



P-ISSN: 2349-8528

E-ISSN: 2321-4902

www.chemijournal.com

IJCS 2020; 8(5): 768-773

© 2020 IJCS

Received: 24-05-2020

Accepted: 27-08-2020

Rohit Kumar Bajpai

Department of Vegetable
Science, A. N.D.U. A & T.
Kumarganj, Faizabad, Uttar
Pradesh, India

DP Mishra

Department of Vegetable
Science, A. N.D.U. A & T.
Kumarganj, Faizabad, Uttar
Pradesh, India

GC Yadav

Department of Vegetable
Science, A. N.D.U. A & T.
Kumarganj, Faizabad, Uttar
Pradesh, India

Vimlesh Kumar

College of Agriculture Campus
Azamgarh, A. N.D.U. A & T.
Kumarganj, Faizabad, Uttar
Pradesh, India

Sharvan Kumar

Department of Vegetable
Science, A. N.D.U. A & T.
Kumarganj, Faizabad, Uttar
Pradesh, India

Evaluation of F₁ hybrids and parental lines for quantitative and qualitative traits of Brinjal

Rohit Kumar Bajpai, DP Mishra, GC Yadav, Vimlesh Kumar and Sharvan Kumar

DOI: <https://doi.org/10.22271/chemi.2020.v8.i5k.10392>

Abstract

The present investigation was conducted to know the diversity among the F₁ hybrids developed through diallel mating design with the using 8 diverse parents for quantitative and qualitative traits. The study was conducted with the field evaluation of 28 F₁ hybrids and 8 parents during two consecutive years. The wide range of variation observed among the traits during both the years. Perusal of *per se* performance of the parental lines and F₁ hybrids (Table 4.2) for all the traits studied revealed a wide range of mean values which indicated that the parental lines involved in this study were genetically diverse and had good breeding value, which confirmed the predictions of analysis of variance. Out of 28 F₁ hybrids sixteen hybrids *viz.*, P₁ × P₂, P₁ × P₄, P₁ × P₆, P₁ × P₇, P₁ × P₈, P₂ × P₃, P₂ × P₄, P₂ × P₅, P₂ × P₆, P₃ × P₅, P₃ × P₆, P₄ × P₅, P₄ × P₆, P₅ × P₆, P₅ × P₇, P₅ × P₈, P₆ × P₈, and P₇ × P₈ produced significantly higher yield than both standard varieties Punjab Sadabahar and Pant Rituraj.

Keywords: brinjal, fruit yield, diallel mating, quality traits

Introduction

Eggplant (*Solanum melongena* L.) or brinjal is a vegetable of family solanaceous, which is worldwide known as aubergine or guinea squash. It is one of the most popular and major vegetable crop in India and other parts of the world. It is self pollinated and annual herbaceous plant, probably originated in India and shows secondary diversity in South East Asia. It is being grown extensively in India, Bangladesh, Pakistan, China, Japan, Philippines, France, Italy and U.S.A. In Southern Europe. Brinjal is a staple vegetable and it is a favourite dish in South East of France. Brinjal has got much potential as raw material in pickle making and dehydration industries (Singh *et al.*, 1963)^[1]. It is highly productive and being consumed as a cooked vegetable in many ways and liked by both poor and rich. Year round availability, easy culture, moderate to high yield and consumption in varieties of ways like salad, bhaji, stuffed brinjal, bhārtha, chatni, pickles etc., is the king of vegetables in India. Further, in recent years brinjal is being exported in the form of products like *baingan bhārtha*, *chatni*, *pickles* etc. to Middle East countries.

Eggplant is being cultivated in India over an area of 0.735 million ha with an average annual production of 12.95 million tonnes and productivity of 19.1 mt/ha. In Uttar Pradesh, brinjal is being cultivated on an area of 3.0 lakh ha with annual production of 90.9 lakh tonnes. Agra, Meerut, Lucknow, Kanpur, Aligarh, Chitrakoot and Gorakhpur districts contribute more area and production to the state pool (Anon., 2019)^[2].

