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M Siva
College of Horticulture, Dr. Y S R Horticultural University, Venkataramannagudem, Andhra Pradesh, India

K Uma Jyothi
College of Horticulture, Dr. Y S R Horticultural University, Venkataramannagudem, Andhra Pradesh, India

AVD Dorajee Rao
College of Horticulture, Dr. Y S R Horticultural University, Venkataramannagudem, Andhra Pradesh, India

K Uma Krishna
College of Horticulture, Dr. Y S R Horticultural University, Venkataramannagudem, Andhra Pradesh, India

N Emmanuel
College of Horticulture, Dr. Y S R Horticultural University, Venkataramannagudem, Andhra Pradesh, India

Corresponding Author:
M Siva
College of Horticulture, Dr. Y S R Horticultural University, Venkataramannagudem, Andhra Pradesh, India

Stability studies for growth and yield attributing characters in brinjal (*Solanum melongena* L.) over coastal Andhra Pradesh conditions

M Siva, K Uma Jyothi, AVD Dorajee Rao, K Uma Krishna and N Emmanuel

Abstract
The present present investigation entitled "Development of stable heterotic hybrids in brinjal (*Solanum melongena* L.)" was conducted at three locations *viz*., Horticulture Research Station, Nuzvid, Horticulture Research Station, Pandirimamidi and College of Horticulture, Venkataramannagudem to estimate heterosis, combining ability and to assess stability of parents and their crosses for yield and yield contributing characters employing half-diallel mating design. The experimental material consisted of 30 genotypes which included seven parents, 21 resultant F1 hybrids and two checks *viz*., Arka Anand and VNR-51, executed in a randomized block design replicated thrice during 2018-2019. The portioning of environments + (genotypes x environments) mean squares showed that environments (linear) differed significantly and were quite diverse with regards to their effect on the performance of the genotypes for fruit yield and quality traits. A perusal of stability parameters indicated from the present study on stability, four hybrids *viz*., Pennada x EC-169084, Bhagyamati x EC-169084, Bhagyamati x EC-169089 and EC-169084 x EC-169089 possessed higher fruit yield than the checks and were identified as stable crosses for fruit yield per plant and other traits.

Keywords: Brinjal, F_1 hybrids, growth, yield and stability parameters

Introduction
Brinjal, grown throughout the year, is a common and popular vegetable crop in the subtropics and tropics, therefore, can play a vital role in achieving the nutritional security. Being an important source of plant-derived nutrients, the identification of brinjal genotypes with higher nutrients and better consumer preference could be beneficial for society, particularly for poor consumers. But the development of cultivars with improved fruit quality and good phytochemical properties, a pressing need for better market value, through breeding has received relatively little attention in vegetables especially in brinjal [16]. Phenols and ascorbic acids are important determinants of brinjal fruit flavour[18]. Brinjal fruit is a rich source of ascorbic acid and phenolics, both of which are powerful antioxidants[22] and have been reported to successfully suppress the development and growth of tumors, lung cancer, inhibit inflammation, and cardiovascular. Higher ascorbic acid content in brinjal fruit is associated with increased nutritive value of the fruits which would help better retention of colour and flavour [7]. The proximate compositions of fruits not only determine fruit quality but also are associated with the tolerance attribute of the genotype against biotic stresses [6]. However, a very scanty work is being reported regarding the stability analysis of quality traits in brinjal in and outside the country. Therefore, the present investigation was carried out to determine the stable genotypes both in terms of yield as well as qualitative traits.

Materials and Methods
The present investigation was carried out at College of Horticulture, Venkataramannagudem, Horticultural Research Station, Pandirimamidi and Horticultural Research Station, Nuzvid during the period from January, 2017 to July, 2018 situated at Nuzvid is in Krishna district, situated at an altitude of 167 m above mean sea level at 17.14^0 N latitude and 81.80^0 E longitude. The soil is well drained, deep sandy loam in texture and granular to sub granular, blocky in structure. E_2 = Pandirimamidi is in high altitude tribal zone of Andhra Pradesh and is situated at an altitude of 340 m above mean sea level at 81.45^0 latitude and 17.25^0 longitude.

