Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.5404

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **5 (5):** 872-878 (2017)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Genetic variability, Heritability and Genetic Advance for Yield, Yield Related Components of Brinjal [*Solanum melongena* (L.)] Genotypes

Parvati Pujer[1*], R. C. Jagadeesha[2] and Sarumangala Cholin[3]

[1]Ph. D. Scholar, [2]Professor and Head, 3Assistant Professor,

Department of Biotechnology and Crop Improvement, University of Horticultural Sciences, Bagalkot, India

*Corresponding Author E-mail: paru.hortico@gmail.com

Received: 7.08.2017 | Revised: 12.09.2017 | Accepted: 18.09.2017

ABSTRACT

Eggplant or brinjal [Solanum melongena L.] is the most popular and widely cultivated vegetable crop in the central, southern and Southeast Asia and in some African countries. In the present investigation 55 genotypes were collected and evaluated at the Research Farm of Department of Biotechnology and Crop Improvement during Khari season of 2015 to assess the mean performance, genetic variability, heritability and genetic advance. The experiment was laid out in Completely Randomized Block Design (RCBD) with 2 replications. ANOVA was found significant for all the traits .The mean performance for yield contributing traits, the genotype CBB-54 (11.80) showed highest number of flowers per branches and lowest CBB-16 (2.50), for number of fruits per plant the genotype A2 (53.00) highest and lowest by the genotype CBB-37 (8.75) , the average fruit weight recorded highest CBB-22 (176.70g) and lowest A13 (18.00g) and the fruit yield per plant showed maximum mean performance by the genotype A14 (2.90kg) and minimum by the genotype A12 (0.65kg). The mean performance for quality traits like, total phenol observed lowest for the genotype CBB-44 (0.54) and height CBB-50 (2.35), for reducing sugar the genotype A12 (0.31) highest and lowest by the genotype CBB-34 (1.38) and for ascorbic acid the highest recorded by the genotype CBB-49 and CBB-50 (18.50) and lowest by A13 (4.00). Estimates of phenotypic coefficients of variability (PCV) and genotypic coefficients of variability (GCV) ranged for average fruit weight (18.00- 176.70) followed by plant spread (51.70-87.60) respectively. PCV were slightly higher than the corresponding GCV and the difference was very low for majority of the characters, suggesting that prevalence of more of genetic effects than environment in their expression. Heritability in broad sense (h^2), genetic advance (GA) and genetic advance as percentage of mean (GAM) ranged between 19-79-100%, 0.55-70.63, 23.17- 104.14 % respectively. High GCV, PCV, heritability coupled with High genetic advance indicating more of genetic inheritance and selection is effective. Therefore direct selection helps in selecting good genotypes with high growth, yield and quality for brinjal hybrids.

Key words: *Solanum melongena, Mean performance, Genetic variability, Heritability, Genetic advance*

Cite this article: Pujer, P., Jagadeesha, R.C. and Cholin, S., Genetic variability, Heritability and Genetic Advance for Yield, Yield Related Components of Brinjal [*Solanum melongena* (L.)] Genotypes, *Int. J. Pure App. Biosci.* **5(5):** 872-878 (2017). doi: http://dx.doi.org/10.18782/2320-7051.5404

INTRODUCTION

Eggplant or brinjal *[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 and for this reason[13] regarded the crop as being of Indian origin. **Genetic Variability** The phenotypic expression of the plant character is mainly controlled by the genetic make up of the plant and the environment, in which it is grown and the interaction between the genotypes and environment. Further, the genetic variance of any quantitative trait is composed of additive variance (heritable) and non additive variance (non heritable), which include dominance and epistasis (non-allelic interaction). It is necessary to partition the observed phenotypic variability into its heritable and non heritable components with suitable parameters, such as phenotypic and genotypic coefficient of variation and heritability in broad sense. Effectiveness of selection directly depends on the amount of heritability and genetic advance as per cent of mean for that character. So, this study aimed at justifying the real worth of the selection parameters that will be framed through comparative study of genetic variability parameters. Information generated from the studies of character association serve as the most important indicator (plant character) that ought to be considered in the selection programme. The present studies were, therefore, initiated with an objective to determine genetic variability for fruit yield and related attributes along with quality components in relationships in a collection of 55 genotypes of brinjal.

