

## Pests of Mango



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## Main pests of mango

- Mango mealy bug: *Drosicha mangifera*
- Mango leaf hoppers:
  - *Idioscopus clypealis*
  - *Amtitodus atkinsoni*
  - *Idiocercus niveasparus*
- Mango stem borer: *Batocera rufomaculata*
- Mango fruit fly: *Dacus dorsalis*



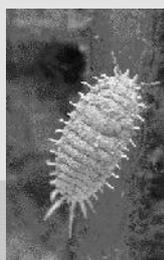
## *Drosicha mangifera* (Mango mealy bug)

## Distribution and host plants

- Pest is widely distributed from Punjab to Assam.
- It attacks 62 other plants besides mango.
- The other important plants are jackfruit, guava, papaya, jamun, ficus and citrus.

## Appearance

- Insect shows sexual dimorphism.
- Males are crimson red.
- They have one pair of black wings.
- They are not harmful and they appear in April.
- Female is oval flattened. It is apterous, sluggish and degenerate bug.
- Legs and antennae are vestigial. Body is covered with white mealy powder. It is most injurious stage of the insect. It is found crawling up and down around the base of the tree and trunk.



## Life cycle

- Pest is active from Dec to May.
- The rest of the year it spends in egg stage.
- After copulation females migrate down the tree to the soil for egg laying.
- Eggs are laid in silken purses in the soil.
- Eggs are found upto 15 cm in the soil.
- Eggs are laid in April and May.
- Sometimes the deadbodies of the females are found sticking to the egg purses.

- Egg is 1 mm long and 0.7 mm broad.
- it is oval, freshly laid egg is shiny pink. Later on it turns paler.
- Eggs start hatching in last week of December or in January.
- Hatching continues for about one month.
- Nymphs are reddish in colour. They secrete powdery secretion through dermal glands. Due to this powdery secretion their colour gets obscured sometimes.

- Nymphs appear before flowering on mango trees.
- 70-80% nymphs ascend the host tree immediately.
- The remaining feed on weeds but ultimately all the nymphs reach the inflorescence and feed on cell sap.
- They moult thrice, mature nymphs are dirty brown.

- First nymphal stage last from December to early February.
- Second nymphal stage lasts from early February to middle of March and
- third nymphal stage from March to April.
- At the time of moulting the nymphal stages reach the cracks and crevices in the trunk and after moulting they again find suitable feeding sites.

- Third nymphal stage sticks to their feeding place and here sex differentiation starts.
- The nymphs which are destined to become male undergo pupation.
- Pupation is irregular and shapeless.
- It is secreted by dermal glands.
- After a few days the adult emerges from puparium.
- Adult fly to the top of the tree in search of mature female.

- The nymphal stage that are destined to become female continue feeding.
- They grow in size and live for about a month.
- They are wingless and bigger.
- Copulation takes place just after the emergence of males.

- Males die after copulation.
- Female mature after 15-35 days, migrate towards the plant base or falls to the ground.
- Here it lays eggs in silken purses.
- After egg laying the female dies.
- Only one brood produced per year.

## Damage

Nymphal stages and females suck plant juice from the inflorescence and tender shoots so that the young fruit becomes juiceless and then drop off

## Control

- All the weeds should be removed from the orchard. Soil thoroughly ploughed to expose eggs to solar heat.
- Insecticides applied to the soil around the trees where eggs are expected to be laid. Due to presence of insecticides the emerging nymphal stage dies.
- Effective insecticides are Aldrin, methyl Parathion.
- The insecticides should be sprayed at the gap of 15 days.
- The effective insecticides are Carbaryl and Monocrotophos.

- Most effective control is by applying bands of polythene or alkathene of 400 gauge around the trunk of the trees in last week of December.
- Mud or greese is applied to the lower edge of sheet so that nymphal stages are prevented to climb the tree.
- This banding of polythene should be done on all trees including the trees of other crops such as guava, jackfruit and citrus etc. when the bugs have already migrated to the trees.