Brinjal fruits are rich source of minerals like calcium, magnesium, potassium, iron, zinc and copper. It is also a fair source of fatty acids and it is used for medicinal purposes in curing diabetes, asthma, cholera, bronchitis and diarrhea. It is reported to stimulate the intrapeptic metabolism of blood cholesterol. Leaf and fruit, fresh or dry produce marked drop in blood cholesterol level. The de-cholesterolizing action is attributed to the presence of polyunsaturated fatty acids (lignoleic and linolenic) which are present in flesh and seeds of the fruit in higher amount (65.1%).

Materials and Methods

The experimental materials for the present study comprised of eight promising and diverse pure lines/varieties of brinjal selected on the basis of genetic variability from the germplasm

Corresponding Author:**Rohit Kumar Bajpai**

Department of Vegetable
Science, A. N.D.U. A & T.
Kumarganj, Faizabad, Uttar
Pradesh, India

stock maintained in the Department of Vegetable Science, A.N.D. University of Agriculture & Technology, Kumarganj, Ayodhya (U.P.) India. The selected parental lines *i.e.* NDB-S-1 (P₁), Pb. Sadabahar (P₂), NDB-2 (P₃), NDB-3 (P₄), Narendra Ujala (P₅), Pant Rituraj (P₆), NDB-S-2 (P₇) and NDB-S-3 (P₈) were crossed in the all possible combinations, excluding reciprocal during *Kharif*, 2017 to get 28 F₁.

The experiments were conducted in a Randomized Complete Block Design (RBD) with three replications to assess the performance of 28 F₁ hybrids and their 8 parental lines.

Observations on all the quantitative characters, except length of edible fruit and fruit circumference were made on five randomly selected plant of genotype/crosses separately in each replications. The observation on quantitative traits were done on visual basis for every genotype / crosses.

The analysis of variance for design of experiment was done for partitioning the variance into treatments and replications according to procedures given by Panse and Sukhatme (1967)^[6].

Results and discussion

Analysis of variance due to source of variations for different characters revealed highly significant differences among the genotypes, parents, hybrids and parents vs hybrids except for days to 50% flowering and crop duration in both year due to parent. Whereas days to 50% flowering, days to first fruit harvest and crop duration for both year, however unmarketable yield and TSS were non-significant due to parent vs hybrid only Y₁. Which suggested great variability in these sources of variations for almost all the fourteen characters studied. Shekar *et al.* (2012)^[8], Kumar *et al.* (2013)^[4] Ambade, *et al.* (2013)^[1] and Mili *et al.* (2014)^[5] also reported the significant difference for quantitative and qualitative traits in Brinjal.

Perusal of *per se* performance of the parental lines and F₁ hybrids (Table 1 & 2) for all the traits studied revealed a wide range of mean values which indicated that the parental lines involved in this study were genetically diverse and had good

breeding value, which confirmed the predictions of analysis of variance. Among the parental lines, P₃ was the earliest line with respect to days to 50% flowering was parent P₃ (46.33 days); also P₃ line was earliest for days to first fruit harvest, P₃ (59.33 days); largest fruit length, parent P₁ (26.40 cm); largest fruit circumference parent P₈ (30.00 cm); average fruit weight, parent P₆ (156.66 g); highest plant height, parent P₅ (87.06 cm); largest primary branches per plant, parent P₆ (6.06); largest number of fruits per plant, parent P₄ (27.38); highest marketable yield, parent P₁ (2.03 kg); unmarketable yield, parent P₆ (1.07 kg); crop duration, parent P₁ (227.33 days); highest dry matter content, parent P₁ (6.00 %); highest TSS, parent P₅ (7.80 %) and maximum yield per plant P₁ (2.44 kg) in Y₁. Among the parental lines, the earliest parent with respect to days to 50% flowering was parent P₅ (49.00 days); earliest for days to first fruit harvest, P₅ (64.00 days); largest fruit length, parent P₁ (26.06 cm); largest fruit circumference parent P₈ (30.60 cm); average fruit weight, parent P₆ (156.33 g); highest plant height, parent P₅ (87.03 cm); largest primary branches per plant, parent P₆ (6.06); largest number of fruits per plant, parent P₄ (28.55); highest marketable yield, parent P₄ (2.12 kg); unmarketable yield, parent P₄ (0.52 kg); crop duration, parent P₂ (222.66 days); highest dry matter content, parent P₁ (6.03 %); highest TSS, parent P₅ (7.73 %) and maximum yield per plant P₄ (2.64 kg) in Y₂. Out of 28 F₁ hybrids sixteen hybrids *viz.*, P₁ × P₂, P₁ × P₄, P₁ × P₆, P₁ × P₇, P₁ × P₈, P₂ × P₃, P₂ × P₄, P₂ × P₅, P₂ × P₆, P₃ × P₅, P₃ × P₆, P₄ × P₅, P₄ × P₆, P₅ × P₆, P₅ × P₇, P₅ × P₈, P₆ × P₈, and P₇ × P₈ produced significantly higher yield than both standard varieties Punjab Sadabahar and Pant Rituraj (Table-1&2). Among the significant crosses for fruit yield per plant, crosses P₄ × P₅, P₁ × P₄ and P₂ × P₄ were top three crosses which also showed superiority for number of fruit per plant along with very good fruit shape, with medium and small fruit length, respectively. The present study corroborated with the findings of Rad *et al.* (2015)^[7] Yadav *et al.* (2018)^[10] Gupta *et al.* (2018)^[3].

