Available online at
www.agrospheresmagazine.vitalbiotech.org

ISSN (E): 2582 – 7022

Agrospheres:e-Newsletter, (2022) *3*(3), 30-33

Article ID: 362

Pruning of Fruit Plants

Devi Darshan[1*] Jitendra Kumar Shukla[2] and Saurabh Yadav[3]

[1,3]Research Scholar, Punjab Agricultural University Ludhiana Punjab- 141004
[2]Research Scholar, Department of Horticulture (Fruit Science), Chandra Shekhar Azad University of Agriculture and Technology Kanpur Uttar Pradesh- 208002

*Corresponding Author
Devi Darshan*

Article History
Received: 2.03.2022
Revised: 11.03.2022
Accepted: 16.03.2022

INTRODUCTION

Pruning is an acceptable method for improving the overall performance of fruit trees that is supported by scientific concepts. When deciding on the natural and extent of pruning, it is necessary to consider the development and flowering characteristics of the individual variety in question. In order to properly prune fruit trees, it is not enough to prescribe a pruning schedule based solely on the type of fruit, because even different varieties have different growing tendencies. The proportion of little branches on the branches of different varieties varies, and the pruning method must be adjusted correspondingly. The location of fruit buds and the length of the internodes are two more factors to consider when determining the nature, extent, and timing of pruning operations.

Pruning:

Pruning can be defined as "Removal of plant parts especially shoots, roots, buds etc. to obtain better and qualitative yield is termed as pruning"

Objectives of pruning:

- More assistance in determining what the tree performs in terms of fruiting is needed
- Higher quality fruit can be produced
- Removal of diseased, crisis-crossed, dry and broken branches
- To reroute the flow of energy by removing non-productive portions
- Put your energy on the areas where you can see results
- Maintain root and shoot ratio
- Less incidence of biotic and abiotic stresses

Physiology of pruning:

- Delays fruiting: It is critical to delay fruiting until mature trees have nearly filled their space in order to get high annual yields

- Increases the size of the fruit, the amount of nitrogen per growing point and the rate of growth around the cut
- Summer pruning eliminates leaves that create photosynthates, which are necessary for the growth of all tree sections and the maintenance of sugar levels
- It inhibits late-season trunk enlargement and root growth due to diminished whole-tree photosynthesis

Types of Pruning:

Thinning out:

Total removal of the shoot or branch at its insertion point on a large branch or scaffold. To increase the fruit size and reduce the alternate bearing tendency. Grapes, Peach, Plum and Quince.

Heading Back:

A portion of a shoot is removed with a cut made anywhere below the terminal bud on a shoot, but not the total removal of the shoot.

Thin wood pruning:

Refers to the removal of slow growing, weak, under hanging branches or shoots which are either not fruiting or producing fruits of low quality.

Bench Cut:

Removes vigorous, upright shoots back to side branches that are comparatively smooth and external growing.

Summer tipping or pinching:

During the growth season, the apical bud of shoots or spurs is removed.

Hedging:

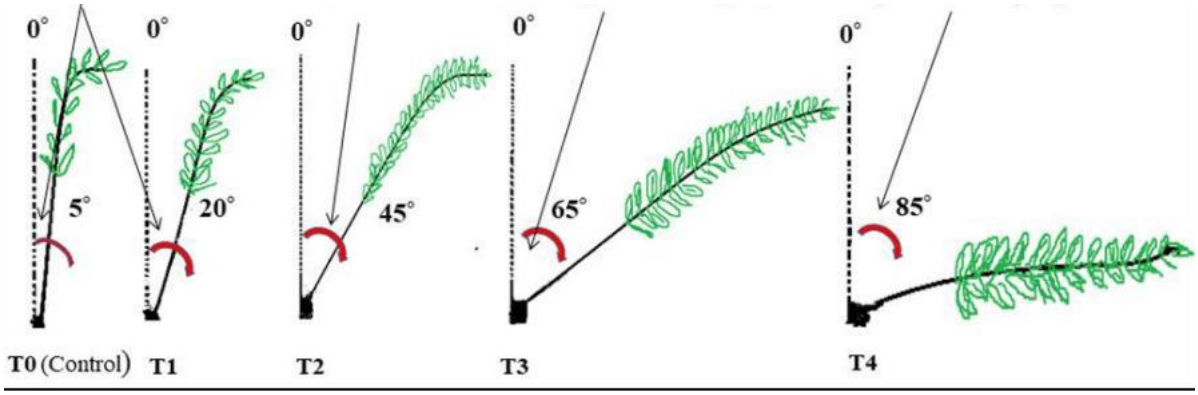
In either the summer or the dormant time, the indiscriminate elimination of all branches inside a plane.

