BIOLOGICAL CONTROL OF CAPE BROOM: CAPE BROOM PSYLLID

Background

Cape broom, *Genista monspessulana* (also known as Montpellier, French or canary broom), is an erect leguminous shrub with bright yellow flowers that reaches 2-3 metres tall at maturity. Native to the Mediterranean region it has now become a significant weed in the higher rainfall areas of southern Australia where it invades disturbed bushland and poorly managed pastures. Plants are also common on roadsides and in recreation areas. In pastures, cape broom may form thickets that prevent grazing on infested areas and provide cover for pest animals such as rabbits. In Tasmania, the largest infestations have been recorded in the south east of the State.

The hard seed coat can delay germination for months or years with buried seeds able to remain dormant and viable for four years or longer. As a result, large seed banks can develop under mature plants and seed banks exceeding 50,000 seeds per square metre are not uncommon. Seed dormancy can be broken by fire resulting in dense infestations of seedlings that can out-compete other plants after a fire event.

Methods used to control Cape broom include herbicides, burning, mechanical clearing and grazing using sheep and goats. Grazing with sheep and goats especially on young plants is effective in pasture situations. Cape broom is believed to be toxic if grazed excessively but it is unlikely that animals would consume the large amounts necessary to cause poisoning. The limited success, expense and difficulty in controlling Cape broom in many areas resulted in biological control being investigated.

Introduction

The Cape broom psyllid, *Arytinnis hakani*, is a sap sucking bug that is abundant on Cape broom in the western Mediterranean and can cause significant reductions in leaf area and reduce flowering. The psyllid was approved for release in south east Australia after host specificity tests confirmed that it had a narrow host range and posed no risk to native flora. Cape broom psyllid was first released in Tasmania in 2009 and a mass rearing program is now being conducted by TIA to establish it at sites throughout the State. If this establishment program is successful, the best sites will be used to collect and redistribute the psyllid to new sites to accelerate dispersal.

Description

Eggs are oblong, less than 1 mm in length and vary from cream to orange in colour. Nymphs are wingless but quite mobile and pass through 5 developmental stages (instars). The colour of these changes from orange to bright green as they increase in age. The second instars are approximately 1 mm long and the fifth instars are just over 2 mm. Adults are 2-3 mm long with transparent wings that have light brown veins and green to yellow green bodies.

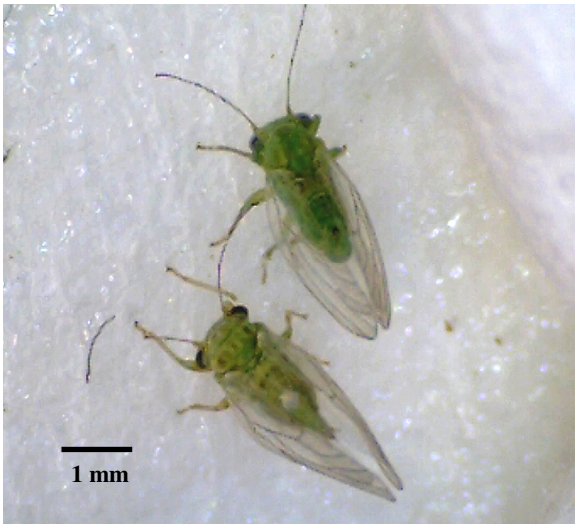

Figure 1. *Cape broom psyllid adults (Photo: Wade Chatterton, TIA).*

Life cycle

Adult females lay up to 200 eggs amongst young leaves and flower buds. Eggs can survive through the winter and hatch in spring. Newly hatched nymphs begin feeding on the leaves and buds, then pass through five instars before reaching the adult stage. The length of the Cape broom psyllid life cycle is temperature dependent. Under Tasmanian field conditions, the Cape broom psyllid may pass through about three generations per year.

Feeding damage

Adults and nymphs insert their mouthparts into plants, injecting saliva and then sucking the sap from plant cells. Large populations can occur on young, actively growing foliage causing a reduction in plant vigour, flowering and seed set. The psyllid therefore has the potential to retard the growth, reproduction and spread of Cape broom and may provide a useful control in native vegetation and in areas that are difficult to access with traditional control methods such as herbicides.

Introductions of more biological control agents are planned and these will place additional stress on plants and may ultimately decrease the density of infestations. Biological control should be considered as a long-term program that is best used on large, chronic infestations with a low priority for control by other methods.

Releases

Releases are made by cutting psyllid infested branches and tying them amongst the branches of broom plants at new sites. The psyllids will transfer onto the live plants and start new colonies.

Acknowledgements

The initial importation, culturing and release of the Cape broom Psyllid in Tasmania was federally funded by the 'Caring For Our Country' program through the Department of the Environment, Water, Heritage and the Arts/Department of Agriculture Fisheries and Forestry. The initial collection and consignment of Cape broom psyllid to Tasmania was conducted by South Australian Research and Development Institute (SARDI). Information on the biology of the Cape broom psyllid used in this pamphlet was provided by SARDI and CSIRO.

Further information

For further information on this project contact:
John Ireson
Tasmanian Institute of Agriculture,
13 St. John's Avenue, New Town, 7008.
Phone: (03) 6233 6821; Fax: (03) 62782716
Email: John.Ireson@utas.edu.au

CARING FOR OUR COUNTRY