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Research Article

Performance evaluation of different genotypes of brinjal (*Solanum melongena* L.) under mid hill conditions of Himachal Pradesh

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Abstract
The field experiment was conducted to study the performance of fifty genotypes of brinjal (*Solanum melongena* L.) under mid-hill conditions at the Research Farm, Department of Vegetable Science, Dr YS Parmar University of Horticulture and Forestry, Nauni, Solan, (HP) during the summer rainy season of 2017. All these fifty brinjal genotypes showed significant variation in growth and yield attributing characters. Maximum fruit yield per plant was observed in PBH-3 (1.180 kg) closely followed by another 5 genotypes namely PBHR-42 (1.120 kg), SR-312 (1.063), Punjab Barsati (1.000 kg), UHF BRL-4 (0.997 kg) and SR-333 (0.997 kg).

Keywords
Mean performance, Brinjal, superior genotypes.

INTRODUCTION

Vegetables constitute an important supplement of our daily diet. They supply proteins, fats, minerals, vitamins and organic acids beside ambient carbohydrates required for normal health at cheaper rates. Among the various vegetables grown in India, Brinjal (*Solanum melongena* L.) has been a staple vegetable in our diet since ancient times. In the solanaceous vegetables, brinjal is equally rated high in its nutritional value which can be compared well with tomato (Choudhary, 1976). It is also known as Aubergine in Europe. It is considered a native to India, where the major domestication of large-fruited cultivars occurred. The most cultivated species of brinjal are *Solanum melongena* L. which is derived from the Arabic term for one king of eggplant in the 16th century.

MATERIALS AND METHODS

The experiment was laid out in randomized complete block design with three replications with fifty genotypes at the Research Farm of the Department of Vegetable Science, Dr YS Parmar University of Horticulture and Forestry, Nauni, Solan, (HP) during the summer rainy season of 2017. The observation was recorded on plant height, the number of branches per plant, days to 50 per cent flowering, days to first harvest, total harvest duration, fruit shape, fruit colour, fruit length, fruit breath fruit weight, the number of marketable fruits per plant, marketable fruit yield per plant, per plot and per ha, total soluble solids, ascorbic acid content, incidence of fruit rot and incidence of fruit borer. The observations were recorded from five randomly selected plants in each replication for all characters and the averages were worked out to record the mean value in each replication for statistical analysis.

RESULTS AND DISCUSSION

Plant height is the most important trait in determining the harvest duration and total yield of the crop. Significant variations in plant height were observed among all the genotypes which ranged from 52.13 cm (SR-301) – 130.47 cm (UHF BRL-4) as seen in Table 1. The genotypes *viz*. DBR-128 (129.77 cm) and H-295-3 (129.27 cm) were

significantly on par to the later *i.e.* UHF BRL-4. These results are in conformity with Nayak and Nagre (2013), Vidhya and Kumar (2015), Das *et al*. (2017), Ravali *et al*. (2017), Patel *et al*. (2017), Sujin *et al*. (2017), who also observed variable heights in their respective set of genotypes in brinjal. The number of branches per plant ranged from 3.02 (Arka Nidhi) to 11.56 (DBR-128). General means for the character was 5.31. Twenty genotypes, including the checks; PPL and Pusa Kranti produced morenumber of branches per plant than the populations mean (5.31). Similar wide variations for the number of branches in brinjal ranging between 3.87 and 17.20 have also been observed by earlier researchers *viz*. Prabhu *et al*. (2009), Bora *et al*. (2011), Shekar *et al*. (2012), Kumar *et al*. (2013), Nayak and Nagre (2013), Lokesh *et al*. (2013), Dhaka and Soni (2014), Madhavi *et al*. (2015) and Ravali *et al*. (2017).

Earliness is of economic importance in vegetables as it helps to fetch premium prices. The mean data presented in Table 1 on the performance of different genotypes for this trait ranged from 29.33 days (Punjab Sadabahar) to 61.67 (UHF BRL-7) vis-a-vis population mean of 40.90 days. Overall, as many as 17 out of 20 long fruited genotypes and 13 out of 24 round/oval fruited genotypes significantly excelled the respective check varieties *i.e.* PPL (31.00 days) and Punjab Nagina (32.00 days).

