

Western Flower Thrips

Frankliniella occidentalis (Pergande)

Description:

Immature stages – Eggs are translucent, white, and kidney-shaped. Larvae generally resemble the adults but are wingless. Larvae are pale yellow in color and both instars have red eyes. Pupal stages are also pale yellow in color and are found inside flowers or in soil.

Adult stages – Thrips are generally very small (up to 2 millimeters (mm), or 1/10 inches, in length). Adults are cigar-shaped with fringed wings. Adult females are dark yellow to dark brown in color, and males are mostly light yellow.

Biology:

Life Cycle – The life cycle of thrips consists of the egg stage, followed by two larval stages, two pupal stages, and finally the adult stage. Males are generally smaller than the females. Thrips display parthenogenesis (reproducing without mating), and both mated and unmated females can lay eggs. The eggs of most plant-feeding thrips are inserted into plant tissue by the females. The larval stages actively feed on plant material.

Seasonal Distribution – Several generations may occur in a year, since the life cycle can be completed in about two weeks under favorable conditions. Thrips populations generally peak during spring and early summer.

Damage to Crop:

Western flower thrips are some of the most serious pests of greenhouse plants as well as many other outdoor ornamental, vegetable, fruit, horticultural, and agronomic crops. In addition to causing feeding damage, they also transmit plant viruses such as tomato spotted wilt virus (TSWV) and impatiens necrotic spot virus (INSV), causing significant economic losses. More than 500 plant species, such as petunia, verbena, and impatiens, are affected by western flower thrips.

The mouthparts of thrips are unique to their family and asymmetrical, unlike those of most insects. The left mandible forms a narrow stylet that draws out plant sap, and the right mandible is reduced or absent. Some species inject digestive enzymes into the wound, and this causes silver or bronze colored speckles on the surface of the plant parts. Small black specks of excrement may also be seen on the affected parts. Some thrips also excrete honey dew, which favors the growth of black sooty mold.

Management:

Thrips are attracted to the colors yellow and blue, so yellow and blue sticky cards are an effective way to monitor populations. The cards should be placed among plants just above the canopy level so that the insects



Nymph



Adult



Damage

are caught during flight. Blue or white water pan traps can also be used for monitoring. Regular inspecting plants for damage symptoms, like silvery or bronze discoloration, and the distortion of leaves and flowers will also help to identify damage from thrips.

An integrated approach is always best to manage thrips, and the sanitation of the field area or greenhouses is integral to thrips management. Weeds may serve as alternate hosts for thrips as well as reservoirs for viruses. Fallen leaf litter or debris should be removed to reduce pupation rates and disrupt population buildup.

Physical exclusion can help prevent infestation. Placing fine mesh screens over fans and other vents restricts the entry of thrips. Mesh screens can also be used to restrict small areas of nurseries to prevent thrips from attacking new plants or to examine and quarantine plant material brought from outside. Greenhouse workers should avoid wearing bright colored clothes, especially when moving between greenhouses, so that thrips are not attracted and transported.

Most thrips are attacked by one or more natural enemies and chemical control may not be required in certain situations, especially in the landscape. For example, red-banded thrips and melon thrips are preyed upon by lacewings, spiders, predatory thrips, mites, and predatory bugs like minute pirate bugs. Some natural enemies are specific, like the larval endoparasitic wasp *Thripobius semiluteus* Boucek (Eulophidae), which specifically attacks greenhouse thrips. Biological control of thrips in greenhouses and high-value landscapes and nurseries can be successful only if it is part of integrated management program.

Chemical control often becomes necessary in severe infestations, but it is important to understand that thrips are difficult to control due to several reasons. Owing to their tiny size, they can hide in places that cannot be reached by pesticides. Systemic insecticides also have limitations, because they may not reach growing points of plants like tender leaves and buds where the thrips feed. The continuous exposure to insecticides leads to the development of resistance in thrips. Therefore, the choice of insecticides and their application methods should be made after considering these points. Insecticides should be used sparingly if the damage is tolerable and natural enemy populations are high. Using the Georgia Pest Management Handbook, choose insecticides labeled for use against thrips and for application on the host plant. Contact your local University of Georgia Cooperative Extension office for specific recommendations. Follow all directions, particularly safety precautions on insecticide labels.

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