

## Mites/spider mites

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### Identification, Biology & Management

Mites and spider mites are microscopic ½ mm or less sap sucking pests. They are not insects but are related to ticks and spiders. Mites feed on nearly all native and exotic deciduous, broadleaf, evergreen, and needle-bearing evergreen ornamental trees. More than 150 families of mites are known, however, only very few are important in terms of damage to trees and shrubs which are largely contained within three families; spider mite family (*Tetranychidae*), gall and rust mites family (*Eriophyidae*) and false spider mite family (*Tenuipalpidae*).

### Symptoms

Mites cause damage through extracting liquids and chlorophyll from tender plant tissue or through gall formation (Figure 1). Infested foliage becomes bronzed, mottled or pale. In particular heavy infestations leaf necrosis followed by premature leaf drop may occur.

Galls are formed in response to toxic saliva which is injected into the plant during feeding. Injury largely occurs during warm dry weather as this is favorable for mites while unfavorable for the host plant. In these conditions mite populations can grow at enormous rates leading to severe plant injury.

Mites are commonly found on most landscape plants. Injury occurs if favourable conditions allow for rapid mite population increase or if an insecticide is used on the host plant that then kills the predacious insects that normal feed on mites.

The ability to diagnose mite injury in the field is desirable due to the unavoidable deterioration of samples sent to the laboratory. For field diagnosis hold a piece of white paper underneath a portion of foliage. Shake the foliage sharply catching the debris with the piece of paper. Then use a hand lens to identify the debris or use your fingers to

smear the debris. If mites are present smears of blood will result.

Figure 1: Mite damage on conifers



### Causal Agents

The most significant mites causing damage to trees and shrubs in the UK are:

**Lime mite** (*Eotetranychus tiliarium*) a sporadic pest effecting street trees especially in hot dry summers. Cause grey brown or bronzed leaves in the summer followed by premature leaf fall.

**Conifer mite** to include **Conifer spinning spider mite** (*Oligonychus unungunis*) a common pest throughout the UK, a particularly important pest

to young spruce trees. These mites usually have up to five generations a year and produce considerable quantities of webbing. Infested foliage is mottled yellow eventually turning brown, and in advanced cases needles may drop prematurely. Spruce seedlings and transplants can be killed especially in combination with moisture stress.

**Sycamore leaf gall mite** (*Artacris macrorhynchus*) A widespread and common mite which causes formation of 2-4 mm elongate dark red galls on the upper surface of leaves. Considered a cosmetic pest.

**Pear leaf blister mite** (*Eriophyes pyri*) a significant pest to pear trees but also many *Rosaceous* trees. The 0.22 mm brown mites overwinter in bud scales becoming active in early spring. Pale green to yellow galls often develop before the leaves unfold. The pest on young trees may prove detrimental (Figure 2).

**Fruit tree red spider mite** (*Panonychus ulmi*) a widespread pest to many fruit and ornamental trees, heavy infestations result in leaf bronzing and premature leaf fall

Figure 2: Pear blister mite attack



### Control

Currently in the UK no miticide/acaricides are registered for control of mites on outdoor

ornamental trees and shrubs. Therefore the control of mites is achieved through using physical insecticides. Physical insecticides work by non-chemical means such as suffocation or abrasion of the insect cuticle i.e. soap, spray oil and/or silicon based abrasive products.

A dormant spray of oil plus copper should be applied in late winter to suppress overwintering stages. In early spring monitor for mite feeding activity; apply spray treatments as necessary at 14-21 week intervals to control later generations. Repeat applications are required due to the non-persistent nature of these products. 100% control should be achieved with three sprays at correct intervals. Spray applications should take into consideration the nature of the pest. Mites largely oviposit on the undersides of leaves; therefore sprays should be aimed on the underside of foliage.

Predacious mites (*Neoseiulus fallacies*) and green lacewings are effective biological controls.

**Note:** Synthetic insecticides are not recommended controls. Research indicates that applications of these products can significantly increase mite populations as natural predators are killed while the mites are not.



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