

Insect pests of Mango and their Management

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Introduction

Mango (*Mangifera indica* L.) is better known as the 'King of fruits' and have been extensively grown in tropical and sub-tropical areas on a wide variety of soils throughout the world. Mango fruits have been known for attractive colour, savoring smell, delicious taste and high nutritive value. Although, India is the largest mango producing country, accounting about 60 per cent of world production, the export of fresh fruit is limited to Alphonso and Dashahari varieties.

The major constraint which affects the vitality and yield potential of mango are the insect pests such as Mango hoppers, mango mealy bugs, fruit flies, shoot borer, mango leaf webber, bark eating caterpillar and mango malformation. Among them, mango hoppers, mealy bug and fruit flies are the dreaded ones which poses the economic significant losses in the mango cultivation.

Mango Hoppers

Mango hoppers are the serious pests especially during onset of inflorescence. Fifteen species have been reported on mango from Asia. However, only 3 species are serious pests such as *Amritodus atkinsoni*, *Idioscopus clypealis* and *Idioscopus niveosparus*.



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Nature of Damage

Both the nymphs and the adults feed on the plant sap of the flowers, leaves, tender shoots, and newly formed fruitlets. The mango leaf hoppers are small wedge shaped insects which continuously suck the saps from the inflorescence thereby reducing the vigour of the plants and leaving behind the dead and empty inflorescence. The affected flower heads turn brown and dry up, and fruit setting is affected. They also damage the crop by secreting a sweet sticky substance which encourages the development of sooty mould, *Maliola mangiferae* and *Capnodium mangiferae* on leaves and inflorescence and adversely affecting the photosynthetic activities of the leaves. Heavy feeding results to 'hopperburn' which is caused by the toxic effects of the insects' saliva. It also causes mosaic virus disease as the pests are carriers of the virus.

Activity

A low population of hoppers has been recorded in mango orchards throughout the year but it shoots up during February-April and June-August. High humidity and rainfall conditions during blossoming are congenial for their rapid development and multiplication. Cloudy weathers and precipitations are conducive conditions which favours the pest population build up at the time of blooming. Temperature and relative humidity constitute important environmental factors regulating the population of the leaf hoppers.

Life Cycle

The eggs are laid inside the soft plant tissue

on the underside of the leaves. They are elongate or curve, whitish to greenish, and about 0.9 mm long. Eggs hatch in about 10 days. The nymphs look similar to the adults but are very small, pale yellow-green, and wingless. They undergo five nymphal stages. Their cast skins usually remain on the lower surface of the leaf. Nymphs have the ability to walk sideways, forward or backward at rapid paces. Adults hop fast, fly quickly, and can run in all directions when disturbed, hence the name leafhopper.

Integrated Management

- Conserve the natural enemies like coccinellids, chrysopids and spiders as they are potential predators of nymphs of hoppers.
- In senile and neglected orchards, dense tree canopy should be pruned heavily to have better light penetration.
- Three sprays of insecticides at critical crop stages are important to avoid hopper infestation.
- Spray the mango tree with Azadirachtin or neem oil @ 3000 ppm or 3 ml/lit of water in the month of mid January.
- After 15 days or in 1st week of February month, one systematic spray (imidacloprid @ 0.3 ml/lit of water) should be done on entire plant (including stem) before flowers initiation to reduce the population build-up of hoppers.
- Third spraying of Lambda cyhalothrin @0.5 ml/ lit of water or *Beauveria bassiana*@ 2 ml/lit of water after attaining the pea size **mango**.
- Do not spray when trees are in full bloom to avoid killing of pollinators as the mango flowers have been pollinated by house flies.

Mango mealy bugs

Mango mealy bugs (*Drosicha mangiferae*), a polyphagous pests in India are recorded as serious pests from Asia on several host crops. Nymphs and adult female bugs are flat, oval and covered with waxy white powder which enables them hard to control. Generally eggs are laid in silken pouch in ending May to June, which hatches out during ending December to starting January. The newly hatched nymphs start crawling on trees and settle on tender twigs and inflorescence. Continuous desapping results into flower drop and also affecting the fruit set.

Integrated Management

- Deep ploughing of orchard immediately after harvest or during summer months to expose eggs and pupae of mealy bugs to natural enemies and sun heat. Heavy irrigation of orchard in October also helps in destruction of eggs of mealy bugs.
- Raking of soil around the tree trunk and mixing with methyl parathion 2% dust @ 250 g per tree or drench the tree basin with imidacloprid @ 0.5 ml per lit of water for controlling early instar nymphs of mealy bugs in the month of November–December.
- Release of *Cryptolaemus montrouzieri* at 10 beetles/plant. Mealybug destructors are observed devouring the mealybugs in Jammu conditions.
- *Menochilus sexmaculatus*, *Rodolia fumida* and *Sumnius renardi* are important predators in controlling the nymphs. The entomogenous fungus *Beauveria bassiana* is found to be an effective bioagent in controlling the nymphs of the mealy bug.
- After mud plastering 25 cm wide, 400 gauge alkathene (polythene) sheet should be fastened to the tree trunk about

30 cm above the ground level to prevent migration of freshly hatched nymphs of mealybugs in the month of December-January.

- Put a heap of fine sand around the tree trunk so that the mealybug crawlers cannot climb on the trees.



A bunch of mango infested with Mango mealy bugs and leaves covered with sooty moulds



Mealybugs infesting fruit and shoot of mango



Plants covered with honey dew



Sand heaps along tree trunk



Tree Banding with alkathene sheets

Life Cycle of Mango mealy bugs



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