The average annual rainfall is 1186 cm. Soil is well drained, deep sandy loam in texture and granular to sub granular, blocky in structure. E_3 = Venkataramannagudem is located in west Godavari district with an average rainfall of 900 mm, situated at an altitude of 34 m above sea level and at 16.38^0 N latitude and 81.50^0 E longitude. The soil is red sandy loam with good drainage and moderate water holding capacity. The experimental material comprised of biometric data of all the 30 genotypes (21 single crosses + 7 parents + 2 standard checks) were used for heterosis and stability. The individual experiment was conducted in randomized block design with three replications. The uniform, healthy seedlings were planted on ridges maintaining inter and intra row spacing of 90 x 75 cm, respectively. All the package of practices were followed to raise a healthy crop. Observation on fruit yield per plant was recorded as an average of five randomly selected plants of each genotype and replication whereas fruit yield per hectare was calculated on the basis of total plot yield. Qualitative parameter i.e. ascorbic acid content were estimated through titration method[14] and total phenol content was estimated with Folin- Ciocalteu reagent using catechol as standard [20] the Genotype × environment interaction and stability analysis of different genotypes across the six environments were worked out as per statistical technique[5] and analyzed through window stat software.

Results and Discussion

1. Plant height (cm)

Mean values for plant height ranged from 92.17 cm (EC-169089) to 143.04 cm (EC-169084 x Babajipet-2) with an overall mean of 121.05 cm. The regression coefficient (bi) values ranged from -0.97 (Pennada x Babajipet-2) to 3.05 (Pennada x Tuni Local) (Table 1). The F_1 hybrids *viz.*, Bhagyamati x Babajipet-2 (b_i=1.07) and Babajipet-1 x Tuni Local (b_i=1.09) had recorded mean plant height higher than grand mean with unit regression coefficient (b_i) and non-significant deviation from regression (s^2d_i) and were found to be stable for plant height over locations. The F_1 hybrids *viz.*, Pennada x EC-169084 (b_i=0.74), Pennada x Babajipet-1 (b_i=-0.55), Bhagyamati x EC-169084 (bi=-0.89), Babajipet-1 x Babajipet-2 (b_i=-0.28) and Babajipet-2 x EC-169089 (b_i=0.88) had higher mean than general mean with b_i < 1 and were suitable for poor environments. Whereas, the hybrids EC-169084 x Babajipet-2 (b_i=1.49), Babajipet-1 x EC-169089 (b_i=1.66) and Babajipet-2 x Tuni Local (b_i=1.37) had b_i values greater than one with higher than grand mean and non-significant deviation from regression and were considered to perform well in favourable conditions. Similar results were reported [1-4, 9, 17, 21] in brinjal

2. Number of priamary branches per plant

For primary branches per plant, mean values ranged from 8.83 (Babajipet-2 x Tuni Local) to 12.23 (Pennada x EC-169084) with a overall mean of 10.26. The regression coefficient (b_i) values ranged from 0.16 (Pennada x EC-169084) to 1.67 (Pennada x Babajipet-2) (Table 1). The hybrids *viz.*, Pennada x Babajipet-1 (b_i=1.03), EC-169084 x Babajipet-1 (b_i=1.01), EC-169084 x Tuni Local (b_i=1.01), Babajipet-1 x Babajipet-2 (b_i=1.08), Babajipet-1 x EC-169089 (b_i=1.08) and Babajipet-1 x Tuni Local(b_i=1.01) recorded higher mean number of primary branches per plant than grand mean with nearer to unit regression coefficient (b_i) and non-significant deviation from regression (s^2d_i) and were found to be stable for number of primary branches per plant over locations. The hybrids *viz.*, Pennada x EC-169084 (b_i=0.16) and EC-169084 x Babajipet-2 (b_i=0.79) had more mean than general mean with regression values (b_i) <1 and these hybrids were considered to be suitable for unfavourable environments, whereas, the hybrids Pennada x EC-169089 (b_i=1.36), Bhagyamati x EC-169084 (b_i=1.38), EC-169084 x EC-169089 (b_i=1.12) and EC-169089 x Tuni Local (b_i=1.25) possessed above average mean values, showed b_i values greater than one with predictable performance in favourable environments. Similar results were reported [4, 21] in brinjal.

