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Studies on the effect of plant growth regulators and chemicals on flowering, fruit set and yield of mango (*Mangifera indica* L) cv. Banganpalli

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A set of two experiments on the effect of plant growth regulators (paclobutrazol at 3 ml.m^{1} canopy diameter, NAA at 80 ppm), flower enhancing chemicals (Ca $(NO_3)_2$ at 1%, H_3PO_4 at 0.5%, KH_2PO_4 at 1%) in combination with fruit set improving chemicals (spermidine at 0.01 mM, spermine at 0.1 mM, boron -20% at 1.25 gm.l^{-1}) on flowering, fruit set and yield of mango cv. Banganpalli, was conducted at Fruit Research Station, Sangareddy, Dr. YSRHU, A.P. In two experiments the design adopted is randomized block design with factorial concept with three replications per treatment. Various vegetative parameters like number of new flushes (number), internodal length (cm), flowering parameters like time taken for panicle initiation (days), days taken for 50% flowering and 100% flowering per cent of flowering (%), panicle length and panicle breadth (cm), and yield parameters like number of days taken for fruit set from panicle initiation (days), number of fruits. panicle-1 (number), number of fruits tree^{-1}, fruit weight (gm) and yield (kg tree^{-1}) were recorded.

In the first experiment mango cv. Banganpalli trees were sprayed with flower enhancing plant growth regulators and fruit set improving chemicals alone and in combinations. Trees applied with paclobutrazol alone significantly reduced the vegetative growth in terms of minimum number of new flushes and internodal length compared to control trees. Paclobutrazol alone and in combinations with fruit set improving chemical significantly minimized the number of days taken for panicle initiation and increased the number of days taken for 50% and 100% flowering, duration of flowering along with increase in percent of flowering, panicle length and breadth when compare to control trees. Significantly the highest fruits.panicle^{-1}, fruit. tree^{-1} and yield were recorded in paclobutrazol (42.17% over control) alone applied trees compare to control. Boron could able to significantly increase the fruit.panicle^{-1} and final retention of fruits and increased the fruit weight reflecting in the overall increase in yield by 37 percent. Among the combination, maximum increase in yield over control was recorded in paclobutrazol application along with spermidine (63.11%), NAA + spermidine (57.59%), NAA + boron (60.03%). However, based on benefit cost ratio spraying of NAA + Boron has give maximum benefit cost ratio of 3.06. Among the fruit set improving chemical boron either alone or in combination with NAA has recorded highest improvement in the yield.

In the second experiment mango cv. Banganpalli trees were sprayed with flower enhancing chemicals in combination with fruit set improving chemicals. Ca $(NO_3)_2$ applied trees has reduced significantly the number of new flushes and H_3PO_4 has significantly reduced the intermodal length. KH_2PO_4 and H_3PO_4 alone or in combinations with fruit set improving chemical significantly minimized the number of days taken for panicle initiation and increased the number of days taken for 50% and 100% flowering, duration of flowering along with increase in percent of flowering, panicle length and breadth when compare to control trees. Significantly the highest fruits.panicle^{-1}, fruit.tree^{-1} and yield were recorded in $Ca(NO_3)_2$ (29.81% over control) applied trees and spermidine (48.72% over control) applied trees alone compare to control. Spermidine alone could able to significantly increase the fruit.panicle^{-1} and final retention of fruits and increased the fruit weight reflecting in the overall increase in yield by 48.72%. Among the combination, maximum increase in yield over control was recorded in Ca $(NO_3)_2$ + spermidine (87.27%), H_3PO_4 + spermine (76.09%), KH_2PO_4 + Spermine (74.51%). However, based on benefit cost ratio, spraying of Ca $(NO_3)_2$ + spermidine has give maximum benefit cost ratio of 3.35.

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