



## Management of African bollworm (*Helicorpa armigera*) on tomatoes

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Tomatoes are attacked by wide range of pests which damage the crop and result in poor crop quality and low yields. The most important pests of tomatoes in KwaZulu-Natal (KZN) are the larvae of various moths such as African bollworm. The African bollworm is considered to be one of the pests that causes severe damage on tomatoes if not controlled. The moths emerge sporadically when climatic conditions are favourable. Caterpillars of the African bollworm feed on leaves, buds, growing points, flowers and fruit of the crop.

### Identification

The larvae of the bollworm are yellowish-white to reddish brown. The head is dark brown to black and there are several rows of black bumps with short hairs along its back. The fully-grown (after 2 to 3 weeks) caterpillars are 35 – 40 mm long with stripes along the sides of the body that range from almost black, brown or green to pale yellow and dark grey yellow (Figure 1).



**FIGURE 1:** The caterpillar of African bollworm  
([www.madumbi.co.za](http://www.madumbi.co.za), accessed May 2017)

The moth is about 14 - 25 mm long with a wingspan of 35 - 40 mm. It is a fleshy, yellowish-brown moth with a dark speck, greyish irregular lines and a black kidney-shaped mark on the forewings. The hind wings are

whitish with a black patch along the outer margin (Figure 2). The bollworm moths fly at night.



**FIGURE 2:** Bollworm adult moth

([www.infonet-biovision.org/PlantHealth/Pests/African-bollworm](http://www.infonet-biovision.org/PlantHealth/Pests/African-bollworm), accessed April 2017)

The moth lays up to 700 eggs on the flowers and the leaves of the plant. The eggs are creamy-white or yellowish-white in colour, and 0.5 mm in diameter. Bollworm eggs hatch within three to five days depending on the conditions. Young bollworm caterpillars are hairy and their colours vary from black to brown-beige. The bollworm is present throughout the year in the warmer parts of KZN.

### Damage

The damage varies between regions and locations, and between seasons. Caterpillars of the African bollworm feed on leaves, flowers and the tomato fruit. The damage on the leaves reduces leaf area, which leads to slow plant growth. The main damage is caused by feeding on flowers and fruit. Flower feeding prevents fruit formation. Caterpillars bore holes into the fruit and eat the inner parts, causing damage to

tomato fruit. As with any insect damage, secondary diseases may also occur later. One caterpillar can damage several fruits and the quality of the fruit is affected (Figure 3). The population, and therefore the extent of damage, is usually greater in warm areas, decreasing during the cooler months (when temperatures fall below 18 °C).



**FIGURE 3:** Caterpillar feeding on tomato fruit. ([www.pestnet.org/fact\\_sheets/tomato\\_corn\\_earworm\\_112.htm](http://www.pestnet.org/fact_sheets/tomato_corn_earworm_112.htm), accessed May 2017)

## Management

It becomes difficult to control larvae once they have entered the fruit as they are protected by the flesh of the tomato fruit. Prevention is therefore the most effective way to control bollworm.

## Non-chemical control

Cultural practices are those management activities that the farmer can carry out to make the environment unfavourable to one or more pests. The main objective of any cultural practice is to reduce pest numbers to allow natural or biological controls to take effect. One of these is visual inspection of the crop. It is advisable and very important to look for the presence of eggs and young caterpillars for early pest control. In small fields, they can be handpicked before they enter the tomato fruit. Infested plants should be removed from the field and destroyed after harvesting. Tomatoes should be planted away from other host crops such as cotton and maize crops. Introduction of predators such as parasitic wasps, ants, lacewings, ladybirds and assassin bugs can help if the tomato

crop is grown in the same field as cotton and maize. This should be done before young caterpillars are able to enter the fruit. Trap crops such as sunflower and African marigold can be used to manage bollworm; they can be planted every eight rows. After harvesting, pupae can be exposed to sunlight and natural enemies by ploughing the soil.

## Chemical control

It is important to note that African bollworms build resistance to chemicals, therefore chemicals need to be rotated. There are registered effective chemicals that can be used to control African bollworm. These include: Cypermethrin, Deltamethrin, Endosulfan, Methomyl, Mevinphos and Permethrin. These are only active ingredients, trade names may differ depending on the company producing the chemical. Chemicals are dangerous to both humans and the environment, therefore it is very important to follow the instructions on the product label. Always wear protective clothing when using chemicals.

## References

Bill K. 2013. Controlling the African bollworm. <http://www.farmersweekly.co.za/crops/vegetables/controlling-the-african-bollworm>

Robyn J. 2012. Biological bollworm control. <http://www.farmersweekly.co.za/agri-technology/farming-for-tomorrow/biological-bollworm-control>

[www.plantwise.org](http://www.plantwise.org) accessed 11 May 2017

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