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Short communication

Performance of banana cultivars in Gujarat

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ABSTRACT

Field experiments were conducted for three years to assess the performance and select the cultivar ideally suited to Saurashtra region in Gujarat. The cultivars evaluated were Basrai, Harichal, Robusta, Gros Michel, Gandevi Selection and Lacatan. Of these, Gandevi Selection proved superior, with regard to growth parameters, yield characters and its attributes. It also yielded the highest benefit cost ratio.

Key words: Evaluation, banana, cultivars, growth, yield

Banana is a major fruit crop of Gujarat state making up 17% of the total area under fruit crops and accounts for about 53% of the total fruit production in the state (Anon., 2007). Many varieties of banana are under cultivation in this region but no systematic studies have been conducted to screen them for high yield. Therefore, the present study was undertaken to evaluate improved cultivars of banana for their suitability for cultivation in Saurashtra region of Gujarat.

The present investigation was undertaken during the period 2000-06 at the Lalbagh Fruit Research Station, Department of Horticulture, Junagadh Agricultural University, Junagadh. Six varieties of banana viz., Basrai, Harichal, Robusta, Gros Michel, Gandevi Selection and Lacatan were evaluated in a randomized block design with three replications at a spacing of 1.8 x 1.8 m. Plants were grown with uniform cultural practices. Five plants of each variety in each replication were used for recording data on growth characters, duration of the crop, yield and quality parameters and statistically analyzed. The TSS was estimated using a hand refractometer and values were expressed in ^{o}Brix.

The pooled analyses of data of three season's trials are presented in Table 1, 2 and 3. Significant differences were observed among the different varieties for all characters studied except fruit girth. Significant variation in growth and yield of banana varieties was reported earlier by Singh *et al* (1996). The data on growth, flowering and maturity characters of different varieties of banana are given in Table 1. The results revealed that the maximum plant height (2.08 m) was recorded in Gandevi Selection which was on par with Gros Michel (2.07 m) while, the lowest plant height (1.71 m) was recorded in Basrai. Similarly, the highest stem girth (81.98 cm) was registered in Gandevi Selection which was again at par with Gros Michel (79.06 cm). The lowest stem girth (54.07 cm) was observed in Lacatan. Number of leaves per plant ranged from 24.43 in Gandevi Selection to 20.73 in Lacatan. Lacatan also

Table 1. Growth, flowering and maturity characters of different varieties of banana

Varieties	Plant height (m)	Stem girth (cm)	No. of leaves/plant	Days to flowering	Days to maturity
Basrai	1.71	65.04	20.74	307.25	398.00
Harichal	1.77	69.18	21.02	327.00	421.75
Robusta	1.90	71.56	21.72	303.08	404.92
Gros Michel	2.07	79.06	22.83	336.42	443.08
Gandevi Sel.	2.08	81.98	24.43	395.00	522.92
Lacatan	1.90	54.07	20.73	300.83	388.58
CD *(P=0.05)*	0.12	4.99	1.70	4.26	5.93
CV %	4.83	6.42	5.63	7.68	4.78
Y x T	NS	NS	NS	N S	NS

NS: Non-Significant

Table 2. Performance of different varieties of banana with respect to fruit yield and its attributes

Varieties	Yield (ton/ha)	Weight of bunch (kg)	No. of hands /bunch	No. of fingers /bunch
Basrai	40.20	13.04	7.77	85.67
Harichal	49.44	16.02	8.22	116.08
Robusta	46.85	15.18	7.62	104.68
Gros Michel	59.64	19.28	8.58	130.17
Gandevi Sel.	72.53	23.50	10.89	178.66
Lacatan	46.29	15.00	7.73	112.24
C D *(P=0.05)*	6.69	2.176	0.581	10.996
CV %	6.86	6.673	8.688	5.364
Y x T	N.S.	NS	N. S.	N.S.