B**ranch bending:**

- Shoot bending is one of the ways to produce better quality fruits in the off-season of guava.
- In branch bending 10-15 pair of leaves along with flower and developing fruit are removed manually
- Branches are bent by applying pressure gradually from proximal to distal end of branch
- They were kept at bent position by tying the tip of branches to the wooden pegs fixed on the ground with the help of rope till flushing completes for 40-45 days

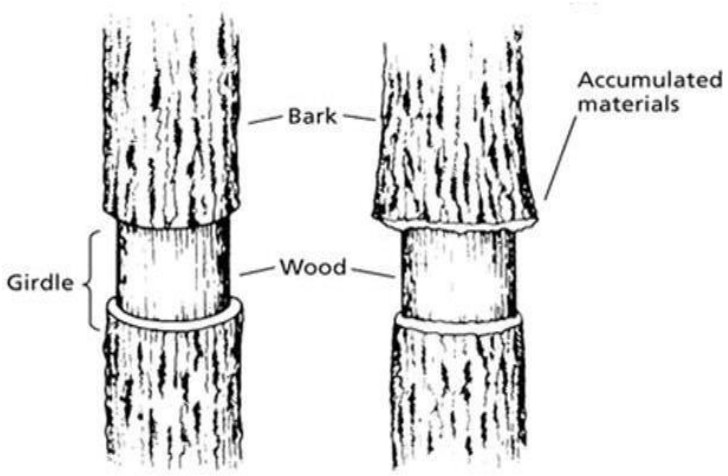
Physiology of branch bending:

- Auxin concentration is low on the upper side and buds are not inhibited and develop into strong water sprouts.
- Bending angle with 20˚, 45 ˚to 65˚, increased the leaf chlorophyll content, leaf TSS content fruit colour development, nutrient elements (K, Mg, Ca) growth, and diameter of wax apple fruits.
- It decreases the length of a shoot causing retardation of the upward and downward flow of phloem sap.
- In the bent branch, IAA and GA3 content decrease, whereas, the concentration of ABA and cytokinin increases, thus stimulate flowering.



Girdling: "Removal 2-3 mm white strip of bark around the stem is known as girdling"

ISSN: 2582 - 7022



Aims of girdling:

- The distribution of photosynthate, mineral nutrients and PGRs can be manipulated by interfering with the phloem transfer between the canopy and the roots
- Leaf nitrogen concentration, C/N ratio, and carbohydrate content were all improved, as was intern blooming and fruit set
- Decreased total N_2 stimulated spur development at the shoot's base
- encourage rooting in air layering

Times and season of pruning:

The dormant season, which occurs between the fall of leaves and the opening of buds in the spring, has long been thought to be the best time to prune. Late pruning during the dormant period is not recommended since it causes more bleeding than earlier pruning. In rare situations, the exposed cut area may give an opportune chance for pathogen invasion. Winter pruning is usually favoured in this location over spring pruning because bleeding will be excessive afterwards.

Effect of pruning on vegetative growth:

It's a dwarfing technique because, under the same conditions, the total growth of unpruned trees is always greater than the total growth of pruned trees. The quantity of growth that was removed, as well as the growth that would have occurred on those locations, is not compensated for by the growth response to pruning. In addition to inhibiting top growth, pruning operations also impede root growth.

Effect of pruning on flower bud formation:

In young trees that have not yet reached flowering stage, pruning slows the differentiation of floral primordia in direct proportion to the intensity of pruning. It promotes vegetative development at the expense of flower initiation components. Pruning slows fruit production but simultaneously increasing the size of individual fruits and the harvest as a whole.

Effect of pruning on fruit setting:

Pruning can drastically reduce the amount of marketable fruit produced. When trees are pruned, the amount of fruit they produce decreases. Thinning and other pruning operations are recommended to get the most marketable fruit and the highest return on investment.

CONCLUSION

In most of the fruit growing zones, high density planting and canopy management for higher output of quality fruit per unit area has already seized the lead. However, with the introduction of growth retardants, pruning, and training techniques in tropical and subtropical fruit, the concept of high density planting is gaining traction. By standardizing the training and pruning practices, a high density planting orchard may be used by regulating the plant canopies.

ISSN: 2582 - 7022

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