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Evaluation of Brinjal (*Solanum melongena* L.) Genetic Pool for Various Characters

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Abstract

Thirty genotypes of brinjal were evaluated for 12 quantitative characters during the *rabi* season of 2008-2009. Significant differences were observed for almost all the traits viz., plant height (cm), number of primary branches per plant, number of fruits per plant, fruit length (cm), fruit diameter (cm), number of seeds per fruit, seed yield per plant (g), 100 seed weight (g), average fruit weight (g), fruit yield per plant (g), fruit yield (q/ha) except days to 50% flowering. Genotype namely. Pant Samrat has been found superior for fruit yield (q/ha) followed by genotypes DBL-2, Kashi Sandesh, ABSR-2, CHBR-1 and NUN-531.
Key words : Variability, Heritability, Genetic advance, Brinjal.

Brinjal, egg plant or aubergine (*Solanum melongena* L.) is the most popular and widely cultivated vegetable crop in the central, southern and southeast Asia and in some African countries. The crop is extremely variable in India, Vavilov (1) regarded the crop as being Indian origin. India being the center on origin, there is a great range of variability and that variability can be exploited for evolving a high yielding type. The evaluation of the potentialities of the existing varieties is essential because it is the genetic diversity of the initial parental material, on which depends the promise for further crop improvement. Keeping these in view the present research work was formulated to evaluate the 30 genotypes of brinjal for different quantitative characters of brinjal.

Methods

The experimental materials comprised 30 genotypes of brinjal, obtained from different sources, were evaluated in randomized block design at Vegetable Research Form, Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, during *rabi* season of 2008-2009. Agronomic practices were followed to grow a better crop. Thirty five days old seedlings were transplanted at a spacing of 60 cm between rows and 45 cm between plants. Observation were recorded on five randomly selected plant for 12 characters viz., days to 50% flowering, plant height (cm), number of primary branches per plant, number of fruits per plant, fruit length (cm), fruit diameter (cm), number of seeds per fruit, seed yield per plant (g), 100 seed weight (g), average fruit weight (g), fruit yield (q/ha). Analysis of variance was carryout as suggested by Panes and Sukhatme (2).

Results and Discussion

The analysis of variance revealed that, the significant differences among the genotypes for all the traits studied indicating that there is substantial genetic variability for these traits. The mean performances of tested genotypes for different yield and yield traits are presented in Table 1. On the basis of mean performance, the genotype Punjab Sanyog (61) and Punjab Barsati (64.67) were found to be good for early flowering, whereas genotype KS-235 recorded maximum days (94.00) for flowering. Genotype Pusa Green Long (69.33 cm) and NUN-531 (66.50 cm) have been found good for plant height, while genotype Pant Rituraj exhibited minimum value for plant height (36.57 cm). Genotype Pusa Kranti (12.07) and Punjab Bahar (11.47) recorded maximum number of branches

per plant, while, genotype Punjab Sanyog exhibited minimum branches per plant (5.60). For maximum number of fruits per plant, genotype Pusa Purple Long (15.3) and Pusa Anupam (13.0) were registered best, whereas genotypes NUN-531 recorded minimum number of fruits per plant (6.17). Genotype Hisar Pragati (18.03 cm) and Punjab Bahar (15.43 cm) may be considered for maximum fruit length, whereas, genotype Arka Sheel showed minimum fruit length (6.83 cm), Genotypes had maximum diameter was NUN-531 (7.47 cm) and Pant Samrat (6.57 cm). Genotype NUN-531 (196g) and Kashi Sandesh (156 g) recorded maximum average fruit weight, while genotype Hisar Pragati registered minimum fruit weight (58.33 g). Pant Rituraj (1213.33) and Pant Samrat (1117.00) registered maximum number of seeds per fruit. However, maximum 100 seeds weight was observed in genotype Kashi Sandesh (0.63 g) and DVRT-8 (0.61 g). BR-SPS-14 (65.60 g) and Pusa Purple Long (63.43 g) may be considered for maximum seed yield per plant. Genotype Pant Samrat has been found superior for fruit yield (q/ha) followed by genotype DBL-2, Kashi Sandesh, ABSR-2, CHBR-1 and NUN-531. On the other hand genotype Hisar Pragati registered low fruit yield (181.23 q/ha).

From the present investigation, it can be concluded that genotype like Pant Samrat, DBL-2 and Kashi Sandesh were identified as promising and high yielding genotypes for Varanasi region. High variation among genotypes has indicated that there is a scope of selection in the region.

Table 1. Mean value of 30 genotypes of brinjal for various yield and yield attributing characters.