MATERIALS AND METHODS

The present investigation was carried out at the research plot of Biotechnology and Crop Improvement during the *kharif* season of the year 2014-15. Experimental material consisted of 55 genotypes and it was laid out in Completely Randomized Block Design (RCBD) with 2 replications. All the scientific agronomic package of practices was followed to raise a healthy crop except spraying of insecticides to control the shoot and fruit borer, leaf hopper and white fly and phomopsis blight diseases.

Experimental data

Five plants of each accession in each replication were randomly selected for recording the observations on 14 yield and its component characters viz. plant height (cm) 90 DAT, stem girth (cm) 90 DAT, number of branches per plant 90 DAT, plant spread (cm) 90 DAT, days to first flowering, days to 50 per cent flowering, fruit diameter (cm), total phenol (%), reducing sugar (%), ascorbic acid (mg/100g), number of flowers per branches, number of fruits per plant, average fruit weight (g) and fruit yield per plant (kg). The mean replicated data on various biometric traits were subjected to analysis of variance as per the standard statistical procedure [9]. Phenotypic and genotypic components of variance, phenotypic and genotypic coefficients of variation and the broad sense heritability the expected genetic gain or advance under selection [3] were calculated.

RESULTS AND DISCUSSION

Analysis of variance and genetic variability

The ANOVA (Table 1) showed highly significant differences among the genotypes for all the traits indicating thereby the presence of sufficient variability in the experimental materials. The mean performances of the different genotypes for different trait are presented in table 2. The genotype CBB-36 recorded highest mean performance for plant height (82.00 cm) and lowest by (40.40 cm), for stem girth (cm) the genotype CBB-6 (2.59cm) showed height and lowest recorded by A10 (1.09cm), for number of branches the genotype CBB-22 (11.20) recorded highest and the genotype A10 (3.20) lowest, for plant spread (87.60cm) CBB-14 genotype showed highest and the lowest genotype A13 (53.70cm), the genotype CBB-54 (31.70) showed early flowering and the genotype CBB-50 (61.20) showed late flowering, for days to 50 per cent flowering the genotype showed early flowering A10 (38.70) and lowest by the genotype CBB-50 (68.50). The quality contributing traits the mean performance recorded as, the genotype CBB-49 (7.10cm) showed height for fruit diameter and lowest showed by A11 (2.20cm), for the total phenol lowest observed by the genotype CBB-44 (0.54) and height by the genotype CBB-50 (2.35), the genotype, for reducing sugar the genotype A12 (0.31) recorded highest and lowest reducing sugar by the genotype CBB-34 (1.38) and for ascorbic acid the highest recorded by the genotype CBB-49 and CBB-50 (18.50) and lowest by A13 (4.00) . The yield contributing traits are very important for selecting best high yielding hybrids therefore, the genotype CBB-54 (11.80) showed highest number of flowers per branches and lowest recorded by CBB-16 (2.50), for number of fruits per plant the genotype A2 (53.00) recorded maximum and minimum showed by the genotype CBB-37 (8.75) , the average fruit weight recorded highest for the genotype CBB-22 (176.70g) and lowest by A13 (18.00g) and the fruit yield per plant showed maximum mean performance by the genotype A14 (2.90kg) and minimum by the genotype A12 (0.65kg). The high mean performance helps in identifying the best genotypes for developing the hybrids with good growth, earliness, and quality and yield parameters.

