

Gall Wasp Infestation in Wax Apple

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Growing of wax apple or locally known as 'jambu air', is often faced with infestations by insect pests. These pests include gall wasp, fruit fly, leaf eating beetle, leaf miner and thrips. The gall wasp, *Anselmella malacia* (Hymenoptera: Chalcidoidea: Eulophidae) is the most problematic among them.

Normally, there is no core inside the wax apple fruits. However, when the fruits are attacked by the gall wasp, a large gall, which looks like a walnut is found. The gall is induced by the larvae of a tiny gall wasp. This seed-like gall in the fruit is often mistaken as a natural occurrence during the early stages of the pest infestation. The gall occurrence is noticed as a pest, only during severe infestation, when the gall is big and the fruit is damaged.



Infested fruit, with seed-like gall



Severely infested fruit

Pest biology

The female wasp is about 2.2 mm long, while the male is smaller, about 1.5 – 2.0 mm long. The dorsal side of the body is dark, shiny and metallic in appearance. It has yellowish antennae and transparent wings.



Adult wasp



Larvae in galls



Pupae in galls



Adults emerging from galls

Damage

The eggs are inserted into the soft tissue, mainly at the pistils' detached points from the developing fruits. The point where the pistil is detached from the fruit is the softest part and thus, it is preferred site for the female to oviposit her eggs. The larvae, which develop within the soft tissue, induce the formation of galls. As the infestation progresses the galls get bigger, due to abnormal cell division and cell enlargement. After feeding is complete, the larvae pupate within the galls. After pupation, the adult wasps emerge after cutting exit holes through to the outside. The galls provide food and shelter for the invading insects, while the plants suffer from loss of growth and vigor, due to the changes in growth and subsequent loss of nutrients. The fruits are also damaged, due to feeding of the larvae and the exit holes by the adults. The exit holes by the adults can be seen as tiny black dots on the ripe fruits.

Control measures

It is recommended that wrapping of developing fruits be carried out immediately after anthesis, when the pistils are still attached on the fruits. This could reduce the incidences of the females laying egg around the pistils' detached points on the fruits.

The use of a contact insecticide, such as deltamethrin, during the early stages of fruit development may be required to reduce the adult population. The young fruits are normally removed from the stalk, leaving only two to three fruits per bunch, prior to the spraying. During serious pest infestation, removal of fruits at all stages may be necessary, to break the pests' life cycles. The affected fruits should be removed and destroyed, to remove the pest breeding ground. The affected unwanted fruits could be buried or stored in proper plastic bags or used for composting. In other words, proper field sanitation must be practiced.

Growing of wax apple in net-houses or covering the whole plant with the net, does help to reduce the pest infestation.



Correct timing for wrapping of developing fruits



Wrapping of developing fruits



Wrapped fruits, ready for harvesting