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Performance of Different Types of Brinjal for Their Physical Fruit Parameters and Flowering Parameters

M.P. Sanas[1], A.P. Sanas[2], S. M.Shinde[3]

[1]College of Agriculture, Dr. B. S. Konkan KrishiVidyapeeth, Dapoli-415712, Dist-Ratnagiri, (M.S.), India

[2]M. P. Sanas. Department of Horticulture, College of Agriculture, Dr. B. S. Konkan Krishi Vidyapeeth, Dapoli-415712, Dist-Ratnagiri, (M.S.), India

Abstract: ***The field experiment was conducted to study the performance of thirteen localbrinjal (Solanummelongena) types under konkan climatic conditions at the Educational Research Farm, Department of Horticulture, Dr. BalasahebSawant Konkan KrishiVidyapeeth, Dapoli (M.S.) during the rabi season of the year 2008-2009.All these thirteen brinjal genotypes showed significant variation in physical fruit characters and yield characters. Physical parameter viz., weight of fruit, length and Girth of fruit, Shape of fruit and colour of fruit showed notable variation among all the genotypes of brinjal. The genotype SML-5 recorded significantly the highest fruit length (23.01cm). However, the genotype SML-8 showed the longest fruit breadth (8.03cm). The highest fruit weight was reported by the genotype SML-3 (178.94g).***

Keywords: Brinjal, *Solanummelongena*, fruit physical parameters, flowering, yield

1. Introduction

Vegetables constitute an important supplement of our daily diet. They supply proteins, fats, minerals, vitamins and organic acids beside ambient carbohydrates required for normal health at cheaper rates. Among the various vegetables grown in India, Brinjal (*Solanummelongena* L.) has been a staple vegetable in our diet since ancient times. In the solanaceous vegetables, brinjal is equally rated high in its nutritional value which can be compared well with tomato (Choudhary,1976). In Maharashtra the area under brinjal cultivation is about 29400 ha with the production of about 4,79,200 MT, while the productivity is about 163.00 q/ha (Anon, 2008).Though brinjal is having good nutritional and medicinal properties besides having high production potential, cultivars grown in konkan shows wide variation in plant and fruit characters due to consumer's acceptance difference varied from region to region. Thus it resulted in lack of larger area under a single variety. Agro-climatic conditions of konkan region are ideal for brinjal cultivation. It is grown all the year round due to mild climatic conditions. Under high rainfall conditions also the brinjal crop shows better field stand with good quality fruits. It has occupied prominent place among the popular vegetables grown in konkan and are sold in daily local market. One of the important features of brinjal cultivation in konkan is that it shows wide variation in growth habit as well as fruit characters. In certain pockets of konkan, some local types have dominance in market over the improved ones and are more preferred by the consumers.

Heterozygous nature of the local brinjal cultivars gives a better scope for improvement under konkan conditions for commercialization. Thus now it's a high time to commercialize brinjal crop with due consideration to the variability available in the konkan region. Thus attempt was made for collection and evaluation of local brinjal types grown in Konkan region to study the growthand yield characters.

2. Material and Methods

The local brinjal genotypes collected from different areas of Konkan region were grown at the Educational Research Farm, Department of Horticulture, Dr. BalasahebSawant Konkan KrishiVidyapeeth, Dapoli (M.S.) during the rabi season of the year 2008-2009. The thirteen treatments comprising 13 local brinjal genotypes, SML-1 : Bandhtivare local, SML-2 : Sadve local, SML-3 : SuvarnPrathibha, SML- 4 : Vengurla local, SML-5 : Sheravali local, SML-6 : Vetore local, SML- 7 : Majal local, SML-8 : Kasaral local, SML-9 : Goa local, SML-10 – Asond local, SML-11 : CHES-309, SML-12 : Lanja local, SML-13 : Nayashi local were replicated twice in Randomised block design.The spacing adopted was 60 cm in between two rows and 60 cm in between two plants within a row.Thirty plants were maintained in each gross plot of 3.60m x 3.00m.All recommended cultural practices were followed to ensure good crop growth.To record the biometric observations, sampling technique was used. Five plants from the net plot were selected randomly from each treatment per replication. The selected plants were marked by labeling. The growth parameters were recorded at harvest of all the labeled plants and mean values for each observation were used for statistical analysis.

3. Result and Discussion

All these thirteen brinjal types showed significant variation in physical charactersof fruit and yield characters. Wide range of variation was observed in number of fruits per plant as well as yield per plant, per plot and per hectare.

A) Physical parameters of fruit:

Physical parameter viz., weight of fruit, length and Girth of fruit, Shape of fruit and colour of fruit showed notable variation among all the genotypes of brinjal. Further, it was observed that all these fruit parameterssignificantly varied among all genotypes except for fruit girth.

