

Branched Broomrape - Management: State prohibited weed

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*This Landcare Note details the approach adopted by the Victorian government to the management of the State Prohibited Weed branched broomrape, *Orobanche ramosa*, to prevent its introduction to and spread in Victoria.*

Common and scientific names

Branched broomrape, *Orobanche ramosa* Linnaeus

See the Landcare Note LC0269: Branched broomrape - Identification: State Prohibited Weed, for a description and illustrations of the plant and related species, and details of its biology.

Status

Branched broomrape has not yet been found in Victoria but poses an extremely serious threat to Victorian agriculture, particularly to the pulse, oilseed and vegetable industries. It also affects some Australian native plants. All broomrape (*Orobanche*) species are prohibited imports to Australia and have largely been kept out by quarantine controls, but the seeds could easily enter undetected. Many of our trading partners prohibit all broomrapes, so Australian export markets will be severely affected if these plants become established.

Branched broomrape is a State Prohibited Weed under the *Catchment and Land Protection Act 1994*. This means that the Victorian Government is responsible for its eradication should it be found in Victoria. It is also a declared exotic disease under the *Victorian Plant Health and Plant Products Act 1995*. The plant could possibly be introduced to Victoria on vehicles or machinery or as a contaminant of soil, livestock, fodder or produce from a large and expanding area of infestations in the Murray Bridge area of South Australia. It was estimated in 2000 that branched broomrape would cost Australian agriculture \$2.1 billion in 25 years if left uncontrolled.

It is an offence to import this plant or any plant product affected by it into Victoria. Persons knowing, or having reason to suspect the presence of branched broomrape on land they occupy, or in plant products in their possession or control, must notify an Authorised Officer of the Department of Primary Industries without delay and by the quickest means of communication available. Any Orobanche found attacking crops must be reported immediately.

Background

Broomrapes are parasitic plants that attack the roots of crops including pulses, pasture legumes, oilseeds and a wide range of vegetables. They do not photosynthesise and can only survive by parasitising a host. There are about 140 species, mostly in northern Eurasia.



Figure 1. Victorian government officers trained in broomrape identification and hygiene procedures in South Australia complete a washdown with seed sterilant after contact with the plant.

Five species cause heavy damage in Europe, Asia and America: Egyptian broomrape (*Orobanche aegyptiaca*), nodding broomrape (*O. cernua* var. *cernua*), crenate broomrape (*O. crenata*), sunflower broomrape (*O. cumana*) and branched broomrape. Major crops are seriously affected when these damaging broomrapes become established. The parasite deprives its host of water and nutrients. Yield

reductions of 30 to 70% are not uncommon. Produce may not be saleable because the quality is reduced or because of broomrape contamination.

Broomrape can only establish if it contacts a suitable host. Depending on the species of broomrape, potential hosts include: bean, broadbean, broccoli, cabbage, fibre hemp, canola, capsicum, carrot, cauliflower, celery, chickpea, chrysanthemum, clover, cucumber, eggplant, lentil, lettuce, melons, pea, potatoes, sunflower, tobacco, tomato and vetch. Many common weed species can also be parasitised including capeweed and thistles. So far there is no record of broomrapes attacking cereals.

The Murray Bridge outbreak area is subject to a containment and eradication program funded by the Federal Government, in cooperation with States and industry, and agreed upon by an intergovernmental standing committee. Each State is contributing funds in accordance with the potential impact branched broomrape would have on that State.

Containment measures and quarantine

In Victoria, emergency measures are in place to deal with possible introduction. Quarantine measures in South Australia are intended to minimise the likelihood of spread.

Declaration of branched broomrape enables the restriction of movement of vehicles, machinery, horticultural produce, fodder, grain and livestock from quarantined areas and empowers the Department of Primary Industries (DPI) to direct a landowner to prevent the growth of the plant.

Inspection of Victorian properties linked to infested areas in South Australia commenced in Victoria in October 2000 and has occurred during spring in each subsequent year. Many sites linked to the infestation that have been inspected for three consecutive years are now considered to be unaffected.

A team of 25 DPI staff trained to identify broomrapes and respond to infestations is being maintained. The team will enforce quarantine and containment measures on properties found to be infested in Victoria. These measures involve restrictions in the movement of equipment, produce and livestock, along with decontamination and eradication procedures. Staff will implement 'traceback' mechanisms to identify sources of contamination, and will 'trace forward' to identify where branched broomrape may have been spread from newly identified infestations.

Management and control

What you can do

Please cooperate with government staff seeking to prevent the introduction and minimise the establishment of branched broomrape. The weed is a community threat and community support is needed to avoid it being spread. Look for pest broomrapes in crops and other areas. Mark any infested sites so that they can later be easily found. Report the presence of any broomrapes to the nearest DPI office. DPI staff will consult with the landowner and land managers to determine what action should be taken.

Hygiene

Agricultural seeds, fodder, livestock, etc. from infested areas should not be imported to Victoria unless officially certified as free of contamination. Certified seed should be used wherever possible.

Warning! *Farmers and property owners who have obtained seed, fodder, livestock or other materials from areas near Murray Bridge since the 1980s should be especially vigilant.*

Machinery and equipment used in infested areas must be cleaned before being moved elsewhere. Land managers using contractors should ensure that they maintain appropriate hygiene and decontamination standards. Decontamination of vehicles by washdown with a seed sterilant is necessary. Footwear and clothing used in infested areas should be cleaned and sterilised. Areas with broomrape should be avoided when harvesting. Stock should be quarantined for 30 days after grazing infested areas to ensure that ingested seed is not deposited on uninfested land.

Control measures

Broomrapes are extremely difficult to control. Soil fumigation is effective but kills everything and is very costly and disruptive. Methyl bromide is the most effective fumigant, but may not work well in heavy soils and is being phased out for environmental reasons. Solarisation using plastic sheets can be used to heat the soil to kill seeds but is also very expensive and takes land out of production for long periods.

Cultivation can provide control if the seed can be deeply buried. Pre-emergent herbicides are effective in some situations. Expendable "catch crops" that stimulate germination of broomrape seeds can be planted. The catch crop and the broomrape are then physically or chemically treated. It may also be possible to use "trap crops" that stimulate germination of broomrape but are not themselves affected. Overseas developments not commercially available in Australia include chemicals that artificially induce germination of broomrape seeds, resistant cultivars of some vulnerable crop species and the broomrape seed-feeding fly, *Phytomyza orobanchia*, used to control broomrape in the Ukraine. Biological control using fungal pathogens as mycoherbicides is also being tested overseas. In the long term, the only option for severe infestations may be to switch to non-host plants such as cereals, orchard crops or vines.

Further information

Please contact DPI, PO Box 48, Frankston, 3199, phone (03) 9785 0111, fax (03) 9785 2007.

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