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PERFORMANCE OF SELECTED BRINJAL LINES IN NAGALAND

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ABSTRACT

Nine local selecttions of brinjal (*Solaman melongena L)* viz Selection-1 (3×8) to Selection-9 (3×9) were screened for their growth, yield and fruit borer infestation during 1996-97 and 1997-98 at ICAR Reserch Complex for NEH Region, Nagaland Centre, Jharnapani, Results showed that Selection-9 (3×9) has recorded maximum plant height (89.31 cm) with early flowering (41.99 days) after transplanting. However, Selection-2 (4×7 os) which bore oval type of fruits recorded maximum girth, whereas maximum fruit length was noted in Selection-6 (1×7). The maximum yield (282.48 q/ha) as well as fruit weight (2.02 kg/plant) were also recorded in Selection-6 (1×7). Fruit borer (*Leucinodes arbonalis)* infestation ranging from 12.12 to 26.97% was found in these selections with Selection-9 (3×9) and Selection-6 (1×7) recording the lowest and highest percentage of infection, respectively.

INTRODUCTION

Brinjal (*Solamn melongena* L) is grown commonly in almost all parts of India. It is an importent vegetable and is available more or less throughout the year. Selections of varieties depend upon their suiitability and expression of components which contribute to maximum yield Brinjal has now become important and popular crop in Dimapur and surrounding areas of Kohima District, Nalagand to the commercial growers (Imchan, 1986). Information on genotypic adaptability in this region is meagre. Farmers of this area grow mostly old varities which are low yieleders and highly susceptible to fruit borer infestation (Anon, 1995). Therefore, the present investigitation was carried out to assess the performance of some prospective brinjal lines under the foot hills condition of Nagaland.

MATERIALS AND METHODS

The experiments were conducted at ICAR Research Complex for NEH Region, Jharnapani, Nagaland. Nine local selections of single and cluster fruited brinjal [Selection-1 (3×8), Selection-2 (4×7 os), Selection-3 (4×9), Selection-5 (5×9 oc), Selection-6 (1×7), Selection-7 (4×7 oc), Selection -8 (7×9) and Selection-9 (3×9)] were evaluated in a randomized block design with three replications. Seeds were sown in the nursery in the week of August and transplanting of seedings was done during the first week of September at a distance of 75 cm between rows and 60cm within rows. A uniform dose of framyard

manure at the rate of 20 tonns/ha were applied. Total quantities of phosphorus and potash along with half of nitrogen were applied at the time of transplanting. The remaining dose of nitrogen was applied as a top dressing one month after transplanting. Observations on growth, yield characters and fruit borer infection were recorded and analyzed.

RESULTS AND DISCUSSION

Signficant variations in growth in terms of plant height and yield were recorded amongst the lines. Selection-9 (3×9) and Selection-3 (4×9) recorded the maximum plant height of 89.31 cm and 78.86 cm, respectively whereas, the minimum plant height of 68.30 cm was observed in Selection-6 (3×9) and Selection-7 (4×7 oc) flowered in 41.99 days and 43.07 days, respectively after transplanting and were found to be the earlier (Table 1). Similarly, all lines failed to exibit significint influence on number of fruits/plant. The maximum number (39.61) of fruits per plant was observed in Selection-6 (1×7), followed by Selection-9 (36.18) and Selection-7 (35.17) whereas, the least number (27.55) of fruit plant was recorded in Selection-2 (4×7 os). The lines Selection-6, Selection-9 and Selection-4 produced fruits of greater length (17.35, 16.17 and 15.92 cm, respectively) while the Selection-2 recorded minimum fruit length. Selection 2 having oval type of fruits had signficantly more (5.45 cm) fruit girth than other selections. Significantly more fruit yield/ plant was recorded in Selection-6 (2.02 kg), Slection-9 (1.83 kg) and Selection-5 (1.76 kg). The positive correlation between fruit yield/plant and average yield suggests that fruit yield should be considered as one important criterion in selection of high yielding varities of brinjal.

Based on two years average data, higher yield was recorded in the two lines viz, Selection-6 and Selection-9 (282.48 and 267.77 q/ha, respectively). The higher yield in Selection-9 was due to more number of fruits, fruit weight/plant and longer fruit length. These characters also showed positive correlation with yield. Similar observations for these characters were also recorded by Bavaji (1982) and Hiramath (1977) in chilli, Prasad and Prasad (1997) in tomato and Amarchand (1994) in brinjal.

It is evident (Table 2) that the maximum fruit borer infestation for all lines was observed on 24th December, 1996 and 4th January, 1997 whereas, the lowest infestation found on 20th fortnight of January. Among the Selections tested, Selection-6 (1×7) was found highly (26.97%) susceptible followed by Selection-1 and selection-5 (26.57 and 25.25%, respectively) whereas the lowest percent (12.12) infestation was found in Selection-9 – Singh and Pandey (1994) reported upto 70% of fruit borer infestation in brinjal crop.

It may be concluded that Selection-6 and Selection-9 were promising in terms of growth and fruit characters as well as tolerant to fruit borer. These lines can be further exploited in future hybridization and in integrated pest management programme.

