Potential impact of fall armyworm on pastures

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

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

Adults have been known to fly long distances and migrate quickly, particularly with the aid of weather patterns and jet streams. Check your pasture regularly to detect the early stages of infestation.

Pest risk

Fall armyworm is reported to feed on tropical and subtropical grasses in grazing systems overseas. It is likely that tropical and subtropical pastures in Queensland will support large populations of fall armyworm in suitable seasons.

It is unclear what impact fall armyworm might have on pasture productivity, but outbreaks of dayfeeding armyworm (*Spodoptera exempta*) have caused significant short-term defoliation in buffel pastures. This defoliation can kill seedlings and retard the growth of established plants. Infested pasture may be reinfested by the offspring of the first infestation.

Grasses that fall armyworm infest overseas include:

- *Sorghum haleepense*, common name Johnson grass
- *Chloris gayana*, common name Rhodes grass
- *Agrostis* spp., collectively called bent grasses
- *Digitaria* spp., collectively known as pangloa, digit or finger grasses
- *Cynodon dactylon*, common names include: couch, green couch, couch grass
- *Poa* spp., common names in Queensland include: annual Poa, winter grass
- *Panicum* spp., collectively known as panics.

Most of these are common across Queensland, in grazed pastures, hay production, and urban situations.

The potential for fall armyworm to infest other important native (e.g. Mitchell grass, spear grass, blue grasses) and sown pastures (e.g. Buffel grass, Rhodes grasses) is unclear, but it is possible these could host.

Hay production, including Lucerne, may be at risk of production loss caused by fall armyworm infestation, including irrigated production over winter in warmer regions.

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 dark 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°C.

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 distinctive patterns with a white spot on each forewing. Cotton Info's Insect ID Guide provides a detailed guide to identifying fall armyworm.

What should I look for?

Look for egg masses and small larvae. Larvae may be more active at night. Small larvae, and their damage, can easily be overlooked. The majority of feeding occurs over a period of around 3–5 days as the final three larval instars (4–6) complete their development. If smaller larvae in the crop are not detected, the defoliation done by these later instars can appear to happen suddenly.

Image 6 and 7 – Day feeding armyworm and damage to buffel pastures

How can I manage an outbreak?

Early detection is essential. Regularly check your pastures for signs of damage or loss of productivity.

Use a sweep net or sweep a bucket through the grass to dislodge larvae. Larvae may be active during the day in thick stands, but more often at night in less dense, or damaged areas. Once all foliage has been removed, fall armyworm will move en masse to a new area.

In hay production in the United States of America, it is recommended that control actions be implemented at 2–3 larvae per square foot (~30 cm^2). In Queensland, there are currently no registered insecticides for this insect in pasture situations, but check the Australian Pesticides and Veterinary Medicines Authority (APVMA) for permits (see below on how to do this).

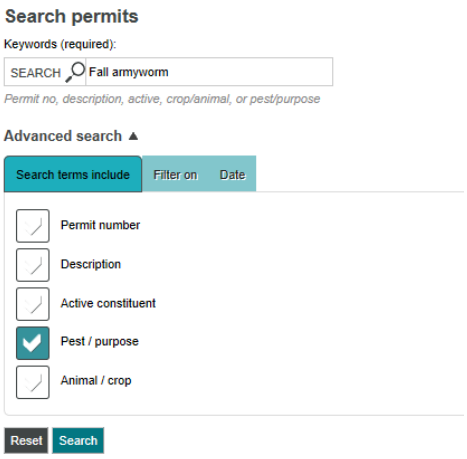
Graziers should assess their pastures on a regular basis, and determine the abundance and impact of fall armyworm, and other armyworm species. If a loss of production seems likely, seek advice on what options are available to limit loss of production. A useful non-chemical approach is to heavily stock the infested paddock(s) to utilise the pasture before it is eaten by armyworm, and physically reduce armyworm populations through stock movement.

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.

Some insecticides used for the control of *Helicoverpa armigera*, other armyworms and caterpillar pests may provide some level of control of fall armyworm. Biocontrol agents released for *Helicoverpa* are also expected to have an impact on fall armyworm.

It is critical that following the application of any permitted insecticides the subsequent cutting of hay or grazing of stock is done in accordance with labelled withholding periods, and export slaughter intervals.

The APVMA is currently assessing, as a priority, applications for permits for the use of chemicals against fall armyworm in pasture. 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.



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, call **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
Images 6–7 by Department of Agriculture and Fisheries