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# Center for Smart Agriculture

## Hi Tech Fruit Culture



**Module 3: Canopy Management**  
**Session 6: Rejuvenation**



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- **Rejuvenation/ Top Working**
- Rejuvenation is the process of pruning and after pruning management of the plants to make them productive by utilizing the existing root system, which mean restoring the productive capacity of the fruit trees.





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- **Objectives of rejuvenation**
- 1. To increase the productivity and economic age of plant.
- 2. To convert the low yielding and inferior varieties/seedling origin trees into
- superior and high yielding trees.
- 3. To exploit the better root system of a plant who has survived in adverse soil
- and climatic conditions.
- 4. To lessen the time of gestation period.
- 5. To increase the orchard income.
- 6. To lessen the incidence of diseases and pests.



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- **Principle of rejuvenation**
- 1. Trees have latent buds which are activated by heading back of branches at certain point to put forth new sprouts which grow into branches forming fruiting area.
- 2. When the branches are cut back, imbalance is created in root: shoot ratio as a result new shoots arise from plant to balance it.



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- **Advantages of top working:**
  1. Increase the tree productivity /orchard productivity.
  2. Conversion of old and senile orchards into productive orchards.
  3. Conversion of seedling or inferior variety plantation /orchard into new orchard with desirable variety or varieties through top working.



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- 4. Possibility of grafting several varieties on the same plant.
- 5. Increasing the fruit set of orchard by grafting few shoots with polliniser varieties.
- 6. Additional income by selling the pruned wood during non bearing season or period.



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- **TECHNIQUES FOR REJUVENATION**

- Old, unthrifty trees can often be rejuvenated by a moderate to severe pruning.
- This is in the form of skeletonising the tree, i.e. cutting back the branches of the tree till only the basic frame is left.
- Moderate skeletonising would entail cutting back the large branches to healthy wood, while at the same time maintaining the basic structure of the tree.



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- Particularly large unthrifty trees would benefit from a more severe skeletonising, where all the main branches are cut back to the main trunk only leaving about a metre or so of branch.
- The whole trunk and remaining branches should be painted with diluted paint to prevent sunburn and borer attack.
- In both these cases, there will be a proliferation of sucker growth. These should be treated as mentioned previously.





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**TECHNIQUES FOR REJUVENATION**



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- **CULTURAL PRACTICES IN THE REJUVENATED ORCHARDS**
- **Inter cultivation**
- Regular intercultural practices are essential for proper upkeep of the pruned mango orchards.
- It improves physical conditions of soil, ensures aeration by breaking soil surface crust and removes those weeds which compete for soil moisture and nutrition.



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- **Water Management**
- Adequate moisture is required soon after heading back of branches for proper initiation and development of shoot growth.
- Care of pruned tree requires watering them regularly during the dry season.
- Due to moisture stress in the pruned trees, emergence of new shoots as well as rejuvenation process is severely affected.



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- Therefore, it is necessary to ensure irrigation in rejuvenated trees which is required at regular intervals for initiation of shoots below the cut portion.
- To promote the proper development of tree canopies and fruiting twigs, irrigation required at the interval of every seven to ten days in summer and fifteen to twenty days in winter in addition to the period of rainfall during the monsoon season.



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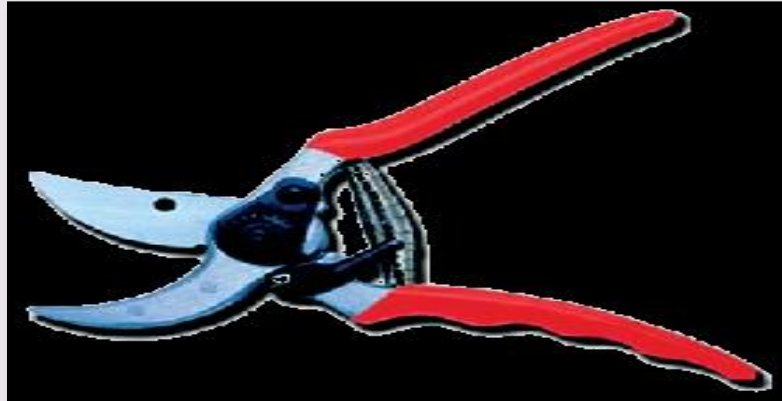
- **Integrated nutrient management**
- Integrated nutrient management refers to maintenance of soil fertility and plant nutrient supply to an optimum level for sustaining the desired crop productivity in rejuvenated orchards through optimization of the benefits from all the possible sources in an integrated manner.
- Therefore, it is a holistic approach where we first know what exactly is required by plants for optimum level of production



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- **TOOLS AND EQUIPMENTS FOR REJUVENATION OF ORCHARDS**
- **1. Secateur**
- It is considered as the most important tool in horticultural operations and is used to prune small twigs and terminal shoots of mango. Its blade should be of good quality because poor quality blades may not give smooth cuts. Twigs around 1 to 1.5 cm diameter can be cut easily.





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- **2. Pruning saw**
- The commonly used saws are crescent saws, tapered saws and straight saws.
- In general, a small saw is required for cutting of hard branches and sometimes the same saw can be used for pruning also.
- It is usually used to prune small branches of 1 to 2 inches diameter.





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- **3. Tree pruner (Pruning shear)**
- Different types of shears like hand shears, lopping shear; tree trimmers etc. are needed for pruning.
- Pruning shears should not be very expensive but these should be made up of good steel.
- Similarly, these should make a smooth and clear cut with least injury to the plant.
- Pruning shears are used to prune 2 to 2 ½ inches diameter branches of mango.



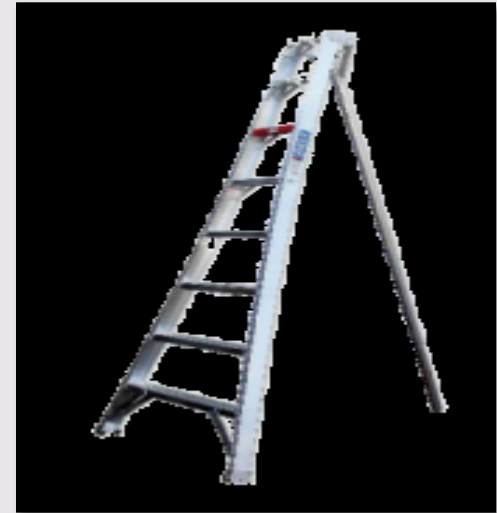




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- **4. Chain saw**
- It is a power operated saw used to prune big logs of any diameter.
- Main purpose of using chain saw is to save time.
- **5. Pruning ladder**
- Pruning ladder comes in different sizes according to the height at which pruning is to be done.
- It is used to approach higher limbs for pruning and heading back operations.





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Thank  
you