Comparison of the genotypes for days to the first harvest revealed that; though Punjab Sadabahar was the earliest to attain flowering, yet a round fruited SR-303 (57.00 days) was earliest to produce marketable fruits. This may be due to the existence of genotypic and genotypic x environment differences post-anthesis and fruit set. The observation is also in line with the finding of Bite (1989), who recorded first fruit harvest in a cucumber hybrid which was not earliest in flower production. An oval fruited DB-144 (96.17 days) took maximum days to first harvest vis-a-vis its respective shaped check variety; Punjab Nagina (58.00 days). Variability with respect to 50 per cent flowering in brinjal spreading between 36.00 to 78.00 days has also been recorded earlier by Tripathy *et al.* (2017), Nilakh *et al*. (2017), Patel *et al*. (2017) and Tirkey *et al.* (2018). Similarly, Mohanty (2002), Shekar *et al.* (2012), Patel *et al*. (2015) and Ravali *et al*. (2017) harvested first fruits between 52.33 to 109.30 days after transplanting.

Total harvest duration ranged from 55.00 (UHF BRL-8) to 113.33 days (UHF BRL-6) as depicted in **Table 1.** The other genotypes which recorded prolonged harvest duration at the par of the later were; SR-303 (111.00), SR-312 (110.33), SR-305 (110.33) and UHF BRL-1 (107.33). Overall, 28 genotypes, including checks *i.e.* PPL (94.33), Pusa Kranti (105.00) and Punjab Nagina (95.33) were found to have a longer harvest duration than the population mean (90.59 days). The trend of such variation in total harvest duration has also been reported by Das *et al*. (2017).

The length of fruits in different genotypes of brinjal ranged from 5.80 cm in a round fruited genotype DB-30 to 19.94 cm in a long fruited check variety (PPL) as seen in Table 1. Overall, as many as 24 genotypes, including checks (PPL and Pusa Kranti) produced longer fruits than the population mean (10.66 cm). Among 20 long fruited and 3 oblong genotypes, none of them surpassed the respective standard variety PPL and Pusa Kranti. However, 8 out of 24 rounds/oval genotypes excelled the check variety, *i.e.* Punjab Nagina in fruit length (6.96 cm). Trend of such variation in fruit length has also been reported by Golani *et al*. (2007), Kumar *et al.* (2011), Begum *et al.* (2013), Vandana *et al.* (2014), Uddin *et al*. (2014), Gavade and Ghadge (2015), Ravali *et al.* (2017).

Maximum fruit breadth of 7.55 cm was observed in a round fruited genotype UHF BRL-6 closely followed by another round genotype *i.e.* PBHR-42 (7.32 cm). A long variety of Arka Keshav observed minimum breadth of 1.91 cm. Variability with respect to fruit size in brinjal has also been observed and reported by earlier researchers namely Prabhu *et al*. (2009), Shekar *et al*. (2012), Kumar *et al*. (2013) and Nayak and Nagre (2013) in brinjal, who observed variation in fruit width ranging between 2.13 to 18.61 cm.

A pool of 50 genotypes under scrutiny for variability comprised of 21 long, 4 oblong and 25 round/ oval fruited genotypes. Among long genotypes, the fruit weight varied from 23.01 g (Arka Keshav) to 143.90 g (UHF BRL-3), in oblong it ranged from 42.89 g (DB-181) to 122.00 g (Pusa Kranti), while round/oval fruits weigh between 46.47 g (DB-109) to 219.13 g (UHF BRL-6) each as can be given in Table 1. Whereas, only 3 out of 20 long fruited genotypes recorded significantly increased weight per fruit vis-a-vis long check variety PPL(83.68 g), as many as 11 round/oval entries significantly surpassed the check variety *i.e.* Punjab Nagina (70.36 g). However, none of 3 oblong fruited genotypes in the present study exceeded in per fruit weight to check variety Pusa Kranti (122.00 g). Corresponding to the above results, variability in average fruit weight of brinjal has also been noticed by Vidhya and Kumar (2015), Patel *et al*. (2015), Kumar *et al*. (2016) and Patel *et al*. (2017).