The estimates of mean, range, genotypic coefficient of variation (GCV) and phenotypic coefficient of variation (PCV) for 14 quantitative traits in brinjal genotypes are presented in table 3. Mean and ranges are the simple measures of variability. The range of mean values also revealed sufficient variation for the characters under study. Maximum range of variability was observed for average fruit weight (18.00- 176.70) followed by plant spread (51.70-87.60). These findings are in consonance with the findings of earlier workers[4] , [1],[10]. The characters showing high range of variation have more scope for improvement. The lowest range of mean was recorded for ascorbic acid (0.30-1.37) indicating availability of low variation for its improvement in the experimental material used.

Estimates of phenotypic variance (PV) and genotypic variance (GV) ranged from and 0.08-1176.77 and 0.08- 1176.15 respectively. The estimate of phenotypic coefficient of variance (PCV) and genotypic coefficient of variance ranged from 11.31-50.58 and 11.28-50.57 respectively (Table 3). The PCV was highest for average fruit weight (50.58%) followed by number of flowers per branches (43.89 %) and number of fruits per plant (37.55%). Similarly GCV was also highest for average fruit weight (50.57 %) followed by number of flowers per branches (43.70 %) and number of fruits per plant (36.06 %). The PCV and GCV were lowest for plant spread at 90 DAT (11.31 & 11.28). In general for all the characters under study, PCV were slightly higher than the corresponding GCV indicating prevalence of environmental influence on expression of these traits. However, the difference between PCV and GCV being very low for majority of the characters suggesting more prevalence of genetic governance of these characters and thus selection on phenotypic basis would holds good. Slightly higher PCV to GCV were also obtained by [5],[8],[7],[2],[11]. The PCV and GCV values were classified as low (<10.00 %), moderate (10.00-20.00%) and high (>20.00%) as suggested by [12]. In the present investigation PCV and GCV were high for number of branches (26.61 & 26.39), fruit diameter (20.55 & 20.44), total phenol (29.81 & 29.58), reducing sugar (33.00 & 32.37),Ascorbic acid (32.07 & 28.51), number of flowers/branches (43.86 & 43.70), number of fruits per /plant (37.55 & 36.06), average fruit weight (50.58 & 50.57) and fruit yield per plant (32.35 & 31.69). The characters like, plant height (12.51% & 12.42%), stem girth (19.07% & 18.90 %), plant spread

(11.31% & 11.28%), days to first flowering (14.09% & 13.98%), days to 50 per cent flowering (11.61% 7 11.56%) has moderate PCV. High (>20.00%) GCV and PCV estimates are also evident from the studies of [5], [8], [7], [2], [11]. In the present investigation it was also evident that difference between PCV and GCV were low for all the character studied. It indicates more of genetic control than environment in governing these traits and scope and importance of germplasm used in future selection for crop breeding.

Heritability and genetic advance

Estimates of heritability in broad sense (h^2), genetic advance (GA) and genetic advance as percentage of mean (GAM) are presented in table 3 and figure 1. Heritability, GA and GAM values ranged between 79-100%, 0.55-70.63, 23.17- 104.14 % respectively. The heritability values were classified as low (<30.00%), moderate (30.00- 60.00%) and high (>60.00%) while by [6] that of GA and GAM as low (<10.00 %), moderate (10.00-20.00%) and high (>20.00%) as suggested by Johnson *et al*[3]. Estimates of heritability were high (>60.00%) for all the traits viz, for plant height (98 %), stem girth (98%), plant spread (98 %), number of branches (100%), days to first flowering (99 %), days to 50 per cent flowering (100 %), fruit diameter (99%), total phenol (98 %), reducing sugar (96 %), ascorbic acid (79 %), number of flowers/branches (99 %), number of fruits per /plant (92 %), average fruit weight (100 %) and fruit yield per plant (100 %). Similar results reported by the scientist[1,4, 10].

