

Management of unfruitfulness in mango: An important activity for farm women

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Mango is an important commercial fruit crop of India. It is very popular among the consumers on account of its excellent flavour and aroma. India is the leading producer of mango globally and shares more than 40 per cent of world's mango production. Fresh mangoes and mango pulp are the important items of agri exports from India. There are 10 Agri-export zones for mango in the country. Being profitable in nature, the area under mango is expanding and it covers nearly 35 per cent of total area under fruits. Mango can play an important role in improving rural economy and also create livelihood opportunities for farm women and young entrepreneurs. There is varied diversity in mango germplasm and a wide number of varieties are quite popular among the consumer. Some of the preferred varieties of mango include Alphonso, Totapuri, Amrapali, Dashehari, Langra, Chausa, Banganapalli, Bangalora, Bombay Green and Gulabkhas. Mango tree is hardy in nature and requires comparatively low maintenance cost. Despite being a profitable crop, there are few factors which renders mango unproductive and results in huge losses to grower. One of the major reason being unfruitfulness due to alternate bearing habit. However, with technological interventions the unfruitfulness in mango can be managed and bearing of unproductive mango orchards can be ensured.

Farm women play a major role in care and maintenance of orchard. They are also actively involved in nursery raising, post-planting care, harvesting and post-harvest management. Due to scarcity of male workers, the women work force in agriculture is increasing. Despite of massive participation of farm women, the farm output does not appear to be significant due to lack of technical competency of farm women. Such shortcoming in contribution of farm women is prominent due to their lack of exposure to various capacity building and skill development programmes. Farm women can play a major role in managing the unfruitfulness in mango through appropriate technological interventions. Their involvement in managing unfruitfulness in mango can efficiently enhance the orchard productivity.

Reasons for unfruitfulness in mango orchards:

Mango tree exhibits the phenomenon of alternate bearing or irregular bearing. The tree put forth reproductive growth one year (on year) and profuse vegetative growth another year (off year). This phenomenon is prominent in alternate bearing cultivars like Dashehari, Chausa and Langra. The phenomenon is mostly due to varietal as well as environmental factors in addition to the orchard management practices including pruning, nutrition, irrigation and plant protection. A proper balance between vegetative and reproductive growth is necessary for fruitfulness of the orchard.

Flower induction in mango during off year:

Flowering in mango can be induced by soil application of Paclobutrazole @ 1 ml/m canopy spread applied during first fortnight of October. Paclobutrazole (PBZ) is a gibberellin biosynthesis inhibitor and also serves as a growth retardant. It is available in the trade name of Cultar/PP333/ Lagan. PBZ induces flowering in mango by reducing the gibberellins level which in turn increases the auxin: gibberellins ratio, which is essential for flower induction.

Control measures to be taken:

- ❖ It is essential to lightly prune the tress after harvesting preferably during June-July. This facilitates better aeration and light penetration within the canopy. Even the newly emerged shoots get sufficient time to attain physiological maturity and emerge as reproductive shoots. However, not more than 50 per cent of plant biomass should be removed.

- ❖ While pruning, the current season shoots should be removed. This results in synchronized flowering in the same season.
- ❖ The centre of the plant should always be kept open and the hanging branches should be removed.
- ❖ Criss-crossed, overcrowded, dried and diseased shoots should be trimmed.
- ❖ The duct space of 1 m should be maintained between rows and plants to facilitate easy intercultural operation.
- ❖ After pruning operations are over, it is necessary to heavily feed the plants (5 years or more) with 15-20 Kg of Farm Yard Manure, 1 Kg urea, 1 kg SSP and 1 kg MOP/tree. Manuring and fertilizer application is necessary and should be carried out immediately after harvest without further delay. Since, the trees will be induced with Growth retardant in October, nutrient application is an essentially pre-requisite operation.
- ❖ The application of Paclobutrazole should start in October and should be preferably completed by first fortnight.
- ❖ The canopy spread should be measured with the help of measuring tape in both east-west and north-south direction and the average spread should be considered. PBZ should be applied @ 1 ml/m canopy spread. For example, if the canopy spread is 6m, then 6 ml PBZ is to be applied. PBZ should be diluted with around 15 L of water and applied around the tree trunk either by drenching around the collar region or by applying the solution in fertilizer ring.
- ❖ The tress should be profusely irrigated as flood irrigation after PBZ application. Care should be taken that PBZ should be applied only to the mango tress i.e. either in the ring or collar region. Avoid spilling of PBZ solution in the interspaces because it inhibits the growth of inter crops.



Measurement of canopy spread in Mango



Application of Paclobutrazole by ring method around the tree trunk of Mango

Conclusion:

The mango trees treated with optimized dose of Paclobutrazole flower appreciably and produces substantial yield. The quality attributes of the fruit such as TSS, acidity and sugar content is also not affected with the treatment. PBZ should not be used if the plant canopy is poorly developed or headed back. Sensible use of optimized doses of paclobutrazole is an important intervention to eliminate unfruitfulness in mango and skill development of farm women regarding optimized & cautious use of Paclobutrazole can be very effective in improving orchard productivity.