Table 1: ANOVA (mean squares) for a set of 8 x 8 diallel cross in brinjal over two years (Y₁, Y₂)

Source of Variation	Years	d.f.	Days to 50% flowering	Days to first fruits harvest	Fruit length (cm)	Fruit circumference (cm)	Average fruit weight (g)	Plant height (cm)	Primary branches per plant (cm)
Replications	Y ₁	2	42.28*	76.58*	2.22	0.95	445.34	458.24	5.42
	Y ₂	2	47.78*	53.23*	3.08	9.19	92.56	26.66	5.91
Genotypes	Y ₁	35	14.18	15.56*	33.40**	88.14**	2260.25**	330.70**	1.90**
	Y ₂	35	17.13	16.29*	30.93**	89.48**	2252.64**	310.51**	1.69**
Parents	Y ₁	7	3.50	13.23**	71.71**	187.09**	2629.32**	214.75**	1.22**
	Y ₂	7	6.92	11.18**	65.01**	190.83**	2629.61**	190.15**	1.28**
Hybrids	Y ₁	27	16.81	16.56**	22.01**	63.24**	2163.44**	282.73**	1.57**
	Y ₂	27	19.75	18.20**	20.98**	64.08**	2150.47**	246.97**	1.29**
Parents vs. Hybrids	Y ₁	1	18.22	4.66	72.76**	67.68**	2290.55**	2437.58**	15.44**
	Y ₂	1	17.78	0.23	60.88**	66.04**	2372.51**	2868.53**	15.40**
Error	Y ₁	70	8.27	2.64	1.63	1.38	21.42	11.86	0.24
	Y ₂	70	7.09	1.86	1.37	1.35	28.01	10.95	0.17

*, ** Significant at 5 per cent and 1 per cent probability levels, respectively.

Source of Variation	Years	d.f.	Number of fruits per plant	Marketable yield (kg)	Unmarketable yield (kg)	Crop duration (days)	Dry matter content	Total soluble solids TSS (%)	Yield per plant (kg)
Replications	Y ₁	2	14.38	0.02	0.0002	82.95	0.01	0.01	0.01
	Y ₂	2	57.91	0.001	0.001	114.06	0.002	0.006	0.0007
Genotypes	Y ₁	35	111.54**	0.79**	0.11**	433.14**	0.46**	2.53**	1.22**
	Y ₂	35	113.21**	0.90**	0.05**	336.31*	0.47**	2.49**	1.27**
Parents	Y ₁	7	46.71**	0.35**	0.17**	254.35	0.79**	0.45**	0.46**
	Y ₂	7	68.91**	0.28**	0.02**	259.23	0.80**	0.42**	0.39**
Hybrids	Y ₁	27	132.05**	0.86**	0.11**	488.13**	0.38**	3.16**	1.30**
	Y ₂	27	127.69**	1.03**	0.05**	364.41*	0.39**	3.12**	1.44**
Parents vs. Hybrids	Y ₁	1	11.83**	1.72**	0.003	200.06	0.50**	0.13**	4.27**
	Y ₂	1	32.37**	1.65**	0.15**	117.22	0.32**	0.0005	2.87**
Error	Y ₁	70	1.63	0.03	0.003	219.62	0.009	0.03	0.02
	Y ₂	70	3.31	0.02	0.003	204.66	0.009	0.02	0.07

*, ** Significant at 5 per cent and 1 per cent probability levels, respectively.

