

Impact of mulching and certain pre harvest treatments on growth and yield of mango (*Mangifera indica* L.) cv. ALPHONSO

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ABSTRACT

A field experiment was conducted during 2007-2008 at Horticultural College and Research Institute, Periyakulam with a view to study the growth and yield attributing characters of mango by the treatment combination of mulching with the pre harvest chemical sprays of calcium chloride, calcium nitrate, potassium sulphate and borax along with the bio inoculants which include *Pseudomonas fluorescens* FP7 (0.2%) along with chitin (0.5%) in mango. The treatments include mulching(dried leaves)(T₁), mulching + calcium chloride 2%(T₂), mulching + calcium chloride 4%(T₃), mulching + calcium chloride 6%(T₄), mulching + calcium nitrate 4%(T₅), mulching + potassium sulphate 1%(T₆), mulching + borax 1%(T₇), mulching + *Pseudomonas fluorescens* FP7(0.2%) + chitin (0.5%) 6 times at 15 days interval starting from 15 days before expected flowering + calcium chloride 1%(T₈) and control(without spray and mulching(T₉)). The treatment has been given to the experimental orchard 30 days prior to harvest. The results revealed that mulching along with spraying of one per cent potassium sulphate resulted in increased tree height, tree girth and tree spread in east -west and north-south directions, at vegetative, flowering and harvesting stages and earliest fruit harvest at 96 days. Highest number of panicles per square metre, highest fruit set per centage at pea berry stage and highest fruit retention was observed when mulching was done along with spraying of *Pseudomonas fluorescens* FP7 (0.2%) with chitin(0.5%) and one per cent calcium chloride.

Key words : Mulching, Mango, Bioinoculants, Pre harvest treatment

INTRODUCTION

Fruits are considered as protective and they play a significant role in human diet through the supply of required vitamins and minerals. Among the fruits, mango is one of the best fruit in the world market due to its excellent flavour, attractive fragrance, beautiful colour, delicious taste and health giving properties. Hence, it is popularly called as 'King of fruits'. One medium sized mango of 200 g provides more than daily requirement of Vitamin A of an adult and three fourth requirement of Vitamin C. India continues to be the largest mango producing country of the world, with total production of 140 million tones. The serious threat imposed to the per capita availability of fruits is their perishable nature and consequent post harvest loss stretching to the tune of mango 20-50 per cent of the horticultural produce. Post harvest loss in mango fruits starts from pre harvesting stage followed by harvesting, handling, cleaning, transportation, storage, packing, processing and marketing. The growth and development of the fruit along with its shelf life largely depends upon the initial growth of the plant. Diseases often are the most important constraint to the production of tropical fruit. They indirectly reduce yields by debilitating the plant and directly reduce the yield of fruit before it could be recognized and managed. Dry spells during flowering and early fruit development stages, adversely affect the fruit yield. Therefore, application of mulches on soil surface may be a viable option for better

soil health. Hence, pre harvest treatments using chemicals in combination with mulching were applied to study their effect on the growth and yield attributing characters in mango.

MATERIALS AND METHODS

The material of the present investigation consisted of mulching, bio inoculants and chemicals as pre harvest field sprays, for increasing the yield and yield attributing characters in mango (*Mangifera indica* L.) cv. ALPHONSO. The experimental field was raised in a Randomized Block Design with four replications. The chemicals used as pre harvest field spray comprised of calcium chloride 2, 4 and 6 per cent, calcium nitrate 4 per cent, potassium sulphate 1 per cent and borax 1 per cent wherein *Pseudomonas fluorescens* FP7(0.2%) along with chitin (0.5%) were used as bioinoculants. Observations were recorded on various growth characters such as tree height, tree girth and tree spread. The yield attributing characters in the study included fruit set percentage, fruit retention at harvest, number of panicles produced on one square meter canopy area, number of days to harvest from fruit set, individual fruit weight, individual fruit volume, yield per tree and number of fruits per tree. Tree height was measured from the base to the top most growing point using measuring tape and expressed in m. The tree spread was recorded using a measuring tape in both east-west and north-south

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