The estimates of GAM were also high (>50)for average fruit weight (104.14%), number of flowers per branches (89.68%), number of fruits per plant (71.34 %), reducing sugar (65.40 %), fruit yield per plant (63.93 %), total phenol (60.44%), number of branches (53.93%), ascorbic acid (52.22%). The moderate GAM (>20) was recorded for plant height (25.37%), stem girth (38.59), plant spread (23.17%), days to first flowering (23.17%), days to 50 per cent flowering (41.89). During the selection for the improvement of any character knowledge of both broad sense heritability and GAM are necessary because broad sense heritability is based on total genetic variance and which includes both fixable (additive) and non-fixable (dominance and epistatic) variances. When heritability is mainly due to non-additive genetic effects (dominance and epistasis) genetic advance will be low, while in cases where heritability is chiefly due to additive gene effects, a high genetic advance may be expected. In the present investigation, except for first flowering node, high GAM coupled with high heritability has been observed for all the characters is the indication of prevalence of additive genetic effects (fixable) involved in their expression and predicted to show good response to phenotypic based selection in crop improvement programme. Hence, it is advisable for straight phenotype based selection to improve these characters. High heritability along with high GAM estimates are also obtained[2,5,7,8,11].

Being primary centre of origin, India has accumulated a wide range of variability in brinjal. The existing variability can be used to further enhance the yield level of the brinjal cultivars by following appropriate breeding strategies. Diverse genotypes can be utilized for hybridization programme also. Major yield contributing characters is identified and selection for these traits will be helpful in getting increased yield of this crop. Based on the results obtained it was concluded that high genetic variability and heritability estimates obtained for most of the earliness, growth, yield and its components including quality indicated the prevalence of additive genetic effects (fixable) governing their expression. Therefore, direct selection based on these combinations of traits help in harnessing for selecting good genotypes with high yield per plant in improvement programmes

Table 1: Analysis of variance for 14 characters of brinjal genotypes

	Characters / df	Replication	Treatments	Error
		1	54	54
1	Plant height 90 DAS (cm)	1.570	139.12**	1.100
2	Stem girth 90 DAS (cm)	0.001	0.22**	0.002
3	Number of branches 90 DAS	0.082	5.49**	0.045
4	Plant spread 90 DAS (cm)	0.582	119.96**	0.311
5	Day to first flowering	0.525	97.95**	0.754
6	Days to 50 per cent flowering	0.265	88.68**	0.244
7	Fruit diameter (mm)	0.657	1.97**	0.010
8	Toatl phenol (%)	0.219	0.36**	0.002
9	Reducing sugar (%)	0.331	0.15**	0.003
10	Ascorbic acid (mg/100g)	3.247	21.48**	2.516
11	Number of flowers/branches	0.093	15.87**	0.059
12	Number of fruits per /plant	43.911	266.51**	10.763
13	Average fruit wieght (g)	3.746	2352.92**	0.625
FY/P	Fruit yield per plant (kg)	0.000	0.48**	0.010

