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Evaluation of brinjal genotypes for yield attributing parameters

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Abstract

The present investigation entitled “Evaluation of Brinjal Genotypes for yield attributing parameters” was conducted at the Experimental Unit, Botany Section, Shankar Nagar, College of Agriculture, Nagpur during *kharif* 2022-2023. The experimental design adopted was randomized block design with three replications comprising Twelve genotypes. The genotype NBG-6 (T6) required minimum days to initiation of 1st flower bud (42.57 days), minimum days for Initiation flowering (45.33 days) and minimum days (47.83 days) for 50% flowering while. The highest number of flowers per cluster was obtained in genotype NBG-6 (5.07). All the yield attributing characters were found for be significant in present investigation. The highest number of fruits per plant (28.68) was reported in the genotype NBG-4, fruit weight (181.03 g) was highest in genotype NBG-5, Genotype NBG-5 recorded highest fruit yield per plant (2.04 kg plant⁻¹), yield per plot (59.70 kg plot⁻¹) and yield per hectare (434.07 q ha⁻¹).

Keywords: Brinjal, genotypes, *Solanum melongena*, yield

Introduction

Brinjal (*Solanum melongena*) is one of the most important fruit vegetable in India. Vavilov (1928) [30] has mentioned that its centre of origin was the Indo- Burma region. Brinjal is grown extensively in India, Bangladesh, Pakistan, China and other parts of the globe. It is a species of the Solanaceae family, having chromosome number 2n=18. Globally, it is grown in an area of about 1.87 million hectares with an annual production of 50.19 million tonnes and a productivity of 26.83 tonnes/ha. In India, the acreage of brinjal is 0.73 million hectares with an annual production of 12.80 million tonnes and a productivity of 18.06 tonnes/ha (Anonymous 2018) [1]. Phenols and ascorbic acids are important determinants of brinjal fruit flavour (Stommel and Whitaker, 2003) [27]. It contain β -carotene (34 mg), riboflavin (0.05 mg), niacine (0.5 mg) and ascorbic acid (0.9 mg) per 100 g of fruit (Kandoliya *et al.* 2015) [12]. Brinjal successfully suppress the development and growth of tumors, lung cancer and cardiovascular diseases (Somawathi *et al.*, 2014) [26]. Fruit setting in brinjal cultivars with long-styled flowers varied from 70-86%. The fruit is pendant and is a fleshy berry borne singly or in clusters. Subbiah *et al.* (1985) [28] obtained higher yields of brinjal with combined use of FYM and fertilizers.

Materials and Methods

The experiment was carried out at the Experimental Unit, Botany Section, Shankar Nagar, College of Agriculture, Nagpur during *kharif* 2022-2023. 12 Genotypes (11 local genotypes + 1 standard check) The experiment was laid out in randomized block design with three replications at spacing of 60 cm \times 60 cm. All the recommended cultural practices were followed to raised a healthy crop and data recorded for yield parameters *viz.*, Days for initiation of flower bud, days for initiation of 1st flowering, days for fifty per cent flowering, no. of flower cluster⁻¹, no. of fruits plant⁻¹, weight of fruit (g), yield per plant (kg), yield per plot (kg), yield per ha (q). Least significance at 5% level was used for finding the significant differences among the treatment means. The data obtained from selected plants were subjected to analysis of variance as suggested by Panse and Sukhatme (1967) [20].

Results and Discussions

Data on influence of different treatments on growth attributing characters of brinjal are presented in Table 1.

Analysis of variance indicated that the effect of brinjal genotypes on days from transplanting to initiate flower bud varied significantly and was in the range of 43.33 to 51.40 days with grand mean of 45.73 days. The genotype NBG-6 (42.57 days.) was taken shortest time for 1st flower bud initiation which was at par with genotype NBG-10 (43.33 days), whereas, genotype NBG-7 (51.40 days) was taken longest duration for first flower bud initiation.

The variation in days to first flowering was recorded in ranged from 45.33 to 56.33 days with overall average for days to first flowering was 50.31 days presented in Table 1. The genotype NBG-6 (45.33 days) was taken shortest time for first flowering followed by genotype NBG-5 (45.00 days), While genotype NBG-7 (56.33 days) was taken longest duration for first flowering initiation. The result was in contradictory to the reports conducted by Shafeeq *et al.* (2007) [23], Mishra *et al.* (2008) [19].

From the finding (Table 1), that significant differences were recorded in 50% flowering by brinjal genotypes. Days to 50% flowering was recorded from the date of transplanting and it ranged from NBG-6 (47.83 days) to NBG-7 (61.43 days) with overall average for days to 50 percent flowering was 55.33 days. The minimum number of days to 50% flowering was found in NBG-6 (47.83 days) followed by NBG-1 (50.40 days) and NBG-12 (52.57 days) (46.66 days) and the maximum number of days to 50% flowering was found in NBG-7 (61.43 days). The similar findings were confirmed with Balaji *et al.* (2013) [5] studied sixty brinjal genotypes and recorded that the germplasm line IC-90930 took minimum days (33.00) to 50% flowering.

The variation in number of flowers per cluster was reported in ranged from NBG-1 (3.37) to NBG-6 (5.07) with overall average value for number of flowers per cluster was 3.94 presented in Table 1. The highest of flowers per cluster was obtained in genotype NBG-6 (5.07) minimum number of flowers per cluster was found in genotype NBG-1 (3.37). Variations occur due to genetic makeup of plant.

