



Government
of South Australia

Declared Plant Policy

This policy relates to natural resources management under section 9(1)(d) of the Landscape South Australia Act 2019 (the Act), enabling co-ordinated implementation and promotion of sound management programs and practices for the use, development or protection of natural resources of the State. Specifically, this policy provides guidance on the use and management of natural resources relating to the prevention or control of impacts caused by pest species of plants that may have an adverse effect on the environment, primary production or the community, as per object s7(1)(f) of the Act.

broomrapes, other than branched broomrape (*Orobanche* spp.)

The genus *Orobanche* includes about 200 species. All are root parasites of a wide range of broadleaf plants, without chlorophyll and appearing above ground only when they flower. Some are important as weeds of legumes (including lucerne, peas, beans and lentils) and vegetables (e.g. tomato, potato, capsicum, and lettuce), reducing yield or causing failure in these crops. All broomrape seed is prohibited from import into Australia. One broomrape species, clover broomrape (*Orobanche minor*) is widespread as a weed of gardens.

Branched broomrape (*Orobanche ramosa*) is the subject of a separate policy. One other species of broomrape, *Orobanche cernua* var. *australiana*, is native to South Australia with threatened species status, is not a pest of agriculture and is excluded from the declaration.

Management Plan for Broomrapes

Outcomes

- No impact of broomrapes on agriculture or pasture production in South Australia.
- No impact of broomrape contamination on the marketability of South Australian produce.

Objectives

- Prevent the entry of any additional broomrape species to South Australia.
- Prevent the spread of clover broomrape to farming systems where it may cause losses.
- Avoid damage to populations of the native *Orobanche cernua* var. *australiana*

Best Practice Implementation

- Any importation or sale of seed contaminated with broomrape seed to be prevented.
- All regional landscape boards and Green Adelaide to maintain surveillance for alert weeds including broomrape.

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- New infestations of broomrape found on arable land to be reported to the delegate of the Chief Executive of the Department for Environment and Water for determination of the species.
- Any high priority infestations of clover broomrape to be controlled as detailed in regional management plans.
- Infestations of other introduced broomrapes to be destroyed as found.

Regional Implementation

Refer to regional management plans for further details.

For clover broomrape:

Region	Actions
Alinytjara Wilurara	Limited action
Eyre Peninsula	Protect sites
Green Adelaide	Protect sites
Hills and Fleurieu	Protect sites
Kangaroo Island	Protect sites
Limestone Coast	Protect sites
Murraylands and Riverland	Protect sites
Northern and Yorke	Protect sites
South Australian Arid Lands	Limited action

For other broomrape species:

NRM Region	Actions
Alinytjara Wilurara	Destroy infestations Alert
Eyre Peninsula	Destroy infestations Alert
Green Adelaide	Destroy infestations Alert
Hills and Fleurieu	Destroy infestations Alert
Kangaroo Island	Destroy infestations Alert
Limestone Coast	Destroy infestations Alert
Murraylands and Riverland	Destroy infestations Alert
Northern and Yorke	Destroy infestations Alert
South Australian Arid Lands	Destroy infestations Alert

Declaration

To implement this policy, these broomrape species are declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia so that movement of contaminated produce can be prevented. Their entry to South Australia, movement or transport on a public road by themselves or as a contaminant, or their sale by themselves or as contaminants are prohibited.

Land owners are required to notify their regional landscape board or Green Adelaide of broomrape plants growing on their land and are responsible for destroying these plants, with the exception of clover broomrape or the native broomrape. These authorities are required to destroy infestations on road reserves in their regions and may recover costs from the adjoining land owners.

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Introduced broomrapes are declared in category 1 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow their entry, road transport or sale can only be issued by the Chief Executive, DEW or their delegate pursuant to section 197.

Under the *Landscape South Australia (General) Regulations 2020*, Regulation 27 specifies the conditions under which a person is exempt from the operation of section 186 and may transport wool, grain or other produce or goods carrying broomrape on public roads, or bring them into the State. Regulation 28 specifies conditions under which a person is exempt from the operation of section 188(2) and may sell wool, grain or other produce or goods carrying broomrape. Note that certain produce or goods may be excluded from these general movement and sale exemptions by Gazettal Notice of the Chief Executive, DEW.

Harvested grain delivered to a grain handler must also comply with Grain Trade Australia Trading Standards, which allow a maximum of two broomrape seeds per 0.5 L for certain grains.

The following sections of the Act apply to clover broomrape throughout each of the regions noted below:

Sections of Act	Region								
	AW	EP	GA	HF	KI	LC	MR	NY	SAAL
186(1) Prohibiting entry to area	X	X	X	X	X	X	X	X	X
186(2) Prohibiting movement on public roads	X	X	X	X	X	X	X	X	X
188(1) Prohibiting sale of the plant	X	X	X	X	X	X	X	X	X
188(2) Prohibiting sale of contaminated goods	X	X	X	X	X	X	X	X	X
190 Requiring notification of presence									
192(1) Land owners to destroy the plant on their properties									
192(2) Land owners to control the plant on their properties									
194 Recovery of control costs on adjoining road reserves									

The following sections of the Act apply to broomrapes other than clover broomrape, branched broomrape and the native broomrape throughout each of the regions noted below:

Sections of Act	Region								
	AW	EP	GA	HF	KI	LC	MR	NY	SAAL
186(1) Prohibiting entry to area	X	X	X	X	X	X	X	X	X
186(2) Prohibiting movement on public roads	X	X	X	X	X	X	X	X	X
188(1) Prohibiting sale of the plant	X	X	X	X	X	X	X	X	X
188(2) Prohibiting sale of contaminated goods	X	X	X	X	X	X	X	X	X
190 Requiring notification of presence	X	X	X	X	X	X	X	X	X
192(1) Land owners to destroy the plant on their properties	X	X	X	X	X	X	X	X	X
192(2) Land owners to control the plant on their properties									
194 Recovery of control costs on adjoining road reserves	X	X	X	X	X	X	X	X	X

Review

This policy is to be reviewed by 2025 or in the event of a change in one or more regional management plans for broomrapes.

