

TECHNOLOGY OF REJUVENATION OF OLD UNPRODUCTIVE MANGO ORCHARDS

In the recent past, there has been about 30 to 35% decline in productivity of old and dense mango orchards. The Central Institute for Subtropical Horticulture (CISH), Lucknow has developed technology of rejuvenation of old and unproductive mango orchards. The important components of the technology package are indicated below:

PRUNING

- Prune tree branches 5 times at 2.5 m to 6.5 m and above from ground. Dried, diseased and undesired branches are to be completely removed. Based upon architecture of the individual tree, retain main branches to make the frame work for development of open canopy with outward growth. To check the microbial infection, treat the cut surfaces with paste of cow dung.
- Two to three months after pruning, there is profuse emergence of new shoots leading to bushy growth and unhealthy competition for light and nutrition among the shoots. To facilitate development of open canopy of healthy shoots and to check the competition for nutrition and light, recurrent selective thinning operations should be undertaken.

MANAGEMENT OF PRUNED TREES

- Basins and irrigation channels should be prepared during January after completion of pruning. Depending upon temperature and soil moisture status, pruned trees must be irrigated at an interval of 15–20 days from March till the onset of monsoon.
- Trees need intensive care for survival of emerging new shoots and development of ideal canopy. Apply 2.5 kg Urea, 3 kg Single Super Phosphate (SSP) and 1.5 kg Muriate of Potash besides 100–120 kg well decomposed Farm Yard Manure (FYM) in the basin prepared around each pruned tree. Half dose of Urea and full dose of Single



A view of old and unproductive mango orchard



A view of 50 years old pruned orchard

Super Phosphate (SSP) and Muriate of Potash should be applied during the end of February. Before application of fertilizer, moisture must be ensured in the basin. The remaining half dose of Urea is applied during onset of monsoon. Full dose of FYM should be applied in the first week of July. Hoeing and weeding needs to be done before application of manures and fertilizers.

- Mulching may be followed for conserving soil moisture in the basins during April to June. Dried grasses, mango leaves, straw or black polythene sheet may be used for mulching. All these management practices must also be followed for unpruned trees in alternate rows to secure higher yield from them.

INTER CROPPING

- Pruning of trees make the orchard space open with greater availability of sunlight. Inter-space between the rows of trees can be successfully utilized for intercropping. Flowers like marigold, gladiolus, etc., vegetables (cucurbits, okra, lobia) during *kharif* season and potato, pea, brinjal, cauliflower, cabbage etc. during *rabi* season and spices (ginger and turmeric) are ideal intercrops. Intercropping generates additional employment and income for farm families.

THINNING OF SHOOTS

- Three to four months after pruning i.e. during March-April, there is profuse emergence of shoots on pruned branches. If they are allowed to grow, there is undesirable competition among shoots for space, light, nutrition and growth. Consequently, dense and bushy canopy of unhealthy shoots with poor bearing potential develops on pruned trees. Therefore, selective and regular thinning of shoots should be carried out to facilitate development of open and spreading canopy of healthy shoots.
- Retain only outwardly growing 8–10 healthy shoots per branch and remove the rest so that they get proper nourishment and develop into ideal canopy. Thinning operations are undertaken during June and August.
- Infestation of stem borer can be easily identified by wooden frass fallen on ground from the affected branches. Holes and oozing of gum in affected branches are the other indicators of its infestation. Larvae of the insect tunnel inside the trunk and destroy the conductive



Development of healthy umbrella canopy after two years of pruning

tissues. As a result, the branch and foliage start drying. Larvae can be pulled out from the hole by using thin wire or cycle spoke or they can be traced along the tunnel from gum oozing spot. To control larvae hidden inside the branch and trunk, place cotton-wick soaked with Nuvan insecticide inside the hole, and sealing these with mud.

- New shoots can get affected with leaf cutting weevil insect and anthracnose disease. This weevil damages shoots by cutting the leaf across the lamina like scissors. It can be managed by two sprays of 0.2% carbaryl (Sevin) insecticide (@ 3 g per liter water) at an interval of 15 days. Brown spots on young leaves are the characteristic symptom of anthracnose disease. Copper oxychloride (3 g per liter water) should be sprayed twice at an interval of 15 days for its management.

YIELD

After two years of pruning, the pruned trees become rejuvenated with development of healthy and productive canopy and start flowering and fruiting. On an average, about 60 kg of fruit per tree per year can be secured from trees rejuvenated after pruning at a height of 5 m from ground. By adopting this technology, the productivity can be restored and with progressive increase in yield, orchards once again become productive and remunerative.



Fifty years old rejuvenated tree in good bearing after two years

COST

Rejuvenation technique involves both fixed and variable costs. The fixed cost is for equipments for pruning, thinning, spraying and other activities. The variable cost includes labour, manure and fertilizers, cultural operations, pesticides, etc. Fruits harvested from pruned trees have better quality compared to those harvested from unpruned trees. The average variable cost for rejuvenation is about Rs 160 per tree per year. Rejuvenation technology has ecological significance as it provides an effective and remunerative alternative to uprooting and rehabilitating old and dense orchards. By adopting the recommended rejuvenation technology trees can regain life for another 20–25 years with enhanced quality fruiting potential, sustainable production and competitive returns.

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