3. Days to 50% flowering

The number of days to 50% flowering ranged from 43.11 (EC-169089 x Tuni Local) to 54.54 (Pennada x EC-169084) with a overall mean of 48.75 days (Table 1). One hybrid, EC-169089 x Tuni Local (43.11) had lower mean than grand mean with regression coefficient around unity (b_i=1.08) and non-significant deviation from regression. Hence, this hybrid was considered to possess the average stability for early flowering at different locations. Regression coefficient less than one (b_i<1) with low mean than general mean and non-significant deviation from regression were observed in Bhagyamti x EC169089 (b_i=0.91), EC-169084 x Tuni Local (b_i=0.10), Babajipet-1 x Babajipet-2 (b_i=0.90), Babajipet-1 x EC-169089 (b_i=0.06) and Babajipet-2 x Tuni Local (b_i=0.60). These hybrids perform better under unfavourable environments with early flowering, whereas, hybrids *viz.*, Pennada x Babajipet-1 (b_i=1.21), Bhagyamati x Babajipet-1 (b_i=1.20) Babajipet-1 x Tuni Local (b_i=2.05) and Babajipet-2 x EC-169089 (b_i=1.21) recorded low mean than grand mean with b_i values greater than one and non-significant deviation from regression values and these were predicted to perform well under favourable environments for early flowering. These results are in agreement with the findings [21] in brinjal.

4. Number of flowers per cluster

For number of flowers per cluster, the regression coefficient (b_i) values ranged from 0.28 (Bhagyamati x Babajipet-2) to 1.78 (Pennada x Babajipet-2) and mean values ranged from 3.18 (Tuni Local) to 5.71 (Pennada x EC-169084) with an overall mean of 4.31(Table 2). The hybrids *viz.*, Bhagyamati x EC-169084 (b_i=1.01) and EC-169084 x Babajipet-2 (b_i=1.02) had recorded mean flowers per cluster higher than grand mean with unit regression coefficient (b_i) and non-significant deviation from regression (s^2d_i) and was found to be stable for number of flowers per cluster over locations. The hybrids *viz.*, Pennada x EC-169084 (b_i=0.91), Bhagyamati x Babajipet-2 (b_i=0.28), Babajipet-1 x Babajipet-2 (b_i=0.92) recoded mean above grand mean with regression values less than unity and non-significant s^2d_i and these hybrids were suitable to unfavourable environments, whereas, the hybrids Pennada x Babajipet-1 (b_i=1.25), Pennada x Babajipet-2 (b_i=1.78), Pennada x EC-169089 (b_i=1.12), EC-169084 x Babajipet-1 (b_i=1.18), EC-169084 x EC-169089 (b_i=1.12), Babajipet-1 x EC-169089 (b_i=1.27), Babajipet-2 x EC-169089 (b_i=1.23) and Babajipet-2 x Tuni Local (b_i=1.13) exhibited means greater than grand mean with regression values more than unity and non-significant deviation from regression. These hybrids were stable for number of flowers per cluster which would be expected to perform uniformly well over variable environments.

5. Number of fruits per cluster

For number of fruits per cluster, the regression coefficient (b_i)

values range from 0.53 (Babajipet- 1 x Babajipet-2) to 1.44 (Pennada x Babajipet-1) and mean values ranged from 1.58 (Tuni Local) to 4.58 (Bhagyamati x EC-169084) with a overall mean of 2.99 (Table 2). The hybrids *viz.*, Pennada x EC-169084 (b_i=0.98), Pennada x Babajipet-2 (b_i=0.98), Pennada x EC-169089 (b_i=0.98), Bhagyamati x EC-169084 (b_i=0.98), Bhagyamati x Babajipet-1 (b_i=0.98), EC-169084 x Babajipet-1 (b_i=0.98) and EC-169084 x EC-169089 (b_i=0.98) recorded mean number of fruits per cluster higher than grand mean with unit regression coefficient (b_i) and non-significant deviation from regression (s^2d_i) and was found to be stable for number of fruits per cluster over locations. The hybrids *viz.*, EC-169084 x Babajipet-2 (b_i=0.84) and Babajipet-1 x Babajipet-2 (b_i=0.53) recoded mean above grand mean with regression values less than unity and non-significant s^2d_i and these hybrids were suitable to unfavourable environments, whereas, the hybrid ie Pennada x Babajipet-1 (b_i=1.44) exhibited means greater than grand mean with regression values more than unity and non-significant deviation from regression. These hybrids was stable for number of fruits per cluster which would be expected to perform uniformly well over favourable environments.

6. Fruit length (cm)

Mean values of fruit length ranged from 7.79 cm (Pennada) to 14.61 cm (Babajipet-2 x EC-169089) with an overall mean of 11.96 cm. The regression coefficient (b_i) values ranged from -1.75 (VNR-51) to 1.95 (Pennada x Babajipet-1) (Table 2).

