Evaluation of Important Mango Cultivars of Diverse Origin for their Fruit Set Behaviour under Lucknow Conditions

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Twenty-six commercially important cultivars of mango were evaluated for fruit set in Lucknow conditions for 2 years. A wide range of variability was observed for fruit set behaviour. The cultivars like Amrapali, Chausa, Dashehri, Fazri, Banglora, Kishanbhog, Neelam exhibited satisfactory performance.

Key Words: Barren Panicles, Fruit Set, Mango Cultivars

Fruit set is one of the important factors affecting final yield of mango (Thimmappaiah and Suman, 1987). It is influenced by several factors like cultivars, pollination and weather conditions. Apart from these, mango cultivars exhibit eco-geographical dependence for growth, flowering and fruiting (Singh and Singh, 1988; Yadav and Rajan, 1993 and Singh *et al.*, 1994) and some of these may be erratic in fruiting under specific geographical locality and *vice versa.* Since, in India, more than a thousand cultivars are in existence and about 30 of these are grown on commercial scale, there is a scope for introducing suitable cultivars in a region, Therefore, before selecting suitable commercial cultivars for large-scale plantation or using them in breeding programme, study of their fruit set behaviour under the conditions where they are to be grown is of immense importance. The purpose of this study was to evaluate cultivars for their fruit set potential under Lucknow conditions.

Materials and Methods

The experiment was conducted during 1994 and 1995 at the Central Institute for Subtropical Horticulture, Rehmankhera, Lucknow, on full-grown trees of 26 important commercial mango cultivars (Table 1), representing various parts of the country. Hundred panicles of each cultivar were tagged before opening of the flowers. Observations on fruit set were recorded at 40 days after the mustard stage of the fruit. Data was recorded on percentage of barren panicles, fruit bearing panicles and number of normal fruits per panicles.

Results and Discussion

A wide range of variability was observed for fruit set behaviour in mango cultivars under Lucknow conditions. The analysis of variance recorded highly significant difference between cultivars for percentage of barren panicles, normal fruits/panicle and fruit set (%)

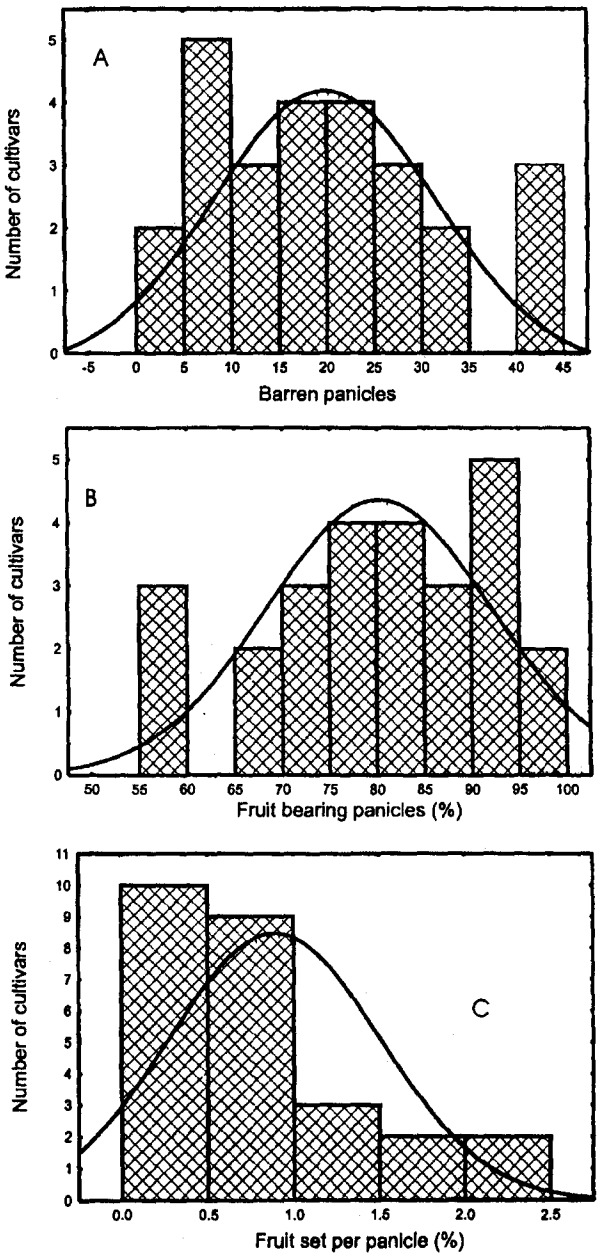

Fig. 1. Frequency distribution of A: barren panicles (%), B: fruit bearing panicle (%) and C: fruit set/panicle (%)

