

Banana scab moth

What damage does it cause?

Banana scab moth (*Nacoleia octasema*) is one of the most economically damaging pests in banana and can cause up to 100% bunch damage if left uncontrolled.

Significant economic damage from banana scab moth is primarily confined to the fruit. Feeding by young larvae starts as soon as the first bracts lift and usually increases in severity as the larvae grow and move progressively down the bunch as subsequent bracts open.

Damage is usually confined to the outer curve of the fingers (the area nearest to the bunch stalk) but, in more severe cases, damage can extend to areas between touching fingers, or even extend to cover the whole fruit surface. The surface feeding by larvae results in scars which quickly turn black. While damage is usually only superficial, affected fruit is downgraded or unsuitable for market.

When does it occur?

Banana scab moth favours moist and warm conditions, therefore the period of greatest potential damage is during the wet season. Bunches which emerge from December through to the end of May are most at risk of attack. The cooler and drier winter months are relatively free of banana scab moth damage. However damage can occur if unseasonal rain occurs at this time. Research has shown adults do not mate and lay eggs under low humidity and dry conditions.

Understanding the lifecycle

The tiny (1.2-1.5mm) flattened eggs are laid in clusters which resemble miniature overlapping fish scales. These egg clusters are very difficult to locate because of their small size and the fact that they are laid near the throat of the plant. The eggs are usually laid on the emerging bunch and the surrounding leaves and bracts, but eggs have occasionally been found on the pseudostem below the new bunch. The larvae are pink to brown in colour and range in length from 1.5mm when first hatched to about 25mm when fully developed. If disturbed the larvae wiggle violently and drop on silken threads. When the larvae are fully mature they pupate in the trash at the base of plants or sometimes on the bunch or beneath dry leaf sheaths. The brown pupae range in length from 9-13mm.

The adult moths which are quite small (22mm wingspan) are rarely seen due to their size, the fact they hide during the day and their dull brown/grey colouration makes them difficult to spot. Adults are most active at dusk when mating and egg laying occurs. The adults do not appear to be attracted to lights. The total lifecycle takes around 25-32 days. Populations tend to be highest and most consistent during the wet season.



Figure 1. Banana scab moth Larvae feeding on plant material



Figure 3. Adult banana scab moth

How to monitor for banana scab moth

The only practical method for monitoring for banana scab moth is to inspect freshly emerged bunches (bract fall) for the presence of damage and/or larvae. Pay special attention to the underside of the fingers in each hand (closest to the bunch stalk) and also the cushion area. In very young bunches it may be necessary to lift the developing hand away from the bunch stalk to reveal any larvae and/or fresh damage.

Also pay attention to the base of the bunch stalk where the larvae enter the throat of the plant. Larvae can be detected by separating the base of the flag leaf and removing the bract that is attached to the stalk. Often a clear jelly-like substance, which appears to be associated only with banana scab moth feeding, is present at these sites.

It is a good idea to monitor known 'hot spots' such as rows adjacent to scrub or creek lines.

Managing banana scab moth

Treatment of banana scab moth should be commenced as soon as damage is detected because the damage results in immediate downgrading or rejection of fruit. Management of banana scab moth is particularly important if heavy bunching is anticipated and/or the conditions are favourable or forecast (hot and wet).

Biological control: Although there has been no major specific parasite or predator that has been identified, there are a number of wasp parasites, spiders and other general predators that provide a low level of natural control. The ant, *Tetramorium bicarinatum* which is commonly found on plants and bunches provides some level of suppression of banana scab moth.

Cultural control: Selecting followers of equal size which equates into synchronised bunch emergence over a block will ensure that chemical control methods are more efficient.

Chemical control: Bell injection has significantly reduced the amount of insecticide used by the banana industry. The accurate targeting of insecticide using injection does not harm beneficial insects on other parts of the plant. The correct site for injection is approximately one third of the way down from the top of the upright bunch or 'spear'. Beneficial insects may be providing some control of other pests, therefore this method is preferred to the less-precise application methods of dusting, bunch spraying and broadcast applications from the ground or air. Chlorpyrifos and bifenthrin are registered and commonly used for bell injection. Dusting with chlorpyrifos (PER14240) can also be used but is not as effective as injection. Dust residues can detract from fruit appearance and excess dust residues can cause fruit to be rejected from market. To be effective dust must be applied just prior to bunch emergence to prevent entry of young larvae into the bunch. Once the larvae move beneath the bracts they will not be controlled by dusting unless the bracts are lifted by hand to expose the larvae. Registered and permitted chemicals can change so check the website of the Australian Pesticides and Veterinary Medicines Authority (APVMA) to access the most up to date information. (<http://apvma.gov.au/>)

For more information contact:

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Figure 2. Banana scab moth larvae