All the genotypes screened in the present investigation revealed significant variations for this character as well. Mean the number of fruits/plant ranged from 1.39 (UHF BRL-7 – an oval fruited) to 29.86 (PPC – a long fruited with cluster bearing genotype) as illustrated through mean data in Table 2. Among the long genotypes, 5 long fruited commercial cultivars bred by different institution *viz.* PPC (29.86), Swarn Anubhav (26.52), Arka Kusmakar (23.76), Pant Samrat (20.71) and Punjab Barsati (20.10) included in our present study recorded a significantly higher number of fruits/plant as compared to respective long fruited standard variety PPL (16.62). Similarly, five of the round/oval genotypes namely SR-305 (26.33), SR-321 (25.00), SR-333 (24.72), SR-312 (23.87) and

Table 1. Mean performance of brinjal genotypes for different horticultural traits

S.No.	Genotypes	Plant height (cm)	Number of branches per plant	Days to 50 per cent flowering	Days to the first harvest	Total harvest duration	Fruit length (cm)	Fruit breadth (cm)	Fruit weight (g)
1	Punjab Sadabahar	88.07	7.05	29.33	60.67	90.33	18.65	3.17	87.26
2	Punjab Barsati	77.50	6.85	39.33	60.67	95.33	13.11	4.04	80.39
3	PBHL-4	89.90	6.32	34.07	77.00	89.33	14.98	3.43	74.46
4	Arka Nidhi	70.43	3.02	44.50	65.33	70.33	14.62	2.61	59.46
5	Arka Shirish	108.93	3.78	40.00	78.33	90.33	11.60	2.42	35.97
6	Arka Kusumakar	101.57	4.62	43.17	79.67	101.00	11.22	2.82	41.44
7	Arka Neelkanth	90.93	3.43	43.33	80.50	99.67	11.52	2.19	29.85
8	Arka Keshav	85.40	4.96	44.17	77.50	67.67	15.46	1.91	23.01
9	Pusa Purple Cluster	100.20	3.81	44.50	76.17	66.33	12.43	3.31	59.96
10	Pant Samrat	100.17	3.15	40.50	76.17	76.00	11.25	2.78	40.72
11	PB-4	87.37	4.20	36.81	57.67	89.67	14.53	3.18	67.85
12	PB-6	81.10	4.69	39.17	78.00	74.00	11.96	3.18	56.48
13	IC-074224-1	124.77	5.43	42.67	83.67	105.00	13.07	3.53	67.63
14	H-295-3	129.27	8.48	53.00	74.33	85.00	15.86	3.02	66.05
15	UHF BRL-2	82.00	3.58	54.00	81.33	95.33	14.53	4.04	109.63
16	UHF BRL-3	117.33	5.37	31.46	71.17	80.33	17.29	4.25	143.90
17	UHF BRL-4	130.47	4.98	40.00	74.00	99.00	13.48	4.69	116.89
18	UHF BRL-5	106.67	8.70	51.61	75.83	94.33	12.11	4.04	89.93
19	Swarn Anubhav	86.70	4.00	40.17	75.00	73.67	12.62	3.15	56.14
20	BARI	74.97	5.06	44.83	60.17	85.00	14.30	2.23	33.99
21	PBH-3	87.17	6.57	32.83	60.67	95.33	11.83	4.96	104.68
22	SR-303	80.47	5.50	34.33	57.00	111.00	7.08	5.06	68.71
23	SR-333	67.07	4.09	32.76	60.67	105.33	7.16	5.20	76.23
24	UHF BRL-1	87.10	4.59	43.33	63.33	107.33	9.76	5.35	119.69
25	DB-143	73.23	4.44	34.72	72.17	67.67	7.94	3.52	59.26
26	DBL-139	96.57	4.85	39.17	76.67	99.00	7.35	4.29	61.99
27	SR-312	68.37	3.66	35.83	60.67	110.33	6.62	4.84	65.83
28	SR-301	52.13	3.96	44.50	71.67	90.00	6.98	5.12	66.50
29	SR-305	62.70	4.92	35.17	62.33	110.33	8.02	4.92	73.96
30	DB-110	75.93	5.21	33.17	71.67	91.67	8.02	5.05	82.43
31	DBR-128	129.77	11.56	46.00	94.50	103.50	7.73	5.34	85.33
32	DB-144	111.70	5.75	41.33	96.17	99.00	7.58	3.61	50.98
33	UHF BRL-6	119.77	7.07	49.17	78.67	113.33	11.73	7.55	219.13
34	BH-2	91.57	5.57	35.50	72.33	87.33	9.27	5.35	106.60
35	UHF BRL-7	91.73	4.17	61.67	84.67	70.67	10.54	6.00	142.56
36	UHF BRL-8	112.43	5.58	54.99	62.83	55.00	8.67	6.64	128.80
37	SR-321	75.77	4.01	35.00	73.83	100.33	6.28	4.64	63.19
38	DB-109	102.20	4.48	38.98	78.33	100.83	6.02	4.41	46.47
39	BR-322-2	78.70	5.64	41.69	78.17	95.33	10.21	6.69	185.42
40	BR-16	86.47	4.57	36.45	83.67	97.67	8.19	5.46	88.32
41	BR-123	77.80	3.62	36.33	72.17	100.67	8.16	5.90	106.95
42	DB-181	115.53	4.36	44.67	92.50	76.50	8.44	3.24	42.89
43	DBR-134	116.43	8.66	54.33	86.17	69.33	6.72	5.46	81.32
44	PBHR-41	86.50	7.05	37.33	81.83	78.33	6.26	5.85	91.26
45	PBHR-42	79.10	5.55	31.65	71.33	92.67	9.10	7.32	174.61
46	DB-30	94.80	4.38	42.67	67.50	75.33	5.80	4.65	59.30
47	BR 101	72.70	4.15	39.27	67.83	103.50	7.78	6.36	102.06
48	Pusa Purple Long (C)	92.37	6.75	31.00	72.83	94.33	19.94	3.04	83.68
49	Pusa Kranti (C)	60.07	8.43	52.37	71.67	105.00	12.17	5.06	122.00
50	Punjab Nagina (C)	75.67	5.09	32.00	58.00	95.33	6.96	5.19	70.36
	Mean	91.11	5.31	40.90	73.30	90.59	10.66	4.40	83.43
	SE ± (m)	1.98	0.18	1.71	2.27	2.58	0.49	0.18	5.90
	$CD_{0.05}$	5.55	0.51	4.79	6.36	7.24	1.38	0.52	16.56
	Range	52.13-130.47	3.02-11.56	29.33-61.67	57.00-96.17	55.00-113.33	5.80-19.94	1.91-7.55	23.01-219.13

