

Special Cultural Practices of Mango Production

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ARTICLE ID: 52

Abstract:

The mango (*Mangifera indica* L.) is a plant that is naturally adapted to hot tropical climates. However, the ideal temperature conditions for its sustainable growth and cultivation are similar to those found in mild subtropics, where lower annual growth rates and better flower induction are caused by cooler winters, which also encourage high-density plantings and improve flower induction. Controlling yearly blossoming to align with warm spring temperatures is also essential for achieving sustained mango production in subtropical areas, as it helps prevent pollination issues and embryo abortion. Applying suitable cultural practices is necessary to raise the standard of mango fruit production. Suppliers of fresh product to the processing factories and all growers exporting fresh fruit adhere to good agricultural practices, or GAP. Rather, voluntary standards are frequently adhered to in accordance with regional market norms. Soil testing, integrated pest and nutrient management, prudent pesticide use, and appropriate post-harvest handling are some significant GAP practices that farmers today adhere to.

Keywords: Appropriate cultural practices, Control of flowering, Cultivars, Flower induction.

Introduction:

The most significant crop is the mango. Mango output in India is the highest, followed by China, with 38% of the country's total land dedicated to fruit cultivation and 18.6% of its overall fruit production coming from this source. Mango output was 68.47 million MT, second only to bananas. With 6.3 MT productivity—quite low when compared to Brazil and Mexico—the overall mango output reached its peak in 2007–2008 (13.997 million MT). In the current global context, it is imperative to enhance both the productivity and quality of Indian mangoes. For mango production, it is therefore desirable to put up control and compliance mechanisms.

In order to add value via the processing of food intended for human consumption, several standards and methods are also available, which must be integrated. The bulk of mango varieties grown, sold, and consumed in India have grade standards for size, shape, color, and local preferences; however, their quality in terms of maturity standards, pesticide residue and other contaminant residues, microbial loads, etc., has not been sufficiently addressed.

Good Management Practices in Mango with Concepts?

Good Agricultural Practices are already widely used by farmers in both developed and developing nations through environmentally friendly farming techniques as conservation agriculture, integrated pest control, and integrated nutrient management. Currently, GAP is explicitly acknowledged in the global regulatory framework for mitigating hazards related to pesticide usage, taking into account environmental, safety, and public and occupational health issues. If farmers have the ability to respond, this development may incentivize them to adopt GAP by creating new market possibilities. Wide-ranging advantages would result from such standards, which envision a targeted approach to adopting traceability, good farming practices, etc. through suitable infrastructure, record keeping, and monitoring. creation of rudimentary agriculture infrastructure, cultivate a culture among farmers that values sound agricultural techniques, uniform strategy for all farms, regardless of size greater understanding of the requirement of consuming safe and high-quality food among consumers and producers, traceability by full food chain integration, Enhancement of the environment and soil fertility, Safety and well-being of workers, a solid reputation on the global market for producing fruit products of high quality and safety, Technical trade barriers that agricultural product exporters encountered are removed.

Important Cultural Practices in Mango:

1. Soil preparation:

Crop soil should be prepared in accordance with standard techniques or NRC/SAU guidelines. Till crops are planted across slopes and along contours, the soil can be improved until the depth of the soil is sufficient to support the crop's root system.

2. Inter-culture/Intercrops/ cover crops:

Vegetables and other low-growing crops, such as cowpea, black gram, green gram, and groundnut, are planted as intercrops or cover crops in immature mango orchards. In addition to providing some revenue to the producers until the mango plants begin delivering fruit four

to five years after planting, cultivation aids in the control of weeds and enhances tree development.

3. Irrigation

After six months, newly planted grafts should receive irrigation every three to four days, or every eight to ten days, depending on the environment. For plants 3-5 years old, a 10-15 day irrigation interval is sufficient. Irrigation should be avoided for two to three months before blooming on bearing trees since it encourages vegetative growth and lowers crop yield. Watering may begin and be continued weekly or fortnightly after the fruits have grown to the size of a marble. This encourages quick fruit development, early maturity, and improved quality in addition to lowering fruit drop. Mangos, on the other hand, are mostly rainfed crops.

4. Weeding:

It is recommended to apply safe weedicides both before and after planting. Weeding can be done manually or with the use of mechanical weeders or labor.

5. Planting density and spacing:

A suitable planting density will allow for the best possible use of the land, solar radiation, and windflow. Nowadays, most fruit species exhibit a discernible tendency toward higher planting densities. In the case of mangoes, this is also true. In the subtropics, where normal planting distances were 5-7 x 3-4 m (fig. 5a), modern high-density plantings at 4 x 2 m or even 3 x 1 m, oriented in a North-South direction, are being used more and more. It is even closer when planted in terraces (Galán Saúco, 2008). Within subtropical greenhouses, mangoes are grown at densities comparable to those grown outdoors in the Canary Islands, in Málaga, Spain; in trellis systems with planting distances of 2.5 x 2 m and three horizontal wires, the first at approximately 1.00 m above the ground and the highest at 2.5 m; or in palmetto systems, similar to those found in El Algarve, Portugal, at 2.0 - 3.0 x 1.5 - 2.5 m (Galán Saúco, 2015).

