

Study of Growth Parameters and Flowering Behavior of F₄ Progenies of Brinjal (*Solanum Melongena* L.) Under Konkan Agroclimatic Conditions

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Abstract: The field investigation was conducted at the Educational Research Farm, Department of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli (M.S.) during the rabi season of the year 2012-2013. The fifty treatments comprising 50 F₄ progenies of brinjal were replicated twice in Randomized Block Design. From the present study, it could be concluded that most of the growth parameters and flowering characters were significantly varied. Further, it was observed that all these progenies were found tolerant to bacterial wilt. Thus, on the basis of plant architecture, consumer preference and tolerance to bacterial wilt, 25 promising progenies were selected for further study in F₅ generation.

Keywords: Brinjal, growth parameters, plant spread, flowering.

INTRODUCTION

Brinjal (*Solanum melongena* L.) is one of the major and principle vegetable crops widely grown in India and other parts of world. Also in Maharashtra, it is one of the important vegetable crops under cultivation, which covers an area of 0.26 lakh ha with 0.58 Million tonnes annual production (Anonymous, 2013b). In Konkan, the area under brinjal cultivation is around 0.012 lakh ha with annual production of 0.02 MT during 2010-2011 (Anonymous, 2012).

Due to existence of wide genetic variation in the brinjal in the Konkan region, farmer has an opportunity to grow brinjal genotype as per the location specific consumer's preference. Some of the local types grown in Konkan region also show tolerance to bacterial wilt. Thus, by taking into consideration the variation in growth and fruit characters and tolerance to bacterial wilt, most of the local types have been selected from Konkan region and after screening to bacterial wilt tolerance,

growth and yield performance half diallel crosses were made at the Department of Horticulture during the year 2008-2009.

The genotypes performing well can be released as a variety or it can be put to further use in the breeding programme as a breeding line by the breeder. Thorough evaluation of the genotypes is needed to know the performance of the genotypes in terms of growth and flowering characters. Based on this, promising genotypes can be identified. Keeping all these above mentioned points in view, an experiment was carried out to evaluate 50 brinjal genotypes of F₄ progenies were evaluated under Konkan agroclimatic condition.

MATERIALS AND METHODS

The field experiment was conducted at the Educational Research Farm, Department of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli (M.S.) during the rabi season

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Table 1
Variation in vegetative growth parameters of F₄ progenies of brinjal

Progenies	Plant height (cm)	No. of primary branches	No. of secondary branches	No. of leaves	Plant spread (cm)	Progenies	Plant height (cm)	No. of primary branches	No. of secondary branches	No. of leaves	Plant spread (cm)
56	72.7	3	8	248.5	75.4	83	76.5	2	8	197	96.75
57	104.1	3	7.5	190.5	84.05	82	72.5	2	6	184	84.5
60	95.1	3	7.5	211	79.85	70	81.5	2	8	314	85.5
61	89.95	2	8	216.5	81.58	71	78.5	2	8	250.5	80.25
62	86.5	3	8.5	182.5	72.1	72-1	71.5	2	7	209.5	79.5
63	65.5	2	8	196	82.5	74	114.5	2	8	202	102.5
64	65.5	2	8	135	74	79	111.6	2.5	9	198.5	88.75
68	78	2	7.5	187.5	67.25	80-2	110	2	7	218.5	88.25
69	85.55	3	7.5	181	85.9	81-2	80	2	7	249.5	96
72	84.55	2	8	203	79.38	86	73.5	2	8	198.5	87.75
76	76.7	2	8	215.5	94.5	87	92.45	2	8	233.5	98.13
77	96	2	9.5	178	74.05	87-2	78.5	2	7	241.5	74.5
80	91	2	7	165	81	88-2	75	2	8	239	77.5
81	86.5	2	7.5	238.5	81.25	89	72.5	2	7	181	77
66	85.5	2	7	162.5	76.5	90	76.5	2	8	194.5	87.75
65	88	3	8	233.5	80.75	92-2	85	2	8	252	75.25
59	76.5	2	7.5	217.5	80	93	71.1	2	7	224	82
56-2	69.5	2	7	183.5	77	94	85.5	2	7	180.5	87.75
99	84.5	2	8	171	74.25	100	92.5	2	7	182.5	85.75
95	90.5	3	8	194.5	91.5	99-1	87	2	8	197	81
94-2	89.5	3	8	225	88.5	99-2	64.5	2	7	184	72.25
94-1	93.5	2	7.5	223.5	89.25	99-3	80	2	7.5	314	72.25
92	80.5	2	8	215	86.75	Range	64.5-	2-3	6-9.5	135-	67.25-
91-2	87	2	7	178	81.5		114.5			314	102.5
91	77.25	2	7	224.5	82.25	Mean	83.76	2.19	7.65	206.77	82.32
88	84.6	2	8	230.5	81.25	Result	Sig	Sig	Sig	Sig	Sig
85	91.1	3	8	244	75.75	S.Em+-	3.31	0.07	0.29	14.74	2.32
84	72.5	2	7.5	170	77.25	CD@5%	9.41	0.20	0.83	41.88	6.58

2012-13. The soil of experimental plot was lateritic and acidic in reaction with pH ranging from 5.6 to 6.5. The selection of the site was considered on the basis of suitability of land for the cultivation of brinjal. The investigation consisted of 50 F₄ progenies of brinjal and studied in Randomized Block Design with two replications. To record the biometric observations, sampling technique was used. The observations were recorded on ten randomly selected plants per genotype per replication for twenty one characters *viz.*, plant height (cm), number of primary branches, number of secondary branches, number of leaves, plant

spread (cm), thorns on stem and on leaves, days for initiation of flowering, days for fifty per cent flowering. The fifty promising progenies selected based on the characters like plant height, branching habit, earliness, harvesting span, fruit shape size and colour, yield and their tolerance to incidence of bacterial wilt during F₃ generation were self to get seed material for raising F₄ generation.

