Potential impact of fall armyworm on sorghum

Fall armyworm (*Spodoptera frugiperda*) is an exotic pest that has been detected in Queensland.

Based on overseas experience, fall armyworm larvae can cause significant crop damage if left unchecked.

Adults can fly long distances and migrate quickly, particularly with the aid of weather patterns and jet streams. Check crops regularly to detect the early stages of infestation.

Pest risk

Sorghum is a host of fall armyworm. It is at risk of damage at the vegetative stage and at risk of significant yield loss with infestations at grain-filling stages.

In the United States of Amercia, fall armyworm is considered to be as damaging as helicoverpa in sorghum at grain-filling stages.

Crops at greatest risk of fall armyworm infestation, from local population build up or migration, are likely to be autumn-sown crops in Central Queensland, and late sown crops through the southern parts of Queensland.

Overseas, fall armyworm has rapidly developed pesticide resistance where subjected to repeated and prolonged use of insecticides.

Appearance

Eggs

Eggs are pale yellow and 0.4 mm in diameter and 0.3 mm high. They are laid in furry ‘egg masses’, which stick to foliage. There are 100–200 eggs in a mass.

Image 1 – Egg mass

Larvae

Image 2 – Larvae emerging from egg mass

Image 3 –Older larvae with ‘Y’ shape on head

The larvae are light green to brown with a larger darker head. As they develop, they become darker with white lengthwise stripes and dark spots with spines. Older larvae (30–36 mm) have a distinctive pattern of four spots on the second to last body segment and an inverted 'Y' shape pattern on their heads.

Pupa

The pupa is red-brown, 14–18 mm long and approximately 4.5 mm wide. Pupation mostly occurs in soil under the host plant, occasionally in host vegetation. Fall armyworm do not hibernate during winter and cannot survive temperatures below 10℃.

Adult

Image 4 – Female moth

Image 5 – Male moth

The adult moths have a brown or grey forewing and a white hindwing, and a wingspan of 32–40 mm. Male fall armyworms have more patterns and a distinct white spot on each forewing. Cotton Info's Insect ID Guide provides a detailed guide to identifying fall armyworm.

What should I look for?

Monitor for fall armyworm in sorghum just as you would for *Helicoverpa armigera,* paying particular attention to defoliation in the establishment and vegetative stages. Fall armyworm can damage younger sorghum plants, but this does not usually impact plant growth and yield, unless pest pressure is high and defoliation severe. Look for damage on the lower leaves and the whorl.

Fall armyworm larvae typically infest the whorl of sorghum plants, causing large, irregular-shaped holes in emerging leaves. *Helicoverpa armigera* and other armyworm species will cause similar damage in sorghum, so it is important to open up the whorl to identify the larvae.

How can I manage an outbreak?

Early detection is essential. Regularly check your crops for insects and damage. Pheromone traps may provide an indication of local fall armyworm activity.

Key to the control of any pest is an integrated pest management approach. The Department, in collaboration with industry, is working to identify strategies and tactics for the medium to long-term response.

Like *Helicoverpa armigera*, small fall armyworm larvae feed on the pollen and larger larvae feed on the developing grain. Managing infestations before heads emerge will reduce the risk of this type of damage.

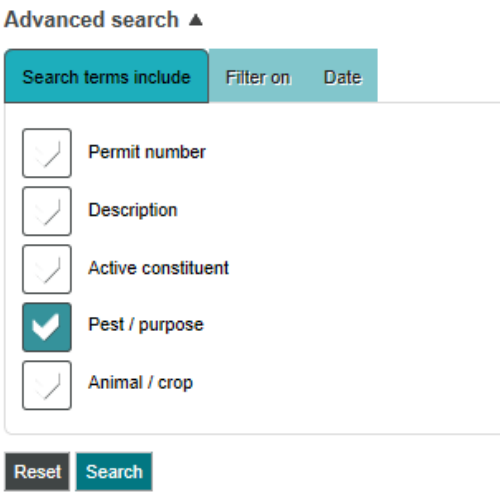
In the event of infestations during the vegetative stage of growth, the United States of America control guidelines recommend intervention if damage results in more than 30% defoliation, or there are 1–2 (or more) larvae per whorl. If the infestation occurs during the grain fill stage, use the *Helicoverpa* economic threshold calculator at thebeatsheet.com.au.

Fall armyworm is not susceptible to *Helicoverpa* NPV used to control *Helicoverpa armigera* in sorghum. Be aware that insecticides applied for fall armyworm control will incidentally expose *Helicoverpa armigera* in the crop, and increase selection pressure for resistance.

It is essential that with any pesticide use for fall armyworm control, the implications for chemical resistance development in other pests that may be exposed (e.g. *Helicoperva)* and the potential impact on natural enemies is considered.

Currently, the Australian Pesticide and Veterinary Medicine Authority (APVMA) has issued permit PER88638 for the use of certain chemicals for the control of fall armyworm in a range of grain crops (including sorghum). It is important that the permit be read in full.

The APVMA is currently assessing, as a priority, applications for permits for the use of additional insecticides fall armyworm. To check for the latest chemical permits applying to fall armyworm using the APVMA's permit portal—search for 'fall armyworm' and check the 'pest/purpose' button.



You should already have strong on-farm biosecurity measures to protect your crops from pest and diseases and should implement good farm hygiene for weed control to remove hosts that could build populations. More information is available at farmbiosecurity.com.au.

What should I do?

Be on the lookout and if you suspect fall armyworm, report immediately to the Queensland Department of Agriculture and Fisheries on **13 25 23**.

More information

For more information, contact the Queensland Department of Agriculture and Fisheries on **13 25 23** or visit **business.qld.gov.au/fallarmyworm**.

Images 1–2, 4-5 by James Castner, University of Florida. Image 3 by D. Balaraju, Krishi Vigyan Kendra