SR-303 (19.62) also recorded significantly more fruits/ plant vis-a-vis respective round check *i.e.* Punjab Nagina (16.67 fruits/plant). Among the oblong genotypes, PBH-3 with 24.14 fruits/plant was significantly superior to the respective check variety, *i.e.* Pusa Kranti (6.74 fruits/ plant) Similar trend with respect to fruiting behavior has been indicated earlier also by different workers like Vidhya and Kumar (2015), Kumar *et al.* (2016), Das *et al*. (2017), Ravali *et al*. (2017), who reported as minimum as 2.33 to as high as 70.33 fruits per plant in their respective variability studies. The observation recorded on fruit yield (kg/ plant, kg/ plot and q/ ha) is presented in **Table 2**. Maximum

Table 2. Mean performance of brinjal genotypes for different horticultural traits

S.No	Genotypes	Number of marketable fruits per plant	Fruit yield per plant (kg)	Fruit yield per plot (kg)	Fruit yield per hectare (q)	TSS (°Brix)	Ascorbic acid (mg/100g)	Incidence of fruit rot (%)	Incidence of fruit borer (%)
1	Punjab Sadabahar	18.12	0.867	13.547	266.54	4.20	17.31	5.08 (2.47)	6.10 (2.66)
2	Punjab Barsati	20.10	1.000	15.713	309.17	5.13	15.84	2.71 (1.93)	4.85 (2.42)
3	PBHL-4	17.10	0.613	9.857	193.94	4.37	18.89	5.21 (2.49)	3.19 (2.04)
4	Arka Nidhi	14.97	0.497	7.853	154.52	5.40	16.76	3.02 (2.00)	4.38 (2.32)
5	Arka Shirish	18.63	0.490	7.953	156.49	3.10	8.43	6.00 (2.65)	15.47 (4.06)
6	Arka Kusumakar	23.76	0.390	6.037	118.78	3.92	8.57	4.62 (2.37)	19.27 (4.50)
7	Arka Neelkanth	13.41	0.410	6.357	125.07	5.35	11.59	6.34 (2.71)	19.17 (4.49)
8	Arka Keshav	17.38	0.393	5.967	117.40	3.47	12.37	6.36 (2.71)	12.99 (3.74)
9	Pusa Purple Cluster	29.86	0.873	13.640	268.38	4.27	10.69	1.17 (1.47)	13.94 (3.87)
10	Pant Samrat	20.71	0.633	9.900	194.79	4.78	10.91	2.70 (1.92)	9.40 (3.22)
11	PB-4	8.05	0.320	4.920	96.80	4.80	8.61	4.11 (2.26)	11.84 (3.58)
12	PB-6	10.76	0.453	7.067	139.04	5.40	6.87	3.94 (2.22)	9.38 (3.22)
13	IC-074224-1	13.09	0.403	6.220	122.38	4.50	10.81	5.21 (2.49)	7.01 (2.83)
14	H-295-3	4.32	0.227	3.480	68.47	3.24	12.21	11.27 (3.50)	15.12 (4.01)
15	UHF BRL-2	12.54	0.860	13.507	265.76	3.14	8.88	6.46 (2.73)	12.66 (3.70)
16	UHF BRL-3	5.71	0.507	7.973	156.88	4.44	5.29	17.21 (4.27)	11.32 (3.51)
17	UHF BRL-4	15.88	0.997	15.613	307.21	3.48	6.15	9.17 (3.19)	4.62 (2.37)
18	UHF BRL-5	15.76	0.837	12.787	251.59	3.54	11.10	1.35 (1.53)	8.65 (3.10)
19	Swarn Anubhav	26.52	0.950	15.003	295.21	4.30	11.70	1.66 (1.63)	2.73 (1.93)
20	BARI	9.36	0.290	4.407	86.70	4.24	9.30	3.24 (2.06)	5.89 (2.60)
