

Effect of pruning and paclobutrazol application on yield and quality of mango (*Mangifera indica* var. Neelum)

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ABSTRACT

A field experiment was conducted during 2008-2009 at Horticultural College and Research Institute, Periyarkulam with a view to rejuvenate the senile mango orchard by subtending different pruning intensities such as 'severe pruning' and 'light pruning' with soil application of paclobutrazol to induce good yield and fruit quality in forty years old unproductive orchard. Results revealed that the fruit yield and its components namely fruit size and number of fruits harvested per tree were improved significantly by the application of paclobutrazol in both types of pruning. The treatments involving 'severe pruning' with addition of paclobutrazol resulted in greater fruit size, whereas the treatment involving 'light pruning' with addition of paclobutrazol accounted for higher number of fruits harvested per tree. The fruit quality assessed in terms of total soluble solids, total sugars, reducing sugars, non-reducing sugars, ascorbic acid and carotenoid content were also enhanced substantially when treated with paclobutrazol in both 'severe' and 'light' pruning treatments during main and off season. The physiological loss in weight was also found to be lowest in treatments involving 'severe pruning' with addition of paclobutrazol.

Key words : Paclobutrazol, Pruning, Mango, Main season, Off season

INTRODUCTION

India continues to be the largest mango producing country of the world, accounting for more than 50 per cent of the world production. It is grown in about 1.60 million hectares with an annual production and productivity of 10.78 million tonnes and 8.71 tonnes per hectare, respectively. Rejuvenation of old and senile orchards has become the need of the hour to counteract the problem of lower productivity through pruning technology. The judicious use of growth retardants particularly paclobutrazol enhances early panicle emergence and also enable the trees to produce shorter and compact panicle, with more number of hermaphrodite flowers which results in more of fruit set. Pruning along with paclobutrazol application can induce off-season bearing during October-November in the variety 'Neelum'. Hence, the present study was undertaken to study the influence of different pruning intensities and paclobutrazol application on yield and quality of mango var. Neelum.

MATERIALS AND METHODS

The material of the present investigation consisted of pruning and paclobutrazol application of the mango trees. The pruning treatment *i.e.*, 'severe and light pruning' were enforced in the trees from the first week of September. Severe pruning includes removal of all foliage above a height of 5 m above the ground level and light pruning includes heading back of all scaffold branches up to 100cm. Soil drenching of paclobutrazol was done in

March by dissolving required quantity of paclobutrazol in 3-5 litres of water and this solution was poured in the root zone along the drip circle after making holes using crow bar. Observations were recorded on twelve qualitative and quantitative characters of the fruit collected from the old trees treated with various treatment combinations *viz.*, severe or light pruning along with or without application of paclobutrazol at varying doses level *i.e.*, 1.5 g a.i.(gram active ingredient) per tree and 2.3 g a.i. per tree, no pruning with paclobutrazol application @ 1.5 g a.i. per tree and 2.3 a.i. per tree, respectively and no pruning with water spray alone. Observations were recorded for main and off seasons on number of fruits, fruit weight, fruit yield in kilogram(kg) per tree, physiological loss in weight(per cent), shelf life (days), Total soluble solids(TSS °Brix), total sugars, reducing and non reducing sugars, titrable acidity, ascorbic acid and carotenoid content. Total sugars, reducing and non reducing sugars in fruits were estimated as per the method suggested by Somogyi(1952) and ascorbic acid and titrable acidity as per the methods suggested by A.O.A.C.(1975). Data collected on yield and quality attributes were subjected to statistical analysis as per the method suggested by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

The highest total number of fruits harvested per tree (122.50) during off season was registered in trees treated with light pruning and soil application of paclobutrazol

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