primary and secondary branches per plant, days to 50% flowering, number of long styled, medium styled, short styled and pseudo short styled flowers, flower clusters per plant, flowers and fruits per cluster, fruit set (%), days to 1st picking, fruit length (cm), diameter (cm), fruit shape index, fruit weight (g), number of seeds per fruit, fruits per plant, fruit yield per plant (kg) and yield per hectare (tons).

RESULTS AND DISCUSSION

All the characters under study were significantly influenced by brinjal varieties. The variety HABL-1 recorded significantly maximum plant height (83.55 cm) at 120 days after transplanting while, variety HABR-4 showed minimum plant height (56.00 cm) at 120 days after transplanting. Variety Oblong White recorded maximum primary branches (6.22) and secondary branches (32.51) per plant followed by JNDBH-01 (5.55 & 31.5). Variety Ramnagar Giant showed minimum number of primary branches (3.89) and secondary branches (18.33) respectively. In Phule Hybrid-2, JNDBH-1, HABL-1 and Uttara hybrids/ varieties spines were present both in leaves and fruits. Other eight hybrid/ varieties were spineless. The minimum time to 50% flowering after transplanting was taken by JNDBH-01 (50 days) followed by REMV-1748 (52.33 days) and Uttara (53.33 days) while, maximum time (58.33 days) was taken by CHB4-1. The maximum number of long styled flowers per plant (17.66) was with JNDBH-01, followed by Jawahar Brinjal-64 (17.22) and HABL-1 (15.89) respectively while minimum number of long styled flowers (8.88) were showed by Ramnagar Giant. In the case of medium styled flowers maximum number of flowers (14.55) per plant was recorded in REMV-1748 followed by JNDBH-01 (13.00), HABL-01 (12.89) and Phule Hybrid-2 (12.44) and minimum were found in Ramnagar Giant (6.77). Number of short styled and pseudo short styled flowers in all hybrids/ varieties remained insignificant. Maximum numbers of flower cluster per plant were found in (14.55) Uttara followed by Punjab Hybrid Round (12.33) and minimum number showed by Oblong White (9.33). Number of flowers per cluster (6.15) and number of fruits per cluster (4.15) were found maximum in variety JNDBH-01. Whereas, minimum numbers of flower per cluster (5.04) and fruits per cluster (2.55) were showed by Ramnagar Giant. The maximum fruit set percent (63.16) was with HABL-1 followed by JNDBH-01 (62.25) while minimum fruit set per cent (50.91) was showed in Ramnagar Giant. This is due to the inherent characteristics of varieties and their response to particular agro-climatic conditions. Similar results were recorded by Anon, (1960); Lombardo and Retaino (1981); Paikra *et al.* (2003); Patel and Sarnaik (2003); Daliya and Wilson (2004).

In the respect to yield parameters, out of 12 hybrids/ varieties investigated here Phule Hybrid-2 was significantly (at 5% level) earliest in attaining edible maturity (70.67 days) followed by Punjab Hybrid Round (71.33 days) while, maximum time (80 days) were taken by Ramnagar Giant. Maximum fruit diameter (9.80 cm) was with Ramnagar Giant followed by Punjb Hybrid Round (6.59 cm), PR-5 (6.35 cm) whereas minimum diameter was with Uttara (3.05cm). The maximum number of seeds (1188.33) per fruit was found in CHB4-1 followed by Punjab Hybrid Round (987), Phule Hybrid-2 (979) and minimum number of seeds per fruit was found in REMV-1748 (351.33). In variety Ramnagar Giant recorded significantly maximum weight per fruit (220.68 g) followed by HABR-4 (160.70 g) Oblong White (151.25 g) while, minimum fruit weight (104.90 g) was recorded in variety Uttara. The maximum number of fruits per plant (16.60), fruit yield per plant (2.44 kg) and fruit yield per hectare (67.83 tons) were found in

JNDBH-01 followed by HABL-1 (15.36 fruits per plant , 2.25 kg per plant & 62.49 tons ha⁻¹). Whereas variety PR-5 recorded minimum number of fruit per plant (7.62), yield per plant (1.14 kg) and yield per hectare (31.78 tons). The probable reason for this might be due to genetic makeup of different varieties and response of varieties to the agro-climatic conditions. Similar results were recorded by Anon, (1960); Lombardo and Retaino (1981); Paikra et al. (2003); Patel and Sarnaik (2003); Daliya and Wilson (2004).