21	PBH-3	24.14	1.180	18.247	359.02	4.15	12.19	1.27 (1.51)	21.19 (4.71)
22	SR-303	19.62	0.867	13.563	266.87	4.54	16.03	2.51 (1.87)	4.99 (2.45)
23	SR-333	24.72	0.997	15.747	309.83	3.13	14.73	1.44 (1.56)	3.66 (2.16)
24	UHF BRL-1	4.05	0.367	5.690	111.96	3.34	12.20	3.04 (2.01)	1.92 (1.71)
25	DB-143	5.95	0.237	3.703	72.87	3.55	8.20	6.93 (2.82)	3.90 (2.21)
26	DBL-139	8.19	0.417	6.433	126.58	4.25	8.97	4.16 (2.26)	7.18 (2.86)
27	SR-312	23.87	1.063	16.713	328.85	3.60	16.93	2.44 (1.85)	9.40 (3.23)
28	SR-301	15.47	0.600	9.493	186.79	4.99	14.77	1.61 (1.62)	5.99 (2.64)
29	SR-305	26.33	0.913	14.007	275.60	4.36	12.80	2.51 (1.87)	2.89 (1.97)
30	DB-110	5.41	0.393	6.180	121.60	4.32	12.52	2.61 (1.90)	4.80 (2.41)
31	DBR-128	2.65	0.190	2.940	57.85	3.54	16.45	3.82 (2.19)	6.10 (2.66)
32	DB-144	3.62	0.153	2.387	46.96	3.24	10.27	7.55 (2.92)	6.36 (2.71)
33	UHF BRL-6	4.27	0.743	11.427	224.83	3.35	11.01	4.34 (2.31)	9.07 (3.17)
34	BH-2	7.76	0.417	6.500	127.89	4.28	16.24	4.48 (2.34)	12.69 (3.70)
35	UHF BRL-7	1.39	0.290	4.440	87.36	3.36	17.29	19.81 (4.56)	18.78 (4.45)
36	UHF BRL-8	5.00	0.620	9.420	185.35	3.93	16.13	3.82 (2.19)	2.36 (1.83)
37	SR-321	25.00	0.800	12.500	245.95	5.30	13.66	1.48 (1.57)	9.52 (3.24)
38	DB-109	7.67	0.303	4.687	92.22	5.23	10.34	1.74 (1.66)	3.43 (2.11)
39	BR-322-2	6.00	0.450	6.967	137.08	3.91	10.60	2.32 (1.82)	10.77 (3.43)
40	BR-16	12.67	0.617	9.683	190.53	3.98	15.81	3.58 (2.14)	23.22 (4.92)
41	BR-123	7.14	0.453	7.020	138.13	4.24	11.79	1.69 (1.64)	10.00 (3.32)
42	DB-181	2.85	0.183	2.740	53.91	3.89	7.97	4.84 (2.42)	1.14 (1.46)
43	DBR-134	4.73	0.317	4.900	96.41	3.52	8.26	1.52 (1.59)	2.22 (1.79)
44	PBHR-41	8.00	0.393	6.127	120.55	3.81	12.58	3.46 (2.11)	14.39 (3.92)
45	PBHR-42	16.14	1.120	17.620	346.69	4.31	16.00	1.70 (1.64)	6.68 (2.77)
46	DB-30	7.24	0.397	6.147	120.94	4.63	11.53	2.08 (1.75)	4.65 (2.38)
47	BR 101	4.29	0.467	7.267	142.98	4.67	14.43	3.64 (2.15)	1.39 (1.54)
48	Pusa purple Long (C)	16.62	0.890	13.740	270.35	4.27	12.52	2.15 (1.78)	19.48 (4.53)
49	Pusa Kranti (C)	6.74	0.790	12.457	245.10	4.46	15.86	1.42 (1.56)	16.33 (4.16)
50	Punjab Nagina (C)	16.67	0.613	9.597	188.82	3.49	17.27	2.47 (1.86)	8.40 (3.07)
	Mean	12.60	0.585	9.123	179.50	4.13	12.35	4.27 (0.11)	9.02 (0.13)
	SE ± (m)	0.86	0.068	1.042	10.78	0.12	0.32	(0.04)	(0.05)
	$CD_{0.05}$	2.41	0.192	2.924	30.25	0.34	0.89	(0.05)	(0.06)
	Range	**1.39-29.86**	**0.153-1.180**	**2.387-18.247**	**46.96-359.02**	**3.10-5.40**	**5.29-18.89**	**1.17-19.81**	**1.14-23.22**