6. Early Pruning.

- Trees are trimmed formally to lower their height. In order to promote lateral branching, the terminal sections of the tree are often chopped or pinched when it is around one meter tall.
- After allowing three to four branches to develop, terminal sections are trimmed or trimmed again until the branches are spaced equally.

- In cases where early pruning is not conducted, established young trees that are 3-5 years old and at least 3 meters tall should be center-pruned in order to regulate their height and ensure appropriate lateral branching growth. This simplifies spraying, bagging, and harvesting processes as well as air circulation and sunshine penetration.
- Pruning is suggested to be done during the dry season.

7. Control of growth and flowering:

➤ Training:

In any event, one of the most crucial cultural activities for a mango planting's future success is training, which is especially significant in subtropical climates.

The following are the primary goals of training in mango:

- In the subtropics, refrain from blossoming too soon.
- To quickly acquire three or four branches that will serve as the mango tree's primary branches, spaced appropriately above the ground.
- To quickly form a well-ramified branch structure, it is necessary to pinch any mature vegetative terminal produced in the spring or summer and remove any inflorescence during the first two years after planting.
- To form a canopy that allows good light penetration, wind resistance, the ability to apply chemical treatments, and reduced sensitivity to pests and diseases.

➤ De-blossoming:

Since it occurs as early as the first year of grafted mango development, it is best to remove blossoms that form on immature plants. As early as the first year of grafted mangoes, nutrients are expected to be directed for the plant's vegetative development in order for there to be blossoms. Therefore, early flowering may have an impact on a tree's development and cause stunted growth.

8. Bagging:

It is advised to bag fruit to keep pests out and use less pesticides when spraying. Mango bagging is a significant cultural practice since it produces higher-quality fruit while reducing the need for pesticide sprays. When fruits are between 55 and 60 DAFI, or the size of a chicken egg, this is done. The bags act as a physical barrier to stop mechanical damage, shield fruits from fruit flies, caecid flies, seed borer, black borer, and anthracnose infections, as well as decrease scab and diplodia infections.

9. Off-season fruit production:

With the exception of varieties with several flowers, fruit production in the tropics is often restricted to the spring and summer seasons. In subtropical regions, harvesting can last until late autumn in certain locations. In subtropical island climates, such as the Canary Islands, harvesting can last until the end of July in open air conditions and the end of June in greenhouses for early cultivars like "Edwards," or until February of the following year for late cultivars like "Keitt." Furthermore, as previously mentioned, removing inflorescences formed in the winter and spring from multi-flowering cultivars or suppressing regular blooming in cultivars not susceptible to embryo abortion can also result in out-of-season output for that specific cultivar.

10. Fruit management.

A plentiful crop is not always ensured by the abundance of blossoms. Low fruit setting can happen at any moment because male flowers predominate. Furthermore, a significant portion of flawless flowers, or hermaphrodites, are not pollinated by insects. Generally speaking, less than 1% of hermaphrodite blooms will mature into fruits. Mango fruit drop is linked to parthenocarpy, insect and disease activity, water deprivation during growth, nutritional competition, and phytotoxic effects of some pesticides. Therefore, the following are advised to reduce the likelihood of fruit drop at an early stage of development: a. Foliar fertilizer treatments prior to fruit bagging (50–55 DAFI) and at fruit set (35–40 DAFI). b. Elimination of pests and severe illnesses. c. Watering trees once a week beginning with the beginnings of panicles and continuing until one month before to harvest. Fruit drop peaked 60 days following the introduction of flowers.

11. Integrated pest management:

One commercial crop that gets a lot of pesticide application during flower and fruit development is the mango. In the countryside, these activities lead to issues with the economy, the environment, and public health. IPM can protect the environment, boost agricultural revenues, keep yields high, and lower threats to consumers' and farmers' health. It combines resistant cultivars, biological control, and other biological processes to avoid, lessen, or minimize pests with appropriate cultural management to increase the vitality of the trees. Nonetheless, emphasis is placed on cultural management techniques that often keep pests at

bay. Pesticides are only used in IPM situations when they are essential, primarily to control insect infestation. IPM Strategies and Tactics are-

- Pruning
- Clean culture
- Monitoring (regular monitoring of flowers and fruits for specific pest and population
- Chemical control
- Insecticides 6. Insecticide management.

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