## Mango leaf hoppers:

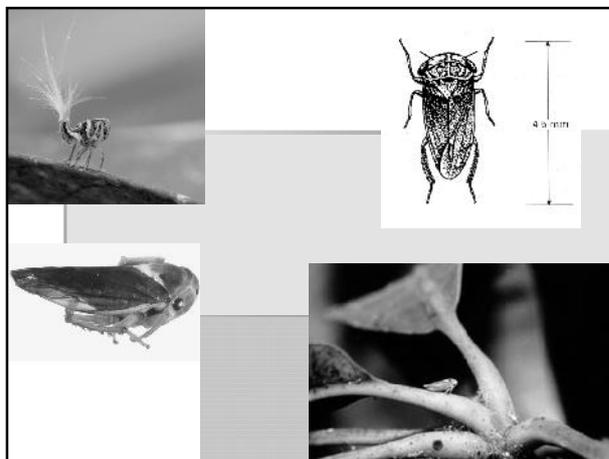
*Idioscopus clypealis*

*Amritodus atkinsoni*

*Idiocercus niveasparus*

## Structure & appearance

- *Idioscopus clypealis* is the largest species.
  - Adult is 6.3mm in length.
  - It is greyish in colour.
  - Nymph are dull yellow.
  - Adults have 3 dark brown spots on the head, a median band and 2 black spots on the pronotum.
  - There is also a black triangular marking on the scutulum and a central longitudinal dark streak which is dilated anteriorly and posteriorly.
  - Hindlegs are covered with thick growth of bristles. The insect is adapted for hopping.
- The adults of *Amritodus atkinsoni* is 5.3 mm long.
  - Central longitudinal dark streak on the scutulum is absent.
  - Nymph is pale yellow in colour.



## Life Cycle

- Pest is active throughout the year except in May and June and from October to January.
- The adult overwinter beneath the bark of the trees or in other concealed places.
- They come out in February and they start sucking sap from the inflorescence in the 2<sup>nd</sup> and 3<sup>rd</sup> week of February.
- Eggs are laid singly and they have embedded in the plant tissue.

- Hence they are not visible under natural condition. Female lays upto 200 eggs.
- Eggs hatch after 4-7 days. Nymphs are 1<sup>st</sup> seen in the last week of February or the 1<sup>st</sup> week of March.
- They feed upon cell sap and excrete sugary substance known as honey dew.
- They are not able to fly because they do not have wings but they have comparatively longer legs for jumping.
- Fungus known as *Chaetothyrium mangiferae* develops on the sugry substance.

- This fungus is commonly known as sooty mould due to its black colour.
- Hence the trees appea smoky black in colour due to presence of nymphal stage.
- Nymph moult 4-5 times in 8-13 days.
- They mature and migrate to the stem and young leaves.
- Here the fully mature nymph moult and give rise to adult.

- Life cycle is of 15-19 days.
- The adults produce rustling sound by dashing themselves against the plant foliage.
- When heavily infested adults appear as black cloud over the trees in the evening.
- During summer they survive in mango grooves. They do not feed and they do not lay eggs in May and June but adults remain very active.
- Eggs are laid in July and August. Adults emerge in September and hibernate in winter.

## Damage

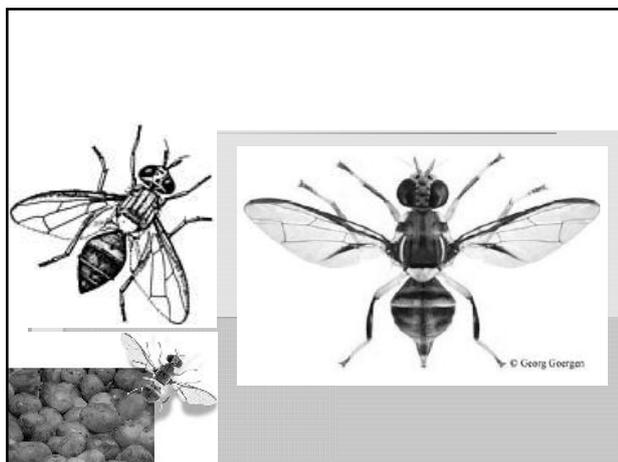
- The most destructive stage is nymphal stage.
- Adults damage the inflorescence and tender branches by feeding as well as by egg laying.
- As a result young trees die. Inflorescence is damaging.
- Food is not set in the inflorescence and yield of mango becomes low.
- Besides this they also secrete honey dew on which the black sooty mould grows.
- This gives sticky appearance to the plants and hinders photosynthesis.

## Control

- Overcrowding of the tree should be avoided.
- Smoky fires are burnt below the trees which drive the pest away.
- Methyl parathion, phosphomidon and carbaryl are also sprayed for chemical control.

## Dacus dorsalis (Mango fruit fly)

- Order: Diptera
- Family: Tephritidae
- Damage is caused by the grubs.
- Grubs feed on pulp and made the fruit unfit for human consumption.
- The pest is active during summer.
- The grubs hibernate as pupae in the soil.
- Adult flies emerge in April.
- They also feed on Guava, Apricot, Plum, Brinjal and Chillies and later migrate to mango.



## Symptoms

- Attacked fruit will usually show signs of oviposition punctures.
- Fruit with a high sugar content, such as peaches, will exude a sugary liquid, which usually solidifies adjacent to the oviposition site.

## Control measures

- Adults are controlled by sprayed of Carbaryl in first week of April.
- It is repeated after 21 days.
- Trays containing emulsion of methyl euginol are hung on the trees from April to June in mango orchard from this methyl euginol also added Malathion.