



Plant Pest Factsheet

Melon thrips

Thrips palmi



Fig. 1: Adult female *Thrips palmi*. © Crown copyright.

Background

The melon thrips, *Thrips palmi*, is a notifiable pest in the UK. It can cause damage to a wide range of glasshouse ornamental and vegetable crops, particularly plants in the families Cucurbitaceae and Solanaceae, such as cucumber, aubergine, tomato and sweet pepper. Their mouthparts are adapted to piercing and sucking, and adults and nymphs both feed by sucking the cell contents from leaves, flowers and fruits, thereby causing surface silvery scars, and leaf deformation or chlorosis.

The species is currently not found in Europe. However, there have been a small number of outbreaks on crops in protected cultivation, several in the Netherlands between 1988 and 1995, one outbreak in southern England in 2000, and one outbreak in Germany in 2014. All of these outbreaks were eradicated. In 2004, there was also a report of *T. palmi* on two outdoor crops (flowers of kiwi, *Actinidia chinensis*) in Portugal, but subsequent annual surveys in the country failed to detect the thrips again. However, *T. palmi* is regularly carried on plants or plant material in trade and, as such, is routinely intercepted at the UK border.

Geographical Distribution

The pest appears to have originated in southern Asia and to have spread from there during the latter part of the twentieth century. It is now widespread in both Asia and the Pacific region, as well as throughout the Caribbean. It has also been recorded locally in North, Central and South America, Africa (but not East Africa) and Australia. The species continues to expand its range, although it does appear to be restricted by certain climatic conditions (cooler temperatures and aridity). The species may well one day become pantropical. However in the UK, *T. palmi* is unlikely to survive outside of protected cultivation.

Host Plants

Thrips palmi is extremely polyphagous, and has been recorded on more than 200 plant species from more than 36 plant families, although it has become particularly recognised as a major pest of hosts in the Curcubitaceae and Solanaceae. Examples of its many recorded hosts include *Capsicum annuum*, *Chrysanthemum* spp., *Cucumis melo*, *Cucurbita* spp., *Cyclamen*, *Glycine max*, *Gossypium* spp., *Helianthus annuus*, *Nicotinia tabacum*, Orchidaceae, *Phaseolus vulgaris*, *Sesamum indicum*, *Solanum lycopersicon*, *Solanum melongena*, *Solanum tuberosum* and *Vigna unguiculata*.

Description

Thrips palmi adults are almost entirely yellow in colouration, although a dark longitudinal line is formed by the joining of the wings when they are held at rest (Figure 1.). The creamy-yellow larval (immature) stages lack wings, but are otherwise generally similar in appearance to the adults (Figure 2.). Identification of the thrips is hampered by both their small size (1.0-1.3 mm) and their great similarity to other yellow or predominantly yellow species of *Thrips* particularly *T. flavus*, a common but economically-unimportant flower thrips found throughout the UK. Within a glasshouse context, species that might be confused with *T. palmi* include the onion thrips (*Thrips tabaci*) and western flower thrips (*Frankliniella occidentalis*). *Thrips palmi* can only be distinguished with certainty from other species of thrips by means of laboratory examination.

Biology

Eggs are laid within plant tissue (leaf, flower or fruit) and are not visible to the naked eye. There are two larval stages, which are active feeders and may potentially be found on any above-ground part of the plant, and then two pupal stages. The latter are sedentary and non-feeding, though will move if disturbed; the second-stage larva usually drops to the soil to pupate, but occasionally the pupae can be found on the aerial parts of the plant. When the adults emerge they return above ground to feed and lay eggs. At 25°C, a single life cycle may be completed in as little as 17.5 days.



Fig. 2: Second-instar larva of *Thrips palmi*. © Crown copyright.



Fig. 3: Thrips feeding on the underside of a leaf. © Crown copyright.