Table 1. Fruit set behaviour of some important Indian mango cultivars

Cultivar	Barren panicles (%)			Fruit bearing panicles (%)			Normal fruit set/panicle		
	1994	1995	Mean	1994	1995	Mean	1994	1995	Mean
Alphonso	72.75	8.00	40.38	27.35	92.00	59.63	0.20	0.35	0.28
Amrapali	11.00	12.75	11.88	89.75	87.00	88.38	2.03	2.08	2.05
Bangnapalli	65.50	19.50	42.50	34.50	80.00	57.25	0.20	0.75	0.48
Bangalora	32.00	0.00	16.00	68.00	99.75	83.88	0.70	1.23	0.96
Bombay	11.25	12.75	12.00	87.25	98.00	88.13	0.90	0.98	0.94
Bombay Green	19.50	0.00	9.75	80.75	100.00	90.38	0.40	1.38	0.89
Chausa	6.25	0.00	3.13	94.00	100.00	97.00	0.70	1.88	1.29
Dashehari	20.00	12.00	16.00	80.00	88.00	84.00	1.10	1.30	1.20
Fazri	11.50	8.00	9.75	88.50	92.00	90.25	1.23	2.70	1.96
Fernandin	65.25	20.00	42.63	34.50	80.00	57.25	0.30	0.68	0.49
Gulab Khas	22.75	16.00	19.38	77.25	84.00	80.63	090	1.05	0.98
Himsagar	14.00	0.00	7.00	86.00	100.00	93.00	0.70	1.25	0.98
Kesar	59.25	8.25	33.75	40.75	92.00	66.38	0.30	0.40	0.35
Khas Ul Khas	10.00	12.00	11.00	90.00	88.00	89.00	0.85	0.75	0.80
Kishan Bhog	6.00	0.00	3.00	92.00	100.00	96.00	2.10	2.85	2.48
Langra	25.00	24.00	24.50	75.25	786.00	75.63	0.50	0.13	0.30
Lucknow Safeda	0.00	12.00	6.00	100.00	88.00	94.00	0.60	0.53	0.56
Mallika	33.50	12.00	22.75	66.75	88.00	77.38	0.25	0.43	0.34
Mankurad	30.00	21.00	25.50	70.00	80.00	75.00	0.50	0.43	0.46
Mulgoa	7.00	7.50	7.25	93.00	92.50	92.75	0.50	1.48	0.99
Neelum 2	42.75	0.00	21.38	56.00	100.00	78.00	0.40	3.33	1.86
Nisar Pasand	47.00	4.25	25.63	53.00	96.00	74.50	0.40	0.14	0.27
Rataul	0.00	41.00	20.50	100.00	59.00	79.50	0.50	0.65	0.58
Suvernrekha	40.50	19.75	30.13	59.25	72.00	65.63	0.30	0.45	0.38
Vanraj	47.75	8.00	27.88	52.25	92.00	72.13	0.38	0.12	0.25
Zardalu	34.00	4.00	19.00	66.00	96.00	81.00	1.00	1.03	1.01
Mean	28.02	11.15	19.59	71.84	88.61	80.23	0.68	1.09	0.88
CD (5%)	3.98	2.81	2.46	4.55	4.40	3.23	0.25	0.19	0.15
Minimum	0.00	0.00	3.00	27.25	59.00	57.25	0.20	0.12	0.25
Maximum	72.75	41.00	42.63	100.00	100.00	97.00	2.10	3.33	2.48
SD	21.43	9.59	11.71	21.40	10.00	11.87	0.49	0.86	0.61
SE	4.20	1.88	2.30	4.20	1.96	2.33	0.10	0.17	0.12
Skewness	0.61	1.20	0.53	-0.61	-1.17	-0.54	1.75	1.20	1.17
Kurtosis	-0.66	2.44	-0.51	-0.66	1.80	-0.60	3.10	0.88	0.73

(Table 1). It is clear from Fig. 1A that 3 cultivars have 40-45% barren panicles whereas 5 cultivars have 5-10% barren panicles. This shows the suitability of these cultivars under the evaluation conditions. Fig. 1B exhibited that there are good number of cultivars with high percentage of fruit bearing panicles. Fruit set/ panicle was more than 1% in 7 cultivars whereas 9 cultivars had 0.5-1% fruit set. Ten cultivars exhibited poor fruit set (>0.5%).

During the investigations on 26 important mango cultivars, it was observed that the percentage of barren and fruit bearing panicles varied year to year. This may be due to erratic weather conditions in some of the years at the time of flowering. In 1994, the highest percentage (72.75%) of barren panicles was recorded in Alphonso followed by Bangnapalli (65.50%) and Fernandin (65.25%) whereas during 1995 it was more in Ratoul (41.00%). Mean value of both the years indicated that the Fernandin (42.63%), Bangnapalli (42.50%) and Alphonso (40.4%) produced the highest percentage of barren panicles. Maximum number of fruit bearing panicles (100.00%) was recorded in Lucknow Safeda and Ratoul during 1994 but in 1995 it was 100.00% in Bombay Green, Chausa, Himsagar, Kishanbhog, Neelam and Bangalora. Mean value showed that the cultivar Chausa produced the maximum percentage (97.00%) of fruit bearing panicles followed by Kishanbhog (96.00%) and Lucknow Safeda (94.00%) and was less in Bangnapalli (57.25%) and Fernandin (57.25%). The highest percentage of normal fruit set/panicle was observed in Kishanbhog (2.48%) followed by Amrapali (2.05%), Fazri (1.96%) and Neelum (1.86%) and it was least in Vanraj (0.25%. These results are in support with the findings of Singh *et al.* (1994) and Yadav and Rajan (1993). The study showed that, in general, varieties from western India like Alphonso and Vanraj exhibited poor fruit set under Lucknow conditions. The variation in fruit set and yield due to change locality was also reported by Macioas Gonzalez and Hernandez (1986), Thimmappaiah and Suman (1987) and Singh and Singh (1988).

The study indicated that profuse flowering is not the only pre-requisite factor for high yield but the extent of fruit set is also important. Thus, the trees bearing large number of panicles may not set satisfactory number of fruits under some of the geographical area due to poor adaption. The cultivars like Amrapali, Chausa, Dashehari, Fazri, Bangalora, Kishanbhog, Neelam exhibited satisfactory fruit set as well as less number of barren panciles under Lucknow conditions. Out of these cultivars, Kishanbhog, Bangalora and Neelum are not commonly grown under Lucknow conditions but exhibited their potential for fruit set and they can yield a good crop.

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