Table 2: ***Per se*** **performance for 14 different characters of 55 brinjal genotypes**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CBB-54	45.81	1.12	3.90	55.40	31.70	44.30	2.34	1.92	0.79	10.50	11.80	27.00	37.05	2.60
CBB-52	40.40	1.35	5.20	58.20	39.70	50.60	4.30	1.70	0.61	8.50	6.40	22.50	30.90	1.10
CBB-51	60.60	1.66	4.70	67.10	42.20	59.10	4.52	1.70	0.50	8.60	6.40	22.50	38.20	1.38
A2	71.05	1.77	5.00	63.90	46.90	53.30	5.10	1.78	0.63	12.50	6.90	8.75	124.70	0.95
A8	79.25	1.40	5.90	61.10	50.30	58.70	4.22	1.99	0.41	11.50	4.20	16.00	45.50	0.98
A9	63.80	1.54	3.90	59.80	40.40	50.30	3.92	1.24	0.62	12.50	5.20	27.00	45.80	1.30
A10	53.85	1.09	3.20	65.95	36.90	38.70	2.75	1.50	0.61	10.00	8.00	17.50	87.70	2.05
A11	64.80	1.42	4.80	68.90	39.70	50.10	2.20	1.76	0.55	9.10	8.10	33.00	40.40	0.98
A12	56.66	2.27	5.00	62.00	50.30	60.60	3.46	0.67	0.31	8.25	3.50	12.50	133.60	0.65
A13	58.70	1.93	5.90	53.70	57.50	63.70	3.80	1.49	0.45	4.00	4.90	41.00	18.00	1.95
A14	68.00	1.14	4.20	62.50	53.70	64.90	4.09	1.77	0.60	11.50	5.90	31.00	44.80	2.90
CBB-1	69.05	1.60	5.40	67.70	56.40	66.60	4.42	1.25	0.70	14.00	8.90	52.00	49.40	1.00
CBB-2	65.30	1.89	5.80	75.90	40.90	50.60	6.38	1.90	0.40	13.50	10.60	24.50	40.50	1.98
CBB-3	70.15	2.30	6.80	66.10	47.00	54.60	4.75	2.15	0.60	17.00	4.70	23.50	80.70	2.05
CBB-4	65.15	1.93	7.10	65.20	53.40	60.70	5.46	1.39	0.52	11.00	6.30	12.50	100.60	1.12
CBB-5	72.35	2.47	9.30	85.20	51.00	58.20	5.79	1.76	0.67	6.50	2.50	30.00	66.69	1.52
CBB-6	76.38	2.59	5.80	87.20	58.20	65.70	4.75	1.09	0.75	5.50	10.70	27.50	83.80	2.10
CBB-7	62.40	1.58	5.60	62.80	53.20	59.90	6.38	1.71	0.78	7.50	4.40	41.50	36.40	2.05
CBB-8	76.65	1.99	6.20	63.10	51.20	58.00	4.42	2.05	0.58	12.50	6.20	36.00	60.40	2.30
CBB-56	66.20	1.64	4.90	68.00	52.00	59.40	5.38	0.72	0.55	13.50	10.40	21.00	84.80	1.05
CBB-41	72.90	2.18	6.30	75.90	46.50	52.40	3.42	1.19	1.19	13.00	2.80	29.00	36.30	1.18
CBB-11	66.05	1.85	9.50	65.50	41.40	50.80	4.67	1.78	1.16	5.50	8.20	35.50	58.80	2.45
CBB-12	54.55	1.37	6.30	62.30	55.60	61.00	4.42	1.76	1.28	11.00	4.40	35.50	61.60	1.15
CBB-13	63.25	1.91	6.30	58.20	56.50	62.00	5.75	1.58	1.10	13.00	4.10	32.00	30.45	1.42
CBB-14	68.50	2.37	9.60	87.60	51.70	58.60	5.80	1.27	0.99	9.00	11.30	33.00	69.50	1.78
CBB-16	72.00	2.36	8.60	64.95	53.30	62.70	4.88	1.34	0.84	11.00	2.80	51.00	19.90	1.80
CBB-17	64.90	1.77	8.20	76.30	47.30	53.50	4.92	0.81	0.49	12.00	10.70	13.00	107.30	1.65
CBB-18	58.05	1.81	6.80	66.90	56.20	63.50	3.92	1.74	1.17	11.50	2.70	35.00	52.60	1.22
CBB-19	63.00	1.38	6.00	66.80	41.30	48.70	4.92	1.18	1.16	5.50	10.20	36.50	47.70	1.64