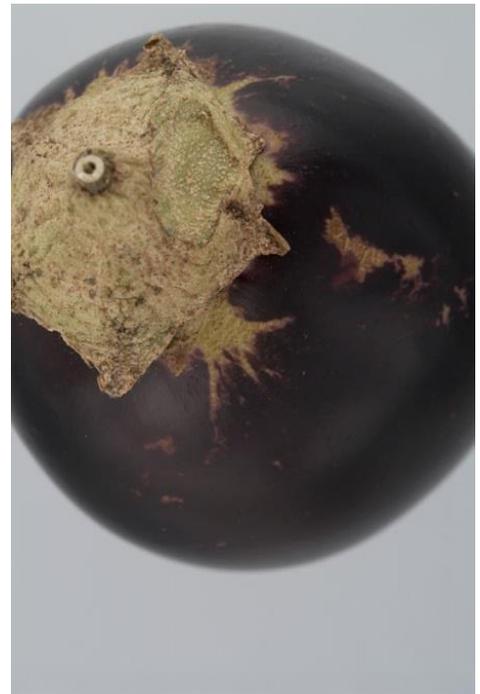


Fig. 4: Surface scarring on an aubergine caused by *Thrips palmi* feeding. © Crown copyright.

Dispersal and Detection

Routine port-of-entry inspections for this pest have been carried out for several decades in England and Wales by the Plant Health and Seed Inspectorate (PHSI). The first interception of *T. palmi* in the UK was in 1997, on imported orchid flowers from Thailand. Subsequently, *T. palmi* has been regularly intercepted on harvested bitter-gourd (*Momordica*) and aubergine from the Caribbean, Asia and West Africa, as well as on

orchid flowers from several South-East Asian countries, and occasionally on basil leaves from Thailand and chrysanthemum cuttings from Brazil. The source of the UK outbreak remains unknown.

On plant material, *T. palmi* may potentially be found on most above-ground parts of the plant (leaves, flowers and fruits); the parts of the plant infested can differ according to variables such as the host and the characteristics of different *T. palmi* populations. As a result, the thrips have the potential to be imported on a wide range of plants for planting, cut flowers, and fruits of host species. During visual examination of plant material, attention should be paid to silvery feeding scars on the leaf surfaces, particularly on the undersides of leaves (where the larvae are most likely to be found; Figure 3.) and especially along the midrib and the veins, as well as to flowers and fruits. Heavily infested plants are often characterised by a silvered or bronzed appearance to the leaves, stunted leaves and terminals, or scarred and deformed fruits. On fruit such as aubergine the larvae are usually hidden under the calyx, but scarring damage caused by feeding activity will often be visible beyond the cover of the calyx (Figure 4.). The potential presence of pupae in the growing medium also poses a risk and a barrier to detection.

Economic Impact

Thrips palmi causes economic damage to plant crops both as a direct result of its feeding activity and from its ability to vector tospoviruses such as *Groundnut bud necrosis virus*, *Melon yellow spot virus* and *Watermelon silver mottle virus*. Its ability to transmit other tospoviruses such as *Tomato spotted wilt virus* remains unspecified. Both larvae and adults feed gregariously and under the right conditions numbers can build up rapidly leading to heavy infestations and severe damage to plants. The particularly large host range of the thrips means that it could threaten a wide range of glasshouse grown crops within the UK, with the potential to cause significant economic impacts.

Advisory Information: keep a good look out

- Seek assurance from your plant supplier(s) that plants are free from this pest as part of any commercial contract
- Ensure that any known hosts of *T. palmi*, such as orchids, are treated prior to import.
- Keep any imported material for 'growing on' separate until it has been thoroughly inspected and found to be free from *T. palmi* and any suspect virus symptoms.
- Monitor your crop during the growing season and erect sticky traps. Blue traps are recommended for thrips, in preference to yellow. Check traps regularly for the presence of thrips.

Contact details

Suspected outbreaks of *Thrips palmi* or any other non-native plant pest should be reported to the relevant authority:

For **England and Wales**, contact your local **APHA Plant Health and Seeds Inspector** or the **PHSI Headquarters**, Sand Hutton, York. Tel: 01904 405138

Email: planthealth.info@apha.gsi.gov.uk

For **Scotland**, contact the **Scottish Government's Horticulture and Marketing Unit**:

Email: hort.marketing@gov.scot

For **Northern Ireland**, contact the **DAERA Plant Health Inspection Branch**:

Tel: 0300 200 7847 Email: planthealth@daera-ni.gov.uk

For additional information on UK Plant Health please see:

<https://secure.fera.defra.gov.uk/phiw/riskRegister/>

<https://www.gov.uk/plant-health-controls>

<http://www.gov.scot/Topics/farmingrural/Agriculture/plant/PlantHealth/PlantDiseases>

<https://www.daera-ni.gov.uk>

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