Ripen fruit with decayed spots

Mango fruits infested with fruit fly

Non chemical management practices

- Avoid growing alternate host plants near mango orchards such as melons, guava, papaya and citrus
- The soil is raked around and below the trees to a depth of 6 cm twice to expose pupae – Two weeks after the fruit reaches maturity and three weeks later
- Plough orchard in the month of November – December to expose fruit fly pupae to sunlight and predators
- Collection and destruction of fallen fruits weekly starting from the initiation of fruit maturity
- Destroy these collected fruits by dumping in a pit (40-60 cm deep) and cover with soil to eliminate all sources of possible breeding sites
- Monitor the fruit fly population in orchards by using methy eugenol traps @ 4-6/acre
- Early harvesting of mature fruits. As this stage of fruit maturity, crops are not susceptible to fruit fly attack
- Pick overripe fruits as these are good breeding sites for fruit flies
- Fruits bagging will result in zero incidence of disease along with protection against fruit fly leading to agro chemical residue-free fruit production
- If fruit fly is very serious (> 5/Surveillance trap), give bait sprays on the tree trunks at weekly interval: (Bait spray is prepared by mixing 100g of jaggery in one litre of water to which 2 mL of deltamethrin (2.8 EC) is added)
- Make a trap using a 2-liter disposable water bottle by creating 2 holes on the bottle, 5 cm above its bottom. To hang, thread a string through the hole. Prepare attractant mixture for fruit flies by combining vinegar (1 cup), water (2 cups) and honey (1 tbsp). Shake the mixture and then fill the trap with it up to the level of the holes. Suspend the trap approximately 5 feet high
- Spray neem oil at 2 – 3 ml/lit of water at regular intervals

Post-Harvest Control (Heat treatment techniques)

- Hot water treatment: Submerging fruits in hot water at 43 to 46.7°C for 35- 90 min.
- Double dip method: Immersion of mango fruits in water at 40 °C for 20 minutes, followed by 10 minutes at 46°C to get 100 per cent mortality of *Bactrocera dorsalis* eggs.

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Organic management practices for mango or guava fruit fly

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Introduction

Mango/guava fruit flies (*Bactrocera dorsalis* and *B. zonata*)

It is one of the major pests of mango in India. Widely distributed in India and south-east Asia and it attacks mango, guava, peach, citrus, ber, banana, papaya etc. Fruit flies are found in temperate, tropical and sub-tropical regions of the world. It causes significant economic losses by lowering the market value of fruits and, as a result, diminishing farmer's revenues. The total estimated losses caused by these fruit flies are up to 27-42% and in severe cases, it may reach up to 90% in mango.

Identification characters

Adult fly is a brown or dark brown with hyaline wings and yellow legs and maggots are light yellowish and legless.

Adult

Maggot

Life cycle or biology

Eggs are laid in small clusters of 2-15 just beneath the skin of the fruit. About 200 eggs are laid by a single female during a period of 1 month. Egg period is 2-3 days in March and April and prolonged up to 10 days in winter. Maggot and pupal periods are 11-15 and 10 days respectively. Pupation takes place in the soil. The adults life span is about 4 months and feed on the ripe fruits exudations and honeydew. The life cycle is completed in 2-13 weeks and this is a multivoltine pest. High temperature coupled with high humidity prevailing during May-July months are favorable.

Nature of damage and symptoms

The fruit flies lay eggs beneath the peel of physiologically mature fruits by puncturing with its needle like ovipositor. On hatching, the yellowish maggots feed on fruit pulp and jump out of the fruit when fully mature, drop to the ground, and pupate deep beneath the soil. Thus, the maggots, on consuming the pulp, render it foul-smelling and discolored. Fruits that have been infected develop brown rotting spots on them and eventually fall to the ground. These fruits then become the source of population build up and spread to the entire orchard and also in the neighborhood.

Egg laying by adult fly