REFERENCS

Amar Chand, Gupta, N.K. and Naidu, A.K. (1994). Preformance of small round fruited brinjal during summer. *Punjab Hort. J* **34** : 119-123.

Anon (1995). Anual Report. ICAR Research Complex for NEH Region, pp : 178.

Babu Naresh, Venkataswarlu, P and Verma, R.C. (1999). Comparative performance of tomato cultivars in foothills of Nagaland. *Indian J Hill Farming* (in press)

Bavaji, J.N and Murthy, W.S. (1992). Selection indices for yield components chilli (*Capicum annum* L) *South Indian Hort* **30 :** 17-21.

Hiramath, K.C. and Mathapathi S.N. (1977). Genetic variability and correlation studies in chilli (*Capsicumm annum* L) var. Grossum Sendt *Indian J. Agril. Sci.* **43** :918-921.

Imchan, T (1986). Fruit and vegetable crops Hand book of Nagaland Agriculture Directorate of Agriculture, Kohima pp 103-134.

Prasad, A and Prasad, R (1997). Studies on varietal performance of tomatoes. *Prog. Hort.* **9 : 57-61.**

Singh, S N. and Pandey, R.B. (1994). Baigan ko keeron se bachain *Phal Phool* **4 :** 58-59.

Table 1. Average yield and phenotypic characters of brinjal selections

Selections	Plant height (cm)	Days to first flowering	No. of furits/ plant	Fruit length (cm)	Fruit grith (cm)	Fruit yield/ plant (kg)	Yield (q/ha) 1997	Yield (q/ha) 1998	Average
Selection - 1(3x8)	75.14	47.14	31.47	13.69	3.20	1.69	288.26	207.90	248.08
Selection - 2 (4x7os)	70.81	49.53	27.55	11.76	5.45	1.37	232.59	182.45	207.52
Selection -3 (4x9)	78.66	45.91	27.93	14.89	4.23	1.49	257.92	189.54	223.73
Selection-4 (5x9)	75.52	44.55	35.29	15.92	3.57	1.59	239.94	238.10	239.02
Selection-5 (5x9 oc)	74.56	47.54	29.71	15.68	3.34	1.76	283.48	228.40	255.94
Selection-6 (1x7)	68.30	45.90	39.61	17.35	2.65	2.02	313.81	251.15	282.48
Selection-7(4x7oc)	69.21	43.07	35.17	13.50	3.38	1.74	267.96	245.37	256.67
Selection-8 (7x8)	73.81	45.66	30.87	14.06	2.71	1.53	250.53	205.42	227.93
Selection-9 (3x9)	89.31	41.99	36.18	16.17	3.51	1.83	300.37	235.17	267.77
S. E.	4.63	NS	NS	NS	0.30	0.17	16.89	10.47	10.80
C. D. at 5%	9.81	NS	NS	NS	0.81	0.36	35.80	22.19	22.90

Table 2. Performance of various brinjal lines against fruit borer

Selection	Per cent infested fruits on						Average
	6.12.1996	14.12.1996	24.12.1996	4.1.1997	20.1.1997	30.1.1997	
Selection -1 (3x8)	30.00 (33.83)	25.90 (30.92)	47.98 (44.31)	33.91 (36.03)	9.96 (18.81)	11.67 (20.44)	26.57 (31.24)
Selection-2 (4x7 os)	22.22 (28.52)	40.88 (40.11)	39.55 (39.41)	19.11 (26.42)	15.32 (23.73)	11.70 (20.61)	24.79 (29.80)
Selection-3 (4x9)	25.00 (30.59)	15.87 (23.81)	31.35 (34.57)	28.99 (32.77)	11.30 (20.27)	11.80 (20.22)	20.71 (27.63)
Selection-4 (5x9)	8.33 (17.38)	14.45 (22.87)	34.80 (36.63)	29.54 (33.65)	9.79 (18.81)	11.57 (20.36)	19.46 (26.78)
Selection-5 (5x9 oc)	42.46 (41.03)	13.33 (21.89)	41.31 (40.57)	29.42 (33.52)	10.65 (19.64)	13.98 (22.30)	25.25 (30.85)
Selection-6 (1x7)	0.00 (4.05)	38.88 (38.76)	46.71 (43.51)	41.09 (40.46)	15.74 (23.89)	15.85 (22.89)	26.97 (31.63)
Selection-7 (4x7 oc)	6.66 (15.45)	17.08 (25.03)	29.53 (33.15)	33.72 (35.91)	12.15 (21.05)	12.47 (21.39)	18.60 (26.06)
Selection-8 (7x8)	0.00 (4.05)	33.33 (35.67)	25.29 (30.59)	33.15 (35.91)	19.10 (26.42)	21.62 (27.90)	22.08 (28.59)
Selection-9 (3x9)	0.00 (4.05)	8.33 (17.56)	8.00 (17.20)	24.86 (30.20)	18.36 (25.77)	13.20 (21.81)	12.12 (21.47)
Average	15.01 (23.19)	23.12 (29.06)	33.84 (35.85)	30.42 (33.77)	13.60 (22.06)	13.76 (2.14)	
C. D. at 5%	2.65	4.80	6.34	5.71	2.45	2.32	3.97

Figures in parenthesis are angular transformed values.