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Effect of chemicals and growth regulators on fruit retention, yield and quality of mango cv. Amrapali

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Mango *(Mangifera indica* L), belongs to *Anacardiaceae* family, is the world's most luscious fruit has been recognized as the 'King of fruits' in India long back. Inspite of profuse flowering and very high fruit set, the ultimate retention and marketable produce of mango is phenomenally low primarily due to heavy fruit drop. Three distinct phases of fruit drop in mango are pin head drop, post setting drop and May drop (Chadha and Singh, 1964). Fruit drop can be significantly controlled by the plant growth regulators (Anila and Radha, 2003). Keeping these views in mind the present investigation was carried out to study the effect of chemicals and growth regulators on fruit retention, yield and quality of mango cv. Amrapali.

The field experiment was conducted in the year of 2005-06 at Central Research Farm, Bidhan Chandra Krishi Viswavidyalaya, Gayeshpur, Nadia, West Bengal to study the efficacy of. chemicals and growth regulators in controlling fruit drop and their effect on yield and fruit quality of five years old mango cv. Amrapali. The experiment was laid out in randomized block design with nine treatments, which were replicated thrice. The treatments were as follows-NAA at 25 ppm (T_1), NAA at 50 ppm (T_2), 2,4-D at 10 ppm (T_3), 2,4-D at 20 ppm (T_4), $ZnSO_4$ at 0.5% (T_5), $ZnSO_4$ at 0.75% (T_6), KNO_3 at 0.5% (T_7), KNO_3 at 0.5% (T_8), and control *i.e.* water spray (T_9). Two sprays were applied, one at pea stage and other at marble stage.

The chemicals and growth regulators showed significant influence on the fruit retention and yield of mango cv. Amrapali over control. Application of NAA at 50 ppm recoded maximum (9.85%) fruit retention per panicle followed by 2, 4-D at 10 ppm. The plants received the treatment of NAA at 50 ppm produced highest number of fruits per plant and yield (88/plant and 16.24 kg/plant) followed by 2, 4-D at 10 ppm and NAA at 25 ppm. These findings are in conformity with the findings of Khan *et al.* (1993). Whereas, plants without application of chemicals and growth regulators recorded minimum fruit retention per panicle at harvest, number of fruits harvested from plant as well as yield per plant followed by KNO_3 at 0.5% (Fig.1).

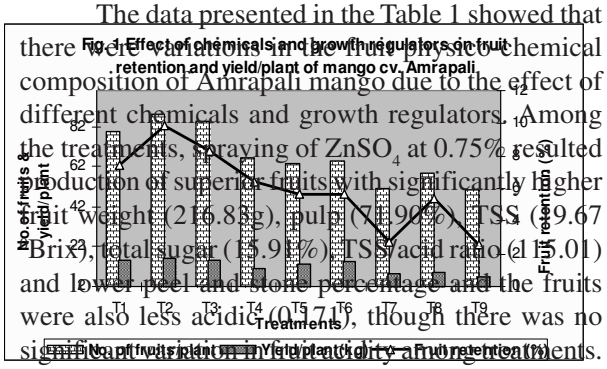

Fig. 1 Effect of chemicals and growth regulators on fruit retention and yield/plant of mango cv. 'Amrapali'

The data presented in the Table 1 showed that there were variations in the fruit physico-chemical composition of Amrapali mango due to the effect of different chemicals and growth regulators. Among the treatments, spraying of $ZnSO_4$ at 0.75% resulted production of superior fruits with significantly higher fruit weight (216.85g), pulp (71.90%), TSS (19.67 °Brix), total sugar (15.91%), TSS/acid ratio (115.01) and lower peel and stone percentage and the fruits were also less acidic (0.171), though there was no significant variation in fruit acidity among treatments. Banik and Sen (1997) obtained highest individual fruit weight with the application 0.4% Zinc. Spraying of $ZnSO_4$ at 0.5 % also recorded higher values regarding quality parameters of fruits. The control plants receiving water spray produced poor quality fruits followed by plants sprayed with KNO_3 at 0.5%.

It is concluded that exogenous application of NAA at 50 ppm at pea and marble stage of fruit growth was beneficial in improving the fruit retention and yield of mango cv. Amrapali while, $ZnSO_4$ at 0.75% resulted in production of superior fruits.

Short Communication

Table 1. Effect of chemicals and growth regulators on physico-chemical composition of mango cv. Amrapali

Treatments	Fruit weight (g)	Pulp (%)	Peel (%)	Stone (%)	TSS (^{0}Brix)	Total sugar (%)	Reducing sugar (%)	Acidity (%)	TSS/acid ratio
T_1	193.33	68.60	15.17	16.22	18.67	15.00	4.72	0.197	94.76
T_2	184.16	68.44	14.96	16.59	18.47	14.82	4.67	0.254	75.31
T_3	184.16	68.29	15.12	16.58	18.13	14.20	4.29	0.197	92.01
T_4	165.00	68.39	16.94	14.66	17.93	14.03	4.23	0.213	84.75
T_5	210.83	70.94	13.70	15.35	19.33	15.68	4.80	0.251	77.17
T_6	216.83	71.90	13.29	14.81	19.67	15.91	4.96	0.171	115.01
T_7	162.50	67.70	15.11	17.18	17.80	12.98	3.37	0.187	95.83
T_8	155.00	67.91	14.99	17.09	17.73	12.65	3.42	0.251	70.65
T_9	135.00	67.47	15.25	17.27	17.53	12.53	3.10	0.304	57.67
S. Em(±)	**8.597**	**0.251**	**0.139**	**0.165**	**0.193**	**0.289**	**0.19**	**0.12**	**-**
CD (P=0.05)	**25.771**	**0.752**	**0.417**	**0.496**	**0.578**	**0.866**	**0.567**	**NS**	**-**

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