

Biological Control of Gorse with the Gorse Spider Mite

Department of Primary Industries, Frankston

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This Landcare Note describes the gorse spider mite, a biological control agent for gorse, Ulex europaeus.

Common and scientific names

Gorse spider mite, *Tetranychus lintearius* Dufour
Sub-class Acari, Family Tetranychidae.

Background

Gorse (furze) *Ulex europaeus* L. is native to central and western Europe. It was introduced to Australia in the early 1800s and now occurs in Victoria, Tasmania, South Australia, Western Australia, NSW and the ACT. Gorse is listed as a Weed of National Significance as it is such an invasive environmental and agricultural weed in Australia, particularly Victoria and Tasmania. It invades bushland, reducing access and conservation values and threatens the survival of rare and endangered plant species. On pastoral land gorse significantly reduces pasture and animal productivity. Gorse also provides habitat and shelter for vertebrate pests, such as rabbits and foxes, and increases fire hazards.

The gorse spider mite is being used as a biological control agent for gorse in Australia. Native to Europe, the gorse spider mite has also been introduced into New Zealand, Hawaii, Chile and Pacific coast states of the USA.

The gorse spider mite was imported into DPI Victoria's quarantine facility at Frankston in 1998. Since then, it has been released at sites in Victoria, Tasmania, South Australia, NSW and Western Australia. Following releases, the gorse spider mite established and spread rapidly and is now widespread.

Description

Adults - Brick red in colour with eight legs (Figs. 1 and 2). Females are oval in shape and 0.56 mm long while males are smaller (0.36 mm long) and more triangular in shape.

Juveniles - The juvenile stages are similar to adults but smaller. Newly hatched mites (larva) have only six legs. The two later juvenile stages (protonymph and deutonymph) both have eight legs.

Eggs - Translucent, spherical, 0.13 mm in diameter, turning bright orange when ready to hatch (Figs 2 and 4).

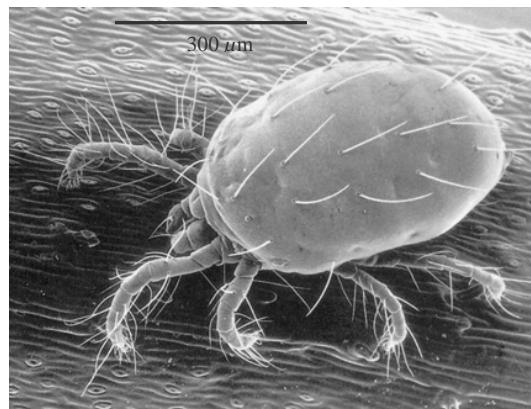


Figure 1. Adult gorse spider mite.



Figure 2. Mixed stages of the gorse spider mite, an example of an egg is indicated by the white arrow and an adult by the black arrow.

Life cycle

Gorse spider mites live in large webbed colonies on gorse bushes (Fig. 3). The females congregate in a 'feeding colony' and move slowly *en masse* as they feed and lay eggs along gorse shoots.

Gorse spider mites have several generations per year and breed more quickly at higher temperatures. The entire life cycle, from egg to adult, takes around 6 weeks at 15°C but can take only half this time at 23°C.

Females live for 2 to 4 weeks with each female producing up to 40 eggs during her life. Eggs take around two weeks to hatch and there are three active juvenile stages.

In warmer weather the mites move throughout the web, but in colder weather they tend to cluster at the centre of the web, often on the leeward side of stems where they are protected from wind and rain which destroy the fine webbing. When a mite colony becomes too large the mites migrate to a new gorse bush. They do this by congregating on the ends of branches - they may even drip from them like icicles - from where they are blown by the wind and land on gorse further away.



Figure 3. Gorse spider mite webbing and damage.

Impact

Gorse spider mites have piercing and sucking mouthparts that pierce individual cell walls of gorse foliage and extract the cell contents. This causes the foliage to appear bleached or brown. Extensive feeding pressure can kill shoots, reduce plant growth and overall plant biomass and abort the production of flowers.



Figure 4. *Phytoseiulus persimilis* is an effective predator of gorse spider mite, the white arrows show gorse spider mite eggs.

The gorse spider mite reduced shoot growth on gorse by around 36% in impact studies conducted over 2.5 years in Tasmania. New colonies expand rapidly and cause severe damage to gorse plants, but often do not persist in large

numbers. It is likely that their populations are being regulated by predators such as the mite-eating ladybird, *Stethorus* spp., and the predatory mite, *Phytoseiulus persimilis* (Fig. 4).

Integrated control

Biological control cannot eradicate a weed but can reduce the spread and density of infestations. In some cases control is achieved to the level where the weed is no longer of concern and no other control is necessary. More commonly, other methods are still required to achieve the desired level of control. Biological control should not be considered the complete answer to a gorse problem. It is a technique that should be used in conjunction with other control measures in an integrated management program.

Biological control of gorse may be more effective if a suite of natural enemies are introduced into Australia. Other biological control agents established in Australia are the gorse thrips, *Sericothrips staphylinus* (introduced in 2001, see Landcare Note LC0170) and the gorse seed weevil, *Exapion ulicis* (introduced in 1939). The gorse soft shoot moth, *Agonopterix umbellana*, was introduced into Victoria and Tasmania in late 2007 and investigations into future agents are continuing.

Further information

If you would like to be part of the gorse biological control program please contact DPI Victoria, Frankston centre, PO Box 48, Frankston, Vic., 3199, ph. 03 9785 0111.

Acknowledgments

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