Weed Risk

Invasiveness

Broomrape seed is produced in large quantities and are shed within months of emerging from the soil. The seeds are very small, under 0.5 mm long, but one plant can produce tens of thousands of seeds. Due to its small size, broomrape seed is very difficult to detect in produce. It can be dispersed by livestock (both internally and externally), in soil, fodder and seed for sowing, and in mud on vehicles or footwear.

The highest risk for further spread is via soil adhering to machinery, and roadsides provide the likeliest pathway for this mode of spread. Seed may possibly be spread by wild animals or with eroded soil blown in strong winds, but the risk of these incidents is much lower.

As broomrapes depend on the habitat provided by their host plants, they have a high ability to establish within this specialised habitat. Grasses and woody plants are not potential hosts.

Impacts

Overseas, broomrapes are major pests of vegetable crops and irrigated pastures as they parasitise a wide range of broadleaf plants. In particular, *O. aegyptiaca*, *O. cernua*, and *O. crenata* are important crop pests in many countries.

The most widespread crop hosts of clover broomrape are the forage legumes, but safflower, sunflower, guizotia, lettuce, groundnut, faba bean and tobacco may also be attacked.

Contamination with broomrape seed has potential to impact the marketability of produce, including the small seeds industry.

Potential distribution

Distribution of broomrapes is determined by the availability of suitable host plants and can grow wherever host crops are grown. Some species such as *O. crenata* grow on widespread weeds and could grow throughout the agricultural zone, in residential gardens and in the southern permanent pasture zone.

Local strains of clover broomrape in Europe have adapted to the hosts that were available in each region. The clover broomrape introduced to South Australia grows on many widespread broadleaf weeds, and therefore could grow throughout the agricultural zone, in residential gardens and in the southern permanent pasture zone.

Feasibility of Containment

Control costs

Because they develop below ground, broomrapes are not easy targets for selective herbicide control. Spot infestations can be treated by destroying the host plant with non-selective herbicides. There is scope for broad acre control using herbicides of the sulfonylurea and imidazolinone groups. Translocated herbicides such as glyphosate have been used at very low rates and become concentrated to effective levels in the parasite, but this is practicable only in broadbean crops.

Considerable effort has been made overseas to produce resistant cultivars of vulnerable crop species; but resistance varies according to the *Orobanche* genotype and environmental

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conditions. The use of comparatively resistant cultivars and management of infested fields with appropriate rotations are the standard control methods overseas. The most effective control techniques involve the destruction of broomrape seeds in the soil. This can be done by pre-planting fumigation, or by solarisation of the soil under plastic sheeting during the growing season; both are relatively expensive. Pre-emergent herbicides, expendable "trap crops" that stimulate the *Orobanche* seeds to germinate and biological control have also been used.

Persistence

Seed of broomrapes remains viable for at least 20 years in the soil, forming long-lived seed banks. As long as any host plants are present, broomrape can renew its seed bank annually.

Broomrape infestations are not easy to detect or delimit because the plants only emerge above the soil level for a short time to flower and release their seeds. They are close to the ground and can be overlooked. In unfavourable years for their growth, flowering shoots may be few and small, or may not emerge at all.

Current distribution

Clover broomrape is an uncommon garden weed associated with hosts such as gazania, nasturtium and creeping boobiolla in suburban Adelaide and regional towns. Infestations in South Australia are small and isolated.

None of the other exotic broomrapes covered in this policy are known to be present in Australia.

State Level Risk Assessment

Assessment using the Biosecurity SA Weed Risk Management System gave the following comparative weed risk and feasibility of containment scores for clover broomrape by land use:

Land use	Weed Risk	Feasibility of control	Response at State Level
Crop-pasture rotation	medium 42	high 28	protect sites
Grazing - Southern	medium 56	high 17	protect sites
Irrigated pastures	medium 63	medium 40	manage sites
Vegetables	medium 67	medium 39	manage sites

The potential impacts of other broomrapes are conjectural and vary widely between species. As they are absent from Australia their feasibility of control is very high, and the option of eradication would be considered based on risk assessment of the species involved:

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Land use	Weed Risk	Feasibility of control	Response at State Level
Crop-pasture rotation	negligible to medium 0 to 57	very high 0	contain spread alert
Grazing - southern	negligible to medium 0 to 67	very high 0	contain spread alert
Irrigated pastures	negligible to high 0 to 112	very high 0	destroy infestations alert
Vegetables	negligible to medium 0 to 67	very high 0	contain spread alert

Considerations

The sporadic occurrences of clover broomrape in gardens are not targeted for control. The aim of protecting sites is achieved by a prohibition on the transport of produce and other materials known to be contaminated with the seed.

All other species of *Orobanche* are prohibited imports to Australia, and are Alert Weeds in South Australia. Their declaration under the *Landscape South Australia Act 2019* facilitates a post-border response to any future incursion. Their spread is best contained by preventing their entry or establishment.

Synonymy

Orobanche L., Sp. Pl. 2: 632 (1753), all species except:

- the native *Orobanche cernua* Loefl. var. *australiana* (F.Muell. ex Tate) J.M. Black ex G.Beck.
- *Orobanche ramosa* L., branched broomrape, an introduced weed which is the subject of a separate policy.

Taxonomic synonym:

Phelipanche Pomel, Nouv. Mat. Fl. Atl. 102 (1874).

Hon David Speirs MP
Minister for Environment and Water

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