

**Thrips**

- Tobacco thrips – *Thrips tabaci***
- Tomato thrips – *Frankliniella schultzei***
- Western flower thrips – *F. occidentalis***

**Damage symptoms**

Nymphs and adults cause early season damage to terminals, leaves, buds and stems. While recognised as a pest, thrips are also a key predator of spider-mite eggs.

**Sampling**

Sample for the number of thrips /plant. Check for the presence of nymphs as well as adults. The presence of nymphs tells if the population is actively breeding. Crops that have had an insecticide seed treatment or in-furrow insecticide treatment may have adult thrips but no nymphs and little plant damage. Sample for the severity of damage to the seedlings. Late season, thrips may reach high numbers in flowers and on cotton leaves, especially in-crops where there has been either little or no insecticide use. These thrips help to control mites. Late season thrips damage would rarely justify control.

**Frequency**

Sample at least weekly. Begin sampling at seedling emergence and continue sampling until thrips abundance declines and plants begin to recover.

**Methods**

Use whole plant visual assessment, with the aid of a hand lens for the observation of nymphs. Check the number of thrips on 20–30 separate plants for every 50 ha of crop. When assessing leaf damage, a rough guide is, if the average size of a thrips damaged leaf is less than 1 cm<sup>2</sup>, then leaf area reduction is often greater than 80%.

Look for symptoms of tip damage. Tip damage caused by thrips appears as extensive crumpling and blackening of the edges of the small leaves within the terminal. For thrips to cause tip damage, they must be present in high numbers (> 30/plant).

**Thresholds**

As thrips occur in cotton in most years the most effective management option is to use a seed treatment or at planting insecticide applied with the seed. This protects plants during the establishment phase and has the advantage of being less likely of negatively affecting beneficial species (predators or parasites) than an insecticide applied to the crop after emergence. Thrips damage to leaves (very common) can result in delayed maturity or even yield loss if very severe. In warm/hot climates, plants have an ability to outgrow and compensate for thrips damage and yield loss due to thrips damage is only likely 1 year in 10. In regions with cooler climates early season, where season length is limited, there is less ability to compensate and yield loss may be incurred 1 year in 2. In both instances the seed treatment or at planting insecticide applied with the seed should provide sufficient control for plants to establish. Thrips populations will decline naturally in early December. Thrips are also often blamed for tipping out, but are rarely the cause. In some instances, populations of thrips will remain high and plant growth delayed by cool, wet weather. In these situations, seed treatments or at planting insecticides may run out and supplementary control necessary according to the thresholds below.

Western flower thrips is not controlled by the current seed treatments or at planting insecticides, but this species is not normally abundant early season in cotton.

SEEDLING TO 6 TRUE LEAVES
80% reduction in leaf area + 10 thrips /plant (adults and nymphs)

Thrips can also be found in cotton in the mid and late season. These are usually *Frankliniella* spp. Adult thrips can be found in flowers where they feed on pollen, but it is unlikely that they affect pollination or fruit set. Eggs are laid on leaves and the hatching larvae may cause some damage to the undersides of leaves. Research has shown that high levels of damage would be required to affect yield, and control should not be considered unless >50% of leaf area is damaged and the crop is pre-cutout. These larvae are also predatory and will eat spider mite eggs, often presenting mites outbreaks from developing.

**Key beneficial insects**

**Predators** – pirate bug, green lacewing larvae, brown lacewing, ladybeetles.

**Selecting an insecticide**

The insecticide products registered for the control of thrips in cotton in Australia are presented in Table 10, page 31. When deciding whether or not to control thrips with an insecticide, an important consideration is the benefit of thrips to cotton crops as predators of spider mites.

**Resistance profile – Western flower thrips**

WIDESPREAD, HIGH LEVELS OF RESISTANCE	WIDESPREAD, LOW/MOD LEVELS OF RESISTANCE
pyrethroids (SP)	chlorpyrifos (OP)
OCCASIONAL DETECTION OF HIGH LEVELS OF RESISTANCE	OCCASIONAL DETECTION OF LOW LEVELS OF RESISTANCE
	dimethoate (OP)

No resistance to insecticides has been detected in Australia for tobacco thrips or tomato thrips.

**Overwintering habit**

Thrips prefer milder temperatures. Populations decline at temperatures greater than 30°C. Thrips are active and common through winter.

**Alternative hosts**

In spring, large numbers of thrips have been observed on flowers of cereal crops and winter weeds. Thrips then transfer to cotton as these hosts dry out or hay off. Cotton crops planted adjacent to cereal crops are particularly at risk of infestation by thrips. In the absence of pollen, thrips feed on other sources of protein such as mite eggs.