Genotypes	Days to 50% flowering	Plant height (cm)	No. of branches per plant	No. of fruits per plant	Fruits length (cm)	Fruits diameter (cm)
Punjab Barsati	64.67	47.63	8.83	10.60	15.10	3.33
Punjab Sanyog	61.00	50.40	5.60	12.67	11.27	4.53
BR-SPS-14	66.00	51.87	8.67	11.40	10.03	5.30
DVRT-8	68.00	60.13	9.70	9.90	8.83	5.47
ABH-1	91.00	61.30	10.80	10.47	12.67	4.33
KS-235	94.00	65.63	9.83	9.93	15.03	5.20
Hisar Jamuni	86.33	59.47	9.23	10.63	12.53	4.60
Arka Sheel	93.00	43.93	8.73	11.70	6.83	5.67
NUN-1521	77.33	42.17	9.03	8.40	14.43	4.00
Pusa Anupam	90.00	49.97	5.83	13.00	10.00	4.90
Arka Nidhi	81.00	54.57	7.53	9.43	10.97	4.93
Nasseppee	76.67	49.80	8.73	11.33	15.73	3.03
CHBR-1	84.33	47.07	10.60	10.4	10.30	5.03
Kashi Sandesh	65.67	58.27s	8.40	9.67	11.67	6.00
Pusa Kranti	85.67	46.50	12.07	7.50	13.53	4.37
Pusa Purple Cluster	70.67	50.47	7.30	8.20	10.37	4.43
Pusa Green long	76.67	69.33	8.93	12.70	10.37	4.60
Pant Rituraj	90.67	36.57	7.17	7.67	8.10	5.90
Pusa Purple Long	91.67	48.27	6.77	15.30	9.87	4.27
Black Beauty	75.00	62.63	6.43	9.27	15.43	2.60
Azad Kranti	69.67	56.30	9.73	8.07	11.37	4.17
Punjab Bahar	91.60	49.53	11.47	6.40	15.70	3.60
Pant Samrat	78.33	43.33	8.40	9.00	10.97	6.57
DBL-2	75.67	40.37	9.30	12.93	9.57	5.27
Pusa Purple Round	79.00	57.33	7.03	11.13	10.70	4.33
Arka Shirish-1	78.67	36.77	8.00	13.57	13.17	3.43
KS-224	73.67	47.00	9.00	9.27	13.13	3.60
Hisar Pragati	75.67	52.23	10.20	8.5	18.03	2.57
NUN-531	90.33	66.50	11.67	6.17	9.30	7.47
ABSR-2	73.00	62.10	10.37	11.53	13.07	4.20
Cd at 5%	2.52	4.33	1.20	1.44	0.98	0.46

Table 1. Continued.

Genotypes	Average fruit weight (g)	Number of seeds per Fruit	100 seeds weight (g)	Seed yield per plant (g)	Fruits yield per plant (g)	Yield (q/ha)
Punjab Barsati	73.00	559.67	0.45	28.30	811.90	300.37
Punjab Sanyog	90.00	699.33	0.54	48.63	1122.67	419.24
BR-SPS-14	100.83	1040.00	0.55	65.60	1137.47	420.33
DVRT-8	112.00	777.33	0.61	45.10	1070.10	395.97
ABH-1	89.33	384.00	0.44	17.23	908.67	336.03
KS-235	114.67	504.67	0.56	28.37	1157.40	424.30
Hisar Jamuni	88.67	616.33	0.37	24.30	921.53	340.97
Arka Sheel	95.00	958.00	0.52	58.07	1098.32	406.27
NUN-1521	106.67	466.00	0.39	15.30	892.97	330.40
Pusa Anupam	98.00	883.67	0.48	54.63	1213.13	448.83
Arka Nidhi	114.67	655.33	0.43	26.33	1069.00	394.53
Nusseppee	74.33	305.00	0.61	20.77	830.67	307.03
CHBR-1	123.00	793.00	0.56	45.20	1237.00	457.67
Kashi Sandesh	156.67	628.00	0.63	37.83	1273.00	478.03
Pusa Kranti	103.67	382.00	0.58	16.65	775.90	287.07
Pusa Purple Cluster	84.00	969.67	0.45	35.70	690.13	255.33
Pusa Green long	80.33	342.00	0.55	23.63	1016.87	276.23
Pant Rituraj	115.00	1213.33	0.54	49.13	856.63	317.00
Pusa Purple Long	76.00	871.67	0.47	63.43	1186.40	438.93
Black Beauty	70.00	401.33	0.41	15.27	656.63	252.93
Azad Kranti	94.67	890.67	0.42	28.33	782.00	289.30
Punjab Bahar	105.00	611.33	0.35	13.83	677.80	248.48
Pant Samrat	156.00	1117.00	0.45	45.47	1418.33	534.77
DBL-2	108.67	614.67	0.58	44.97	1387.87	513.43
Pusa Purple Round	85.33	1059.67	0.43	50.30	939.93	347.80
Arka Shirish-1	82.80	867.00	0.46	53.70	1124.57	422.43
KS-224	71.33	643.33	0.73	22.30	662.07	244.93
Hisar Pragati	58.33	350.33	0.37	10.95	489.73	181.23
NUN-531	196.00	367.33	0.52	11.77	1213.67	449.03
ABSR-2	103.67	692.67	0.36	28.93	1247.00	468.03
Cd at 5%	6.39	15.32	0.022	3.97	56.28	28.05

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