CBB-20	73.95	1.68	7.50	75.60	40.20	48.10	4.38	0.97	0.79	10.50	2.90	38.00	34.60	1.14
CBB-21	60.20	1.72	7.10	72.40	54.70	60.80	6.39	1.07	1.16	12.00	5.30	43.50	40.90	2.10
CBB-22	73.95	1.89	11.20	77.40	53.30	58.20	5.80	1.07	0.94	10.50	5.80	13.50	176.70	2.05
CBB-23	74.60	1.92	8.20	76.40	50.30	53.90	4.42	0.99	1.25	9.00	8.20	36.00	23.10	1.69
CBB-24	64.25	1.64	5.40	65.80	51.60	58.30	5.25	1.19	0.96	7.00	7.40	17.00	106.90	1.37
A1	57.70	1.82	6.60	68.90	44.40	50.40	4.97	1.95	0.96	13.50	10.20	34.00	84.20	1.55
CBB-31	57.05	1.88	6.00	65.60	54.40	50.40	5.10	1.67	0.90	12.60	3.00	44.00	55.60	1.16
CBB-58	71.60	1.47	6.60	67.00	60.40	67.30	5.95	1.37	0.95	9.00	5.10	41.50	62.50	1.31
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CBB-15	76.10	1.72	6.20	75.60	57.00	64.40	4.59	1.05	1.30	13.00	3.00	37.50	82.30	1.57
CBB-59	80.80	2.01	5.20	64.90	53.10	62.30	4.27	1.58	0.95	11.00	3.10	35.50	60.90	1.14
CBB-33	65.55	1.59	6.00	64.80	50.30	59.50	5.57	0.90	0.42	4.50	10.30	47.50	37.00	1.42
CBB-27	70.20	1.60	6.60	68.30	60.10	67.70	5.75	1.26	0.75	11.00	5.20	42.50	46.10	1.38
CBB-29	68.10	2.08	7.70	71.40	50.60	57.80	5.42	1.90	0.97	14.00	8.20	19.00	106.40	1.53
CBB-30	72.60	1.83	5.30	85.80	57.40	64.50	5.09	1.37	0.94	14.50	4.80	30.50	91.10	1.90
CBB-32	68.10	1.61	5.80	74.60	38.40	49.00	4.93	1.76	0.97	15.50	10.40	36.50	96.70	2.04
CBB-34	80.50	1.93	7.60	77.30	54.10	61.20	5.29	0.90	1.38	12.50	11.40	44.00	54.50	1.81
CBB-35	64.80	1.92	7.60	64.30	40.10	50.20	4.60	1.09	1.35	7.00	2.80	38.50	99.90	1.67
CBB-36	82.00	2.13	5.20	63.60	53.30	62.30	4.14	1.55	1.21	11.00	5.20	52.00	34.10	1.26
CBB-37	66.25	1.57	6.00	68.40	50.30	59.20	5.60	0.94	0.89	10.00	8.70	53.00	86.40	1.47
CBB-38	77.20	2.18	9.40	72.60	51.10	59.20	4.30	0.77	0.94	10.50	8.60	43.50	23.40	1.62
CBB-40	65.10	1.90	7.80	77.40	42.80	48.40	6.04	1.74	1.15	10.00	6.30	36.50	61.70	2.26
CBB-43	57.50	1.40	4.20	55.40	60.30	65.50	4.47	1.99	0.89	5.50	2.80	29.50	86.80	0.77
CBB-50	75.85	1.50	4.40	67.10	61.20	68.50	6.54	2.35	0.97	18.50	3.70	16.50	129.50	0.92
CBB-57	70.55	1.50	5.60	74.70	42.10	49.10	5.25	1.95	0.92	8.50	8.70	25.50	92.50	1.65
CBB-44	66.40	2.25	4.60	64.60	52.00	57.90	4.38	0.54	0.72	15.00	5.40	32.50	85.60	0.91
CBB-49	69.70	1.78	3.90	68.70	57.30	65.00	7.10	1.18	0.91	18.50	4.30	9.00	136.60	0.90
C.V.	1.57	2.54	3.38	0.81	1.74	0.86	2.11	3.74	6.43	14.68	3.77	10.46	1.17	6.53
S.E.	0.74	0.03	0.15	0.39	0.61	0.35	0.07	0.04	0.04	1.12	0.17	2.32	0.56	0.07
C.D. 5%	2.10	0.09	0.42	1.12	1.74	0.99	0.20	0.11	0.11	3.18	0.49	6.58	1.58	0.20

