



False Codling Moth on table grapes

False codling moth (FCM) (*Thaumatotibia leucotreta*) is endemic to sub-Saharan Africa and is classified as a quarantine/phytosanitary pest by many of the export markets of South African fruit. FCM can breed in many kinds of host plants and cultivated fruit. It is an important phytosanitary pest affecting citrus fruits, stone fruits and table grapes. Although FCM seldomly infests table grapes, when it does, a single infestation can lead to large scale rejections of export consignments. As a sporadic pest, control of FCM is currently not standard practice in table grape production, however effective monitoring of population levels is required to be aware of infestations and to prevent infected fruit from being packed for export. Vineyard sanitation is also an important cultural safeguarding measure that should be implemented.

Biology

FCM is an inconspicuous nocturnal moth. Adult moths have a mottled brownish grey colour with a plume of light coloured scales on the dorsal surface of the body (Fig 1). Female moths lay their eggs, which are 1mm in diameter, directly on or near fruit. Newly hatched larvae move around on the fruit surface searching for a suitable place to penetrate the fruit. Newly hatched and young larvae are creamy-white with a dark brown to black head (Fig 2). As they age, larvae darken through off-white (Fig 3) and finally a pink body colour (Fig 4). The larvae develop inside the fruit until maturity. Mature larvae leave the fruit and pupate just under the soil surface. Pupae are dark brown and about 10mm long (Fig 5). Pupae are enclosed in a cocoon which incorporates soil and leaf litter particles when being spun (Fig 6).

Damage

Fresh larval penetration holes in grapes can be seen, but require careful inspection of the fruit (Fig 7a). Sometimes a few granules of excreta can be found around a fresh penetration hole (Fig 7b), or a mass of excreta can be found around older penetration holes as it continuously exudes from the hole as the larva feeds inside the fruit (Fig 8). Sometimes there is no excreta on the surface of the fruit. The area around the penetration hole can become sunken and brown as the damaged tissue decays (Fig 9).

Monitoring

- Vineyards where infestation has occurred or those in close proximity to citrus or stone fruit orchards where FCM occurs, should be monitored.
- FCM pheromone traps (maintained according to label specifications) should be placed at a frequency of 1 trap per 4 ha area, and traps should not be closer than 150 – 200 m to each other.
- Inspect traps weekly and record all FCM trap catches.
- In vineyard blocks bordering the town or citrus and stone fruit orchards suspected of being the source of infestation, and in vineyards previously infested with FCM, weekly inspections should commence from mid-December. In these high risk areas inspections should be confined to the first 4 rows bordering the town, citrus or stone fruit orchards.
- During standard two-weekly scouting of vineyards, grapes must also be inspected for the presence of FCM and its occurrence recorded.

Cultural control

Vineyard sanitation is important and contributes greatly to suppression of the FCM population, as well as other pests such as fruit flies.

All infested and fallen fruit must be removed and disposed of by either burying under 500 cm of soil, or by pulping with a hammermill. Pulping must take place at least 30 m from the nearest vineyard and fruit must be spread in a manner that it can sun-dry as rapidly as possible. After harvest, all vineyards on the farm must be stripped of fruit, and this fruit must be disposed of.

Chemical control

There are chemical products available to control FCM. For more information about these products, contact your chemical advisor.

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Figure 1: Adult false codling moth



Figure 2: Young (creamy-white) FCM larva exposed just under the skin of a grape near the penetration hole.



Figure 3: Older (off-white) FCM larva inside a grape.



Figure 4: Mature (pink) FCM larva surrounded by dark brown granular excreta produced while feeding inside the grape.



Figure 5: FCM pupa



Figure 6: Cocoons spun together with soil particles. When the adult moth emerges an empty pupal case is left behind protruding from the cocoon.



Figure 7a: A fresh larval penetration hole in a grape.
Figure 7b: Granular excreta at a fresh larval penetration hole.



Figure 8: A larval penetration hole near the stalk with granular excreta exuding from it as the larva feeds inside the fruit.

Figure 9: Fruit damage around the penetration hole in a grape where a FCM larva entered the fruit.