The hybrid *i.e* Pennada x EC-169089 (b_i=1.05) had recorded mean fruit length higher than grand mean with regression coefficient around unity (b_i=1) and non-significant deviation from regression (s^2d_i) and was found to be stable for fruit length over locations. Regression values (b_i) greater than one recorded by Pennada x Tuni Local (b_i=1.21), Bhagyamati x EC-169089 (b_i=1.17), Bhagyamati x Tuni Local (b_i=1.17), EC-169084 x EC-169089 (b_i=1.18), Babajipet-1 x EC-169089 (b_i=1.17), Babajipet-1 x Tuni Local (b_i=1.18), Babajipet-2 x EC-169089 (b_i=1.17), Babajipet-2 x Tuni Local (b_i=1.17) and EC-169089 x Tuni Local (b_i=1.17) with mean greater than the grand mean and non-significant deviation from regression. These were considered to be performed well in favourable environments. This is in conformity with those reported earlier [4, 8, 12, 21] in brinjal.

7. Fruit girth (cm)

Mean values for fruit girth ranged from 7.60 (Pennada x EC - 169084) to 20.86 cm (Babajipet-2 x Tuni Local) with a overall mean of 13.80 cm. The regression coefficient (b_i) values ranged from 0.91 (VNR-51) to 1.10 (Bhagyamati x Tuni Local) (Table 3).

The hybrids *viz.*, Pennada x Babajipet-2 (b_i=1.03), Pennada x Tuni Local (b_i=1.03), Bhagyamati x Babajipet-2 (b_i=1.04), EC-169084 x Tuni Local (b_i=0.99), Babajipet-1 x Babajipet-2 (b_i=0.99), Babajipet-1 x EC-169089 (b_i=0.99), Babajipet-1 x Tuni Local (b_i=0.99), Babajipet-2 x EC-169089 (b_i=0.99), EC-169089 x Tuni Local (b_i=0.99) and Babajipet-2 x Tuni Local (b_i=1.04) had recorded mean fruit girth higher than grand mean with regression coefficient around unity (b_i=1) and non-significant deviation from regression (s^2d_i) and was found to be stable for fruit girth over locations. Regression values (b_i) greater than one recorded by Bhagyamati x Tuni Local (b_i=1.10) with mean greater than the grand mean and non-significant deviation from regression. These were considered to be performed well in favourable environments. Similar results were also observed [11, 15, 21] in brinjal.

8. Average fruit weight (g)

The average fruit weight of mean values range from 40.56 (Pennada) to 90.25 g (EC-169089 x Tuni Local) with a grand mean of 67.34 g (Table 3). The regression coefficient (b_i) values ranged from -2.46 (Pennada x Bhagyamati) to 5.07 (EC-169089 x Tuni Local). The hybrids Babajipet-1 x Babajipet-2 (b_i=1.04), had recorded mean fruit weight higher than grand mean with regression coefficient (b_i) nearer to one and non-significant deviation from regression (s^2d_i) and were found to be stable for fruit weight over locations. The hybrids *viz.*, Pennada x EC-169089 (b_i=-1.65), Bhagyamati x EC-169084 (b_i= 0.81), Bhagyamati x EC-169089 (b_i=-0.10), EC-169084 x EC-169089 (b_i=-1.70), Babajipet-1 x EC-169089 (b_i=-0.30) and Babajipet-2 x Tuni Local (b_i=0.64) had more mean than general mean with b_i <1 and were predictable under poor environments, whereas, the hybrids, Bhagyamati x Babajipet-2 (b_i=2.39), EC-169084 x Babajipet-2 (b_i=2.38), EC-169084 x Tuni Local (b_i=1.84), Babajipet-2 x EC-169089 (b_i=1.11) and EC-169089 x Tuni Local (b_i=5.07) had b_i values greater than one with higher mean than grand mean and non-significant deviation from regression and were considered to be perform well in favourable conditions. This is in agreement with the findings [1-4, 9, 17, 21] in brinjal.

9. Number of fruits per plant

The regression coefficient (b_i) values ranged from 0.41 (Arka Anand) to 1.98 (Pennada x EC-169084). Number of fruits per plant had mean values ranged from 15.22 (Tuni Local) to 70.21 (Pennada x EC-169084) with an overall mean of 37.55 (Table 3).

