Practical - 9

TRAINING AND PRUNING IN AVAILABLE FRUIT TREES

Exercise

Training and pruning in available fruit trees.

Objectives

- To know about training of fruit trees.
- To know about pruning of available fruit trees.

Delivery schedule: 01 period

Student expectations/learning objectives

- To acquire skill of training of important fruits trees in the locality.
- To acquire skills of pruning of important fruit trees.

Handouts/material/equipment's & tools required: Practical note book, pen, and pencil to note down the important points on trainingand pruning operations etc., secateurs, Bordeaux paste, small handle saw.

Pre-learning required: Pre-requisite knowledge about training and pruning of fruit trees.

Introduction

Training and pruning are an age old horticultural practices in fruit trees for canopy management. This forms the basis of precociousness and longevity of the fruit trees in an orchard. The strong scaffold system helps the trees to produce heavy crop load of quality fruits without any major limb breakage. Similarly, regular annual pruning provide the tree the maximum fruit bearing area uniformly over the whole tree. Unpruned trees grow beyond limits and branches start intermingling with the branches of adjacent trees. It is therefore imperative to train fruit trees in its initial years of establishment and regularly prune the tree for more yield of better quality of fruits. Students should know the basic principles behind training and pruning of fruit trees and should acquire the skill of training and pruning of fruit trees available in the locality.

Principles of training and pruning of fruit trees

Training of plants is shaping or adapting them to specific forms so that they can function more efficiently or effectively. Training includes tying, fastening, staking or supporting over a trellis or pergola in a certain fashion or some of its parts are removed to provide a specific framework. A primary objective of training is to develop a strong and open tree framework that allows enough light to reach inside the canopy. Opening the tree canopy also permits adequate air movement through

For teachers…

- Ask students to perform training operation on newly established fruit trees.
- Ask students to perform heading and thining out operation on fruit trees.

the tree. Additionally, a well-shaped fruit tree is aesthetically pleasing, whether in a garden, or commercial orchard. There are many ways to train fruit trees – no single method is right for all situations and needs. Following training systems are generally followed for canopy management of fruit plants in different regions.

Open center or vase system: In this system, the main stem is terminated and growth is forced through a number of branches originating rather close to the upper end of the trunk. In regions where sunlight is a limiting factor, vase or open center systems are generally preferred. In fruit crops like peach and plum this system is commercially followed.

Central leader system: In this system, the trunk is encouraged to form a central axis with branches distributed laterally up and down and around the stem. The central axis, or leader, is the dominant feature of the trees framework, and the main direction of growth is upward. In fruit crops like pear, some varieties of apple, plum, apricot, cherry, walnut and pecan nut this system is occasionally followed.

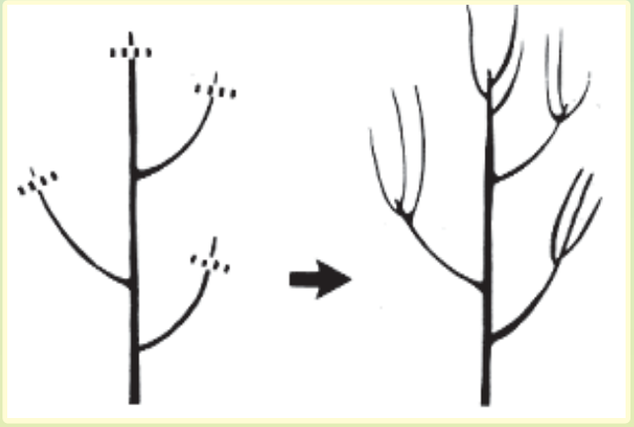
Modified leader system: The modified leader system is somewhat intermediate between open central and central leader systems. The central leader is allowed to grow for four five years and then it headed back and lateral branches are allowed to grow as in the open central system. Apple, walnut, pears, guava and fig etc. are usually rained by this system. This system promotes the lateral shoot growth and restricts the upright growth of the plant by checking the apical dominance.