1	Plant height 90 DAS (cm)	6	Days to 50 per cent flowering	11	Number of flowers/branches
2	Stem girth 90 DAS (cm)	7	Fruit diameter (mm)	12	Number of fruits per /plant
3	Number of branches 90 DAS	8	Total phenol (%)	13	Average fruit weight (g)
4	Plant spread 90 DAS (cm)	9	Reducing sugar (%)	FY/P	Fruit yield per plant (kg)
5	Day to first flowering	10	Ascorbic acid (mg/100g)		

Table 3: Estimation of mean, range, Phenotypic variance (PV), genotypic variance (GV), phenotypic coefficient of variance (PCV) genotypic coefficient of variance (GCV), heritability (h2), genetic advance (GA) and genetic advance as per cent of mean (GAM) for 14 characters of brinjal genotypes

	Mean	Range	PV	GV	PCV	GCV	h^2 (Broad Sense)	GA@ 5%	GA as % of Mean 5%
1	66.92	40.20-82.00	70.11	69.01	12.51	12.42	0.98	16.98	25.37
2	1.79	1.09-2.59	0.12	0.11	19.07	18.90	0.98	0.69	38.59
3	6.25	3.20-11.20	2.77	2.72	26.61	26.39	0.98	3.37	53.93
4	68.60	53.70-87.60	60.14	59.83	11.31	11.28	1.00	15.89	23.17
5	49.88	31.70-61.20	49.36	48.60	14.09	13.98	0.99	14.25	28.57
6	57.46	38.70-68.50	44.47	44.22	11.61	11.57	1.00	13.66	23.78
7	4.85	2.20-7.10	0.99	0.98	20.55	20.44	0.99	2.03	41.89
8	1.44	0.54-2.35	0.18	0.18	29.81	29.58	0.98	0.87	60.44
9	0.84	0.30-1.37	0.08	0.08	33.00	32.37	0.96	0.55	65.40
10	10.80	4.00-18.50	12.00	9.48	32.07	28.51	0.79	5.64	52.22
11	6.44	2.50-11.80	7.97	7.91	43.86	43.70	0.99	5.77	89.68
12	31.36	8.75-53.00	138.64	127.88	37.55	36.06	0.92	22.37	71.34
13	67.82	18.00-176.7	1176.77	1176.15	50.58	50.57	1.00	70.63	104.14
14	1.54	0.65-2.90	0.25	0.24	32.35	31.69	0.96	0.99	63.93

1	Plant height 90 DAS (cm)	6	Days to 50 per cent flowering	11	Number of flowers/branches
2	Stem girth 90 DAS (cm)	7	Fruit diameter (cm)	12	Number of fruits per /plant
3	Number of branches 90 DAS	8	Total phenol (%)	13	Average fruit weight (g)
4	Plant spread 90 DAS (cm)	9	Reducing sugar (%)	FY/P	Fruit yield per plant (kg)
5	Day to first flowering	10	Ascorbic acid (mg/100g)		

