

Thrips

Biology

Thrips are small, only 1-2 mm long slim insects with two pairs of fimbriated wings. The respective species are determined by the shape of the body and the bristles. At the end of their legs there are tarsal segments with small claws and adhesive bulbs. These insects have stinging and sucking mouthparts, they pierce into the cells and remove their contents. The cells fill with air and look silvery and shiny. Thrips are usually plant suckers, but there are also some predatory species. The plant damaging thrips lay their eggs on leaves and other plant parts with the help of an ovipositor. Development stages are two wingless larvae stadiums and then two to three nymph stadiums with the nymphs having so-called stumpy wings. The first larvae stadium and the adults are very mobile whereas the nymphs have phases of immobility. The development depends mainly on temperature and light. In constantly favourable greenhouse conditions there will be about 10-12 generations per year, depending on the respective species.

Different varieties of orchids can be affected.

- Western Flower Thrips (*Frankliniella occidentalis* Pergande): most frequent species in greenhouses, very polyphagous. The adults are about 2 mm long, light yellow to brown-yellow, the larvae are usually golden-yellow. The development cycle includes two larvae and two nymph stadiums and takes about 2-3 weeks in temperatures between 20°C and 30°C. This species usually lives in blossoms, but can also multiply rapidly on leaves and then severely damage all plant parts above the ground. This thrips species is a carrier of the tomato spotted wilt virus which occasionally infests *Phalaenopsis* plants. Thrips become resistant to insecticides relatively quickly.
- Orchid thrips (*Dichromothrips corbetti* Priesner): the female is dark brown, larvae are reddish. The species originates from East Asia, mainly appears on *Vanda* and *Cattleya*. *Phalaenopsis* may also be infested, mainly at the blossoms. Viruses are not transmitted.
- Tobacco Thrips (*Thrips tabaci* Lind.): very polyphagous, frequently found species, greenhouses are often infested by animals coming from outside. The adults are 1-1.3 mm long, grey-yellow to brown, sometimes nearly black, the larvae are white to yellow.
- American Thrips (*Echinothrips americanus* Morg.): a new species of thrips on orchids which occurred in the Netherlands in the mid-nineties for the first time. Up to now, these animals have only been found in the *Spathoglottis* species *Caractea* as well as in young *Miltonia* plants in orchid horticulture. They were also seen on willow and birch seedlings which were found as weeds in the substrate, but they have not moved onto other orchid cultures yet. *Echinothrips* cause bright silvery spots due to sucking the plants and marked dung formation.
- Greenhouse Thrips (*Heliothrips haemorrhoidales* Bouché): occasionally found in orchid greenhouses, mainly damaging leaves, sometimes blossoms, too. Adults are 1-1.5 mm long, dark brown with a bright hind body, antennae, legs and wings. Usually found on the underside of leaves and are able to settle down in greenhouses with constant temperatures. They prefer shady and humid places and develop slowly in high temperatures. Infested leaves turn bleak, paperlike and wilt, large amounts of honeydew pollute the leaf surface. Plant protective measures can markedly reduce the number of animals.
- Palm Thrips (*Parthenothrips dracaenae* Heeg.): Adult animals are about 1.3 mm long, with black and white stripes, the larvae are white. They are very slow and usually sit on the leaves forming large colonies and leave very typical silvery shiny bright spots with black dung drops after sucking. Particularly numerous populations are found, if the host plants are kept in the dark and in moderate temperatures during the autumn and winter seasons. Thrips do not occur in greenhouses with a high humidity. Chemical treatment is unproblematic, biological treatment is more complicated. Predatory mites do not attack these animals, only lacewing flies can be successful.

