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A Review :

Control of height through growth retardants in fruit trees

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In the high density plantation of fruit crops, controlling tree vigour and canopy size are important for enhancing the orchard efficiency and productivity without causing injury to plants. Out of several strategies suggested, use of rootstocks and chemical growth retardants has been found to modify growth, development and increased yield in a number fruit crops. Although dwarfing rootstocks can reduce scion vigour but because of disadvantages like high establishment and management costs and poor anchorage, associated with scions on dwarfing rootstocks, the use of growth retardants may dramatically reduce shoot growth. The response varies with chemical, rate of application, timing, cultivar and vigour.

Even though the problem of controlling tree height in fruit crops is existing from a long era, the situation has become acute and alarming because of growing demand for more fruits as a consequence of increasing population and growing knowledge about the advantages of fruits. The pressure on farmers to produce more fruits per unit area is also visible. The control of plant and organ size can be of great importance in agriculture particularly horticulture. If maximum weight, length, or diameter affects final yield, then an increase in size is desirable. On the other hand, if it would be of commercial benefit, it may be important to be able to reduce the overall size of the plant. High density orchard planting may be possible if a non-noxious plant growth regulator is used to limit vegetative growth.

Tree height can be controlled by two ways :

- Physiologically based methods.
- Horticultural or cultural practice methods.

Physiologically based technique includes use of root stocks, scion, cultivar and tree density. Horticultural control methods include irrigation methods, crop load adjustment, fertilization practices, pruning technique and chemical growth regulators.

Rootstocks, both clonal and seedling origin provide a host of advantages including controlling tree vigour. These root stocks are extensively used in apple, pear, cherry and other temperate fruits. Spur type varieties of apple, peach and sweet cherry are also available. However, these methods of controlling tree height have few disadvantages like all these measures are determined at the time of planting of an orchard. Further more, control of vegetative growth may be inadequate and not satisfactory.

Pruning technique and growth regulators are most commonly used for specific problems of excessive vegetative growth because of their quick effects, ease in application and the desired degree of control.

Chemical control of tree height in fruit trees has played a leading role in recent years which has lead to increase in yield. This can be achieved by certain growth regulators which can alter the distribution of dry matter within the plants so as to increase the economic yield and also enable the plants to adapt to adverse conditions. They can, in effect alter plants growth in a way that virtually converts it to another variety (Mehrotra and Singh, 1972)

Important terms :

Plant hormones :

These are organic compounds other than nutrients, produced by plants which at low concentrations (below 1µ molar)