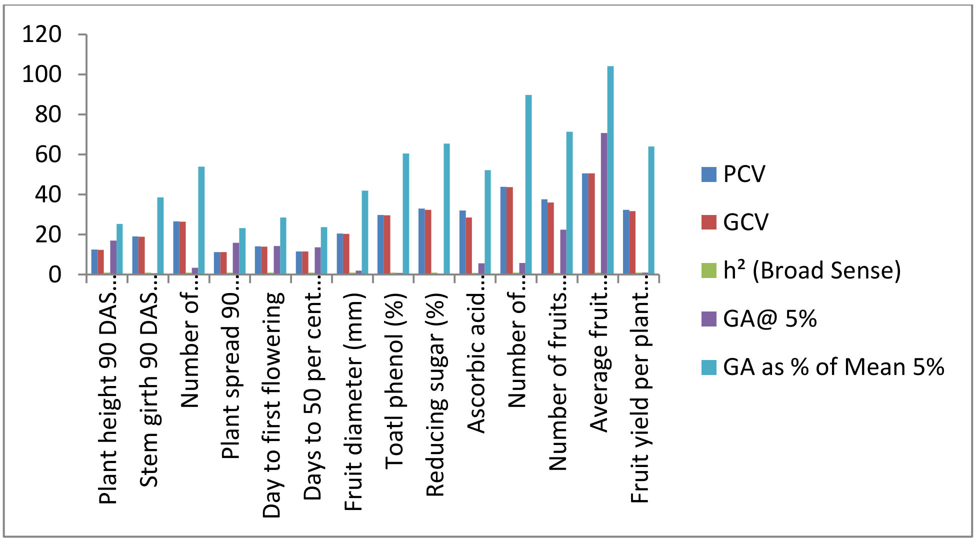

Fig. 1: Estimation of phenotypic coefficient of variance (PCV) genotypic coefficient of variance (GCV), heritability (h2), genetic advance (GA) and genetic advance as per cent of mean (GAM) for 14 characters of brinjal genotypes

REFERENCES

1. Arunkumar, B., Kumar, S. V. S. & Prakash, C. G., Genetic variability and divergence studies in brinjal (*Solanum melongena L*). Bioinfolet, **10:** 739-744 (2013).
2. Babu, S. and Patil, R., Genetic variability and correlation studies in eggplant *(Solanum melongena* L.). *Madras J. Aric Res.* **95 (1-6):** 18-23 (2005).
3. Johnson H W, Robinson H F and Comstock R S., Estimates of genetic and environmental variability in soybeans. *Agronomy Journal*. **47:** 314-318 (1955).
4. Karak. C., Ray, S., Akhtar, A., Naik. and Hazra, P., Genetic variation and character association in fruit yield components and quality characters in brinjal [*Solanum melongena* L.] *Journal of Crop and Weed*. **8(1):** 86-89 (2012).
5. Kumar, S. R., Arumugam, T., Anandakumar, C. R. & Premalakshmi, V., Genetic variability for quantitative and qualitative characters in brinjal (*Solanum melongena* L.). *African Journal of Agricultural Research*, **8:** 4956-4959 (2013).
6. Larik A S, Malik S I, Kakar A A and Naz M A., Assessment of heritability and genetic advance for yield components in *G. hirsutum*. *Scientific Khyber* **13:** 39- 44 (2000).
7. Mili C, Bora GC, Das B, Paul S., Studies on variability, heritability and genetic advance in *Solanum melongena* L. *Direct Res Agric Food.* **2:** 192-194 (2014).
8. Mohammad, R. N. R., Mahdiyeh, P., Abdolrahim, G. and Javad, A., Variability, heritability and association analysis in eggplant (*Solanum melongena*) *ARPN Journal of Agricultural and Biological Science.* New York, pp. 342 (2015).
9. Panse V G and Sukhatme P V. Statistical methods for Agricultural workers. 4th ed. *Indian council of Agricultural Research*, New Delhi, India. pp. 63-69 (1985).
10. Patel K, Sarnaik D, Asati B, Tirkey T. 2004. Studies on variability, heritability and genetic advance in brinjal (*Solanum melongena* L.). *Agric Sci Digest*. **24:** 256-259 (1985).
11. Singh, O. and Kumar, J., Variability, heritability and genetic advance in brinjal. *Indian J. Hort*. **62:** 265-267 (2005).
12. Sivasubramanian S and Menon M., Heterosis and inbreeding depression in rice. *Madras Agricultural Journal.* **60**: 1139 (1973).
13. Vavilov, N. I., Geographical centers of our cultivated plants. *Proc. V. Int. Cong. Genet*. **10 (10):** 464-468 (1928).