Number of fruits per plant in brinjal genotype and was in the range of 9.16 to 28.68 with average mean of 19.68. The highest number of fruits per plant was recorded in the

genotype NBG-4 (28.68) which was at par with NBG-5 (27.05) was superior over rest of the genotypes. The lowest number of fruits per plant was observed in genotype NBG-9 (9.16) followed by genotype NBG-7 (14.43) and NBG-8 (15.62). The results agreed with the findings of Maharana *et al.* (2006) [15], Mishra *et al.* (2008) [19], Kumar and Arumugam (2013) [14], Thangamani and Jansirani (2013) [29], Magar (2014) [16], in brinjal.

The fruit weight of brinjal genotype was in the range of NBG-4 (54.67 g) to NBG-5 (181.03 g) with mean weight of 97.05 g. The highest fruit weight was observed in genotype NBG-5 (181.03 g) and was significantly superior over all the genotype under study which was followed by NBG-8 (144.50 g) While, the lowest fruit weight was observed in genotype NBG-4 (54.67 g). The results agreed with the findings Thapa *et al.* (2005), Haldavanekar (2015) [10] and Bhambure (2016) [6] in brinjal.

The fruit yield per plant of brinjal genotype was in the range of NBG-8 (1.25 Kg) to NBG-5 (2.04 Kg) with average mean of fruit yield per plant 1.57 Kg. The highest fruit yield per plant was observed in NBG-5 (2.04 Kg). lowest fruit yield per plant in genotype NBG-8 (1.25 Kg).

The fruit yield per plot of brinjal genotype was in the range of NBG-8 (37.53 Kg) to NBG-5 (59.70 Kg) with average mean of fruit yield per plot 46.03 Kg. The highest fruit yield per plot was observed in NBG-5 (59.70 Kg) which was found at par with genotype NBG-9 (53.00 kg). Whereas, lowest fruit yield per plot in genotype NBG-8 (37.53 Kg) followed by NBG-3 (37.87 Kg).

Data obtained for yield per hectare revealed that the genotype NBG-5 produced maximum yield (434.07 q), while minimum yield per hectare (275.60 q) reported from genotype NBG-8 followed by NBG-3 (281.63 q). Variation in yield was noticed due to genetic constitution of plant and interaction with environment. The results were in agreement with the findings Mohanty (2001), Ashwani and Khandelwal (2003) [3], Mahaveer *et al.* (2004) [17], Maharana *et al.* (2006) [15], Mishra *et al.* (2008) [19], Ramesh and Patil (2008) [22], Dahatonde *et al.* (2010) [7], Kapgate (2012) [11], Khapte *et al.* (2012) [13], Shinde *et al.* (2012) [25], Balaji *et al.* (2013) [5], Kumar and Arumugam (2013) [14], Thangamani and Jansirani (2013) [29], Magar (2014) [16], Haldavanekar (2015) [10], Gogoi *et al.* (2018) [9] in brinjal.

Table 1: Mean performance of brinjal genotypes.

Tr. No.	Genotypes	Days to Initiation of flower bud	Days to initiation 1st flowering	Days to 50% flowering	No. of flower cluster ⁻¹	No. of fruits plant ⁻¹	Weight of fruit (g)	Yield plant ⁻¹ (Kg)	Yield plot ⁻¹ (Kg)	Yield hectare ⁻¹ (q)
T ₁	NBG-1	43.37	47.33	50.40	3.37	18.48	74.50	1.32	36.97	290.83
T ₂	NBG -2	44.50	49.00	55.17	3.53	19.23	84.67	1.64	45.73	361.27
T ₃	NBG -3	47.43	52.67	57.17	4.17	21.25	60.13	1.27	37.87	281.63
T ₄	NBG -4	50.17	56.00	59.57	3.80	28.68	54.67	1.45	43.13	319.80
T ₅	NBG -5	43.40	47.00	55.13	3.57	27.05	181.03	2.04	59.70	434.07
T ₆	NBG -6	42.57	45.33	47.83	5.07	12.23	125.93	1.78	51.47	390.27
T ₇	NBG -7	51.40	56.33	61.43	4.07	14.43	101.20	1.61	46.80	356.13
T ₈	NBG -8	43.70	48.33	55.07	3.47	15.62	144.50	1.25	37.53	275.60
T ₉	NBG -9	46.27	51.00	59.43	3.67	9.16	133.90	1.89	53.00	415.33
T ₁₀	NBG -10	43.33	49.67	55.53	4.70	22.17	65.47	1.41	42.20	310.53
T ₁₁	NBG -11	47.20	52.33	56.63	3.67	25.98	66.13	1.70	51.30	377.00
T ₁₂	AKLB -9 (Check)	45.43	48.67	52.57	4.27	21.90	72.43	1.52	46.63	326.17
	S.E. ± m.	1.08	1.46	2.04	0.10	3.25	3.45	0.09	2.84	4.17
	CD @ 5%	3.09	4.18	5.86	0.29	9.25	10.12	0.27	8.33	12.22

Conclusion

It can be concluded from the present investigation that the genotype NBG-6 reported earliest days to flower bud

initiation, 1st flowering and 50% flowering. Genotype NBG-5 recorded maximum weight of fruit, Yield per plant, Yield per

plot and Yield per hectare under Eastern Vidarbha conditions of Maharashtra.

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