*** Figures in the parenthesis are square-root transformed value**

fruit yield per plant was observed in PBH-3 (1.180 kg) closely followed by another 5 genotypes namely PBHR-42 (1.120 kg), SR-312 (1.063), Punjab Barsati (1.000 kg), UHF BRL-4 (0.997 kg) and SR-333 (0.997 kg). Further, comparison of mean data recorded on yield from a plot area of 4.32 m^2 and its further transformation to hectare basis (Table 2) revealed that an oblong fruited genotype PBH-3 (359.02 q/ha) recorded the highest yield/hectare followed at par by a round ones *i.e.* PBHR-42 (346.69 q/ha) and SR-312 (328.85 q/ha) whereas, an oval genotype DB-144 (46.96 q/ha) depicted minimum yield potential vis-a-vis check varieties PPL, Pusa Kranti and Punjab Nagina which recorded @ 270.35, 245.10 and 188.82 q/ha, respectively. A wide variation in yield of brinjal to the tune of 32.50 to 548.50 q/ha has also been demonstrated by earlier investigators *viz*. Mohanty (2002), Shekar *et al*. (2012), Kumar *et al*. (2013), Panwar *et al*. (2013), Nayak and Nagre (2013), Chaudhary and Kumar (2014) and Das *et al*. (2017).

Overall, ten genotypes yielded significantly higher than to the respective shape's standard checks. Among the long genotype, Punjab Barsati and UHF BRL-4 registered an increase in yield to the tune of 14.36 and13.63 per cent, respectively over the standard check PPL (270.35 q/ha). Further, only one oblong fruited genotype PBH-3 with a yield of 359.02 q/ha significantly surpassed the standard variety Pusa Kranti (245.10 q/ha). As for round/ oval fruited 25 genotypes evaluated in the present study, as many as 7 genotypes *viz*. PBHR-42 (83.61 %), SR -312 (74.16 %), SR-333 (64.09 %), SR-305 (45.96 %), SR-303 (41.34 %), SR-321 (30.26 %)and UHF BRL-6 (19.07 %) registered a significantly higher per cent of yield over the respective standard round variety, *i.e.* Punjab Nagina (188.82 q/ha). The supremacy of these genotypes over their respective checks was mainly on account of their increased number, weight and harvest duration.