The hybrid Pennada x Babajipet-1 (b_i=1.05) were considered to be stable for fruits per plant over environments as they recorded mean higher than grand mean with good average stability (b_i=1) and non-significant deviation from regression. The hybrids *viz.*, Pennada x Bhagyamati (b_i=0.70), Bhagyamati x EC-169084 (b_i=0.78) and Bhagyamati x Babajipet-1 (b_i=0.71) had more mean than general mean with b_i <1 and will better suited to poor environments, whereas, the hybrids Pennada x EC-169084 (b_i=1.98), EC-169084 x Babajipet-1 (b_i=1.51), EC-169084 x Babajipet-2 (b_i=1.17), EC-169084 x EC-169089 (b_i=1.10) and Babajipet-1 x Babajipet-2 (b_i=1.22) had b_i values greater than one with higher than grand mean and non-significant deviation from regression and were considered to perform well in favourable conditions. Similar results were also observed [2-4, 13, 17] in brinjal. Pennada x Babajipet-1 had average regression (bi, nearer unity), non significant deviation from regression (S^2d_i) value and had high mean the population mean (42.54).

10. Fruit yield per plant (kg)

For fruit yield per plant the mean values ranged from 1.60 (Pennada x Tuni Local) to 3.45 kg (Bhagyamati x EC-169084) with a grand mean of 2.29 kg. The regression coefficient (b_i) values ranged from 0.34 (Babajipet-1) to 1.69 (Pennada x Bhagyamati) (Table 4).

The hybrids, Pennada x EC-169084 (b_i=1.03), Bhagyamati x EC-169084 (b_i=1.01), Bhagyamati x EC-169089 (b_i=1.04) and EC-169084 x EC-169089 (b_i=0.97) recorded mean fruit yield per plant higher than grand mean with unit regression coefficient (b_i) and non-significant deviation from regression (s^2d_i) and was found to be stable for fruit yield per plant over locations. The hybrid, Babajipet-1 x EC-169089 (b_i=0.79) had

more mean yield per plant than general mean with b_i <1 with non-significant deviation from regression (s^2d_i) and is better suited to poor environments, whereas, the hybrids, Pennada x Bhagyamati (b_i=1.69), Pennada x EC-169089 (b_i=1.26), Bhagyamati x Babajipet-2 (b_i=1.24), EC-169084 x Babajipet-1 (b_i=1.52), EC-169084 x Babajipet-2 (b_i=1.29), Babajipet-1 x Babajipet-2 (b_i=1.14), Babajipet-2 x EC-169089 (b_i=1.14) and Babajipet-2 x Tuni Local (b_i=1.32) had b_i values greater than one with higher than grand mean and non-significant deviation from regression were considered to perform well in favourable conditions. Similar results were also reported [1-4, 9, 17, 21] in brinjal. All parents, F_1 hybrids and checks possessed non significant deviation from regression *i.e.*, the performance of the genotypes can be predicted.

Table 1: Stability parameters for plant height (cm), number of primary branches per plant and days to 50% flower per plant in brinjal