Table 2: Mean table of F₁ hybrids in 8 x 8 diallel cross of brinjal over first year (Y₁)

Genotypes	Days to 50% flowering	Days to first fruit harvest	Fruit length (cm)	Fruit circumference (cm)	Average fruit weight (g)	Plant height (cm)	Primary branches per plant (cm)	
F₁ hybrids								
P ₁ x P ₂	48.67	59.67	19.27	15.00	99.33	80.27	6.60	
P ₁ x P ₃	51.67	61.00	18.93	12.00	102.67	80.33	5.80	
P ₁ x P ₄	48.67	62.00	20.67	13.63	120.00	86.47	5.60	
P ₁ x P ₅	51.00	60.33	17.37	16.40	83.33	96.47	6.00	
P ₁ x P ₆	46.67	59.67	18.43	12.83	113.33	75.47	5.07	
P ₁ x P ₇	47.00	57.33	13.60	22.33	133.33	77.60	4.87	
P ₁ x P ₈	51.33	63.33	16.27	26.87	186.67	94.40	5.73	
P ₂ x P ₃	46.33	60.33	16.30	16.13	123.33	73.33	4.80	
P ₂ x P ₄	43.67	56.33	23.63	10.00	81.67	83.67	6.27	
P ₂ x P ₅	47.67	59.33	15.53	14.27	73.33	93.67	7.33	
P ₂ x P ₆	50.33	64.00	17.70	14.27	109.33	80.33	7.20	
P ₂ x P ₇	47.00	59.33	15.43	15.60	100.00	77.53	6.07	
P ₂ x P ₈	51.00	64.67	13.13	16.60	110.33	84.20	6.00	
P ₃ x P ₄	45.33	58.67	20.10	10.70	80.67	72.80	5.13	
P ₃ x P ₅	47.33	60.33	16.63	11.17	70.00	93.33	5.87	
P ₃ x P ₆	46.33	60.33	17.10	16.27	93.33	75.93	6.33	
P ₃ x P ₇	46.00	60.67	13.23	13.73	110.00	75.33	5.73	
P ₃ x P ₈	52.67	66.33	13.37	15.70	111.33	86.00	6.13	
P ₄ x P ₅	51.33	61.00	15.30	11.50	121.67	92.33	5.40	
P ₄ x P ₆	50.00	65.00	19.03	17.60	120.00	85.00	6.67	
P ₄ x P ₇	51.00	65.00	16.17	18.47	120.00	88.80	5.93	
P ₄ x P ₈	51.00	62.67	14.57	12.77	83.33	83.27	5.60	
P ₅ x P ₆	49.00	60.33	13.00	14.33	79.33	100.00	7.20	
P ₅ x P ₇	47.67	60.33	14.87	21.43	116.67	104.27	6.40	
P ₅ x P ₈	48.00	59.67	14.80	20.60	136.67	108.60	7.20	
P ₆ x P ₇	46.00	59.67	13.57	24.10	100.00	90.87	5.87	
P ₆ x P ₈	51.00	60.33	12.87	12.93	106.67	99.53	7.27	
P ₇ x P ₈	46.33	60.33	14.27	26.60	173.67	93.93	5.60	
Parent								
P ₁	46.66	61.66	26.40	11.83	116.66	84.53	5.46	
(C)P ₂	47.33	63.33	22.03	10.23	83.66	82.80	4.86	
P ₃	46.33	59.33	22.36	9.33	70.00	70.86	5.60	
P ₄	46.66	59.66	18.00	14.30	88.33	67.86	5.66	
P ₅	48.33	65.66	14.86	19.56	63.33	87.06	4.66	
(C)P ₆	48.66	61.33	12.20	22.56	156.66	76.06	6.06	
P ₇	47.33	60.33	14.66	27.06	103.66	64.20	4.20	
P ₈	49.33	60.66	15.30	30.00	103.33	70.53	4.66	
Mean	48.33	61.18	16.72	16.62	107.53	84.12	5.84	
C.V.	5.81	2.61	7.48	6.89	4.33	4.21	8.52	
F ratio	1.71	5.95	22.75	68.31	110.05	25.37	7.61	
F Prob.	0.03	0.00	0.00	0.00	0.00	0.00	0.00	
S.E.	1.62	0.92	0.72	0.66	2.69	2.05	0.29	
C.D. 5%	4.57	2.59	2.03	1.86	7.57	5.76	0.81	
C.D. 1%	6.07	3.44	2.70	2.47	10.04	7.65	1.07	
Range	Low	43.67	56.33	12.20	9.33	70.00	64.20	4.20
	High	52.67	66.33	26.40	30	186.67	108.60	7.33