Significant variations were recorded among all the genotypes for this quality trait also. Total soluble solids (TSS) ranged from 3.10 (Arka Shirish) to 5.40 °B (Arka Nidhi & PB-6) as enumerated in Table 2. The other genotypes; Arka Neelkanth (5.35 °B), SR- 321 (5.30 °B), DB-109 (5.23 °B) and Punjab Barsati (5.13 °B), also estimated content of TSS statistically similar to the top TSS rich Arka Nidhi & PB-6. General means for this character was found to be 4.13 °B. These finding can be supported by finding of earlier workers like Chaudhary and Kumar (2014), Tripathy *et al*. (2017), Tirkey *et al*. (2018), who also estimated TSS content in brinjal fruit ranging between 2.83-8.83 °B.

The mean values with respect to ascorbic acid content in different brinjal genotypes are presented in Table 2. The comparison of the mean performance of genotypes showed maximum ascorbic acid in PBHL-4 (18.89 mg/100 g), while UHF BRL-3 (5.29 mg/100 g) estimated the least content of it. The ascorbic acid content in the check varieties PPL, Pusa Kranti, Punjab Nagina was to the tune of 12.52, 15.86 and 17.27 mg/100 g, respectively. Patel *et al*. (2015) had found it in the range of 9.93-16.27 mg/100 g, while Kumar *et al*. (2016), Ravali *et al*. (2017) and Tirkey *et al*. (2018) estimated at between 7.38-13.47, 3.27-9.52 and 4.94-9.03 mg/100 g, respectively in their respective set of genotypes screened by them.

The data recorded on fruit rot incidence (**Table 2)** revealed minimum fruit rot incidence in brinjal genotype PPC (1.47 %) followed closely at par by PBH-3 (1.51 %). A highest fruit rot incidence of 4.56 per cent was recorded in UHF BRL-7. The data recorded on fruit rot incidence (Table 2) revealed the minimum fruit borer incidence in genotype DB-181 (1.46 %), while BR-16 (4.92 %) recorded maximum infestation. In the similar evaluation of brinjal germplasm, Vidhya and Kumar (2015), Kumar *et al.* (2016), Ravali *et al*. (2017) had recorded fruit borer infestation between 7.88 – 60.42 per cent.

The genotypes showed highly significant variations for all the horticultural traits under study. It can be concluded that genotypes Punjab Barsati (long), UHF BRL - 4 (long), Swarn Anubhav (long), PBH - 3 (oblong), PBHR - 42 (round), SR- 312 (round), SR-333 (round), SR-305 (round), SR-303 (round), SR-321 (round) and UHF BRL-6 (round) produced greater yields over the respective shape's check varieties *i.e.* PPL (long), Pusa Kranti (oblong) and Punjab Nagina (round). The high yielding potential registered in these genotypes was primarily on account of either more number of fruit and increased weight per fruit and longer harvest durations. Genotypes Arka Nidhi and PB-6 recorded higher TSS whereas, PBHL-4 gave the highest ascorbic acid content. The genotypes namely, Punjab Barsati, Swarn Anubhav, SR-333, SR-312 and SR-305 had a lesser incidence of fruit borer whereas, PPC, UHF BRL-5, Swarn Anubhav, PBH-3, DB-109, BR-322-2, BR-123, DBR-134, PBHR-42, DB-30 had a minimum incidence of fruit rot.

REFERENCES

Begum F, Islam AKMA, Rasul MG, Mian MAK and Hossain MM. 2013. Morphological diversity of eggplant (Solanum melongena L.) in Bangladesh. Emirates Journal of Food and Agriculture 25: 45-51. [Cross Ref]

Bora L, Singh YV and Bhushan KB. 2011. Stability for fruit yield and yield contributing traits in brinjal (Solanum melongena L.). Vegetable Science 38: 194-196.

Chaudhary P and Kumar S. 2014. Variability, heritability and genetic advance studies in eggplant (Solanum melongena L.). Plant Archives 14: 483-486.

Choudhary B. (1976), Vegetables (4th edtn.). National Book Trust, New Delhi: pp. 50-58.

Das A, Pandit MK, Pal S, Muthaiah K and Layek S. 2017. Characterization of brinjal genotypes for growth, yield and morphological traits. Research Journal of Agricultural Science 8: 789-796.

Dhaka S and Soni A. 2014. Genotypic and Phenotypic correlation study in brinjal genotypes. Annual Plant Soil Research 16: 53-56.

Gavade TR and Ghadage AB. 2015. Genetic variability, heritability and genetic advance in segregating generation of brinjal (Solanum melongena L.). Bioinfolet 12: 325-328.

