

Weed Biological Control Pamphlet No. 8
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REDISTRIBUTION AND ESTABLISHMENT OF GORSE SPIDER MITE

Background

Gorse spider mite, *Tetranychus lintearius* Dufour, a biological control agent for gorse, was first released in Tasmania in December 1998. Glasshouse culturing by the Tasmanian Institute of Agricultural Research (TIAR) enabled releases of the mite to be made in all parts of the state. Gorse spider mite is now established in all areas where gorse is a problem and colonies can be easily collected and established on uninfested gorse bushes.

When is a site ready for redistribution?

The time for harvesting mite colonies from a particular site may vary considerably between sites and is dependent on a number of factors such as the prevailing weather conditions. If a release has been carried out during spring and summer, then collection and transfer of mite colonies can probably commence at the site about a year later. Colonies should at least be ready for harvest by the second year after release. Spring or summer is the best time to collect and transfer mites to a new site. This enables the establishing colony to increase in size before the onset of lower winter temperatures that restrict development.

Choosing a release site

It is best to choose your release sites in advance of harvesting, because a number of factors need to be considered.

- *Is biological control appropriate?*

Biological control is a long-term process and the impact of biological control agents may not be evident for many years. If you are after a short-term solution to your problem, then conventional methods may be more appropriate. Biological control is more suited to sites that are inaccessible to conventional control methods, or, due to financial constraints, are unable to be controlled in the short term.

- *Involve community groups in site selection*

Inviting your local Landcare group members to be involved in site selection can help identify other

interested neighbouring landholders and obtain their long-term co-operation.

- *What sort of release site is required?*

It is always best to select a site, which has a dense and persistent infestation of gorse. If the site is also connected to neighbouring gorse infestations by nearby plants, this will facilitate the movement of mites to other areas once they establish. The plants should be healthy, as mites will survive and reproduce better if their food is nutritious. The release site should be on the upwind side of an infestation as wind currents readily disperse the mites. The site should also have a sunny aspect as the rate at which mite's breed is temperature dependent.

- *The site should be left untreated for up to 3 years*

The site should not be slashed, burned, cultivated or treated with herbicides. If herbicides or insecticides are used on the property, they should be kept within 100m of the release site.

Collection and transfer of mite colonies

To harvest mite colonies you will need some secateurs and a thick pair of gardening gloves to protect your hands from the gorse spines. You will also need some paper bags or containers that can be plastic or cardboard. It is also a good idea, particularly during hot weather, to place the bags or containers into an esky with some freezer blocks, to keep the colonies cool and slow down their activity during transfer. About 5 cuttings, no more than 10 cm. in length, with a minimum of 200 mites on each cutting should be enough to enable the mite to survive and breed successfully at a new site. Simply place the cuttings in the bags or containers. At the new release site, lodge the infested shoots firmly into the new bushes.

There should be no need to tie them. The mites will soon transfer across onto the new bushes. If you have 5 cuttings these can be used to start colonies on 5 neighbouring bushes at the new release site.

Be careful of gorse spider mite predators

Predation by two small black ladybird beetles (*Stethorus* spp.) and the Chilean predatory mite, *Phytoseiulus persimilis* Athias-Henriot, which are difficult to see with the naked eye, is expected to restrict gorse spider mite populations at some sites or even prevent their establishment. If you are transferring colonies of gorse spider mite with these predators present, it may be a waste of time because they could prevent establishment at the new site. However, predators tend to avoid aggregating colonies of mature gorse spider mites that are often clearly visible on branch tips. It is therefore safer to transfer short cuttings (no more than 10 cm.) which contain these colonies. Predators usually feast on eggs and hatchling larvae amongst older webbing further down the branch.

How effective is gorse spider mite

Once mite numbers increase, their feeding can cause considerable damage. However, it is unlikely they will kill gorse and bushes can usually recover from the effects. The mites have sucking mouthparts that pierce individual cell walls of gorse foliage and extract the cell contents. The attacked foliage takes on a bleached or, eventually, a brown appearance. The vigour of the bush can be significantly reduced and flowers may be aborted. Populations of gorse spider mite usually increase for up to 3 years, then suddenly decline during mid-summer. This has been attributed to the effect of predators, coupled with mass migration of the adults. Migration is thought to be triggered by the presence of predators, colony size, a response to the plant or other unknown factors. Migration is imminent when large numbers of mites congregate on the tips of branches or drip from

them like stalactites. The mites are then blown away by the wind or crawl on to neighbouring bushes to start new colonies.

Integrated control

The gorse spider mite is the second biological control agent for gorse to be released in Australia. The first, the now widely established gorse seed weevil, *Exapion ulicis* (Forster), was released in Tasmania in 1939. The effect of the weevil has been restricted because gorse has a flowering period in both spring and autumn. The larvae of the weevil, which attack the seed in spring, are inactive in autumn, so any seed produced during this season escapes attack. Apart from the gorse spider mite, other foliage feeding agents are also being utilised as biological control agents for gorse. These are the gorse thrips, *Sericothrips staphylinus* Haliday, which was released in Tasmania in 2001 and has now established, and the gorse soft shoot moth, *Agonopterix ulicetella* (Stainton), that is scheduled for release in 2006. Ultimately, it is hoped that the combined effects of these agents will help restrict the spread of gorse or be useful in integrated control programs by reducing gorse vigour and enhancing the impact of other control measures.

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