The spacing adopted was 60 cm in between two rows and 60 cm in between two plants within a row. The pits were made in these beds at a distance of 60 cm apart. The recommended dose of N, P₂O₅ and

Table 2
Variation in flowering behavior of F₄ progenies of brinjal

Progenies	Days to first flowering	Days to 50% flowering	Progenies	Days to first flowering	Days to 50% flowering
56	50	53	83	49	54.5
57	49	56.5	82	36	45.5
60	45	55.5	70	37.5	51.5
61	46.5	53	71	44.5	55
62	38	52	72-1	33.5	41.5
63	48.5	55	74	38	50
64	35.5	49.5	79	44.5	49
68	42.5	50.5	80-2	42.5	49
69	50.5	53.5	81-2	47	51
72	34.5	47.5	86	29	42.5
76	45.5	49	87	38.5	49.5
77	42	48.5	87-2	43	50
80	48.5	53.5	88-2	29.5	39.5
81	45.5	53	89	43	53.5
66	48	54	90	36.5	51
65	47.5	53	92-2	37	47.5
59	43.5	49.5	93	44	52.5
56-2	44.5	50	94	45	56.5
99	43.5	49	100	49	55
95	38	48.5	99-1	41.5	52
94-2	48.5	54	99-2	49.5	54.5
94-1	48.5	55.5	99-3	33.5	52
92	46.5	53	Range	29-50.5	39.5-56.5
91-2	45	51.5	Mean	42.47	50.98
91	43	51	Result	Sig	NS
88	33	47	S.Em+-	2.65	2.01
85	41.5	50	CD@5%	7.52	
84	39.5	50			

K₂O was applied as spot application in the form of urea, single super phosphate and muriate of potash respectively. The transplanting was done when seedlings were of 45 days old. All other recommended practices and plant protection measures were adopted to raise the healthy crop. The statistical analysis of the data was done by using the standard methods as described by Panse and Sukhatme (1988). The standard error (S.E.) of means was worked out and critical differences (CD) at 5% level work out whenever the results were significant.

RESULTS AND DISCUSSION

While evaluating growth, flowering characters of F₄ progenies of 50 brinjal progenies; it was observed

that plant height, number of primary branches per plant, number of secondary branches per plant, number of leaves, plant spread, were significantly varied. The data regarding above characters are presented in Table 1.

Significantly the highest plant height (114.5 cm) was recorded by progeny 74 and was significantly superior over all except progenies 79 (111.6 cm) and 80-2 (110 cm). The lowest plant height was observed in 99-2 progeny. Very few progenies namely 56, 57, 60, 62, 69, 65, 95, 94-2 and 85 had 3 primary branches, while rest of the progenies had 2 numbers of primary branches. Progeny 77 (9.5) had significantly the highest number of secondary branches and superior over all progenies except progeny 79 (9.0).

Significantly the highest number of leaves was recorded in progenies 70 (314) and 99-3 (314) and was significantly superior over all progenies. The lowest number of leaves was observed in progeny 64. Significantly the highest plant spread at last harvest was observed in the progeny 74 (102.5 cm) and was significantly superior over all except progenies 83, 81-2 and 87. The lowest plant spread was observed in progeny 68. The details results obtained are given in the Table 1.

Significantly the progeny 86 recorded early flowering (29 days), while progeny 69 recorded the highest days for flowering (50.5 days). The day for fifty per cent flowering among 50 brinjal progenies was varied non-significantly. Lowest days for fifty per cent flowering was noticed in the progeny 88-2 (39.5 days), while highest days in progeny 94 and 57 (56.5 days). The details results obtained are given in the Table 2.

CONCLUSION

From the present findings, it could be concluded that most of the growth parameters and flowering characters were significantly varied. Further, it was observed that all these progenies were found tolerant to bacterial wilt. Thus, on the basis of plant architecture, flowering characters consumer preference and tolerance to bacterial wilt, 25

promising progenies were selected for further study in F₅ generation.

References

- Anonymous, (2012), Area and production. Joint director's office Department of Agriculture, Konkan division government of Maharashtra.
- Anonymous, (2013b), Area and production. N.H.B. Database Published on its website: www.icar.org.in
- Ansari, S.F., Mehta Nandan, Ansari Sajid and Gavel, J. P. (2011), Variability studies in Brinjal (*Solanum melongena*L.) in Chhattisgarh plains. *Electronic Journal of Plant Breeding*, 2(2): 275-281.
- Ashwani, R.C. and Khandelwal, R.C. (2003), Hybrid vigour in brinjal (*Solanum melongena* L.). *Ann. Agric. Res.* 24(4): 833-837.
- Dhaka, S.K. and Soni A.K. (2012), Genetic variability in brinjal (*Solanum melongena* L.). *The Asian Journal of Horticulture*. 7(2): 537-540.
- Karak, C., Ray, U., Akhtar, S., Naik, A. and Hazra, P. (2012), 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.
- Mahaveer, P., Mehta Nandan, Dikshit, S.N., Nichal, S.S. (2004), Genetic variability, genetic advance and heritability in brinjal (*Solanum melongena* L.). *The Orissa Journal of Horticulture*. 32(2): 26-29.
- Sanas, M.P. (2009), Performance of different types of brinjal for their growth, yield and quality Characters. M.Sc. (Agri.) thesis submitted to Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli (M.S.).