Parent / F_1 hybrid	Plant height (cm)			Number of primary branches per plant			Days to 50% flowering		
	Mean	b_i	S^2d_i	Mean	b_i	S^2d_i	Mean	b_i	S^2d_i
Pennada	119.72	0.61	-15.75	11.78	0.81	-0.11	53.01	0.87	-2.52
Bhagyamati	103.07	1.72	-13.55	10.02	0.58	-0.22	49.10	0.81	-2.27
EC-169084	128.14	0.77	-15.27	10.95	1.12	-0.26	50.37	0.89	-2.57
Babajipeta-1	105.09	0.19	37.09	10.47	1.01	-0.27	46.90	0.82	-2.34
Babajipeta-2	115.72	0.99	-13.57	9.16	0.84	-0.25	48.45	0.84	-2.39
EC-169089	92.17	0.87	-13.71	9.87	1.14	-0.26	45.33	0.81	-2.27
Tuni local	98.22	1.36	-19.02	8.95	0.99	-0.27	45.60	0.93	-2.70
Pennada x Bhagyamati	121.69	1.90	126.51**	9.97	0.93	-0.25	52.63	1.21	-3.29
Pennada x EC-169084	139.53	0.74	5.62	12.23	0.16*	-0.20	54.54	1.27	-3.34
Pennada x Babajipet-1	130.58	-0.55	9.87	11.10	1.03	-0.26	48.27	1.21	-3.29
Pennada x Babajipet-2	119.09	-0.97	333.67**	9.85	1.67	-0.27	53.54	1.21	-3.29
Pennada x EC-169089	104.93	1.72*	-19.19	10.69	1.36	-0.17	48.03	0.96	-2.80
Pennada x Tuni local	110.60	3.05	15.72	9.65	1.51	-0.26	48.79	0.91	2.60
Bhagyamati x EC-169084	130.87	-0.89*	-19.17	10.92	1.38	-0.06	52.52	1.21	-3.29
Bhagyamati x Babajipet-1	119.78	0.75	-19.14	10.07	0.94	-0.26	48.05	1.20	-3.27
Bhagyamati x Babajipet-2	124.14	1.07	-11.48	9.17	0.84	-0.20	50.18	1.21	-3.29
Bhagyamati x EC-169089	112.10	0.96	-6.91	10.16	1.10	-0.18	47.93	0.91	-1.80
Bhagyamati x Tuni local	120.70	1.26	-16.48	9.97	1.41	-0.15	49.46	1.22	-3.30
EC-169084 x Babajipet-1	132.12	-0.54	166.97**	10.88	1.01	0.11	50.39	1.24	2.00
EC-169084 x Babajipet-2	143.04	1.49	-17.56	10.65	0.79	-0.22	53.05	1.21	-3.29
EC-169084 x EC-169089	118.06	2.56	31.05	10.72	1.12	-0.26	49.05	0.72	-1.91
EC-169084 x Tuni local	124.83	1.49	75.99*	10.30	1.01	-0.27	47.79	0.10*	-3.34
Babajipet-1 x Babajipet-2	136.23	-0.28	53.75	10.97	1.08	-0.27	46.24	0.90	-1.36
Babajipet-1 x EC-169089	123.84	1.66	-18.10	11.07	1.08	-0.18	46.30	0.06	1.80
Babajipet-1 x Tuni local	129.86	1.09	7.22	9.43	1.01	-0.27	45.33	2.05	1.48
Babajipet-2 x EC-169089	129.22	0.88	-19.24	9.22	0.83	-0.24	45.35	1.21	-3.28
Babajipet-2 x Tuni local	137.37	1.37*	-19.24	8.83	0.70	-0.19	45.74	0.60	-1.32
EC-169089 x Tuni local	118.69	2.01	-2.62	10.32	1.25	-0.22	43.11	1.08	-3.08
Arka anand	106.61	1.43*	-19.24	10.07	0.87	-0.25	47.20	1.10	-0.47
VNR-51	131.33	1.31	-18.27	11.48	0.45	-0.15	45.21	1.28	-3.34
G.Mean	121.05			10.26			48.75		
SEm ±	4.4			0.17			0.81		

*: Significant at 5% level; **: Significant at 1% level

Table 2: Stability parameters for number of flowers per cluster, number of fruits per cluster and fruit length (cm) in brinjal

Parent / F_1 hybrid	Number of flowers per cluster			Number of fruits per cluster			Fruit length (cm)		
	Mean	b_i	S^2d_i	Mean	b_i	S^2d_i	Mean	b_i	S^2d_i
Pennada	4.86	0.71	-0.04	3.74	1.18	-0.02	7.79	0.32	-0.13
Bhagyamati	3.38	0.80	-0.06	2.80	1.14	-0.02	11.31	0.58*	-0.14
EC-169084	5.39	0.80	-0.06	4.05	1.14	-0.02	10.10	0.74	-0.13
Babajipeta-1	3.61	0.89	-0.07	3.06	1.18	-0.02	11.10	0.37	-0.13
Babajipeta-2	4.09	0.69	-0.04	2.47	1.18	-0.02	12.22	0.49*	-0.14
EC-169089	3.43	0.65	-0.03	1.71	1.18	-0.02	13.24	0.57	-0.13
Tuni local	3.18	0.72	-0.05	1.58	1.18	-0.02	12.39	0.42	-0.13
Pennada x Bhagyamati	4.03	1.53	0.04	2.93	0.98	-0.03	11.02	1.66	-0.13
Pennada x EC-169084	5.71	0.91	-0.07	4.54	0.98	-0.03	9.72	1.78	-0.13
Pennada x Babajipet-1	4.47	1.25	-0.04	3.58	1.44	-0.02	10.60	1.95	-0.12
Pennada x Babajipet-2	4.40	1.78	0.17	3.39	0.98	-0.03	11.78	1.17	-0.13
Pennada x EC-169089	4.52	1.12	-0.06	3.03	0.98	-0.03	13.67	1.05	-0.12
Pennada x Tuni local	3.73	1.02	-0.07	2.68	0.98	-0.03	12.11	1.21	-0.13
Bhagyamati x EC-169084	5.56	1.01	-0.07	4.58	0.98	-0.03	9.84	1.17	-0.13
Bhagyamati x Babajipet-1	4.19	0.58	-0.01	3.15	0.98	-0.03	11.30	1.17	-0.13
Bhagyamati x Babajipet-2	4.78	0.28	0.10	2.95	0.98	-0.03	11.78	1.17	-0.13
Bhagyamati x EC-169089	4.14	0.55	0.00	2.35	0.66	0.03	13.93	1.17	-0.13
Bhagyamati x Tuni local	3.28	0.78	-0.05	2.05	0.98	-0.03	13.23	1.17	-0.13
EC-169084 x Babajipet-1	5.12	1.18	0.05	3.37	0.98	-0.03	10.45	1.16	-0.13