The fruit weight was in the range of 52.90g to 178.94g with general mean of 122.48g. Significantly the highest fruit weight was reported by the genotype SML-3 (178.94g) and was significantly superior over all the genotypes except the genotypes SML-8 (175.10g), SML-10 (175.55g) and SML-13 (164.40g). The lowest was in the genotype SML-7 (52.90g). Above general mean 122.48g, fruit weight was observed in the genotypes SML-1, SML-3, SML-5, SML-8, SML-9, SML-10, SML-11 and SML-13. The variation in weight of the fruit was also recorded by the Mahaveer*et al.* (2004), Thapa*et al.* (2005), Shafeeq*et al* (2007), Mishra*et al.* (2008).

The genotype SML-5 recorded significantly the highest fruit length (23.01cm), while the lowest (7.76cm) in the genotype SML-8. Thus range of fruit length was in between 7.76cn to 23.01cm with a general mean of 14.25cm. Further the genotype SML-5 was significantly superior over all other genotypes. The genotypes SML-1, SML-3, SML-9, SML-11 and SML-13 had higher value of fruit length than population mean of 14.25cm The variation in above characterswas also reported by Mahaveer*et al.* (2004), Thapa*et al.* (2005), Maharana*et al.* (2006), Mishra *et al.* (2008) in brinjal genotypes.

Breadth of fruit was significantly varied among all the brinjal genotypes under study. The data regarding on breadth of fruit in brinjal genotypes revealed that the breadth of fruit was varied significantly among all the genotypes. The genotype SML-5 recorded significantly the highest fruit length (23.01cm)However, the genotype SML-8 showed the longest fruit breadth (8.03cm) and was at par with the genotype SML-10 (7.43). The shortest fruit breadth was noticed in the genotype SML-5 (3.88cm) with mean of 5.39cm. Above population mean the genotypes SML-3 (5.39cm), SML-9 (10.73cm), SML-10 (7.43cm), SML-11 (5.46cm) and SML-13 (5.93cm).recorded the more fruit breadth.Significant variation in above character was also observed by Rajput *et al.* (1996) Ashwani and Khandelwal(2003) in brinjal.

The data presented in Table2 revealed that brinjal genotypes under study show the variation in shape of fruit. The genotype SML-2, SML-4, SML-6, SML-7 and SML-12 produce the medium oblong fruits, while the genotypes SML-3, SML-11, SML-9 and SML-13 had the oblong fruits. The oval shape fruits were observed in the genotypes SML-8 and SML-10. Further the genotype SML-1 and SML-5 had the long shaped fruits.Similar results regarding the variation in shape of the fruits were reported by Yadav (1996) and Singh *et al*. (2007) in different brinjal genotypes.

The data presented in Table 2 showed wide variation in fruit colour among the different brinjal genotypes under study. The fruit colures *viz* green, green with whitish stripes, green with purplish strips, purple, dark purple were observed in most of the brinjal genotypes. The green colour was observed in the genotypes SML- 4 and SML-6, whereas green coloured fruits with whitish stripes were observed in the genotypes SML-2 and SML-8. The genotypes SML- 5, SML-7, SML-12 and SML-10 were of green coloured having purplish strips whereas the dark purple colour was observed in SML-1, SML-9 and SML-13. Whitish Purple coloured fruits were noticed in the genotype SML-3 and SML-11. The variation in brinjal fruit colour was also noticed by Yadav (1996) and Singh *et al*. (2007).

B) Flowering Parameters

It is observed from the data presented in Table 3 that days for initiation of flowering ranged in between 40.90days and 64.40days with general mean of 51.03days. The genotype SML-5 recorded significantly the earliest flowering (40.90days) than all other genotypes under study. The genotype SML-9 had produced the latest flowering (64.40days). Further, the genotypes SML-5, SML-10, SML-11, SML-12, and SML-13 had recorded less number of days for first flowering than general mean of 51.03day.Above findings regarding to variation in first flowering in different brinjal genotypes are in conformity with Singh and Choudhary(1987-88), Ashwani and Khandelwal (2003) and Mahaveer et al. (2004).

The days for fifty per cent flowering among thirteen brinjal genotypes varied significantly from 50.80 days to 77.80 days with a general mean of 62days. Significantly the earliest fifty per cent flowering was noticed in the genotype SML-5 (50.80 days) and was superior over all other genotypes under study. The latest fifty per cent flowering was observed in the genotype SML-9 (77.80 days). Further, the genotypes SML-5, SML-8, SML-11, SML-12 and SML-13 reported less number of days for fifty per cent flowering than population mean of 62.82days. Thus the genotype SML-5 was found to be earliest in fifty per cent flowering. Above result was conformity with the findings of Rajput *et al.*, (1996), Sharma and Swarup, Shafeeq*et al.* (2007), Mishra *et al.* (2008) reported in brinjal genotypes.

