

# Onion thrips in onion — identification and monitoring

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## What is onion thrips?

Onion thrips (*Thrips tabaci*) is a tiny (<1.5 mm long), slender, free-moving insect that is often found in large numbers in onion. Adults are pale yellow to light brown and have a pair of wings fringed with long hairs (Fig. 1). The immature stages have the same body shape as adults but are lighter in colour and are wingless.



Figure 1. Onion thrips adult and nymph (inset).

## Damage caused by onion thrips

Both adults and nymphs feed by piercing and rasping the leaf surface and drinking the liquid. The feeding areas later appear as silvery patches on the leaves (Fig. 2). When feeding areas are large, the plant's ability to photosynthesise and maintain water balance is greatly reduced, resulting in yield loss or reduced bulb size. Onion thrips may also enter harvested bulbs and breed there, thus reducing

marketability of bulbs. Apart from direct damage, onion thrips is a vector of tomato spotted wilt virus (TSWV) and iris yellow spot virus (IYSV); the latter is a potentially destructive virus of onion.

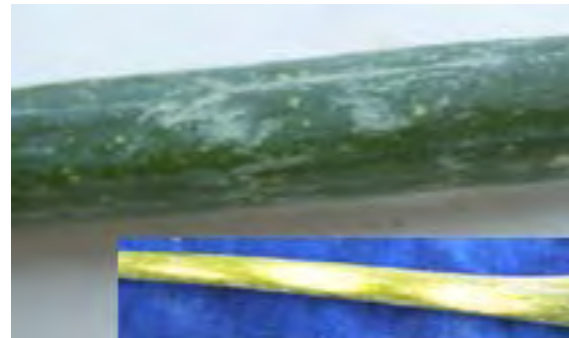


Figure 2. Symptoms of damage caused by onion thrips feeding (top), and iris yellow spot virus infection (inset).

## Identification

Most (>90%) thrips found in onion are onion thrips. Occasionally a few plague thrips (*Thrips imaginis*) are also found, especially early in the crop season. Adults of the two species can be separated easily under the microscope by the presence (in plague thrips) or absence (in onion thrips) of red pigment in the ocelli on the head of freshly collected specimens (Fig. 3).



Figure 3. Dorsal view of the head of plague thrips (left) and onion thrips (right), highlighting the red colour of the ocelli in the plague thrips.

Later in the crop season, some predatory desmothrips may also be present. These are large thrips, more than double the length of onion thrips and plague thrips (Fig. 4). They have banded wings that are round at the tips.



Figure 4. Predatory desmothrips

### Where are onion thrips found?

In a young onion plant, both adults and nymphs are found mostly in between the inner leaves (Fig. 5, left). As plants mature, most adults disperse to other parts of the leaves. Nymphs also disperse but the majority remain in between the inner leaves. In a mature plant with fallen leaves, adults and nymphs are also found in clusters inside the leaf folds (Fig. 5, right).



Figure 5. Left: Onion thrips are found mostly in between the inner leaves. Right: Clusters of onion thrips adults and nymphs.

### Monitoring

Onion thrips density can be assessed directly by on-site visual inspection or extraction and lab counting, or indirectly by trapping. In on-site visual inspection, make sure touching leaves are separated and fallen leaves are lifted to reveal hidden thrips.

Extract thrips by immersing and shaking the plants in ethanol or water for a few minutes, and then filtering the liquid through fine mesh. You can then count the thrips on the mesh, using a microscope. Alternatively, cut leaves into pieces and place in a funnel connected to a collection vial. Place a few drops of turpentine on a cotton wick, and place that on top of the plant material to repel the thrips to the collection vial.

For either visual inspection or extraction, a minimum of 10 plants should be checked from each monitoring block.

Yellow sticky traps are used to trap onion thrips. A minimum of five sticky traps should be placed

in each monitoring block. The traps are retrieved after a period of time and then examined under a microscope. In addition to onion thrips, flies, midges, bugs and other thrips species may also be trapped in the sticky trap. Other common thrips species found in sticky traps in onion fields in south-western New South Wales are plague thrips, dandelion thrips (*Tenothrips frici*), haplothrips, and tomato thrips (*Frankliniella schultzei*). Onion thrips and plague thrips are generally paler than the other three species (Fig. 6). In addition, onion thrips and plague thrips have seven antennal segments, while the others all have eight antennal segments.



Figure 6. Yellow sticky trap and five thrips species commonly found in onion in NSW. From left to right: onion thrips, plague thrips, tenothrips, haplothrips and tomato thrips.

### Further reading

Kirk WD 1987, 'A key to the larvae of some common Australian flower thrips (Insecta:Thysanoptera), with a host-plant survey', *Aust. J Zool.*, 35: 173–85.

Mound LA, Gillespie P and McMaster F 1997, *Identification guide to thrips associated with crops in Australia*, NSW Agriculture, Orange.

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