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Effect of Paclobutrazol on Fruiting Behaviour of Mango

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Paclobutrazol, a broad-spectrum gibberellin and strolbio-synthesis retardant a thousand times more potent than chlornequat chloride, ensure regular, early and heavy fruiting in mango. Paclobutrazol was used @2.3 g PBZ per metre tree canopy spread radius in soil drip for the control of alternate bearing. It not only induced early flowering but increased number of fruit on each tree, yield, specific gravity and decreased fruit weight, fruit volume and fruit size.

The productivity of mango orchards throughout the country is low and stagnant, around 8 tonnes per hectare, even though 65 per cent of the world mango harvests are reaped in India. This is mainly because of alternate and shy-bearing in most commercial varieties like Dashehari, Langra, Chausa and Bombay Green of North india. Some growth regulators viz. Cycocel, Alar, KNO_3 and Ethrel, have induced flowering in mango at certain locations (Maiti *et al.*, 1972 and Chacko *et al.*, 1972 a) but application of these compounds at other locations have failed to be of any practical importance (Ram *et al.*, 1976). Hence, an experiment was conducted to induce flowering and fruiting in mango by early application of PBZ in soil drip.

The experiment was carried out during 1994-95 on uniformly bearing mango trees (16-17 years) on Dashehari, Langra, Chausa and Bombay Green to find out the effect of early application PBZ on vegetative growth and flowering. Paclobutrazol was applied on 25 August 1994 @2.3 g PBZ per metre tree canopy spread radius in soil drip followed by spraying of 1.5% KNO_3, on 25 October, 1994. The aqueous suspension of PBZ for treatment were prepared by adding desired quantity of 23% cultar in 7 litre of water. Each treatment was applied on one tree and replicated thrice.

The observations recorded were subjected to statistical analysis by using Randomized Block Design. Valid conclusions were drawn only on significant difference between the treatment mean at 0.05 level of probability (Cochran and Cox, 1959). In order to compare treatment means, critical difference were calculated.

Flowering

Data on per cent flowering in (Fig. 1 A, B, C, D) show that PBZ treatment in 25 August induced early flowering. In cultivar Dashehari 20 days early flowering occured. However, in Langra not only 20 days flowering occurred

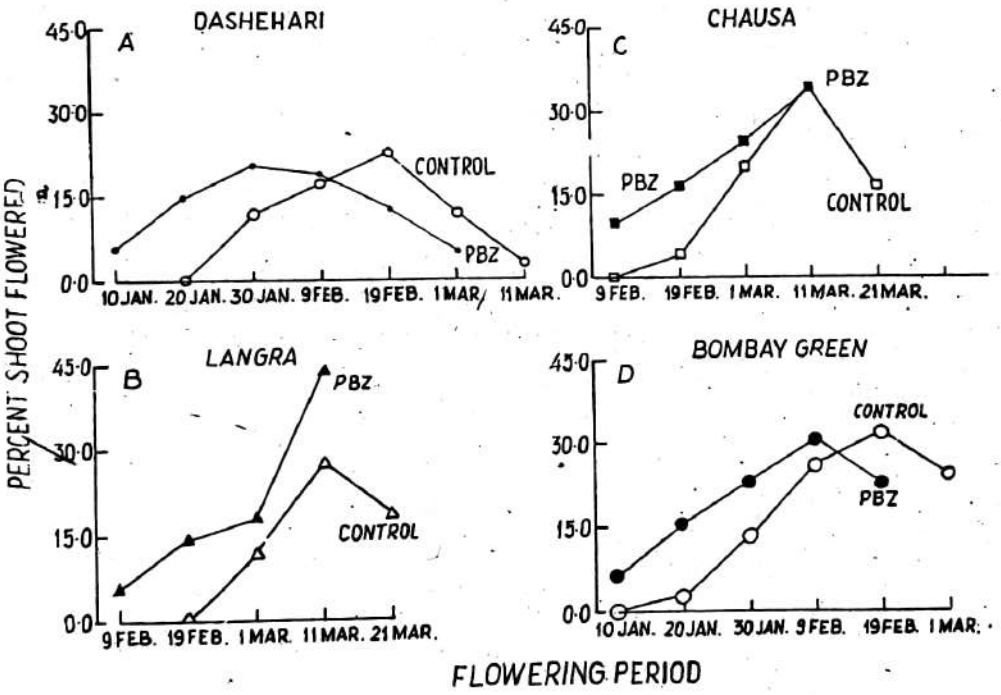


Fig. 1 : Response of PBZ on flowering of mango cvs. Dashehari (A) Langra (B) Chausa (C) and Bombay Green (D) when 16-17 year old trees were treated with 2.3 g PBZ per meter tree canopy spread radius followed by spraying of 1.5% KNO3.

TABLE 1

Effect of paclobutrazol treatment on fruit set, fruit growth and yield.

Treatment	Initial fruit set (1st week of April)	Fruit set at pea stage (2nd week of April)	Mature fruit/ panicle	No. of fruit/ tree	Yield (kg/ tree)	Fruit weight (g)	Fruit volume	Soecific gravity	Length of fruit (cm)	Width of fruit (cm)
Dashehari – Control	43.00	13.66	1.33	145.00	56.66	275.33	269.33	1.01	11.26	7.03
Dashehari – 2.3 g PBZ/m tree canopy spread radius	48.00	16.00	2.33	191.66	74.00	259.00	253.66	1.01	9.93	6.30
Langra – Control	38.00	14.33	1.33	181.66	66.00	286.33	280.00	1.01	9.37	8.20
Langra – 2.3 g PBZ/m tree canopy spread radius	43.33	16.33	2.00	219.00	87.66	250.66	244.00	1.02	8.93	7.30
Chausa – Control	41.33	13.33	1.66	120.66	38.66	277.66	262.00	1.01	11.98	6.90
Chausa – 2.3 g PBZ/m tree canopy spread radius	44.66	15.33	2.33	155.00	56.00	249.66	246.66	1.01	11.17	6.13
Bombay green – Control	42.00	11.66	1.33	190.33	33.66	271.66	267.66	1.01	7.05	7.43
Bombay Green – 2.3 g PBZ/m tree canopy spread radius	47.00	14.33	2.00	280.66	49.33	288.00	282.66	1.01	8.18	8.00
Treatment	3.544	1.694	NS	9.875	7.382	12.683	12.411	0.0047	0.621	0.338
C. D. at 5% cultivar	NS	NS	NS	23.510	NS	NS	17.552	NS	0.879	0.478
Interaction	NS	NS	NS	NS	NS	25.367	24.823	NS	NS	0.677

due to PBZ application but per cent flowering was also increased and flowering completed about 20 days earlier. Similarly in cvs. Chausa and Bombay Green induction and completion of 10 days earlier flowering was accomplished by paclobutrazol. Similar results were earlier reported by (Galila and El-Masry, 1991; Vuillaume, 1991).

Fruit set and yield

Data on fruit set and yield are reported in Table 1 show that PBZ increased fruit set in all the cultivars without much of cultivar difference. Interaction between cultar and cultivars were not significant. Paclobutrazol increased number of fruits on each tree, yield, specific gravity and decreased fruit weight, fruit volume and fruit size without any effect on number of mature fruits per panicle. Difference between cultivars occurred due to paclobutrazol application on fruit number per tree, yield fruit volume and size of fruit., Kulkarni (1988) reported that soil drench of 10 g paclobutrazol per tree increased 1.6% fruit yield and similar increased in yield were also reported (Kurian and Iyer 1993).

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