It was revealed from the data presented in table 3 that the number of days from flowering to fruit set ranged in between 6.10days and 9.05days with mean 7.74 days. The genotype SML-5 recorded less number of days (6.10 days) from flowering to fruit set and was significantly superior over all other genotypes except the genotype SML-3 (6.70 days).However the genotype SML-9 reported the highest number of days (9.05 days) from flowering to fruit set. Further the genotypes SML-3, SML-4, and SML-13 required less number of days for flowering to fruit set than the general mean (7.740 days).The variation in above characteristic was also observed by Singh and Gopalakrishnan (1999), Mahaveer*et al.* (2004) in brinjal. It is revealed from the data presented in Table 7 that the days from fruit set to harvesting among thirteen brinjal genotypes varied significantly.Days from fruit set to harvesting varied in between 12.70 days and 19.10 days with 15.75 days general mean. The lowest number of days required from fruit set to harvesting was observed in the genotype SML-5 (12.70days) and was at par with the genotype SML-3, while the genotype SML-9 reported the highest number of days(19.10days) from fruit set to harvesting. Further the genotypes SML-1, SML-3, SML-4 SML-6 and SML-13

4. Conclusion

Thus, from the results obtained and analyzed during the present investigation, it was concluded that all these thirteen genotypes of brinjal differed significantly for most of the

physical fruit characters under study. The fruit shape varies from long to oval to oblong in shape. The fruit colures *viz* green, green with whitish stripes, green with purplish strips, purple, dark purple were observed in most of the brinjal genotypes. All the flowering parameters varied significantly among all the brinjal types under study. The genotype SML-5 was found to be the earliest in initiation of flowering, fifty percent flowering, days required for flowering to fruit set and fruit set harvest.

Table1: Variation in fruit weight, length and breadth among brinjal genotypes

Sr. No.	*Genotypes*	*Weight of fruit (gm)*	*Length of fruit (cm)*	*Breadth of fruit (cm)*
1	SML-1	141.9	20.19	4.09
2	SML-2	78.2	12.38	4.68
3	SML-3	178.94	16.29	5.41
4	SML-4	75.9	9.87	5.06
5	SML-5	147.5	23.01	3.88
6	SML-6	56.14	12	5.11
7	SML-7	52.89	13.94	4.67
8	SML-8	175.1	7.76	8.03
9	SML-9	130.62	16.2	5.8
10	SML-10	175.55	8.28	7.43
11	SML-11	141.34	16.91	5.46
12	SML-12	73.73	13.31	4.56
13	SML-13	164.4	15.07	5.92
	Range	52.90 – 178.94	7.76 – 23.01	3.88 – 8.03
	Mean	122.5	14.25	5.39
	S.E. ±	9.57	0.46	0.65
	C.D.at 5 %	29.5	1.42	5.54

Table 2: Variation in colour and shape of fruits among brinjal genotypes

Sr.No.	*Genotypes*	*Shape of fruit*	*Colour of fruit*
1	SML-1	Long shape	Dark purple
2	SML-2	Medium oblong fruits	Green with whitish stripes
3	SML-3	Oblong fruits	Whitish-purple
4	SML-4	Medium oblong fruits	Light green
5	SML-5	Long shape	Green with purplish strips
6	SML-6	Medium oblong fruits	Light green
7	SML-7	Medium oblong fruits	Green with purplish strips
8	SML-8	Oval	Green with whitish stripes
9	SML-9	Oblong fruits	Dark purple
10	SML-10	Oval	Green with purplish strips
11	SML-11	Oblong fruits	Whitish-purple
12	SML-12	Medium oblong fruits	Green with purplish strips
13	SML-13	Oblong fruits	Dark purple

Table 3: Flowering parameters as influenced by different types of brinjal

Sr. No.	*Treatments (Variety)*	*Daysfor initiation of flowering*	*Days for fifty % flowering*	*Days from flowering to fruit set*	*Days from fruit set to harvesting*
1	SML-1	52.80	63.80	7.50	15.60
2	SML-2	52.30	65.10	7.70	15.95
3	SML-3	52.50	65.90	6.70	13.75
4	SML-4	51.90	64.00	7.30	14.55
5	SML-5	40.90	50.80	6.10	12.70
6	SML-6	51.80	63.30	7.60	14.85
7	SML-7	52.70	65.70	8.50	17.15
8	SML-8	51.40	62.70	8.70	17.30
9	SML-9	64.40	77.80	9.05	19.10
10	SML-10	50.90	63.20	8.10	16.20
11	SML-11	50.10	62.40	7.70	16.00
12	SML-12	47.40	56.60	8.40	16.55
13	SML-13	44.30	55.40	7.3	15.00
	Mean	**51.03**	**62.82**	**7.74**	**15.75**
	S.Em. ±	0.63	0.69	0.21	0.39
	C.D. at 5%	1.96	2.13	0.66	1.22

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