Golani IJ, Mehta DR, Naliyadhara MV, Pandya HM and Purohit VC. 2007. A study on genetic diversity and genetic variability in brinjal. Agriculture Science Digest 27: 22-25.

Kumar A, Kumar S and Yadav YC. 2011. Variability studies for yield and yield attributing characters in brinjal (Solanum melongena L.). Progressive Agriculture 11: 486-488.

Kumar SR, Arumugam T and Anandakumar CR. 2013. Genetic Diversity in Egg plant (Solanum melongena L.). Plant Gene and Trait 4: 4-8.

Kumar SR, Arumugam T and Ulanganathan V. 2016. Genetic diversity in eggplant germplasm by principal component analysis. SABRAO Journal of Breeding and Genetics 48: 162-171.

Lokesh B, Reddy PS, Reddy RVSK and Sivaraj N. 2013. Variability, heritability and genetic advance studies in brinjal (Solanum melongena L.). Electronic Journal of Plant Breeding 4: 1097-1100.

Madhavi N, Mishra AC, Prasad JO and Bahuguna N. 2015. Studies on variability heritability and genetic advance in brinjal (Solanum melongena L.). Plant Archives 15: 277-281.

Mohanty BK. 2002. Variability, heritability and genetic advance studies in brinjal (Solanum melongena L.). Indian Journal of Agriculture Research 36: 290-292.

Nayak BR and Nagre PK. 2013. Genetic variability and correlation studies in brinjal (Solanum melongena L.). International Journal of Applied Biology and Pharmaceutical Technology 4: 211-215.

Nilakh SB, Thaware BL, Dhekale JS and Palshetkar MG. 2017. Genetic variability studies on F_5 generation of brinjal (Solanum melongena L.). Plant Archives 17: 103-105.

Panwar NS, Mishra AC, Pandey V, Nautiyal M and Bahuguna A. 2013. Evaluation of brinjal (Solanum melongena L.) hybrids for growth and yield characters under rainfed mid hill conditions of Uttarakhand. International Journal of Forestry and Crop Improvement 4: 32-35.

Patel K, Patel NB, Patel AI, Rathod H and Patel D. 2015. Study of variability, correlation and path analysis in brinjal (Solanum melongena L.). The Bioscan 10: 2037-2042.

Patel VK, Singh U, Goswami A, Tiwari SK and Singh M. 2017. Genetic variability, interrelationship and path analysis for yield attributes in eggplant. Environment and Ecology 35: 877-880.

Prabhu M, Nadarajan S and Pugalendhi L. 2009. Genetic parameters in eggplant backcross progenies. American Eurasian Journal of Sustainable Agriculture 3: 275-279.

Ravali B, Reddy KR, Saidaiah P and Shivraj N. 2017. Variability, heritability and genetic advance in brinjal (Solanum melongena L.). International Journal of Current Microbiology and Applied Sceince 6: 42-47. [Cross Ref]

Shekar K, Ashok P and Sasikala K. 2012. Studies on Heritability and Multivariate Analyses in Brinjal (Solanum melongena L.). Vegetable Crops Research Bulletin 76: 79-88. [Cross Ref]

Sujin GS, Karuppaiah P and Manivannan K. 2017. Genetic variability and correlation studies in brinjal (Solanum melongena L.). International Journal of Plant Sciences 12: 21-17. [Cross Ref]

Tirkey M, Saravana S and Pushpa L. 2018. Studies on variability, heritability and genetic advance for yield and its attributes in brinjal (Solanum melongena L.). Journal of Pharmacognosy and Phytochemistry 1: 1181-1183.

Tripathy B, Sharma D, Jangle BP and Bairwa PL. 2017. Evaluation of brinjal (Solanum melongena L.) genotypes for growth and yield characters under Chhattisgarh conditions. The Pharma Innovation Journal 6: 416-420.

Uddin MS, Rahman MM, Hossain, MM and Mian MAK. 2014. Genetic diversity in eggplant genotypes for heat tolerance. SAARC Journal of Agriculture 12: 25-39. [Cross Ref]

Vandana Y, Nandan M and Smita B. 2014. Variability and heritability estimates in the germplasm collection of egg plant (Solanum melongena L.). Trends in Biosciences 7: 3482-3484.

Vidhya C and Kumar N. 2015. Genetic variability studies in brinjal (Solanum melongena L.) for fruit yield and quality. Electronic Journal of Plant Breeding 6: 668-671.