

**JUVENILITY  
AND  
FLOWER BUD DIFFERENTIATION**

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**Juvenility** is referred to the period during which a plant cannot be induced to flowers whereas maturity is occurred if a plant gives flowers. Plants are unable to initiate flowers after germination and have to undergo in a juvenile developmental phase.

Juvenility is defined strictly in terms of ability of seedlings to form flowers. The juvenile phase ends with the attainment of the ability to flower. The appearance of the first flowers on the seedling is the first evidence that the plant is in the adult phase. Any transition period between the 2 phases is qualitatively the same as the adult phase, but there is presently no method for distinguishing such a transition period from the juvenile phase.

The term '**Rejuvenation**' means restoring the productive capacity of the fruit includes removal of old twigs. **Rejuvenation** restores the production potential of old, un-productive **orchards** by pruning of branches at different periodicity and at different severities.

## **MANAGEMENT & REJUVENATION OF SENILE ORCHARDS**

The decline of productivity has been attributed to various factors. The most of the problems are due to faulty management i.e. unsuitable site and climate, cultivation of intercrops, inadequate nutrition's, improper planting, undesirable planting materials, incidence of insectpest and disease and other biotic and a biotic stresses. The decline of trees starts with sparse appearance, yellowing and different type foliage symptoms, undergrowth and sickly appearance, dried-up top growth with small and less number of fruits. The branches of trees start to die from the top to downwards, ultimately resulted poor quality fruits (rough surface, thick skin and less juice). Such type of decline may be seen in whole orchards, on in a single tree or patches. It is a rare site to get any plantation free of this malady even intensity varies from plant to plant and from month to month in the same plant. The growers do not adopt the proper management practices in terms of plant protection; manuring, irrigation; mulching, pruning etc. and the orchards become sick. In general, canopy of fruit crops has irregular shape. Trees of irregular shape and size are difficult to deal with and even culminate into poor yield in the subsequent years as the lower branches of canopy gradually turns inert and infertile as well.

### **Rejuvenation Strategies:**

- ✓ Providing technical know-how including plant health coverage and nutritional management programme.
- ✓ Re-plantation of old & uneconomical orchards.
- ✓ Gap filling by providing disease free quality seedlings.
- ✓ The development agencies may prepare comprehensive orchards management Programme providing all the necessary inputs like, plant nutrient, plant protection chemical, horticultural equipment and periodical training's.
- ✓ Training is an important component, which improves over all efficiency of the knowledge and skill of field functionaries.
- ✓ Complete technological information on management of decline orchard may be packaged and same may be disseminated in farmer's field.

## REJUVENATION OF GUAVA

- In case of totally declined plants it is advised that they should be headed back to the extent of 1.0 to 1.5 meters above the ground level during May to allow the development of fresh canopy of healthy shoots.

- These newly emerged shoots were allowed to grow up to a length of about 40 to 50 cm. These shoots were further pruned to about 50 percent of its total length in October for emergence of multiple shoots.

- The farmers interested to take rainy season crop can allow the shoots to bear flower buds and fruits.

- It is desired to promote fruit load in winter season. Hence, to check the onset of rainy season crop, shoot pruning (50%) was done again in May. emergence of new shoots was facilitated. These new shoots emerging after May pruning were found to have high flowering and fruiting potential for winter crop.

- This procedure of sequential and periodic pruning was continued every year for proper shaping of tree canopy and to ensure enhanced production of quality fruits during winter season. • Irrigation is done just after rejuvenation. Adequate watering is a sine qua non for the optimum development of novel shoots in rejuvenated trees.

- During the phase of heading back, 50 kg FYM along with 6 kg neem cake / plant is made. Six month after rejuvenation, manures 40 kg FYM + 4 kg neem cake + 1300 g urea +500 g muriate of potash and 1800 g single super phosphate / plant /year to be given.

- Adopt management practices control of pests and diseases as recommended by the research organizations for their respective areas. Management practices to be followed for rejuvenation of Mango, Anola and Guava

- Cutting should be done from lower surface of the branch and later from upper surface to avoid cracking as well as bark splitting.

- Application of cow dung or copper oxy choride on cut surface of pruned branches to check the microbial infection.

- Application of FYM @ 40-50 kg/plant soon after pruning.

- Insure irrigation soon after for shoot sprouting and proper development of tree canopies.

- Mulching around trees with black polythene film.

- Thinning of shoots and retaining 4 to 6 outward growing, well spaced and healthy shoot per pruned branch.

- Good phyto-sanitary procedures are to be adopted to manage the rejuvenated plants.

- Regular observation for incidence of stem borer. If the infestation is observed then immediately control measures, comprising pulling out the grubs from the holes with help of iron spoke and plugging the holes with monocrotophos or 0.05 per cent dichlorvos or chlorpyrifos soaked cotton swabs following by mud plaster to be taken up.

- If infestation still continues sprays carbaryl (0.2 per cent) or monocrotophus (0.004 per cent).

- Adopt management practices control of pests and diseases as recommended by the research organizations for their respective areas.

- The interspaced are used to grow suitable inter crops, which not only provide nutrition to the main crop of aonla, but also generate additional income. Mango

### **Flower bud differentiation**

**Definition-** Development of flower parts following initiation. In most fruit trees of the temperate zone, flower buds are fully differentiated before winter, but in olives, differentiation occurs during or at the end of winter.

Alterations during flower bud development may also cause lack of fruit set. Thus, flower bud drop in apricot has been repeatedly reported in different cultivars and situations . A number of factors have been related to flower bud drop such as frosts before and during bud break , **unsatisfied chilling requirements, water stress, high bud density, premature defoliation or the nutritional status of shoots** (Likewise, warm temperatures during dormancy have been related to flower bud drop in peach), and the physiological mechanism that induce flower bud drop.