Central leader

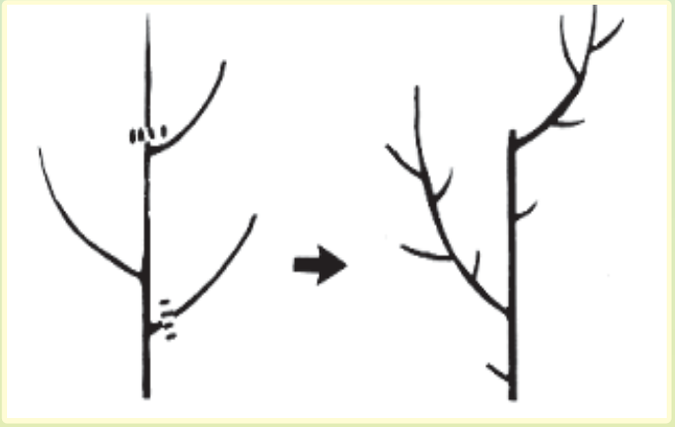
Open central

Modified Central leader

Unfortunately, many people approach pruning with a great deal of apprehension. Others view pruning as a chore and give little forethought to technique as they hastily do the job. Proper pruning requires a basic understanding of how plants respond to various pruning cuts. Pruning is an operation based on scientific



Heading removes a part of a shoot or limb.



Thinning removes the entire shoot or limb.

principles to improve the overall performance of fruit trees. The growth and flowering habits of specific variety must be taken into account for deciding the nature and extent of pruning. Pruning involves both art and science: art in making the pruning cuts properly, and science in knowing how and when to prune for maximum benefits. There are two basic types of pruning cuts, heading and thinning.

Each results in a different growth response and has specific uses. Heading consist of cutting back the terminal portion of a branch to a bud, whereas thining out is the complete removal of a branch to a lateral or main trunk. Because the heading back of a stem destroy apical dominance, it is usually followed by the stimulation of several lateral bud break, depending on the species and the distance from the tip to the cut. To encourage spreading growth, the branch is usually cut back to an outward-pointing bud. Heading back tend to produce a bushy, compact plant. Other types of heading are topping, dehorning, hedging and clipping.Thinning in contrast to heading encourages longer growth of the remaining terminal branches. The net result of thinning is a reduction of laterals. Thinning of weak growth tends to open up the tree. It usually results in producing a larger rather than bushier plant. Thinning is generally the least invigorating type of pruning cut and provides a more natural growth form of plants. Important in maintenance pruning, thinning cuts are used to shorten limbs, to improve light penetration into plants and to direct the growth of shoots or limbs.

Pruning and bearing habit of fruit trees

The amount of pruning depends on the bearing habit of the plant. One should be thoroughly familiar about the bearing habit of fruit trees to prune them meaningfully and profitably. Different varieties of fruit trees differ in their position of flower bud differentiation. Buds having the potential to flower are formed either terminally, laterally or adventitiously. The terminal bud may be formed on long or short growth, laterally on current or past season growth and adventitiously from any point on the trunk. Plants having terminal fruit bud do not possess exactly spreading habit and the trees are rather compact or bushy. Similarly, plants possessing flower buds on the spurs (terminally as in apple and laterally as in sweet cherry) are more compact than those bearing fruit buds on long shoot. Depending on the position of the flower buds developing into a fruit, the grower has to use light, medium or heavy pruning.

Timing of pruning

The time of pruning is influenced by a number of factors, including convenience, the peculiarities of species, and the effect desired. Fruit trees are usually dormant pruned. Not only is this most convenient in the cycle of orcharding, but the framework of the plant can be more easily seen with the foliage off. Where winter temperature are low, pruning operation is usually delayed until the severest weather is past in order to reduce winter injury to fresh cuts. The pruning operation is best not carried on into the growing season because of the additional loss of translocated foods.

Students Activities

1. Visit newly established fruit orchards in the locality and train few trees in open central system and few in modified leader system.
2. Practice thinning out and heading types of pruning on some fruit trees in the locality.
3. Practice removal of dead wood, intermingling branches, water suckers, root suckers and diseased shoots from the fruit trees.

Study Material

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