*, ** Significant at 5 per cent and 1 per cent probability levels, respectively.

Genotypes	Number of fruits per plants	Marketable yield (kg)	Unmarketable yield (kg)	Crop duration (days)	Dry matter content (%)	Total soluble solids (TSS %)	Yield per plant (kg)
F₁ hybrids							
P ₁ x P ₂	27.23	1.82	0.89	216.67	6.21	5.87	2.71
P ₁ x P ₃	23.33	1.91	0.49	203.33	6.10	7.33	2.40
P ₁ x P ₄	26.40	2.34	0.82	221.67	6.13	7.27	3.17
P ₁ x P ₅	23.87	1.42	0.57	229.33	5.51	6.77	1.99
P ₁ x P ₆	22.20	1.98	0.54	204.33	5.97	7.53	2.52
P ₁ x P ₇	19.40	2.01	0.57	201.00	6.01	7.00	2.59
P ₁ x P ₈	14.67	2.05	0.69	198.67	6.00	6.57	2.74
P ₂ x P ₃	14.63	1.38	0.42	193.33	5.93	6.40	1.97
P ₂ x P ₄	37.93	2.40	0.70	218.67	5.43	5.37	3.10
P ₂ x P ₅	27.30	1.68	0.33	228.67	5.91	6.47	2.00
P ₂ x P ₆	19.40	1.69	0.43	233.33	5.13	7.13	2.12
P ₂ x P ₇	13.70	0.93	0.44	220.33	6.00	6.73	1.37
P ₂ x P ₈	17.07	1.41	0.48	202.00	5.95	6.57	2.04

P ₃ x P ₄	21.43	1.28	0.44	181.67	6.02	6.10	2.01	
P ₃ x P ₅	29.27	1.55	0.49	216.67	5.13	9.77	2.05	
P ₃ x P ₆	21.53	1.50	0.51	193.33	6.10	9.43	2.18	
P ₃ x P ₇	19.33	1.59	0.54	207.67	5.93	6.80	2.13	
P ₃ x P ₈	10.20	0.76	0.37	219.00	5.80	6.93	1.13	
P ₄ x P ₅	38.10	3.45	1.19	225.00	5.27	7.83	4.64	
P ₄ x P ₆	22.87	2.02	0.72	220.00	5.17	8.30	2.91	
P ₄ x P ₇	19.67	1.91	0.45	218.33	5.83	8.70	2.36	
P ₄ x P ₈	24.80	1.59	0.48	226.67	6.14	6.43	2.07	
P ₅ x P ₆	25.00	1.64	0.35	201.67	6.00	7.27	2.02	
P ₅ x P ₇	24.83	2.38	0.51	214.33	5.90	8.27	2.90	
P ₅ x P ₈	22.43	2.46	0.61	223.33	5.00	6.83	3.07	
P ₆ x P ₇	18.83	1.52	0.36	206.67	6.00	7.00	2.55	
P ₆ x P ₈	28.33	2.52	0.52	222.33	6.03	8.53	3.04	
P ₇ x P ₈	11.87	1.78	0.28	220.00	5.70	6.70	2.61	
Parent								
P ₁	20.93	2.03	0.40	227.33	6.00	7.03	2.44	
(C)P ₂	17.60	1.18	0.29	216.00	6.00	7.63	1.47	
P ₃	25.33	1.39	0.37	212.66	5.93	7.03	1.77	
P ₄	27.38	1.92	0.50	224.00	4.73	6.63	2.42	
P ₅	23.63	1.05	0.45	207.00	5.00	7.80	1.49	
(C)P ₆	15.23	1.31	1.07	225.66	5.43	7.00	1.72	
P ₇	20.93	1.59	0.58	217.33	5.96	6.96	2.17	
P ₈	21.33	1.64	0.56	201.33	6.00	6.90	2.20	
Mean	21.86	1.73	0.55	214.24	5.76	7.20	2.30	
C.V.	7.22	10.58	10.15	6.79	1.67	2.57	6.09	
F ratio	44.53	23.59	45.75	1.99	49.12	70.79	63.54	
F Prob.	0.00	0.00	0.00	0.01	0.00	0.00	0.00	
S.E.	0.91	0.11	0.03	8.40	0.06	0.11	0.08	
C.D. 5%	2.57	0.30	0.09	23.66	0.16	0.30	0.23	
C.D. 1%	3.41	0.39	0.12	31.39	0.21	0.40	0.30	
Range	Low	10.20	0.76	0.28	181.67	5.00	5.37	1.13
	High	38.10	2.52	1.19	229.33	6.21	9.77	4.64

