



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.*

### azarola (*Crataegus sinaica*)

Azarola is a species of hawthorn that occurs in isolated infestations at present and has not reached its ecological limits in the State. Where infestations are not managed, they have the potential to invade bush in the Adelaide Hills and similar high rainfall areas, reducing the amenity and conservation values of these sites.

### Management Plan for Azarola

#### Outcomes

- Maintain the integrity of native vegetation in high rainfall regions.
- Maintain the amenity of recreation areas susceptible to invasion by azarola

#### Objectives

- Prevent any further naturalisation of azarola.
- Remove high priority infestations of azarola in the control areas.
- Contain any intractable infestations in these areas.
- Prevent the further spread of azarola.

#### Best Practice Implementation

- Regional landscape boards in the active control areas and Green Adelaide to ensure high priority infestations, as determined by the board, on private or public land are controlled.
- Regional landscape boards in the active control areas and Green Adelaide to control infestations on road reserves subject to regional priorities.
- Any infestations too large for immediate control in these areas to be the subject of plans for containment and progressive reduction.
- Regional landscape boards and Green Adelaide to enforce the prohibition on sale of plants of azarola.

## Regional Implementation

Refer to regional management plans for further details.

Region	Actions
Alinytjara Wilurara	Limited action
Eyre Peninsula	Destroy infestations Regional alert
Green Adelaide	Monitor
Hills and Fleurieu	Monitor
Kangaroo Island	Monitor – not present Regional alert
Limestone Coast	Destroy infestations Regional alert
Murraylands and Riverland	Limited action
Northern and Yorke	Protect sites
South Australian Arid Lands	Limited action

## Declaration

To implement this policy, azarola is declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia. Its movement or transport on a public road, by itself or as a contaminant, or sale by itself or as a contaminant is prohibited. Green Adelaide and the Hills and Fleurieu, and Limestone Coast, landscape boards may require land owners to control azarola plants growing on their land; these two landscape boards and Green Adelaide are required to control plants on road reserves and may recover costs from the adjoining land owners.

Azarola is declared in category 3 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow its sale or road transport can only be issued by the regional landscape boards and Green Adelaide 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 azarola on public roads. 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 azarola. Note that certain produce or goods may be excluded from these general movement and sale exemptions by Gazettal Notice of the Chief Executive of the Department for Environment and Water.

The following sections of the Act apply to azarola 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										
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			X	X		X				
194 Recovery of control costs on adjoining road reserves			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 azarola.

## **Weed Risk**

### Invasiveness

Azarola invades a broad range of vegetation communities including riparian and coastal areas. It has slow early growth with its competitive ability low at the seedling stage but high once the bushes are established.

Azarola reproduces by seed and suckers. They produce large amounts of seed in the edible fruit (haws), which can be spread long distances when consumed by birds and mammals. Over 2,000 fruits with 2-3 seeds each would be produced on a mature tree. Seed is dispersed effectively by birds and mammals, and takes 2 or more years to germinate as it is enclosed in a hard pit. Spread can occur to a lesser extent via mud and fruit adhering to machinery, vehicles and animals. Much of the spread in the past was by deliberate plantings, but this has ceased.

### Impacts

Azarola is a deciduous, dense shrub or small tree which can grow to 7 metres high and wide. It forms dense thickets that seriously impede movement of stock and humans.

Azarola can have a major impact on bushland habitats, shading out ground-flora and affecting the growth and regeneration of overstorey plants. It is likely that the leaves dropped each autumn impact on biodiversity by increasing nutrients levels in surface soil.

Dense patches of hawthorns compete with native regrowth and form spiny thickets that provide good cover for rabbits and other pests. In the British Isles, *Crataegus* species are an important reservoir of the fire blight bacterium which affects pears and apples. Azarola also is known to host Mediterranean fruit fly and light brown apple moth.

### Potential distribution

Azarola infestations are restricted to areas within the 600 mm annual isohyet, but could also develop along streams near former plantings in drier areas. Potential habitats occur in parts of the Hills and Fleurieu, Eyre Peninsula, Kangaroo Island, Northern and Yorke and Limestone Coast regions.

## **Feasibility of Containment**

### Control costs

There are a variety of control methods for azarola. Mature stands can be controlled using cut and paint or stem injection. Small plants are susceptible to spot spraying. Seedlings can be hand-pulled.

Persistence

Azarola plants are slow-growing but long lived, possibly living for centuries. Like other hawthorns, they are tolerant to the levels of frost encountered in South Australia, and to moderate levels of drought and salinity.

Current distribution

There are infestations of azarola on the western slopes of the Mount Lofty Ranges from Paracombe to Balhannah. There is also one infestation recorded at Clare in the Mid North.

**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
Native vegetation	low 25	very high 2	monitor
Urban	negligible 1	very high 1	monitor

**Considerations**

Azarola was proclaimed for a small number of local government areas in the Adelaide Hills in 1980 as a "community pest plant". Because hawthorns are slow-growing shrubs, they were not been given a high priority by boards and there has been no significant change in their abundance since 1990. Risk assessment at the State level implies monitoring infestations; azarola scores low on weed risk and very high on feasibility of control, due to its limited potential range. There is a regional action of destroying incursions as necessary in two of the regions where it is currently absent but has potential to infest (Eyre Peninsula and the South East).

Azarola is a larger hawthorn than *Crataegus monogyna*, developing into a small tree. It occurs in the central and eastern parts of the Mediterranean region, and was introduced by the Adelaide Botanic Gardens in the 1850s as a hedge and crop plant.

Some *Crataegus* plants in the Adelaide Hills have characters intermediate between azarola and may, and are believed to be F<sub>1</sub> hybrids of these two hawthorns. Hybridisation among *Crataegus* species, especially involving *C. monogyna*, is very frequent overseas. Azarola is an ancient cultivated fruit that probably originated as a hybrid of *Crataegus azarolus* with *C. monogyna*, which may explain its frequent backcrossing to *C. monogyna* in the Adelaide Hills.

Azarola is occasionally used as an ornamental and as a source of fruit for jam. It is a long-lived but slow-growing tree.

## Synonymy

*Crataegus x sinaica* Boiss., Diagn. Pl. Orient. ser. 2, 2: 48 (1856)

Nomenclatural synonym:

*Crataegus azarola* L. var. *sinaica* (Boiss.)Lange, Revisio Sp. Gen. Crataegi (1897)

Taxonomic synonym:

*Crataegus montesantosii* Diap., Repert. Spec. Nov. Regni Veg. 34: 65 (1934)

Other common names include azarola thorn, azarole, Mediterranean medlar, Neapolitan medlar and za'rur. The common name azarola is also applied to *Crataegus azarolus*, which is naturalised in SA.

## References

Albarouki, E. & Peterson, A. (2007) Molecular and morphological characterisation of *Crataegus* L. species (Rosaceae) in southern Syria. *Bot. J. Linnean Soc.* 153: 255-263.

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**Minister for Environment and Water**

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