Government of South Australia

BIOCONTROL

FACTSHEET

July 2010

For more information on weeds, including use of biocontrol agents contact:

Your local NRM Board
www.nrm.sa.gov.au

Visit the Biosecurity SA web page:
www.pir.sa.gov.au/biosecurity/nrm_biosecurity/weeds

Ph 08 8303 9620

Or Weeds Australia:
www.weeds.org.au

BIOLOGICAL CONTROL OF

Gorse

(*Ulex europaeus*)

Biocontrol agent: Gorse seed weevil (*Exapion ulicis*)

BACKGROUND

Gorse, also known as furze, is a spiny shrub introduced from Europe as a hedge plant.

It is a serious weed of bushland and forest plantations where gorse plants can out-compete native plants and young forestry trees, and increase the fire hazard along plantation edges.

The plant invades improved pastures, resulting in lower carrying capacity, and provides harbour for vermin.

It is expensive to control and requires ongoing follow-up work.

Gorse is a perennial, evergreen legume which can grow to 4 metres tall.

It can live to around 30 years of age and a mature infestation can produce up to 6 million seeds per hectare each year.

Most seeds fall around the plant but they can be expelled to a distance of 5 metres.

The seeds have a hard, water-resistant coating allowing them to remain dormant in the soil for up to 75 years.

Seeds are usually released in hot or dry conditions and mass germinations can occur after burning or mechanical disturbance.

Gorse is a Weed of National Significance and a declared plant in South Australia. Landowners have a legal responsibility to control gorse under the South Australian *Natural Resources Management Act* 2004. Regional NRM Boards coordinate and enforce local and regional control programs for declared plants.

HOW THIS BIOCONTROL WORKS

The gorse seed weevil is native to western Europe. It is widely established in all areas of Australia where gorse occurs, except in Western Australia.

Adult weevils are 1.8 to 2.5 mm long and are present on gorse all year round. They commence egg-laying in spring.

The main damage results from larvae feeding on developing seeds within the pods.

Gorse seed weevil larvae have been shown to damage 44% of the seed produced during spring and summer, but do not infest seed produced in autumn.

RELEASE OF AGENT IN SOUTH AUSTRALIA

The gorse seed weevil was first discovered in South Australia in 1939.

It is well established in the Adelaide and Mt Lofty Ranges NRM Region, and in most of the higher rainfall areas of the SA Murray Darling Basin Region.

Gorse seed weevil pod pupae
Image courtesy of W Chatterton TIAR

Gorse seed weevil adult (1.8 to 2.5 mm long)
Image courtesy of W Chatterton TIAR

Gorse infestations across SA NRM Boards

> Adelaide & Mt Lofty Ranges: widespread in the higher rainfall areas

> Kangaroo Island: small scattered infestations

> Northern & Yorke: common on roadsides and watercourses in the south

> Eyre Peninsula: very scattered infestations in the south

> SA Murray Darling Basin: isolated outbreaks in the higher rainfall area to the west

> South East: rare in the north, scattered in the south

OTHER AGENTS USED ON GORSE

Gorse thrips (*Sericothrips staphylinus*) have been released in the SA Murray Darling Basin Region near Mt Pleasant (2009), Palmer (2007 and 2009), Harrogate (2001), Eden Valley (2006), Macclesfield (2001 and 2006), Mt Barker (2007) and Meadows (2007).

Of the 50 releases made since 2006 in these areas, 40% appeared to have survived beyond the first year, though there has been no spread from release plants at these sites.

Gorse thrips feed on leaves. The impact on potted gorse in glasshouses is high, yet the same level of damage has not been observed in the field.

Gorse spider mites (*Tetranychus lintearius*) were first released in the Adelaide and Mt Lofty Ranges Region in 2001 at Crafers and Lobethal. Since then natural dispersal and intentional releases, especially through the Weed Warriors program, have resulted in the mites establishing in most high rainfall areas of the Adelaide and Mt Lofty Ranges and SA Murray Darling Basin Regions.

Gorse spider mites were established in the South East and present in the Northern and Yorke Regions, but recent eradication/control programs have destroyed many of these sites.

Spider mites are sap feeders on the leaves and stems of gorse. Extensive feeding pressure can kill shoots, reduce plant growth and biomass, and abort the production of flowers. Studies and anecdotal evidence have shown that the spider mite can have a large impact on plant vigour in the first 12 months before predators, such as the introduced Chilean mite (*Phytoseiulus persimilis)* and the native ladybird beetle (*Stethorus histrio*), start to regulate the colony.

Fungal pathogens are being investigated as agents against gorse and CSIRO will conduct host specificity tests against potential candidates.

The **soft-shoot moth** (*Agonopterix ulicetella*) has not yet been released in South Australia. It is difficult to rear in quarantine and more laboratory testing is to be conducted. The **gorse pod moth** (*Cydia succedana*) is nearing completion of host specificity tests.

INTEGRATED CONTROL

Integrated weed management aims to maintain or reduce weed densities to manageable levels by utilising a variety of control practices, including biocontrol where appropriate.

Glasshouse experiments have demonstrated that the gorse thrips, in combination with ryegrass competition and grazing, can significantly reduce gorse seedling survival.

Integrated gorse control can utilise mechanical clearing, cultivation, herbicides, hand-pulling, fire, grazing, pasture management and revegetation, in addition to biocontrol.

In inaccessible locations, or where there is a risk of damage to sensitive native vegetation, conventional control methods may be difficult or impossible to implement. Biocontrol may then be the only management option however biocontrol alone will not eradicate the weed but slow its rate of spread and allow more time for control by other means.

REFERENCES / LINKS

Declared Plants of South Australia

Integrated Weed Management

Gorse Weed Identification Notes

Biocontrol of Gorse with Gorse Thrips

Biocontrol of Gorse with the Gorse Spider Mite

Biocontrol of Gorse with the Gorse Seed Weevil

Biological Control of Gorse

Weed of the Month: *Ulex europaeus*