EC-169084 x Babajipet-2	5.41	1.02	-0.07	4.49	0.84	-0.01	11.56	1.17	-0.13
EC-169084 x EC-169089	4.94	1.12	-0.06	3.65	0.98	-0.03	13.26	1.18	-0.13
EC-169084 x Tuni local	3.81	1.55	0.05	2.75	0.98	-0.03	11.93	1.17	-0.13
Babajipet-1 x Babajipet-2	5.00	0.92	0.15	3.49	0.53**	-0.03	11.66	1.18	-0.13
Babajipet-1 x EC-169089	4.41	1.27	-0.04	2.93	1.01	-0.03	13.62	1.17	-0.13
Babajipet-1 x Tuni local	3.28	1.74	0.14	2.11	0.98	-0.03	12.81	1.18	-0.13
Babajipet-2 x EC-169089	4.37	1.23	-0.04	2.21	0.98	-0.03	14.61	1.17	-0.13
Babajipet-2 x Tuni local	4.38	1.13	-0.04	2.09	0.98	-0.03	13.54	1.17	-0.13
EC-169089 x Tuni local	3.33	0.74	-0.05	2.02	0.98	-0.03	14.43	1.17	-0.13
Arka anand	3.99	1.24	-0.04	3.48	0.67	0.08*	17.38	1.83	0.05
VNR-51	5.33	0.80	-0.06	4.52	0.98	-0.03	11.67	-1.75	2.74**
G.Mean	4.31			2.99			11.96		
SEm ±	0.16			0.06			0.23		

*: Significant at 5% level; **: Significant at 1% level

Table 3: Stability parameters for fruit girth (cm), fruit weight (g) and number of fruits per fruit in brinjal

Parent / F_1 hybrid	Fruit girth (cm)			Fruit weight (g)			Number of fruits per plant		
	Mean	b_i	S^2d_i	Mean	b_i	S^2d_i	Mean	b_i	S^2d_i
Pennada	8.47	0.99	-0.27	40.56	2.24	-5.96	44.44	0.89	-5.37
Bhagyamati	12.95	1.03	-0.22	51.37	-1.99	7.51	33.21	1.45	-6.31
EC-169084	9.89	0.99	-0.26	45.82	2.27	44.48*	51.52	1.19	-5.61
Babajipeta-1	11.92	1.01	-0.26	48.69	3.09	4.51	30.10	1.32	-6.39
Babajipeta-2	14.71	1.01	-0.26	59.58	-0.64	-2.70	19.18	0.65	-6.79
EC-169089	13.42	0.98	-0.23	69.45	1.57	-7.47	25.30	0.88	-6.88
Tuni local	17.38	1.02	-0.24	71.98	1.27	-7.69	15.22	0.56	-6.47
Pennada x Bhagyamati	11.92	1.01	-0.26	75.41	-2.46	31.72*	40.80	0.70	-6.59
Pennada x EC-169084	7.60	0.99	-0.26	68.17	3.06	26.82*	70.21	1.98*	-7.14
Pennada x Babajipet-1	10.21	0.99	-0.26	50.38	1.28	-7.69	42.54	1.05	-6.72
Pennada x Babajipet-2	14.37	1.03	-0.14	57.97	0.87	-7.57	36.21	0.95	-6.94
Pennada x EC-169089	12.19	0.99	-0.26	72.34	-1.65	4.39	30.98	0.90	-5.79
Pennada x Tuni local	15.38	1.03	-0.22	61.02	-0.83*	-7.70	26.14	0.80	-7.04
Bhagyamati x EC-169084	9.92	0.99	-0.26	74.66	0.81	-3.24	66.31	0.78	-2.67
Bhagyamati x Babajipet-1	12.73	1.04	-0.15	53.25	1.83	-7.05	39.04	0.71	-6.68
Bhagyamati x Babajipet-2	14.86	1.04	-0.15	68.31	2.39	-5.44	36.61	0.91	-7.11
Bhagyamati x EC-169089	13.76	1.04	-0.15	83.60	-0.10**	-7.71	33.80	1.80	-6.90
Bhagyamati x Tuni local	17.68	1.10	-0.20	62.34	-0.52	-3.34	26.97	0.69	-5.93
EC-169084 x Babajipet-1	11.46	0.99	-0.26	65.02	1.83	-7.05	57.77	1.51	-0.42
EC-169084 x Babajipet-2	13.23	0.99	-0.26	72.80	2.38	-5.47	49.19	1.17	-5.68
EC-169084 x EC-169089	12.25	0.94	-0.06	82.30	-1.70	4.83	42.71	1.10	2.43
EC-169084 x Tuni local	15.56	0.99	-0.26	78.05	1.84	-7.03	33.64	1.19	26.22*
Babajipet-1 x Babajipet-2	17.33	0.99	-0.26	82.51	1.04	-7.68	44.05	1.22	-6.09
Babajipet-1 x EC-169089	15.26	0.99	-0.26	73.67	-0.30	-4.44	37.12	0.77	-7.05
Babajipet-1 x Tuni local	18.06	0.99	-0.26	57.74	1.77	-7.16	29.01	1.33	-2.39
Babajipet-2 x EC-169089	15.85	0.99	-0.26	85.01	1.11	-7.70	33.63	0.65*	-7.14
Babajipet-2 x Tuni local	20.86	1.04	-0.15	83.47	0.64	-7.28	27.95	0.94	-5.08
EC-169089 x Tuni local	17.06	0.99	-0.26	90.25	5.07	-4.63	27.84	0.60*	-7.14
Arka anand	9.99	0.90	0.37	77.46	2.93	-3.00	44.76	0.41	-5.53
VNR-51	14.03	0.91	0.01	85.54	0.99	-7.66	54.63	0.89	-7.08
G.Mean	13.80			67.34			37.55		
SEm ±	0.18			1.89			1.12		