*, ** Significant at 5 per cent and 1 per cent probability levels, respectively.

Table 3: Mean table of F₁ hybrids in 8 x 8 diallel cross of brinjal over second year (Y₂)

Genotypes	Days to 50% flowering	Days to first fruit harvest	Fruit length (cm)	Fruit circumference (cm)	Average fruit weight (g)	Plant height (cm)	Primary branches per plant (cm)
F₁ hybrids							
P ₁ x P ₂	48.67	59.67	19.27	15.00	99.33	80.27	6.60
P ₁ x P ₃	51.67	61.00	18.93	12.00	102.67	80.33	5.80
P ₁ x P ₄	48.67	62.00	20.67	13.63	120.00	86.47	5.60
P ₁ x P ₅	51.00	60.33	17.37	16.40	83.33	96.47	6.00
P ₁ x P ₆	46.67	59.67	18.43	12.83	113.33	75.47	5.07
P ₁ x P ₇	47.00	57.33	13.60	22.33	133.33	77.60	4.87
P ₁ x P ₈	51.33	63.33	16.27	26.87	186.67	94.40	5.73
P ₂ x P ₃	46.33	60.33	16.30	16.13	123.33	73.33	4.80
P ₂ x P ₄	43.67	56.33	23.63	10.00	81.67	83.67	6.27
P ₂ x P ₅	47.67	59.33	15.53	14.27	73.33	93.67	7.33
P ₂ x P ₆	50.33	64.00	17.70	14.27	109.33	80.33	7.20
P ₂ x P ₇	47.00	59.33	15.43	15.60	100.00	77.53	6.07
P ₂ x P ₈	51.00	64.67	13.13	16.60	110.33	84.20	6.00
P ₃ x P ₄	45.33	58.67	20.10	10.70	80.67	72.80	5.13
P ₃ x P ₅	47.33	60.33	16.63	11.17	70.00	93.33	5.87
P ₃ x P ₆	46.33	60.33	17.10	16.27	93.33	75.93	6.33
P ₃ x P ₇	46.00	60.67	13.23	13.73	110.00	75.33	5.73
P ₃ x P ₈	52.67	66.33	13.37	15.70	111.33	86.00	6.13
P ₄ x P ₅	51.33	61.00	15.30	11.50	121.67	92.33	5.40
P ₄ x P ₆	50.00	65.00	19.03	17.60	120.00	85.00	6.67
P ₄ x P ₇	51.00	65.00	16.17	18.47	120.00	88.80	5.93
P ₄ x P ₈	51.00	62.67	14.57	12.77	83.33	83.27	5.60
P ₅ x P ₆	49.00	60.33	13.00	14.33	79.33	100.00	7.20
P ₅ x P ₇	47.67	60.33	14.87	21.43	116.67	104.27	6.40
P ₅ x P ₈	48.00	59.67	14.80	20.60	136.67	108.60	7.20
P ₆ x P ₇	46.00	59.67	13.57	24.10	100.00	90.87	5.87
P ₆ x P ₈	51.00	60.33	12.87	12.93	106.67	99.53	7.27
P ₇ x P ₈	46.33	60.33	14.27	26.60	173.67	93.93	5.60
Parent							