NS: Non-Significant

registered minimum number of days to flowering (300.83) and days to maturity (388.58). At the other end of the spectrum, Gandevi Selection recorded the highest number of days to flowering (395) and days to maturity (522.92).

Evaluation of varieties for yield parameters (Table 2) revealed that Gandevi Selection recorded the highest yield (72.53 t/ha), heaviest bunch weight (23.50 kg), maximum number of hands (10.89 per bunch) and number of fingers (178.66 per bunch). The higher fruit yield in Gandevi Selection was due to heavier bunch weight and more number of hands and fingers. These results are in general agreement with earlier findings. Vijayaraghavakumar *et al* (1984) reported that number of fingers influenced the yield of banana directly. Kurian *et al* (1985) reported a strong positive correlation of fruit yield with number of hands, number of fingers, number of leaves per plant, stem girth and total duration of the crop. On the contrary, Basrai recorded the lowest yield (42.25 t/ha), bunch weight (13.04 kg) and minimum number of fingers (85.67/bunch) as compared to other varieties.

Studies on fruit characters (Table 3) indicated that Robusta recorded the highest fruit weight (138.33 g) and length of fruit (21.67 cm) while, Gandevi Selection recorded the lowest fruit weight (117.88 g) and fruit length (18.59 cm). Fruit girth was found non-significant.

Evaluation of varieties for quality characters revealed maximum pulp to peel ratio and TSS (3.46 and 19.15%) in Gros Michel (Table 3). Pulp to peel ratio was the least (2.99) in Robusta and TSS was lowest in Harichal. The minimum (15.31%) weight loss due to ripening was observed in Basrai and the maximum (17.35%) was observed in Gros Michel.

The economics of cultivation under different varieties indicated that Gandevi Selection recorded the highest yield (72.53 t/ha) with the cost of cultivation of Rs.78,693/ha. The net income was Rs.1,38,897/ha, with a BCR of 1:2.77 which was the highest amongst all the varieties (Table 4).

Table 3. Fruit and quality characters of different varieties of banana

Varieties	Av. Fruit weight(g)	Fruit length (cm)	Fruit girth (cm)	Weight loss due to ripening (%)	Pulp skin ratio	TSS (%)
Basrai	133.83	20.47	13.05	15.31	3.13	18.78
Harichal	124.10	18.82	12.94	16.11	3.08	18.48
Robusta	138.33	21.67	13.05	15.96	2.99	19.01
Gros Michel	128.73	20.14	13.28	17.35	3.46	19.15
Gandevi Sel.	117.88	18.59	12.45	15.58	3.21	18.74
Lacatan	128.44	20.71	13.36	16.48	3.14	18.54
CD *(P=0.05)*	7.54	0.77	N. S.	N.S.	0.21	0.42
CV %	4.48	4.66	4.35	2.45	3.80	2.17
Y x T	NS	NS	NS	NS	NS	NS

NS: Non-Significant

Table 4. Economics of different varieties of Banana

Sl. No	Varieties	Yield of Banana(t/ha)	Total cost(Rs./ha)	Gross income(Rs/ha)	Net income(Rs/ha)	CBR
1.	Basrai	42.25	74064	126750	52686	1:1.71
2.	Harichal	49.44	74064	148320	74256	1:2.00
3.	Robusta	46.86	74064	140580	66516	1:1.90
4.	Gros Michel	59.46	74064	178380	104316	1:2.41
5.	Gandevi Sel.	72.53	78693	217590	138897	1:2.77
6.	Lacatan	46.30	74064	138900	64836	1:1.88

* The cost of planting materials, labour, fertilizers, irrigation, cultivation and other expenditure was considered to be Rs.24/- plant

* The market price of banana fruits was considered as Rs.3000/ton

Based on trials conducted over a period of three years, it could be inferred that Gandevi Selection was superior to the other varieties in terms growth characters, fruit yield and associated traits. Gandevi Selection also recorded the highest benefit cost ratio and therefore may be recommended for cultivation in the Saurashtra region of Gujarat.

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