



Government
of South Australia

Declared Plant Policy

Apple of Sodom (*Solanum linnaeanum*)

Apple of Sodom is a spiny shrub growing to about one metre tall. In South Australia it is mainly a weed of coastal districts where it slowly invades unimproved perennial pastures.

Management Plan for Apple of Sodom

Outcomes

Permanent pastures in the southern part of the State protected from reductions in productivity caused by apple of Sodom.

Objectives

- Reduce the distribution and density of apple of Sodom in the South East NRM region.
- Minimise further spread of apple of Sodom in other regions.

Implementation

- Delimit the full extent of apple of Sodom infestations in the South East.
- Prioritise sites to be protected from apple of Sodom invasion in the South East.
- Enforce control in the South East as necessary.
- Increase awareness of apple of Sodom and its potential impacts in all regions.

Regional Implementation

Refer to regional management plans for further details.

NRM Region	Actions
Adelaide and Mount Lofty Ranges	Limited action
Alinytjara Wilurara	Limited action
Eyre Peninsula	Limited action
Kangaroo Island	Limited action
Northern and Yorke	Limited action
South Australian Arid Lands	Limited action
South Australian Murray-Darling Basin	Limited action
South East	Protect sites

Apple-of-Sodom policy

Declaration

To implement this policy, apple of Sodom is declared under the *Natural Resources Management Act 2004* throughout the whole of the State of South Australia. The movement or transport of the plant on a public road, by itself or as a contaminant, or the sale by itself or as a contaminant is prohibited. In the South East NRM region, NRM authorities may require land owners to control apple of Sodom on their land. NRM authorities in this region are required to control plants on road reserves, and may recover costs from the adjoining land owners.

Apple of Sodom is declared in category 3 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow its movement or sale can only be issued by the regional NRM Board pursuant to section 188. Under the *Natural Resources Management (General) Regulations 2005*, the transport or movement of grain for milling or wool for cleaning is exempt from the operation of sections 175 and the sale of wool or grain is exempt from section 177(2) if at the time of the sale the person believes on reasonable grounds that the purchaser will remove the plant from the wool or grain before any re-sale.

The following sections of the Act apply to apple of Sodom throughout each of the NRM regions noted below:

Sections of Act	Region							
	AMLR	AW	EP	KI	NY	SAAL	SAMDB	SE
175(1) Prohibiting entry to area								
175(2) Prohibiting movement on public roads	X	X	X	X	X	X	X	X
177(1) Prohibiting sale of the plant	X	X	X	X	X	X	X	X
177(2) Prohibiting sale of contaminated goods	X	X	X	X	X	X	X	X
180 Requiring notification of infestations								
182(1) Landowners to destroy the plant on their properties								
182(2) Landowners to control the plant on their properties								X
185 Recovery of control costs on adjoining road reserves								X

Review

This policy is to be reviewed by 2020, or in the event of a change in one or more regional management plans for apple of Sodom.

Weed Risk

Invasiveness

Apple of Sodom is known to establish in disturbed natural ecosystems such as coastal vegetation, grassland/grassy woodland and vegetation on rocky outcrops.

Plants do not flower or fruit until the second year and flowering and fruiting extends from late spring to the end of summer. A large plant can produce approximately 1,500 seeds per year.

The seeds germinate in spring and seedlings develop slowly with plants generally not flowering until 2 years of age. Flowering and fruiting of established plants occurs in spring and extends to late summer.

Apple-of-Sodom policy

The berry is not generally consumed by livestock, birds or other native and feral animals. The fruit tends to ripen on the bush, eventually dropping off and is then blown or dragged away with the seeds enclosed. Long distance dispersal can occur when berries are caught up in hay or machinery. Minor spread also occurs with the movement of contaminated agricultural produce, screenings, soil and through birds and foxes. Unlike some other solanum species, apple of Sodom does not sucker from the roots or spread by root fragments.

Impacts

The fruit of apple of Sodom is poisonous to humans and livestock due to the presence of glycoalkaloids, however the berries are not known to be palatable to stock.

The leaves are not grazed by stock due to their prickly nature. This allows infestations to develop freely and can result in dense patches that have the potential to crowd out other plants, restrict stock and human movement and provide harbour for rabbits. In coastal areas apple of Sodom can invade open or degraded native vegetation and is known to harbour large numbers of snails.

Potential distribution

Apple of Sodom grows well on sandy calcareous soils of coastal regions. It is not frost tolerant and is absent from areas prone to frost.

Its range could extend to all coastal areas in the South East region.

Feasibility of Containment

Control costs

Apple of Sodom is difficult to control effectively with chemicals and several years of follow up may be required. Several chemicals are registered for its control, but these are either nonselective or affect a broad range of broadleaved plants. It can also be controlled by regular cultivation.

Persistence

The plant is susceptible to selective and non-selective herbicides, but their efficacy is much greater when the plants are seedlings. Established plants can be difficult to kill with herbicides because of the woody rootstock.

No formal studies have been made on the seed bank of apple of Sodom, but most seed appears to germinate within a year or two of production.

Current distribution

Apple of Sodom is present in the southern Eyre Peninsula, Mount Lofty Ranges and Fleurieu Peninsula, Kangaroo Island and South East regions, usually as small scattered populations in pasture and other cleared land. In the South East, it is more densely scattered along the entire coastal region, with the highest density infestations around Robe and Cape Jaffa.

State Level Risk Assessment

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

Land use	Weed Risk	Feasibility of control	Response at State Level
Grazing - southern	medium 76	high 17	Protect Sites
Native vegetation	low 30	very high 3	Monitor

Considerations

Apple of Sodom was growing at the Adelaide Botanic Garden by 1858 and first collected in this State as a weed in 1880. It is not currently cultivated for any purpose.

Risk assessment indicates a management action at State level of site protection in permanent grazing land, and this is the strategic action adopted by the South East NRM Board. The potential distribution and impacts of apple of Sodom are lower in other regions, where action is limited to enforcing the prohibition on sale and movement of contaminated material.

Synonymy

Solanum linnaeanum Hepper & P.-M.L.Jaeger, Kew Bull. 41: 435 (1986).

Taxonomic synonyms:

Solanum hermannii Dunal, Hist. Nat. Solanum 212 (1813).

Solanum sodomeum L. var. *hermanni* (Dunal) Dunal, Prodr. 13: 366 (1852).

Hon Ian Hunter MLC
Minister for Sustainability, Environment and
Conservation

Date: 3 January 2015