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Damage

Plants damaged by thrips look brighter, later on they turn brown and are covered with small black dung drops. Buds do not grow properly and fall off very early. Sprouts can be deformed. Sucking by *Frankliniella* and *Thrips tabaci* does not result in deformation and growth inhibition right away, as it is the case in many other ornamental plants. However, bright spots can be seen, white spots on leaves and blossoms with dung deposits and growth may be inhibited when there is more severe infestation. This species of thrips is a carrier of the tomato spotted wilt virus which occasionally infests orchids. Particularly threatened are the blossoms of many orchid varieties, in particular those of *Phalaenopsis*, *Miltonia*, *Cymbidium*, *Epidendrum*, *Vanda*, *Masdevallia*, *Cattleya* and *Epicattleya*. The leaf thrips *Echinothrips*, *Parthenothrips* and *Heliothrips* leave typical silvery shiny bright spots with black dung drops. When there is marked infestation, the borders of the leaves might roll in and the leaves might turn brown.

Control

The most important measure to control thrips is comprehensive and adapted monitoring, i.e. all purchased plants must be checked for larvae, adult and infestation checks have to be carried out in the stands using blue boards. No weeds should be placed under the tables. Chemical treatment of *Frankliniella occidentalis* and *Thrips tabaci* can be done by spraying insecticides which have to be repeated after 3-7 days. *Echinothrips*, *Parthenothrips* and *Heliothrips* are very slow thrips, they stay on the leaves during their entire development. Chemical treatment with contact insecticides is unproblematic.

Biological plant protection

Predatory mites *Amblyseius cucumeris*, *A. swirskii*, *A. limonicus* can be used to control *Frankliniella*. As thrips are generally found on orchids, obligatory releases of predatory mites have to be done. It is difficult to make predatory mites settle on orchids, so it cannot be recommended to spread them in the greenhouse. More successful is to distribute them in little paperbags.

Those bags contain bran as a carrier material and also storage mites (*Tyrophagus* sp.) as food for the predatory mites. So these bags are breeding stations containing a sufficient amount of food which is the basis for continuous multiplication of the predatory mites. This bag system proved to be especially successful when *Frankliniella* build populations already in the vegetative phase of the plants. The reason to do this is the phenomenon of reproductivity of *Amblyseius cucumeris* Oud, if *Frankliniella* is the only food they can get. As there is no pollen or other food in green plants, the storage mites in the bags are a good food supplement making up for that negative effect.

In order to prevent marked fluctuations in thrips populations, integratable insecticides can be used. *Amblyseius* is not effective against *Echinothrips* oder *Parthenothrips*, which makes biological treatment of them considerably more difficult.

Animal pests

Thrips



Cattleya: Thrips



Cattleya: Orchid Thrips (*Dichromothrips corbetti*)



Thrips on yellow adhesive trap



Phalaenopsis: Thrips



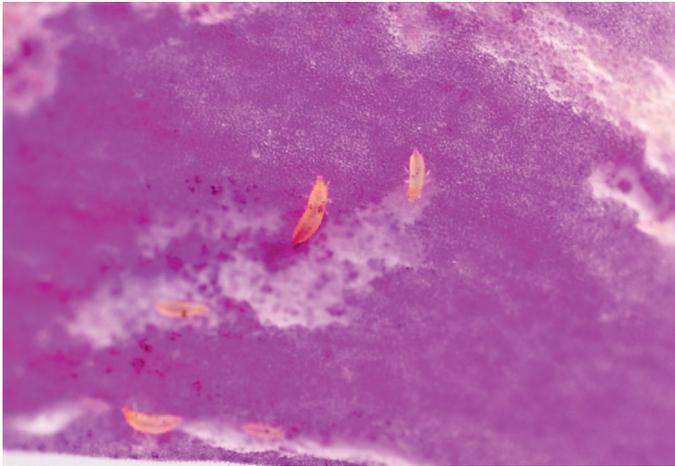
Phalaenopsis: Thrips



Phalaenopsis: Orchid Thrips (*Dichromothrips corbetti*)

Animal pests

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Phalaenopsis: Orchid Thrips (*Dichromothrips corbetti*)



Phalaenopsis: Orchid Thrips (*Dichromothrips corbetti*)



Spathoglottis: American Thrips
(*Echinothrips americanus*)

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