P ₁	46.33	60.33	26.06	12.10	117.00	85.10	5.33	
(C)P ₂	47.66	61.33	22.16	10.50	83.33	76.13	4.76	
P ₃	45.66	57.33	21.60	9.60	70.00	71.00	5.63	
P ₄	47.66	60.00	17.66	14.36	88.66	68.10	5.73	
P ₅	49.00	64.00	15.00	19.83	63.00	87.03	4.80	
(C)P ₆	49.00	61.66	12.40	22.73	156.33	76.00	6.00	
P ₇	45.33	59.33	14.90	27.33	104.00	64.36	4.13	
P ₈	49.00	61.00	15.46	30.60	103.00	70.73	4.53	
Mean	48.33	61.18	16.72	16.62	107.53	84.12	5.84	
C.V.	5.81	2.61	7.48	6.89	4.33	4.21	8.52	
F ratio	1.71	5.95	22.75	68.31	110.05	25.37	7.61	
F Prob.	0.03	0.00	0.00	0.00	0.00	0.00	0.00	
S.E.	1.62	0.92	0.72	0.66	2.69	2.05	0.29	
C.D. 5%	4.57	2.59	2.03	1.86	7.57	5.76	0.81	
C.D. 1%	6.07	3.44	2.70	2.47	10.04	7.65	1.07	
Range	Low	43.67	56.33	12.40	9.60	63.00	64.36	4.13
	High	52.67	66.33	26.06	30.60	186.67	108.60	7.33

*, ** Significant at 5 per cent and 1 per cent probability levels, respectively.

Genotypes	Number of fruits per plants	Marketable yield (kg)	Unmarketable yield (kg)	Crop duration (days)	Dry matter content (%)	Total soluble solids (TSS %)	Yield per plant (kg)
F₁ hybrids							
P ₁ x P ₂	28.40	2.23	0.68	189.33	6.18	5.90	2.91
P ₁ x P ₃	24.50	2.20	0.52	227.67	6.13	7.33	2.57
P ₁ x P ₄	27.57	2.57	0.73	226.67	6.10	7.23	3.30
P ₁ x P ₅	25.03	1.60	0.57	209.00	5.53	6.77	2.17
P ₁ x P ₆	23.37	2.06	0.51	185.00	6.01	7.50	2.57
P ₁ x P ₇	20.57	2.06	0.58	215.00	6.05	6.93	2.64
P ₁ x P ₈	15.83	2.24	0.66	204.33	6.03	6.53	2.90
P ₂ x P ₃	15.80	1.34	0.41	222.00	6.07	5.70	1.75
P ₂ x P ₄	39.10	2.64	0.70	219.00	5.47	5.33	3.34
P ₂ x P ₅	28.80	1.75	0.48	231.00	6.01	6.40	2.23
P ₂ x P ₆	20.57	1.81	0.43	200.00	5.10	7.10	2.24
P ₂ x P ₇	14.87	1.26	0.30	223.33	6.00	6.63	1.56
P ₂ x P ₈	18.23	1.57	0.42	211.67	6.00	6.53	1.98
P ₃ x P ₄	22.60	1.43	0.44	212.33	6.09	6.03	1.87
P ₃ x P ₅	30.43	1.75	0.44	215.33	5.13	9.70	2.18
P ₃ x P ₆	22.70	1.74	0.42	207.67	6.10	9.47	2.16
P ₃ x P ₇	20.50	1.89	0.40	225.33	6.00	6.73	2.29
P ₃ x P ₈	13.45	1.02	0.46	206.67	5.77	6.97	1.47
P ₄ x P ₅	39.27	3.77	0.96	222.33	5.30	7.80	4.73
P ₄ x P ₆	24.03	2.36	0.68	211.33	5.27	8.27	3.03
P ₄ x P ₇	20.83	2.12	0.42	221.67	5.73	8.60	2.54
P ₄ x P ₈	25.97	1.83	0.41	206.67	6.07	6.47	2.25
P ₅ x P ₆	26.50	1.81	0.40	218.67	6.07	7.27	2.21
P ₅ x P ₇	26.00	2.65	0.44	227.33	6.00	8.27	3.09
P ₅ x P ₈	23.60	2.84	0.45	222.67	5.07	6.77	3.29
P ₆ x P ₇	20.00	1.66	0.40	213.00	6.07	6.97	2.06
P ₆ x P ₈	29.67	3.01	0.52	216.00	5.40	6.77	3.53
P ₇ x P ₈	13.03	1.89	0.43	211.67	5.63	6.80	2.32
Parent							
P ₁	22.10	2.00	0.46	219.00	6.03	7.06	2.46
(C)P ₂	18.76	1.43	0.22	222.66	6.03	7.60	1.66
P ₃	26.50	1.57	0.45	205.66	6.00	7.00	2.02
P ₄	28.55	2.12	0.52	210.33	4.76	6.60	2.64
P ₅	24.80	1.27	0.42	219.33	5.06	7.73	1.69
(C)P ₆	13.06	1.62	0.43	210.00	5.40	6.96	1.98
P ₇	22.10	1.90	0.46	193.66	6.00	6.93	2.36
P ₈	22.50	2.00	0.35	214.33	6.03	6.93	2.36
Mean	8.01	7.33	11.42	6.77	1.62	2.30	10.87
C.V.	34.64	43.38	19.25	1.55	53.29	89.28	18.35
F ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.00
F Prob.	1.06	0.08	0.03	8.36	0.05	0.09	0.15
S.E.	2.99	0.23	0.09	23.56	0.15	0.27	0.43
C.D. 5%	3.96	0.31	0.12	31.26	0.20	0.35	0.57
C.D. 1%	6.07	3.44	2.70	2.47	10.04	7.65	1.07
Range	low	13.03	1.02	185.00	4.76	5.33	1.47
	high	39.27	3.77	227.67	6.18	9.70	4.73

