

Effect of paclobutrazol on growth, picking maturity and storage behaviour of red delicious apples

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ABSTRACT

Soil application of Paclobutrazol decreased the tree limb girth, shoot extension, length, breadth, L/D ratio, pedicel length, acidity and ascorbic acid of fruits. Fruit Anthocyanin, total soluble solids, organoleptic rating and fruit calcium was increased by the increasing dose of Paclobutrazol. Paclobutrazol slightly advanced the dates of leafing, first bloom, king bloom, petal fall and pea nut stage. Return bloom was significantly increased.

Key words : Paclobutrazol, Growth, Maturity, Apple.

Paclobutrazol, commercially known as PP333, is a new growth retardant. PP333 interferes in plants via gibberellin biosynthesis and is sterol inhibitor (Leopold, 1971). Greene (1986) reported that application of 1500 to 3000 ppm of PP333 to Golden Delicious apples at full bloom and 21 days after resulted in the reduction of shoot growth, fruit size and increased flesh firmness. Stinchcombe *et al* (1984) observed that application of 1000 to 2000 ppm PP333 delayed flowering, enhanced fruit set and yield of Michelin cultivar of apple.

The post harvest characteristics of apple are known to be influenced by many pre-harvest factors viz; soil type, root stock, age of tree, management practices, foliar sprays of nutrients and plant growth regulators etc. Pre-harvest drop, uneven maturity, poor red colour development at fruit maturity, excessive loss of fruit tissue firmness and fruit quality deterioration during and after storage are problems typically associated with "Red Delicious Apple" which by and large is predominantly grown in Jammu and Kashmir.

Keeping in view the importance of the post harvest characteristics of the apple fruit and management of growth parameters of the trees, the present study on "Effect of Paclobutrazol on growth and picking maturity of 'Red Delicious' cultivar of apples" was undertaken.

MATERIALS AND METHODS

The present study was carried during 2001-2002 on the experimental orchard of Pomology Division, SKUAST-K, Shalimar, Srinagar. Treatments were given during the two years consecutively and fruits from the

experiment were used to study various physico-chemical parameters at harvest (and during storage period up to 28 days at weekly intervals under ambient temperature).

Paclobutrazol was applied as a soil drench around the tree away from trunk under the canopy area, previously hoed and weeds cleared. The treatments were 0, 125, 250 and 375 mg.

Trunk diameter increment of tagged limbs was computed by subtracting their values at Spring and at leaf fall measured 10 cm away from the proximal end and expressed in mm. Date of petal fall was taken at about 80% of the petals had fallen. Starch Iodine rating was done on 1-6 scale at 160 days from full bloom and was worked out by dipping the cut halves of apple fruits in 1 percent Kg solution at the time of harvest.

Days taken to leaf fall from reference date as 1st April were visually assessed when about 90% leaves had fallen. Fruit parameters like Firmness, TSS, Acidity, Vitamin C and Anthocyanin contents were calculated as per standard methods. Other fruit parameters premature fruit drops was calculated by counting after June drops the fruit dropped on each selected limbs on alternate days till the time of picking and the cumulative drop of each treatment calculated.

Organoleptic rating of fruits on 1-5 rating scale was done by a panel of judges for their taste, flavour, texture, crispness and colour. The rating of 1,2,3,4 and 5 were considered as 'poor', 'fairly good', 'very good' and 'excellent' for consumption, respectively.

PLW of fruits was calculated by subtracting the weight of randomly selected fruits from each treatment at weekly intervals and repeated up to 28 days, the values obtained were averaged and PLW of fruits stored under