**Further Information:**

- CSIRO Plant Industries, Narrabri**  
**Lewis Wilson: (02) 6799 1550 or 0427 991 550.**
- NSW DPI, Camden**  
**Grant Herron: (02) 4640 6471.**



**TABLE 10: Control of thrips**

Active ingredient	Concentration and formulation	Application rate of product	Comments
<b>Thrips (Tobacco thrip <i>Thrips tabaci</i> and Tomato thrip <i>Frankliniella schultzei</i>)</b>			
Dimethoate	400 g/L EC	0.35–0.375 L/ha	Apply by ground rig or air. Aircraft may use double track spacing with a reliable cross wind. Do not harvest for 14 days after application. Do not graze or cut for stockfeed for 14 days after application.#
Fipronil	200 g/L SC 800 g/L WG	0.0625–0.125 L/ha 15.5–30.0 g/ha	Regent will take 3–4 days to reach full effectiveness. Use higher rates under high pressure.#
Omethoate	800 g/L SL	0.14–0.28 L/ha	Use higher rate for longer residual control.#
Phorate	100 g/kg G	6.0 kg/ha	For short residual control at time of planting.
		11.0–17.0 kg/ha	For extended period of control. Only use the highest rate on heavy soils when conditions favour good emergence.
	200 g/kg G	3.0 kg/ha 5.5–8.5 kg/ha	For short residual control NSW registration only.

#See label for instructions to minimise impact on bees.

## Australian plague locust

### *Chortoicetes terminifera*

Very rarely are plague locusts a problem for cotton, but large swarms of plague locusts during autumn can result in significant egg lays. Locusts are able to travel up to 500 km in a night on the winds so can be a threat even if not experienced locally in the previous season. Whilst cotton is not a preferred food source for locust there have been a number of instances in southern NSW where control has been required.

Threat of attack could be from bands of hatchlings for instance in adjacent areas or from swarms that fly in from elsewhere. Locusts can actually mow the cotton plants down and can cause significant damage especially when cotton is at the seedling stage.

### Damage symptoms

Severe damage directly attributed to chewing.

### Sampling

An important aspect of responding to the threat of locust plagues is surveillance and monitoring. In NSW, land managers have a legal obligation to report the presence of locusts on their properties to their Livestock Health and Pest Authorities (LPHA). In Queensland, landholders are asked to report the presence of locusts to Biosecurity Queensland (BQ), although there is no legal requirement. While high numbers will be seen very easily visually, it will pay to inspect the perimeters of fields to detect the occurrence of any banding of emerging locust as early as possible. These state authorities may also implement surveillance and monitoring programs to determine the extent of locust outbreaks in an area and evaluate the success of control methods.

### Threshold

Threshold based on plant damage. Locust can cause significant damage in a short period of time especially if cotton small.

### Key beneficials

Birds do eat locusts yet there are no beneficials that could control the numbers present when swarming occurs.

### Selecting an insecticide

In selecting control options it is essential to consider the risk of flaring secondary pests. Choosing an appropriate chemical that fits within the IRMS will be a challenge. As an occasional pest, there are few products registered for their control in cotton. Diazinon and chlorpyrifos are registered – check label



**Thrip damage to lower nodes with terminal showing new growth without damage. Plant is likely to recover however continue to monitor.** (Photo: Lewis Wilson, CSIRO)

for rates and further information. At times of high risk permit applications may be made. Contact Cotton Australia for more information. Seedling cotton may require quicker action.

In some states free insecticide may be available for locust control in certain circumstances. In NSW, the LPHA coordinate locust control activities. The primary aim of this service is to protect crops and pastures, but the circumstances in which free insecticide may be provided may not be consistent with what is required to protect cotton crops. In NSW, free insecticide will only be provided to LPHA rate payers once locust nymphs have banded. BQ coordinates locust control in Qld, and undertake strategic aerial control of locusts where there is any threat of migration to/within the area where Local Governments make contribution to the Contingency Fund. BQ does not directly protect crops.

#### Further Information

**In NSW – contact your local Livestock Health and Pest Authority. [www.lhpa.org.au](http://www.lhpa.org.au)**

**In QLD – contact your local Biosecurity Officer 132523**

**Australian Plague Locust Commission (APLC) [www.daff.gov.au/animal-plant-health/locusts](http://www.daff.gov.au/animal-plant-health/locusts)**