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## Induction of lateral branches in red delicious apple

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**Abstract :** A study was carried out to determine the spontaneous growth and lateral branch induction of Red Delicious apple cultivar on MM-106 rootstock through application of various doses of benzyladenine alone; benzyladenine and pinching; and benzyladenine followed by application of gibberellin. There were significant differences between number of laterals, length of branches, total branch growth and greatest crotch angle in the plants treated by BA in the early spring followed by a dose of GA at 15 days interval as compared to control. Pinching treatments had no significant affect on branching.

**Key words :** *Malus domestica* Borkh, Growth regulators, Lateral branch, Nursery trees, Crotch angle

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The goal of the high density orchard systems is to ensure that the plants start bearing fruits as early as possible so as to overcome the extremely high investment in planting the orchard. The best possible way to ensure this is by planting of branched (feathered) trees in the orchard. Feathers provide sites for the first spur blossom clusters and also the primary limbs for future structure of the tree (Preston, 1968; Quinlan, 1980). Feathered trees as such on dwarfing series of rootstocks are high yielding than whips during the initial years of the orchard (Van Oosten, 1978; Quinlan, 1980) and the economic benefits can be significant (Ferree and Rhodus, 1987). The number of lateral branches provides the opportunity to have a good architected plant for future. In addition, the height, location and angle of laterals provide early and higher yields (Barrit, 1992; Hrotko *et al.*, 1996). An ideal well feathered tree should have at least five branches of more than 20cm in length.

Lateral branches can be induced at desired height in the nursery by overcoming apical dominance. Various combinations of growth regulators and different timings of spray have been used overseas by scientists with fair amount of success (Werthein, 1978; Cody *et al.*, 1985;

Popenoe and Barritt, 1988).

Most of the nurseries in Kashmir valley supply trees to orchardists as 'un-branched whips'. The predominant variety of the valley, 'Red Delicious', because of strong apical dominance forms only few laterals. For other varieties, such as Golden Delicious and Gala, the branches which are formed are of least value as they tend to develop on the trunk near to the ground. A number of new orchards in the valley are being planted on size controlling rootstocks and as such the present study to compare several methods and combinations of nursery treatments to induce lateral branches was conducted to enhance the profitability of the high density orcharding.

### RESEARCH METHODS

The experiment was conducted on the pre-dominant apple variety of the valley 'Red Delicious' on MM-106 dwarfing apple rootstock in the experimental plots of the Division of Pomology, S.K. University of Agricultural Sciences and Technology of Kashmir, Shalimar, India. The soil profile is clay and loamy soil.

The rootstocks were planted in early spring of 2006 and were planted at 1.0x0.1m spacing. Uniform 1 year