*: Significant at 5% level; **: Significant at 1% level

Table 4. Stability parameters for fruit yield per plant (kg) in brinjal

Parent / F_1 hybrid	Fruit yield per plant (kg)		
	Mean	b_i	S^2d_i
Pennada	2.01	0.42	-0.02
Bhagyamati	1.89	0.68	-0.02
EC-169084	2.19	0.82	-0.01
Babajipeta-1	1.61	0.34	-0.02
Babajipeta-2	1.74	0.46	-0.01
EC-169089	1.83	0.58	-0.02
Tuni local	1.33	0.41	-0.02
Pennada x Bhagyamati	2.64	1.69*	-0.02
Pennada x EC-169084	3.05	1.03	-0.02
Pennada x Babajipet-1	2.07	1.05	-0.02
Pennada x Babajipet-2	2.03	0.86	-0.02
Pennada x EC-169089	2.31	1.26	-0.02
Pennada x Tuni local	1.60	1.28	-0.02
Bhagyamati x EC-169084	3.45	1.01	-0.01
Bhagyamati x Babajipet-1	2.22	1.01	-0.02
Bhagyamati x Babajipet-2	2.42	1.24	-0.02
Bhagyamati x EC-169089	2.94	1.04	-0.02
Bhagyamati x Tuni local	1.96	0.56	-0.01
EC-169084 x Babajipet-1	2.53	1.52	-0.02
EC-169084 x Babajipet-2	2.69	1.29	-0.02
EC-169084 x EC-169089	2.87	0.97	-0.02
EC-169084 x Tuni local	1.98	1.06	0.04
Babajipet-1 x Babajipet-2	2.72	1.14	0.01
Babajipet-1 x EC-169089	2.79	0.79	-0.03
Babajipet-1 x Tuni local	1.98	1.03	-0.03
Babajipet-2 x EC-169089	2.79	1.14	-0.02
Babajipet-2 x Tuni local	2.44	1.32**	-0.03
EC-169089 x Tuni local	2.20	0.89	-0.02
Arka anand	2.53	1.34	-0.02
VNR-51	3.06	1.11	0.00
G.Mean	2.29		
SEm ±	0.06		

Conclusion

The present study on stability, four hybrids *viz.*, Bhagyamati x EC-169084, Pennada x EC-169084, Bhagyamati x EC-169089 and EC-169084 x EC-169089 possessed higher fruit yield than Arka Anand and two F1s *viz.*, Bhagyamati x EC-169084 and Pennada x EC-169084 better than VNR-51the checks and were identified as stable crosses for fruit yield per plant.

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