*, ** Significant at 5 per cent and 1 per cent probability levels, respectively.

References

1. Ambade RL, Sahu M, Sahu KK, Mehta N. Heritability and genetic advance of yield and its components in brinjal (*Solanum melongena* L.). Asian Journal of BioScience. 2013; 8(2):234-236 ref.11
2. Anonymous. Database area and production of potato 2011-12. National Horticultural Board, Gurgaon (Haryana), 2019.
3. Gupta RA, Ram CN, Chakravati KS, Deo C, Vishwakarma MK, Arya R *et al.* Studies on variability, heritability and genetic advance in brinjal (*Solanum melongena* L.) Journal of Pharmacognosy and Phytochemistry. 2018; SP1:3195-3198.
4. Kumar SR, Arumugam T, Anandakumar RC, Premalakshmi V. Genetic variability for quantitative and qualitative characters in Brinjal (*Solanum melongena* L.) African Journal of Agricultural Research. 2013; 8(39):4956-4959.
5. Mili C, Bora CG, Das JB, Paul KS. Studies on variability, heritability and genetic advance in Brinjal genotypes. (*Solanum melongena* L.) Direct Research Journal of Agriculture and Food Science. 2014; 2(11):192-194.
6. Panse VG, Shukhatme PV. Statistical Methods for Agricultural Workers, 2nd eds. Indian Council of Agriculture Research, New Delhi, 1967.
7. Rad MRN, Poodineh M, Ghalandarzehi A, Abkhoo J. Variability, Heritability and Association Analysis in Eggplant (*Solanum melongena* L.) Journal of Agricultural and Biological Science. 2015; 10(12): ISSN 1990-6145.
8. Shekar KC, Ashok P, Sasikala K. Studies on heritability and multivariate analyses in brinjal (*Solanum melongena* L.). Vegetable Crops Research Bulletin. 2012; 76(1):79-88.
9. Singh S, Krishnamurthi S, Katyal SL. Fruit Culture in India. Indian Council of Agricultural Research, New Delhi, 1963, 412.
10. Yadav S, Singh VB, Maurya R, Thapliyal V, Singh KAP. Genetic variability, heritability and genetic advance for yield and its contributing traits in brinjal (*Solanum melongena* L.) Journal of Pharmacognosy and Phytochemistry. 2018; 7(5):3189-3193.