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Table 1: Growth Contributing Characters of Brinjal Varieties/ Hybrids.

Hybrid/ varieties	Height of plant (cm)	No. of primary branches	No. of secondary branches	No. of long styled flowers	No. of medium styled flowers	No. of short styled flowers	No. of pseudo short flowers	Days to 50% flowering	No. of flower cluster/ plant	No. of flowers / cluster
Phule Hybrid-2	71.66	5.44	23.9	14.22	12.44	4.44	2.22	55.67	11.22	5.56
Punjab Hybrid Round (Surabhi)	76.66	5.11	28	14.77	12	3.66	2.55	57.33	12.33	5.83
Oblong White	76.22	6.22	32.5	14.88	11.66	3.66	4.22	55.67	9.33	6.35
CHB4-1	71.44	4.44	23.9	15.55	12.11	5.11	3	58.33	10.22	6.7
JNDBH-01	76.66	5.55	31.6	17.66	13	5.22	3.66	50	11.22	6.66
REMV- 1748	82.33	4.22	22.4	15.22	14.55	4.66	4.11	52.33	11.11	5.75
Ramnagar Giant	61.77	3.89	18.3	8.88	6.77	2.67	1.44	57.33	10.55	5.04
HABR-4	56	4.66	24.6	12.66	9.78	3.22	2.66	55.67	10.33	6.9
HABL-1	83.55	4.55	25	15.89	12.89	3.33	2.44	53.67	12.11	6.27
PR-5	73	5	24.8	13.66	10.77	3.44	1.55	54.67	10.55	5.81
Jawahar Brinjal-64	75.77	5.33	26.3	17.22	12.22	4	2.67	53.67	11.55	5.34
Uttara	73.22	4.77	23.9	15.66	12.11	6.89	5.33	53.33	14.55	6.56
F-test	S	S	S	S	S	NS	NS	S	S	S
S.Em(±)	2.975	0.424	3.45	1.632	1.787	1.511	1.222	1.987	0.905	0.299
CD at 5%	6.17	1.056	8.59	4.067	4.454	3.765	3.045	4.951	2.255	0.745

Table 2: Yield Contributing Characters of Brinjal Varieties/ Hybrids

Hybrid/ varieties	No. of fruits/ cluster	Days to 1 st picking from transplant	Peduncle length of fruit (cm)	Fruit length (cm)	Fruit diameter (cm)	No. of seeds/ fruit	No. of fruits/ plant	Fruit weight (g)	Fruit yield/ plant (kg)	Fruit yield ha ⁻¹ (ton.)
Phule Hybrid-2	3.37	70.67	6.5	10.4	5.89	979	12.3	142.89	1.75	48.6
Punjab Hybrid Round (Surabhi)	3.48	71.33	5.19	9.54	6.59	987	13.9	138.38	1.91	53.23
Oblong White	3.77	73	6.3	16.6	5.94	602	12.5	151.25	1.89	52.6
CHB4-1	3.55	71.67	5.63	17	5.6	1188	13.9	142.85	1.97	54.95
JNDBH-01	4.15	76.67	6.51	14.9	4.38	754	16.6	147.11	2.44	67.83
REMV- 1748	3.39	78	8	18.9	3.26	351	13.6	111.6	1.51	41.94
Ramnagar Giant	2.55	80	4.6	14.5	3.8	429	8.31	220.68	1.83	50.83
HABR-4	3.7	78	5.74	14.6	5.68	492	11.1	160.7	1.77	49.16
HABL-1	3.96	76	6.77	24.4	4.89	948	15.4	147.01	2.25	62.49
PR-5	3.15	73	4.83	8.53	6.35	719	7.62	150.16	1.14	31.78
Jawahar Brinjal-64	3.15	75	5.34	11.6	5.74	510	14.2	120.58	1.7	47.22
Uttara	4.07	71.67	6.51	17	3.05	779	13.8	109.9	1.44	40.09
F-test	S	S	S	S	S	S	S	S	S	S
S.Em(±)	0.302	1.324	0.392	1.71	0.868	46.6	0.16	0.09	0.215	0.235
CD at 5%	0.751	3.299	0.977	4.27	2.163	116	0.39	0.22	0.536	0.586